

## CRS 600 Series: Warning and Response

The 600 series of activities within the Community Rating System (CRS) is focused on linkages between a community's emergency management mission and its CRS functions. These credited activities focus on the life safety aspect of a community's floodplain management program, particularly its emergency management flood warning programs, and can result in additional CRS discounts for your citizens. For more information:  
[http://www.youtube.com/watch?v=R\\_UiWz2Ogu8](http://www.youtube.com/watch?v=R_UiWz2Ogu8) = Link to 'YouTube' webinar 'CRS: Credits for Flood Warning.'

**Catalyst of Change.** Even though flood preparedness and response operations frequently rest within the purview of the community's (or county's) emergency management office, the emergency manager's role in advancing public safety, property protection, and disaster resiliency and sustainability through the National Flood Insurance Program and the CRS is sometimes overlooked by the community. The community CRS Coordinator typically coordinates with the county or community emergency management staff to document activities that are credited under the 600 Series. The daily emergency management mission of prevention, preparedness, response, recovery, and mitigation can successfully be integrated with the CRS. Activities 610, 620 and 630 evaluate the community emergency management program in regard to flood warning, levees and dams.

**Background.** Activities under the 600 Series encourage and promote the development and use of community-based flood detection systems, warning dissemination programs, coordinated flood response activities, and critical facility planning. These are the activities that help reduce the threat to life safety, health, and property damage. The emergency manager is the identified catalyst of this effort.

Three activities make up the 600 Series. Activity 610 (Flood Warning and Response) forms the building block of the series, because all communities must have these basic services. Activity 620 (Levees) and **Activity 630 (Dams)** are for more specific threats that are not present in every community, namely levees and dams. All three activities are organized in a similar fashion, with pertinent credit criteria, and require some actions for

- Advance notification of an impending flood (threat recognition);
- Warnings issued to the threatened population (warning);
- Steps taken to protect life and reduce losses (operations), and;
- Coordination with critical facilities (critical facilities planning).

All three activities have a public information prerequisite to educate residents and businesses concerning safety measures before, during, and after a flood. All three activities require the annual completion of a drill, a flood exercise, or documentation of an actual response to an emergency. The latter also requires the submittal of an after-action report or lessons-learned document, including any recommendations for changes to the adopted plan. A flood, levee failure, dam failure, or hurricane exercise qualifies as an exercise for all three activities.

**Focus of this checklist.** Activity 630 (Dams) encourages states to provide dam safety information to communities and encourages communities to provide timely identification of impending dam failure. For credit, a community must identify its high-hazard-potential dams and have corresponding inundation maps Credit is also available for 630 Documentation Checklist

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dissemination of warnings and coordination of emergency response activities to reduce threats to life and property from dam failure. A maximum of 160 points are available under five elements:

- State dam safety program (**SDS**) is based on the credit for the state's dam safety program (up to 45 points);
- Dam failure threat recognition system (**DFR**) looks at the system used to advise the emergency manager when there is a threat of a dam failure (up to 30 points);
- Dam failure warning (**DFW**) credits the dissemination of warnings to the public (up to 35 points);
- Dam failure response operations (**DFO**) credit is based on the planning and practicing specific tasks to be undertaken to reduce or prevent threats to health, safety and property (up to 30 points), and;
- Dam failure critical facilities planning (**DCF**) considers the coordination of dam failure warning and response activities with operators of critical facilities (up to 20 points).

Only communities which can be impacted by high-hazard potential dams can receive SDS credit. It is possible to receive only SDS credit. To receive additional credit in Activity 630, the community must obtain points in each of the last four elements.

In summation, for Activity 630 credit criteria is as follows:

- a. There must be at least one insurable building within the community that is subject to inundation from the failure of a high-hazard potential dam;
- b. The community must have a description of the dam failure threat and a dam failure inundation map or an evacuation area map;
- c. To receive any Activity 630 credit, the community must receive some credit for DFR, DFW, DFO and DCF;
- d. There must be an adopted dam failure warning and response plan;
- e. There must be one or more outreach projects on the warning and safety precautions, and;
- f. There must be an annual exercise of the plan and a lessons-learned report (discussed on pages 630-4 and 630-5 of the CRS Coordinator's Manual).

**If you have any questions concerning the following checklist, please contact Al Goodman at [Al@awgconsulting.comcastbiz.net](mailto:Al@awgconsulting.comcastbiz.net) or by phone at 769-251-5356.**

**The community reports with its documentation checklist:**

- The community reports two high-hazard potential dams, which threaten a combined number of 300 buildings. Dam ‘A’ threatens 100 buildings and Dam ‘B’ threatens 200. Of those 300 structures, 50 buildings are subject to flooding from both ‘A’ and ‘B.’ Dam ‘A’ is owned and operated by a federal agency and Dam ‘B’ is owned and operated by a state agency. The State Dam Safety Office has received an overall score of 30 points of SDS credit for its program. Documentation submitted: 1) The threat descriptions of the two dams required for CRS credit and an Emergency Action Plan with a dam failure inundation map for Dam ‘B’; 2) The ISO/CRS Specialist was shown the dam failure inundation map for Dam ‘A’ by the community’s emergency manager (which depicted 100 buildings at risk); 3) The community’s adopted dam failure warning and response plan based upon the Dam ‘B’ inundation map; 4) The community annually implements one or more outreach projects to the residents and businesses in the area(s) expected to be inundated by Dam ‘B,’ and; 5) The community conducted a tabletop exercise within the past year which exercised its dam failure warning and response plan. The After Action Report is attached.
- The state SDS score is 30 points. **SDS = 30.**
- The number of buildings in the community expected to be inundated by a failure of the two high-hazard potential dams is the combination of the total impacted by all dams, even if counted multiple times. The number is 300. **bDF= 300.**
- The community has been able to develop a creditable primary dam failure warning and response program in conjunction with the operator of Dam ‘B,’ but not Dam ‘A.’ There is no credit for an undisclosed dam failure threat recognition system associated with Dam ‘A.’ Because the buildings impacted by both dams are not warned about the dangers associated with Dam ‘A,’ the number of buildings that benefit from the dam failure threat recognition system is 200. **DFR = 20, bDFR = 200.**
- The dam failure warning procedures includes pre-scripted messages, an outdoor voice system and a network of sirens, a list of community departments and state agencies responsible for portions of the plan, the use of the EAS with pre-scripted messages, a telephonic public alerting system and the use of NOAA weather radios. This results in 30 points of credit. **DFW = 30, bDFW = 200.**
- The dam failure response plan contains scenarios for Dam ‘B’ failure, identifies response tasks and responsible staff and has a data base of people with functional/special needs (with an evacuation plan for them). This results in 25 points of credit. **DFO = 25, bDFO = 200.**
- There are two facilities considered to be critical in a dam failure emergency. Both are located downstream of Dam ‘B’ and not Dam ‘A.’ The contact information of these facilities is contained within the plan and both have their own dam failure response plans that have been accepted by the community. **DCF1 = 10 and DCF2 = 10.**

$$DFR = 20 \quad rDFR = \frac{bDFR}{bDF} = \frac{200}{300} = 0.67$$

$$DFW = 30 \quad rDFW = \frac{bDFW}{bDF} = \frac{200}{300} = 0.67$$

$$DFO = 25 \quad rDFO = \frac{bDFO}{bDF} = \frac{200}{300} = 0.67$$

$$DCF1 = 10 \quad DCF2 = 10$$

$$c630 = SDS + (DFR \times rDFR) + (DFW \times rDFW) + (DFO \times rDFO) + DCF1 + DCF2$$

$$c630 = 30 + (20 \times 0.67) + (30 \times 0.67) + (25 \times 0.67) + 10 + 10 = \mathbf{100}$$

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### Activity 630 (Dams) Documentation Checklist

	Emergency Manager	CRS Coordinator
Name		
Title		
Address		
Phone		
E-mail		

Form Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

Comments:

Please provide the four totals requested below. The credit points for DFR, DFW and DFO are adjusted based on the number of buildings affected by the element. Determining these adjustments requires identifying the area affected and then counting the buildings within that area.

- (1) The number of buildings in the community expected to be inundated by a failure of all the high-hazard potential dams that affect the community. \_\_\_\_\_
- (2) The number of buildings that benefit from the dam failure threat recognition system. \_\_\_\_\_
- (3) The number of buildings that benefit from the dam failure flood warnings. \_\_\_\_\_
- (4) The number of buildings in the area covered by the dam failure response operations actions. \_\_\_\_\_

**State Dam Safety Credit Criteria and Documentation  
[If not previously requested]**

(1) The SDS credit earned by the state dam safety office is provided to all communities that would be affected by a flood from the failure of a high-hazard-potential dam.

A map and description of the threat from failure of high-hazard-potential dams.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(2) The community must meet state dam safety standards to receive credit for this element. If the community owns or regulates the construction, operation, or maintenance of any dams, the community's dams and/or its dam safety program must meet the state standards for dam safety.

(3) If the state's SDS credit changes, the community's credit for SDS will be updated at the next verification visit or modification.

**Dam Failure Recognition (DFR), Dam Failure Warning (DFW), Dam Failure Operations (DFO), and Dam Failure Critical Facilities (DCF)  
Credit Criteria and Documentation**

These activity credit criteria apply to all Activity 630 elements except SDS. Credit criteria for this activity are described in more detail in Section 631.b of the *CRS Coordinator's Manual*.

(1) There must be at least one insurable building within the community subject to inundation due to the failure of a high-hazard potential dam.

[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(2) The community must submit a description of the dam failure threat, including the following for each high-hazard potential dam that affects the community. (The first three items should be available from the state's dam safety office. If not, the community may have to develop the information and document it.)

A general description of the dam, including its distance upstream from the community.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

A dam failure inundation map or evacuation zone map.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

Dam failure flood hazard data, including the arrival time of flood waters at different locations and peak elevations of the dam failure flood.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

The development exposed to dam failure flooding, such as the number and types of buildings; land use (residential, agricultural, open space, etc.); and critical facilities.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

The expected impacts of dam failure flooding on health and safety; community functions, such as police and utility services; and the potential for secondary hazards. (Possibly credited under Activity 510 or a CRS Community Self-Assessment.)  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(3) The community must obtain some credit in all four dam failure warning and response elements (DFR, DFW, DFO, and DCF) in order to receive any credit for its local dam failure warning and response plan.

(4) To receive DFR, DFW, DFO, and DCF credit, the community must have a dam failure warning and response plan that has been adopted by the community's governing body.

The plan or related document must be marked to show where the credited items appear and must: [See Attachment \_\_\_\_\_.]

Describe the dam failure threat recognition procedures (DFR), [pages \_\_\_\_\_.]

Describe the dam failure emergency warning procedures (DFW), [pages \_\_\_\_\_.]

Describe the dam failure operations and actions (DFO). For full credit for DFO, the plan needs to:

(a) Describe the actions to be taken; [pages \_\_\_\_\_.]

(b) Identify the office or official responsible for the action; [pages \_\_\_\_\_.]

(c) Define the time needed to carry out the activity; and, [pages \_\_\_\_\_.]

(d) Contain other critical information that specified agencies and organizations need in order to perform their assigned responsibilities. [pages \_\_\_\_\_.]

(5) To receive DFR, DFW, DFO and DCF credit, the community must implement one or more outreach projects to the residents and businesses in the area(s) expected to be inundated by a dam failure. It must tell people of their risk of flooding, how they will be warned of a dam failure flood and the safety measures they should take (evacuation procedures and routes). [Select] one or more of the following approaches.

Sending an outreach project each year to all residents and businesses in the community.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

Sending an outreach project each year to all residents and businesses in the area(s) subject to dam failure flooding.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

Developing an appropriate approach as part of a Program for Public Information credited under Activity 330.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(6) To receive DFR, DFW, DFO, and DCF credit, there must be at least one exercise or drill of the dam failure warning and response plan each year. This can be an exercise for a flood, levee failure, dam failure, or hurricane. (Criterion can be met if implemented by an actual flood or

threat of failure.) There must be an evaluation of the performance of the plan and recommended changes, usually done in an after-action report.

- Documentation or description of the annual exercise, drill, or response to an actual emergency conducted the previous year. Dam failure threat recognition procedures must have been included (DFR). The exercise must include the procedures for warning people credited under DFW, and operations and action under DFO.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

**Dam Failure Threat Recognition System (DFR) Credit Criteria and Additional Documentation:**

*The maximum credit for this element is 30 points.*

(1) For DFR1 and DFR2:

- (a) The threat recognition procedures must be in the dam failure warning and response plan or a related document. [pages \_\_\_\_\_.]
  - (b) The threat recognition system must be monitored by the operator and/or the local emergency manager (or office on behalf of the emergency manager) 24 hours a day, seven days a week. [pages \_\_\_\_\_.]
  - (c) The equipment used must be tested at least quarterly. Equipment that is used routinely throughout the year, such as a telephone, does not need testing records for CRS credit.
- Copy of records of the quarterly test of all equipment and materials needed for the system.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(2) DFR1 credit is a prerequisite for DFR2 credit.

(3) For DFR1 credit (up to 20 points), the primary dam failure threat recognition procedures must include:

- (a) Procedures and predetermined conditions for when the operator of the dam notifies local emergency managers of a potential or actual dam breach; and [pages \_\_\_\_\_.]
- (b) At least quarterly communication checks between the operator of the dam and emergency services officials. [pages \_\_\_\_\_.]

(4) For DFR2 credit (up to 10 points), the secondary dam failure threat recognition backup system must be directly available to the emergency manager. [pages \_\_\_\_\_.]

[DFR Documentation:]

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- Copy or link to the impact adjustment map showing the area(s) affected by each element and documentation showing how the numbers of buildings used in the calculations were determined.

[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

- A list of the maximum number of buildings that would be flooded or evacuated by/due to a dam failure(s).

[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

**Dam Failure Warning (DFW) Credit Criteria and Additional Documentation:**

*The maximum credit for this element is 35 points.*

- (1) The warning procedures must be included in the dam failure warning and response plan or a related document. [pages \_\_\_\_\_.]

- (2) The warning must reach people in a timely manner, especially because there may not be much time between a sudden dam failure and the point at which the water reaches homes and businesses. For example, television or radio announcements are not credited if they are the only approach used because the failure may occur during the night. The messages should be drafted in coordination with the messages and projects credited under flood response preparations (FRP) in Activity 330 (Outreach Projects). [pages \_\_\_\_\_.]

- (3) For those warning systems requiring specialized equipment, the equipment and procedures must be tested at least annually. Equipment that is used routinely throughout the year, such as television notices and message boards, do not need testing records for CRS credit.

- Copies of records showing the most recent annual test of all equipment and material needed for the system.

[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

- (4) DFW1 (5 points): If the plan includes pre-scripted messages and guidance for staff to quickly issue appropriate warnings. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

- (5) DFW2 (5 points): If the public messages include information on the expected elevation of the flood waters and instructions on when to evacuate. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

- (6) DFW3 (10 points): If an outdoor voice-sound system or fixed siren system is used. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

- (7) DFW4 (either 2 points or 10 points): Two points if the plan identifies the primary and support agencies responsible for door-to-door or mobile public address warnings, or ten points if the plan identifies the routes, procedures, staff, and equipment necessary for door-to-door or mobile address warning. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(8) DFW5 (10 points): If the Emergency Alert System through all channels/stations with pre-scripted draft messages is used. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(9) DFW6 (10 points): If telephone warnings to residents and businesses are used.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(10) DFW7 (Up to 10 points): If all schools, hospitals, nursing homes, prisons and similar facilities that need special flood warning have NOAA Weather Radio receivers and at least one other automated backup system for receiving flood warnings, provided that the community has coordinated with NOAA and there are arrangements for issuing warnings about dam failures.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

**Dam Failure Operations (DFO) Credit Criteria and Additional Documentation:**

*The maximum credit for this element is 30 points.*

(1) The dam failure operations actions must be included in the dam failure warning and response plan or a related document. [pages \_\_\_\_\_.]

(2) Credit is based on the extent and level of detail the dam failure warning and response plan provides for the response operations. General statements or an assignment of responsibilities with no specifics about what is to be done are not credited. For full credit for DFO, the plan needs to:

- (a) Describe the actions to be taken, [pages \_\_\_\_\_.]
- (b) Identify the office or official responsible for the action, [pages \_\_\_\_\_.]
- (c) Define the time needed to carry out the activity, and [pages \_\_\_\_\_.]
- (d) Contain other critical information that specified agencies and organizations need in order to perform their assigned responsibilities. [pages \_\_\_\_\_.]

(3) DFO4 credit is provided if there is a list of the personnel, equipment, facilities, supplies, and other resources needed to complete each task. For full credit, the list must identify what is available within the community and what is needed from private suppliers or other jurisdictions.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(4) DFO1 (10 points): If the community has developed scenarios that explain what could happen if a dam failed. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(5) DFO2 (10 points): If the plan identifies response tasks and responsible community staff and other public and private organizations with responsibilities related to the response tasks in the plan. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(6) DFO3 (5 points): For maintaining a data base of people with functional/special needs who require evacuation assistance when a dam failure warning is issued and for having a plan to provide transportation to secure locations. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(7) DFO4 (up to 10 points): If the plan includes a summary of estimated staff, equipment, supplies and time required for each response task and if the plan identifies the sources of necessary resources. [See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

**Dam failure Critical Facilities planning (DCF) Credit Criteria and Additional Documentation:**

*The maximum credit for this element is 20 points.*

(1) DCF1 is a prerequisite for any DCF credit.

(2) For DCF1 credit (up to 10 points), the community's dam failure response plan must list the facilities considered critical in a dam failure emergency. The community must contact the facilities to determine if they need special warning arrangements. The community does not need to provide a special warning to all critical facilities, only those that need one. There is no impact adjustment for DCF1. The community must include all critical facilities affected by a dam failure on its list.

A list of the critical facilities that would be flooded or evacuated by/due to a dam failure(s).  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(3) For DCF2 credit (up to 10 points), dam failure warning and response plans must have been developed, reviewed, or accepted by the community for individual critical facilities.

(a) A list of all public and private critical facilities affected by dam failure or needed to be operational during a dam failure flood, with the contact and warning needs information.

Provide a list of all public and private critical facilities affected by dam failure or needed to be operational during a dam failure flood, with the contact and warning needs information.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

(b) [For DCF2] The above ((1)(a)) list of critical facilities marked to identify those that have developed their own flood warning and response plans that have been reviewed and accepted by the community. The ISO/CRS Specialist will ask for samples of the plans for review.

Provide a list (and samples) of the critical facilities with dam failure warning and response plans that have been developed, reviewed, or accepted by the community.  
[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

Provide a page from the latest list of the critical facilities affected by dam failure or needed to be operational during a dam failure flood. This list must be updated at least annually.

[See Attachment \_\_\_\_\_ pages \_\_\_\_\_.]

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