



Rehabilitation of High Hazard Potential Dams Grant Program Fiscal Year 2020

Funding Program Guidelines

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Publication Information

This document is available on the Department of Ecology's website at:

<https://apps.ecology.wa.gov/publications/summarypages/2111007.html>

This document contains federal and state guidelines for administration of the 2020 U.S. Federal Emergency Management Agency (FEMA), High Hazard Potential Dams (HHPD) Grant Program. (Notice of Funding Opportunity Number DHS-20-MT-041-00-01) These guidelines apply to Ecology as the primary applicant for the grant and any sub-applicants requesting Ecology pass-thru any of these funds via an Ecology sub-grant.

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¹ www.ecology.wa.gov/contact

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I. Overview

The Federal Emergency Management Agency (FEMA) introduced the High Hazard Potential Dam (HHPD) Rehabilitation Grant Program opportunity for the first time in 2019. It is authorized by Congress under the National Dam Safety Program Act (33 U.S. Code § 467f). The authorizing authority for the Program is Public Law 92-367, Section 8A of the National Dam Safety Program Act, as amended, (Pub. L. No.114-322).

The main objective of the HHPD Rehabilitation Grant Program is to provide technical, planning, design, and construction assistance in the form of grants to non-federal sponsors for rehabilitation of eligible high hazard potential dams. The HHPD Rehabilitation Grant Program defines “rehabilitation” as the repair, replacement, reconstruction, or removal of a dam that is carried out to meet applicable state dam safety and security standards.

The Washington State of Ecology’s Dam Safety Office (DSO) successfully applied for 2019 funds and passed through the grant to two local jurisdictions. This was a pilot year for both FEMA and the States who applied.

The DSO again applied for funds in 2020, and received enough funds to pass through the grant to four local jurisdictions. The DSO intends to apply for 2021 funds as well as subsequent years.

The goal of FEMA and all States is that our successful demonstration of this grant program will lead Congress to increasing the funds available.

This publication was developed to include all funding and screening criteria for eligibility of the grant.

II. FEMA Notice of Funding Opportunity

FEMA's Notice of Funding Opportunity (NOFO) for FY 2020 Rehabilitation of High Hazard Potential Dams (HHPD) was published on May 7, 2020. The NOFO provides prospective applicants and subapplicants FEMA's requirements for eligibility and instructions for applying for the HHPD Rehabilitation Grant Program funds.

Only one application can be submitted for each State. Most States use either the State Dam Safety Office or the State Emergency Management Office. In Washington State, the State Dam Safety Office (DSO) agreed to be the applicant after consultation with the Washington Military Department's Emergency Management Division (EMD). The DSO collaborated with the EMD in applying for the funds.

FEMA awards funds to each State based on the State meeting the prerequisites in the NOFO and a formula primarily based on the number of high hazard dams in the State. Although not required, the DSO is passing through all funds to dam owners. Only dams designated by DSO as "poor" or "unsatisfactory" are eligible for pass through grants.

The full NOFO can be found in Appendix A.

III. Screening Criteria

In order for a dam to be eligible for the HHPD Rehabilitation Grant Program, the organization must first meet all of FEMA's Eligibility Criteria listed below under III.A. Then Ecology's Dam Safety Office (DSO) applied additional Washington State Eligibility Criteria listed below in III.B to determine which dams would be invited to submit an application for the grant.

A. FEMA's Eligibility Criteria

- Has people's lives at risk below the dam as determined by DSO. These dams have a DSO-assigned hazard class of 1 or 2D.
- Fails to meet dam safety standards as determined by DSO. These dams have condition rating of "poor" or "unsatisfactory."
- Has an Emergency Action Plan (EAP).
- Has an Operation and Maintenance (O&M) Plan or Manual.
- Is a dam regulated by DSO.
- Has adequate funding for 50-year operation.
- Is located in a local jurisdiction that participates in the National Flood Insurance Programs (NFIP).
- Is located in a local jurisdiction that has a FEMA-approved hazard mitigation plan that includes dam risks (or that the plan can be completed within one year).
- Is located in a local jurisdiction that has a floodplain management plan or assurance that one will be in place within a year.
- Has a National Inventory of Dams (NID) number.

B. Washington State Eligibility Criteria

- Has a high relative risk compared to other poor condition dams as determined by DSO. This is primarily done through the application and ranking of dam risk using DSO's Risk-Based Methodology for Dam safety in Washington State (Appendix B).
- Must be a local or state government entity.
- Has staff and resources available to perform grant management activities.
- Is in good standing with DSO. (Current on annual dam fees and responsive to DSO compliance direction.)
- Demonstrates they can meet cost sharing of 35%.
- Has a high relative possibility of dam failure (urgency) compared to other poor condition dams.
- Has issues that can be addressed by grant-funded work to reduce risk.

- Complexity of work (proven technologies and methodologies).
- Is cost effective (reasonable estimates, funds needed vs funds available, cost-benefit comparison).
- Builds on previous, successful grant(s) (need for additional funds, demonstrated grant experience).

IV. Risk Methodology

Each dam regulated by Ecology's Dam Safety Office (DSO) that is found to be in poor condition after a periodic inspection is given a risk assessment score with the use of risk-based methodology for dams (Appendix B).

First, the DSO uses the Dam Safety System (DSS) Database to compile all dam information for regulated dams. When the DSO performs a dam periodic inspection, the information is entered into the Dam Safety System (DSS) database. Some of this information becomes criteria for the risk-based prioritization.

All of the criteria below provide points that when added together make up the total priority points or risk assessment score.

- Deficiency Seriousness – seriousness level of each deficiency found during the periodic inspection performed by the DSO. After the DSO performs a periodic inspection each deficiency found is given a seriousness level of either, emergency, major, minor, moderate, or uncertain. Each serious levels has corresponding points.
- Hazard class – Low, Significant, or High hazard depending on the number of People at Risk (PAR) below the dam within the flow path if the dam should fail.
- Warning Potential – The amount of warning time before the breach water would get to the residents. Different points are given based on if the warning potential rating is adequate (> 30 min.), marginal (between 10 & 30 min.) inadequate (< 10 min.), or unknown.
- Year Built – assigns points based on the age of the dam because older dams typically have more deterioration and were not constructed to newer (higher) standards.

Dams were selected for the HHPD Rehabilitation Grant Program and given a risk-based priority primarily by the risk assessment score.

V. Sub-Grant Process

FEMA awards all HHPD grant funds to Ecology's Dam Safety Office (DSO). FEMA's allocation of funds is based on the number of qualifying dams in Washington State and the number of qualifying States that request funds in any given annual grant cycle. Ecology elected to pass through all the grant funds to dam owners (subgrantees). The decision about which dams would receive grant funds was made through the process outlined below. Although Ecology is the pass-through entity and invites dam owners to express interest in a pass-through grant, FEMA makes the final determination as to which subgrantees receive funds and FEMA approves subgrantee project scope, schedule, and budget.

A. Sub-grant process and timeline

- June 26, 2020 – Ecology applied for FY2020 HHPD funds.
- September 17, 2020 – FEMA awarded Washington State \$260,322 in FY2020 HHPD funds based on 23 dams initially qualifying under FEMA's criteria.
- September 18 - October 7, 2020 - DSO determined that 12 of the 23 dams meet or could meet both FEMA's and the DSO's eligibility criteria.
- October 7, 2020 - DSO sent the 12 eligible dam owners an email with the FEMA NOFO, award factors, and other general grant information, inviting them to submit a letter of interest for grant money.
 - The letter of interest to DSO was required to include how much money they would want and what the money would be spent on.
- October 20, 2020 – Eight letters of interest were received by the October 20 deadline.
- October 27, 2020 - DSO reviewed seven letters of interest and decided who should be awarded pass-through grants.
- October 30, 2020 - DSO sent out an email to dam owners who submitted a letter of interest announcing that five dams would be recommended to FEMA for a pass-through grant.
- October 30, 2020 - DSO sent instructions to the five selected dam owners for completing a subapplication.
 - The subapplication was required to provide the required subapplicant information (Appendix C), which included a detailed scope of work, schedule, and budget.
- November 17, 2020 – Subapplications were due to the DSO. DSO worked with subapplicants to ensure eligibility and completeness of application.
- December 9, 2020 – One of the five dam owners declined to move forward with the subgrant due to their staff limitations.

- December 21, 2020 – DSO submitted an amendment to the original FEMA grant application with subapplication information for four dams.
- April 2021 – FEMA intends to make final eligibility decision for subapplicants.
- May - Jul 2021 – FEMAs chosen pass through grants will be entered into Ecology’s Administration of Grants & Loans (EAGL) database.
 - All pass through grant management through the life of the grant will be through EAGL.
 - Subgrantees must follow the administrative requirement for recipients of Ecology Grants and Loans found in the [“Yellow Book”](#)².
 - Subgrantees should use the [EAGL External User’s Manual](#)³ for guidance.
- Aug 1, 2021 – Pass through HHPD Rehab Grant agreement signed and returned to Ecology.

B. Recipient Risk Assessment and Grant Monitoring

Ecology conducts a risk assessment of all HHPD pass-through grant recipients. Ecology does this in two phases. Some risk assessment is done during initial screening and some is done with only the final subrecipients.

For the initial risk screening, Ecology considers the following:

- Dam ownership. Ecology currently only qualifies dams owned by a government entity. This not only reduces risk to FEMA and Ecology, it also simplifies the process as private dam owners would need a government or non-profit organization to sponsor them, which leads to another complicated layer of fund management.
- History of good communication and responsiveness with the Dam Safety Office.
- History of paying dam owner annual fees.
- Project complexity. Innovative or unusual pilot project or a complex project, including projects with multiple or tentative funding sources.

After applicants have been approved by FEMA to receive a grant, Ecology assesses risk to determine whether any additional conditions or monitoring will be applied through the EAGL grant process. The primary tool to assess risk at this point in the process is through a review of past audits using the [Washington State Auditor’s Office Report Tool](#).

² <https://apps.ecology.wa.gov/publications/documents/1701004.pdf>

³ <https://apps.ecology.wa.gov/publications/documents/1701015.pdf>

Other risk factors include:

- First-time recipient.
- Change in key recipient staff.
- Recipient whose last loan or grant ended more than three (3) years prior to the current loan or grant offer.
- Poor or inadequate performance on existing or past projects.
- Results of the financial capability assessment or change in recipient's financial condition.

The level of risk determines the level of oversight required by Ecology throughout the term of the grant. If the recipient's performance or project circumstances change, Ecology may reassess risk and notify the recipient of any changes to administrative requirements.

Appendix A – FEMA NOFO

**The Department of Homeland Security (DHS)
Notice of Funding Opportunity (NOFO)
FY 2020 Rehabilitation of High Hazard Potential Dams (HHPD)**

A. Program Description

1. Issued By

U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), Federal Insurance and Mitigation Administration (FIMA), National Dam Safety Program Office (NDSP)

2. Assistance Listings (formerly Catalog of Federal Domestic Assistance (CFDA) Number)

97.041

3. Assistance Listings Title (formerly CFDA Title)

National Dam Safety Program

4. Funding Opportunity Title

FY 2020 Rehabilitation of High Hazard Potential Dams (HHPD)

5. Funding Opportunity Number

DHS-20-MT-041-00-01

6. Authorizing Authority for Program

National Dam Safety Program Act (Pub. L. 92–367), as amended, 33 U.S.C. § 467f-2.

7. Appropriation Authority for Program

The Department of Homeland Security Appropriations Act, 2020 (Pub. L. No. 116-93)

8. Announcement Type

Notice of Funding Opportunity (NOFO) for Federal Fiscal Year (FY) 2020

9. Program Overview, Objectives, and Priorities

FEMA’s National Dam Safety Program (NDSP) is committed to protecting lives and property from the risks associated with dams. The Rehabilitation of High Hazard Potential Dams (HHPD) Grant Program makes available federal funds to eligible states for pass through to non-Federal governmental organizations or nonprofit organizations for the rehabilitation of dams that fail to meet minimum dam safety standards and pose unacceptable risk to life and property.

For the purposes of the HHPD Program, rehabilitation means the repair, replacement, reconstruction, or removal of a dam that is carried out to meet applicable state dam safety and security standards.

Given the requirements of this grant (e.g. National Flood Insurance Program participation, state and local hazard mitigation plans, floodplain management plan, risk prioritization, state dam safety agency approval of the award), applicants must pursue this grant in coordination with the State Dam Safety Officer and the State Hazard Mitigation Officer, regardless of which entity will implement the grant. Contact information for the State Hazard Mitigation Officers (SHMOs) is provided on the FEMA website at <http://www.fema.gov/state-hazard-mitigation-officers>.

Objectives

The objectives of the program are to:

1. Provide financial assistance for repair, removal, or rehabilitation of eligible high hazard potential dams.
2. Protect the federal investment by requiring operation and maintenance of the project for the 50-year period following completion of rehabilitation.
3. Encourage state, local, and territorial governments to consider all dam risk in state and local mitigation planning.
4. Promote community preparedness by requiring recipients to develop and implement floodplain management plans that address potential measures, practices, and policies to reduce loss of life, injuries, damage to property and facilities, public expenditures, and other adverse effects of flooding in the area impacted by the project; plans for flood fighting and evacuation; and public education and awareness of flood risks.
5. Reduce the potential consequences to life and property of high hazard potential dam incidents.
6. Incentivize states to incorporate risk-informed analysis and decision making into their dam safety practice.
7. Reduce the overall number of high hazard potential dams that pose an unacceptable risk to the public.
8. Promote a program of Emergency Action Plan (EAP) implementation, compliance, and exercise for high-hazard potential dams.
9. Reduce costs associated with dam rehabilitation through the deployment of innovative solutions and technologies.

Priorities

For FY2020, the HHPD priorities are: the technical, planning, design, pre-construction, and construction activities related to the repair, removal, or rehabilitation of eligible high hazard dams.

The HHPD supports FEMA Strategic Goal 1: Build a Culture of Preparedness and Presidential Policy Directive 8: Build and Sustain National Preparedness. Specifically, the HHPD supports

Objective 1.1 of Strategic Goal 1 to incentivize investments that reduce risk, including pre-disaster mitigation, and reduce disaster costs at all levels.

The 2018 Quadrennial Homeland Security Review (QHSR) has identified strengthening national preparedness and resilience as one of the basic Homeland Security missions. This initiative supports this mission by providing grant assistance for high hazard potential dams that poses an unacceptable risk to the public.

10. Performance Metrics

The HHPD Rehabilitation Grant recipients performance will be evaluated on their progress on delivering the following outcomes:

- Increased understanding of risk posed by eligible dams through studies, prioritization, planning, and preliminary engineering.
- Reduced consequences through rehabilitation of eligible high hazard potential dams.

To demonstrate the progress of the HHPD Rehabilitation Grant, the recipient must use the following metrics to measure performance outcomes:

- The percentage of eligible high hazard potential that have implemented pre-construction rehabilitation activities under the HHPD Rehabilitation Grant, and the Population at Risk (PAR) associated with each dam.
- The percentage of HHPD Rehabilitation Grant subrecipients that have developed floodplain management plans (see below for requirements), and the Population at Risk (PAR) associated with each dam.
- The total non-federal investment (including in-kind contributions) applied toward eligible activities supporting the rehabilitation of eligible high hazard potential dams under the HHPD Rehabilitation Grant.
- The anticipated losses avoided as a result of dam rehabilitation projects completed under the HHPD Rehabilitation Grant, and the Population at Risk (PAR) associated with the dam.

See Section H.2.c Performance Metrics, for examples of how to demonstrate progress.

B. Federal Award Information

1. Available Funding for the NOFO:

\$10,000,000.00

The allocation of available HHPD Rehabilitation Grant funds is determined by 33 U.S.C § 467f-2(g)(2) Allocation of Funds. The allocation of the HHPD funds is calculated as follows:

(i) Equal distribution

One-third of the available funding will be distributed equally among states in which the projects for which eligible applications are submitted are located.

(ii) Need-based

Two-thirds of the available funding will be distributed among states in which the projects for which eligible applications are submitted are located based on the proportion that:

- a. the number of eligible high hazard potential dams in the state; bears to
- b. the number of eligible high hazard potential dams in all such states.

2. Projected number of Awards:

50

3. Period of Performance:

36 Months

An extension to the Period of Performance for this program is allowed. For details on the requirements for requesting an extension to the Period of Performance, please refer to Section F, Additional Information, of this announcement.

4. Projected Period of Performance Start Date(s):

09/01/2020

5. Projected Period of Performance End Date(s):

08/31/2023

6. Funding Instrument Type:

Grant

A. Eligibility Information

1. Eligible Applicants

A state with a state dam safety program authorized by state legislation is the only entity eligible to submit HHPD applications to DHS/FEMA.

For the purposes of the HHPD, the term “state” means each of the several states of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

2. Applicant Eligibility Criteria

Each eligible state must designate one State Administrative Agency (SAA) to serve as the applicant for HHPD funding. Each SAA may submit only one (1) HHPD Rehabilitation Grant application to FEMA and be able to comply with regulations associated with receipt of federal financial contributions from FEMA.

3. Subrecipient Eligibility Criteria

Eligible subrecipients under FY2020 HHPD are non-federal governmental organizations (other than the designated applicant) and nonprofit organizations. Under FY 2020 HHPD, eligible subrecipients apply for and receive subawards directly from the SAA. Subrecipients must meet the following criteria to be eligible:

- (A) Acts in accordance with the state dam safety program and the project dam must be regulated by the state dam safety program. All activities must be approved by the state dam safety agency. Any engineering studies, plans, or design drawings and specifications must be approved, signed, and stamped by a qualified design professional registered in the state in which the project is located.
- (B) Participate in, and comply with, the National Flood Insurance Program (NFIP);
- (C) Commit to provide operation and maintenance of the project for the 50-year period following completion of rehabilitation;
- (D) Subrecipients must have in place at the time of obligation of subgrant funds a local FEMA-approved hazard mitigation plan that includes all dam risks (See Section H.2.i, Definitions, for the definition of All Dam Risk) and complies with the Disaster Mitigation Act of 2000 (Public Law 106–390; 114 Stat. 1552). Nonprofit organizations that are subrecipients must be located in a local jurisdiction with a FEMA-approved hazard mitigation plan that includes all dam risks and complies with the Disaster Mitigation Act of 2000 (Public Law 106–390; 114 Stat. 1552). If an HHPD subrecipient does not have a local mitigation plan that includes all dam risks, the subrecipient may request an extension to meet this requirement. (See Section H.2.b., Mitigation Plan Requirement Extension Requests)
- (E) Carries out activities relating to the public in the area around the dam in accordance with the hazard mitigation plan.
- (F) Complies with section 5196(j)(9) of title 42 of the U.S. Code (as in effect on December 16, 2016) with respect to projects receiving assistance under this section in the same manner as recipients are required to comply in order to receive financial contributions from the Administrator for emergency preparedness purposes. See Section H.2.c., 42 U.S.C. § 5196(j)(9), for additional information.
- (G) Have in place (or will be developed not later than 1 year after the date of execution of a project agreement and implemented not later than 1 year after the date of completion of construction of the project) a floodplain management plan to reduce the impacts of future flood events in the area impacted by the project.

The floodplain management plan must address:

- a. potential measures, practices, and policies to reduce loss of life, injuries, damage to property and facilities, public expenditures, and other adverse impacts of flooding in the area protected by the project;
- b. plans for flood fighting and evacuation; and
- c. public education and awareness of flood risks.

FEMA may provide technical support for the development and implementation of floodplain management plans prepared under this grant.

4. Other Eligibility Criteria

FEMA-Approved Hazard Mitigation Plan

The state must have in place (by the application deadline and at the time of obligation of grant funds) a FEMA-approved state hazard mitigation plan that includes all dam risks (See Section H.2.i, Definitions, for the definition of All Dam Risk) and complies with the Disaster Mitigation Act of 2000 (Public Law 106–390; 114 Stat. 1552). If an HHPD applicant does not have a state mitigation plan that includes all dam risks, the applicant may request an extension to meet this requirement. (See Section H.2.b., Mitigation Plan Requirement Extension Requests).

List of Eligible High Hazard Dams

The SAA must submit a list of all eligible high hazard potential dams in their state with the application. The SAA must submit an official assurance statement (signed by the State Dam Safety Officer or Governor's Authorized Representative [GAR]) that all dams included on the list of eligible high hazard potential dams are regulated by the state dam safety program and meet the following HHPD criteria for eligible high hazard potential dams (Source: 33 U.S.C. § 467(4)(A)):

(A) a non-federal dam that—

- i. is located in a state with a state dam safety program;
- ii. is classified as “high hazard potential” by the state dam safety agency in the state in which the dam is located;
- iii. has an emergency action plan (EAP) approved by the relevant state dam safety agency; and
- iv. the state in which the dam is located determines—
 - b. fails to meet minimum dam safety standards of the state; and
 - c. poses an unacceptable risk to the public.

(B) Exclusion: The term “eligible high hazard potential dam” does not include—

- i. a licensed hydroelectric dam; or
- ii. a dam built under the authority of the Secretary of Agriculture.

In addition to the minimum requirements listed above, FEMA will review the Condition Assessment data reported in the NID to validate a dam’s eligibility. Dams that meet the NID criteria for POOR or UNSATISFACTORY condition assessments may be eligible to include on the list of dams if a regulatory notice has also been issued. Dams with SATISFACTORY or NOT RATED condition assessments are not eligible for the HHPD program. Dams classified

as FAIR in the NID will be evaluated by FEMA on a case-by-case basis to determine if they meet the requirements for eligibility.

Upon request, the SAA must provide to FEMA substantiating documentation that verify dams submitted are eligible under the HHPD grant. The requested documentation may include, but is not limited to, copies of the regulatory notices, risk assessments, engineering analyses, etc.

See Section H.2.f, Unacceptable Risk to the Public Determination, and Section H.2.i, Definitions, for the NID Condition Assessment definitions and the definitions of Unacceptable Risk to the Public and Official Regulatory Notice.

5. Cost Share or Match

Assistance provided under the HHPD grant is subject to a non-Federal cost-sharing requirement of not less than 35 percent. Federal funding is available for up to 65 percent of the eligible activity costs. The remaining 35 percent of eligible activity costs must be derived from non-federal sources, which may be in-kind. Requirements for cash and third-party in-kind contributions can be found in 2 C.F.R. § 200.306. The non-Federal cost share contribution is not limited to 65 percent.

The non-federal cost share contribution is calculated based on the total cost of the proposed activity. For example, if the total cost is \$400,000 and the non-Federal cost share is 35 percent, then the non-federal contribution is \$140,000: 35 percent of \$400,000 is \$140,000. The federal share cannot exceed \$260,000 ($\$400,000 \times 65\%$).

B. Application and Submission Information

1. Key Dates and Times

a. Application Start Date:

05/08/2020

b. Application Submission Deadline:

06/26/2020 5:00 PM (EST)

c. Anticipated Funding Selection Date No later than:

09/01/2020

d. Anticipated Award Date No later than:

09/30/2020

e. Other Key Dates

Event	Suggested Deadline for Completion
Obtaining DUNS Number	Four weeks before actual submission deadline
Obtaining a valid EIN	Four weeks before actual submission deadline
Updating SAM registration	Four weeks before actual submission deadline
Starting application in Grants.gov	One week before actual submission deadline
Final application in ND Grants	By the submission deadline

Applying for an award under this program is a multi-step process and requires time to complete. To ensure that an application is submitted on time applicants are advised to start the required steps well in advance of their submission. Applicants should review the table above for estimated deadlines to complete each required step. Failure of an applicant to comply with any of the required steps before the deadline for submitting their application will automatically disqualify their application from funding.

2. Agreeing to Terms and Conditions of the Award

By submitting an application, applicants agree to comply with the requirements of this NOFO and the terms and conditions of the award, should they receive an award.

3. Address to Request Application Package

Initial applications will be processed through the Grants.gov portal and final application will be processed through the Non-Disaster Grants (ND Grants) System.

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>.

Hardcopies of the NOFO and associated application materials can be downloaded from Grants.gov.

In addition, the following Telephone Device for the Deaf (TDD) and/or Federal Information Relay Service (FIRS) number available for this Notice is: (800) 462-7585

4. Steps Required to Submit an Application, Unique Entity Identifier, and System for Award Management (SAM)

To apply for an award under this program, all applicants must:

- a. Apply for, update, or verify their Data Universal Numbering System (DUNS) Number from Dun & Bradstreet (D&B) and Employer ID Number (EIN)
- b. In the application, provide a valid Data Universal Numbering System DUNS number, which is currently the unique entity identifier;

- c. Have an account with login.gov;
- d. Register for, update, or verify their SAM account and ensure the account is active before submitting the application;
- e. Create a Grants.gov account;
- f. Add a profile to a Grants.gov account;
- g. Establish an Authorized Organizational Representative (AOR) in Grants.gov;
- h. Submit initial application in Grants.gov;
- i. (Submit the final application in the ND Grants System; and
- j. Continue to maintain an active SAM registration with current information at all times during which it has an active federal award or an application or plan under consideration by a federal awarding agency.

Applicants are advised that DHS/FEMA may not make a federal award until the applicant has complied with all applicable DUNS and SAM requirements. Therefore, an applicant's SAM registration must be active not only at the time of application, but also during the application review period and when DHS/FEMA is ready to make a federal award. Further, as noted above, an applicant's or recipient's SAM registration must remain active for the duration of an active federal award. If an applicant's SAM registration is expired at the time of application, expires during application review, or expires any other time before award, DHS/FEMA may determine that the applicant is not qualified to receive a federal award and use that determination as a basis for making a federal award to another applicant.

5. Electronic Delivery

DHS is participating in the Grants.gov initiative to provide the grant community with a single site to find and apply for grant funding opportunities. DHS encourages or requires applicants to submit their applications online through Grants.gov, depending on the funding opportunity. For this funding opportunity, FEMA requires applicants to submit initial applications through Grants.gov and final applications through the ND Grants System.

6. How to Register to Apply

- a. *Instructions:* Registering in Grants.gov is a multi-step process. Read the instructions below about registering to apply for DHS funds. Applicants should read the registration instructions carefully and prepare the information requested before beginning the registration process. Reviewing and assembling the required information before beginning the registration process will alleviate last-minute searches for required information.

The registration process can take up to four weeks to complete. Therefore, registration should be done in sufficient time to ensure it does not impact your ability to meet required application submission deadlines.

Organizations must have a Data Universal Numbering System (DUNS) Number, active System for Award Management (SAM) registration, and Grants.gov account to apply for

grants. If individual applicants are eligible to apply for this grant funding opportunity, then you may begin with step 3, Create a Grants.gov account, listed below.

Creating a Grants.gov account can be completed online in minutes, but DUNS and SAM registrations may take several weeks. Therefore, an organization's registration should be done in sufficient time to ensure it does not impact the entity's ability to meet required application submission deadlines. Complete organization instructions can be found on Grants.gov here:

<https://www.grants.gov/web/grants/applicants/organization-registration.html>

- 1) *Obtain a DUNS Number:* All entities applying for funding, including renewal funding, must have a DUNS number from Dun & Bradstreet (D&B). Applicants must enter the DUNS number in the data entry field labeled "Organizational DUNS" on the SF-424 form.

For more detailed instructions for obtaining a DUNS number, refer to:

<https://www.grants.gov/web/grants/applicants/organization-registration/step-1-obtain-duns-number.html>

- 2) *Register with SAM:* All organizations applying online through Grants.gov must register with the System for Award Management (SAM). Failure to register with SAM will prevent your organization from applying through Grants.gov. SAM registration must be renewed annually.

For more detailed instructions for registering with SAM, refer to:

<https://www.grants.gov/web/grants/applicants/organization-registration/step-2-register-with-sam.html>

- 3) *Create a Grants.gov Account:* The next step is to register an account with Grants.gov. Follow the on-screen instructions or refer to the detailed instructions here:

<https://www.grants.gov/web/grants/applicants/registration.html>

- 4) *Add a Profile to a Grants.gov Account:* A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an individual applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the DUNS Number for the organization in the DUNS field while adding a profile.

For more detailed instructions about creating a profile on Grants.gov, refer to:

<https://www.grants.gov/web/grants/applicants/registration/add-profile.html>

- 5) *EBiz POC Authorized Profile Roles:* After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant's request for Grants.gov roles and access is sent to the EBiz POC. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role.

For more detailed instructions about creating a profile on Grants.gov, refer to:
<https://www.grants.gov/web/grants/applicants/registration/authorize-roles.html>

- 6) *Track Role Status*: To track your role request, refer to:
<https://www.grants.gov/web/grants/applicants/registration/track-role-status.html>
- 7) *Electronic Signature*: When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC must authorize individuals who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; this step is often missed, and it is crucial for valid and timely submissions.

7. How to Submit an Initial Application to DHS/FEMA via Grants.gov

Grants.gov applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different webforms within an application. For each NOFO, you can create individual instances of a workspace.

Below is an overview of applying on Grants.gov. For access to complete instructions on how to apply for opportunities using Workspace, refer to:

<https://www.grants.gov/web/grants/applicants/workspace-overview.html>

- a. *Create a Workspace*: Creating a workspace allows you to complete it online and route it through your organization for review before submitting.
- b. *Complete a Workspace*: Add participants to the workspace to work on the application together, complete all the required forms online or by downloading PDF versions, and check for errors before submission. The Workspace progress bar will display the state of your application process as you apply. As you apply using Workspace, you may click the blue question mark icon near the upper-right corner of each page to access context-sensitive help.
- c. *Adobe Reader*: If you decide not to apply by filling out webforms you can download individual PDF forms in Workspace. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html>

- d. *Mandatory Fields in Forms*: In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.
- e. *Complete SF-424 Fields First*: The forms are designed to fill in common required fields across other forms, such as the applicant name, address, and DUNS number. To trigger this feature, an applicant must complete the SF-424 information first. Once it is

completed, the information will transfer to the other forms.

- f. *Submit a Workspace:* An application may be submitted through workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package at least 24- 48 hours prior to the close date to provide you with time to correct any potential technical issues that may disrupt the application submission.
- g. *Track a Workspace Submission:* After successfully submitting a workspace application, a Grants.gov Tracking Number (GRANTXXXXXXXX) is automatically assigned to the application. The number will be listed on the Confirmation page that is generated after submission. Using the tracking number, access the Track My Application page under the Applicants tab or the Details tab in the submitted workspace.

For additional training resources, including video tutorials, refer to:

<https://www.grants.gov/web/grants/applicants/applicant-training.html>

Applicant Support: Grants.gov provides applicants 24/7 support via the toll-free number 1-800-518-4726 and email at support@grants.gov. For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for.

If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist DHS with tracking your issue and understanding background information on the issue.

8. Submitting the Final Application in ND Grants System

After submitting the initial application in Grants.gov, eligible applicants will be notified by DHS/FEMA and asked to proceed with submitting their complete application package in ND Grants. Applicants can register early with ND Grants and are encouraged to begin their ND Grants registration at the time of this announcement. Early registration will allow applicants to have adequate time to start and complete their application.

If you need assistance registering for the ND Grants system, please contact ndgrants@fema.dhs.gov or (800) 865-4076. For step-by-step directions on using the ND Grants system and other guides, please see <https://www.fema.gov/non-disaster-grants-management-system>.

In ND Grants, applicants will be prompted to submit the standard application information required as described below. The Standard Forms (SF) are auto generated in ND Grants, but applicants may access these forms in advance through the Forms tab under the SF- 424 family on Grants.gov. Applicants should review these forms before applying to ensure they have all the information required:

- SF-424A, Budget Information (Non-construction)
 - For construction under an award, submit SF-424C, Budget Information (Construction) in addition to or instead of SF-424A

- SF-424B, Standard Assurances (Non-construction)
 - For construction under an award, submit SF-424D, Standard Assurances (Construction), in addition to or instead of SF-424B
- SF-LLL, Disclosure of Lobbying Activities
- Indirect Cost Agreement or Proposal, if the budget includes indirect costs and the applicant is required to have an indirect cost rate agreement or proposal. See further information below regarding allowability of indirect costs and documentation requirements, including if the applicant does not have or is not required to have an indirect cost rate agreement or proposal, or contact the relevant DHS/FEMA staff identified in Section G, “DHS Awarding Agency Contact Information” for further instructions.

Generally, applicants have to submit either the non-construction forms (i.e., SF-424A and SF-424B) or construction forms (i.e., SF-424C and SF-424D), meaning that applicants that only have construction work and do not have any non-construction work need only submit the construction forms (i.e., SF-424C and SF-424D) and not the non-construction forms (i.e., SF-424A and SF-424B), and vice versa. However, applicants who have both construction and non-construction work under this program need to submit both the construction and non-construction forms.

For program-specific application submission requirements, please refer to the subsection titled “Content and Form of Application Submission” under Section D of this NOFO or to other program documents.

9. Timely Receipt Requirements and Proof of Timely Submission

a. As application submission is a two-step process, the applicant with the Authorized Organizational Representative (AOR) role who submitted the application will receive an acknowledgment of receipt, and a tracking number (GRANTXXXXXXXX) from Grants.gov. This notification does not serve as proof of timely submission as the application is not complete until it is submitted in ND Grants. All applications must be received in ND Grants by 5:00 PM 06/26/2020

Proof of timely submission is automatically recorded by ND Grants. An electronic date/time stamp is generated within the system when the application is successfully received by ND Grants. Additionally, the applicant(s) listed as contacts on the application will receive a system-generated email to confirm receipt.

10. Content and Form of Application Submission

The following forms or information are required to be submitted in either Grants.gov or ND Grants. The Standard Forms (SF) are submitted either through Grants.gov, through forms generated in ND Grants, or as an attachment in ND Grants. Applicants may also access the SFs at <https://www.grants.gov/web/grants/forms/sf-424-family.html>.

- a. Grants.gov
 - SF-424, Application for Federal Assistance (Initial Application)
 - Grants.gov Lobbying Form, Certification Regarding Lobbying
- b. ND Grants: Standard Forms or Information
 - SF-424A, Budget Information (Non-construction)
 - For construction under an award, submit SF-424C, Budget Information (for Construction) in addition to or instead of SF-424A Programs
 - SF-424B, Standard Assurances (Non-construction)
 - For construction under an award, submit SF-424D, - Standard Assurances for (Construction), in addition to or instead of SF-424B Programs
 - SF-LLL, Disclosure of Lobbying Activities
 - Indirect Cost Rate Agreement or Proposal if the budget includes indirect costs. See further information below regarding allowability of indirect costs and documentation requirements, including if the applicant does not have or is not required to have an indirect cost rate agreement or proposal, or contact the relevant DHS/FEMA staff identified in Section G, “DHS Awarding Agency Contact Information” for further instructions.
- c. ND Grants: Program-Specific Forms or Information

In addition, applicants are also be required to submit the following in ND Grants:

 1. Detailed Budget
 2. The SAA must submit a list of all eligible high hazard potential dams, including National Inventory of Dams (NID) ID Identifiers, in their state with the application. See Section C.2, List of Eligible High Hazard Potential Dams, for specific requirements.
 3. A description of the state’s risk-based prioritization method if the application includes activities for more than one dam. (See Section H.2.e, Minimum Requirements for Risk-Based Prioritization.)
 4. Statement that the applicant is able to comply with regulations associated with receipt of federal financial contributions from FEMA.
 5. Assurance statement that subrecipients will meet all criteria listed in Section C.3, Subrecipient Eligibility Criteria.
 6. Assurance statement that the 35 percent cost share requirement can be met. See Section C.5, Cost Share or Match, for requirements.
 7. A Program Work Plan that describes how HHPD funds will be used to advance HHPD priorities and performance goals. The Program Work Plan must clearly identify how the SAA proposes to meet the performance metrics identified in Section A.10, Performance Metrics.

8. A Grant Management Plan for the administration of the HHPD Grant Program. At a minimum, the Grant Management Plan must include the items listed below:
 - i. Designation of the SAA responsible for program administration.
 - ii. Identification of the State Official responsible for all matters related to the High Hazard Potential Dam Rehabilitation Grant Program.
 - iii. Determination of staffing requirements and sources of staff necessary for administration of the program.
 - iv. Establishment of procedures to:
 1. Identify and notify potential subrecipients of the availability of the program.
 2. Ensure that potential subrecipients are provided information on the application process, program eligibility, including the requirement for a FEMA-approved mitigation plan that includes all dam risks, and key deadlines. Determine subrecipient eligibility, including the requirement for a FEMA- approved mitigation plan
 3. Submit revisions or amendments for FEMA review and approval. See Section F.2, Pass-Through Requirements.
 4. Conduct environmental and floodplain management reviews.
 5. Establish priorities for selection of projects.
 6. Process requests for advances of funds and reimbursement.
 7. Monitor and evaluate the progress and completion of the selected projects.
 8. Review and approve cost overruns.
 9. Process appeals.
 10. Provide technical assistance as required to subgrantee(s) including coordination with State Hazard Mitigation Officer regarding mitigation plan requirement.
 11. Comply with the administrative and audit requirements of 2 CFR parts 200 and 3002.
 12. Provide quarterly progress reports to FEMA on approved projects.

11 Intergovernmental Review

An intergovernmental review may be required. Applicants must contact their state's Single Point of Contact (SPOC) to comply with the state's process under Executive Order 12372. (See <https://www.archives.gov/federal-register/codification/executive-order/12372.html>; <https://www.whitehouse.gov/wp-content/uploads/2019/02/SPOC-February-2019.pdf>).

12. Funding Restrictions

All costs charged to awards covered by this NOFO must comply with the Uniform Administrative Requirements, Cost Principles, and Audit Requirements at 2 C.F.R. Part 200,

unless otherwise indicated in the NOFO or the terms and conditions of the award.

Federal funds made available through this award may only be used for the purpose set forth in this NOFO and must be consistent with the statutory authority for the award. Award funds may not be used for matching funds for any other federal grants/cooperative agreements, lobbying, or intervention in federal regulatory or adjudicatory proceedings. In addition, federal funds may not be used to sue the federal government or any other government entity.

HHPD recipients may only fund activities and projects that are included and approved in the FY 2020 HHPD Program Work Plan and Budget. See Section H.2.g, Eligible Activities, for a description of eligible activities. See Section D.10, Content and Form of Application Submission, for Program Work Plan requirements.

The maximum amount of funding any Subrecipient can receive under HHPD is statutorily limited. The maximum subrecipient funding cannot exceed the lesser of 12.5 percent of the total amount of funds made available, or \$7,500,000. For the FY 2020 program, \$10,000,000 is allocated to the HHPD program; therefore, no subrecipient may receive an award for more than \$1,250,000 (See Section H.2.d, Examples Using Funding Formula).

Unallowable Activities

Federal funds provided under the HHPD cannot be used to (See 33 U.S.C. § 467f-2(h)):

- a. Rehabilitate a federal dam.
- b. Perform routine operation or maintenance of a dam.
- c. Modify a dam to produce hydroelectric power.
- d. Increase water supply storage capacity.
- e. Make any other modification to a dam that does not also improve the safety of the dam.

Allowable Costs

- a. Pre-Award Costs

Pre-award costs are not allowed.

- b. Management and Administration (M&A) Costs

Management and administration (M&A) activities are those directly relating to the management and administration of HHPD funds, such as financial management and monitoring. A maximum of up to 10 percent of HHPD funds awarded may be retained by the state, and any funds retained are to be used solely for M&A purposes associated with the HHPD award. Subrecipients may also retain a maximum of up to 5 percent of the funding passed through by the state solely for M&A purposes associated with the HHPD award. Applicant requests for management costs must be included in the Program Work Plan. Subrecipient management cost activities must be added to the scope of work section and reflected in the cost estimate section of subgrant applications.

Applicants and subrecipients who do not receive awards/subawards will not receive reimbursement for management costs.

c. Indirect Facilities & Administrative (F&A) Costs

Indirect costs are allowable under this program as described in 2 C.F.R. Part 200, including 2 C.F.R. § 200.414. Applicants with a negotiated indirect cost rate agreement that desire to charge indirect costs to an award must provide a copy of their negotiated indirect cost rate agreement at the time of application. Applicants that are not required by 2 C.F.R. Part 200 to have a negotiated indirect cost rate agreement but are required by 2 C.F.R. Part 200 to develop an indirect cost rate proposal must provide a copy of their proposal at the time of application. Post-award requests to charge indirect costs will be considered on a case-by-case basis and based upon the submission of an agreement or proposal as discussed above.

C. Application Review Information

1. Application Evaluation Criteria

a. Programmatic Criteria

Mitigation Plan Requirement

Applicant

During the application review period for completeness and eligibility, FEMA will validate if the Applicant has a FEMA-approved state mitigation plan that includes all dam risks (See Section H.2.i, Definitions, for the definition of All Dam Risk). If the Applicant has a FEMA-approved state mitigation plan that does not include all dam risks, FEMA will inform the Applicant of the determination and the Applicant may submit a request for an extension to the mitigation plan requirement. All supplemental attachments must be submitted via ND Grants. (See Section H.2.b., Mitigation Plan Requirement Extension Requests)

Applicant's state hazard mitigation plan will be assessed against 44 C.F.R. Part 201, Mitigation Planning, to determine if the plan complies with the requirement.

Specifically, FEMA will validate whether each of the following elements are included in the state hazard mitigation plan:

- a. Does the plan describe how the state dam safety agency, other agencies, and stakeholders participated in the planning process and contributed expertise, data, studies, information, etc. relative to eligible high hazard potential dams?
- b. Does the plan address all dam risk for eligible high hazard potential dams in the risk assessment?
- c. Does the plan include mitigation goals to reduce long-term vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?

- d. Does the plan prioritize mitigation actions to reduce vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?
- e. Does the plan identify current and potential sources of funding to implement mitigation actions and activities for eligible high hazard potential dams that pose an unacceptable risk to the public?
- f. Does the plan generally describe and analyze the effectiveness of local mitigation policies, programs, and capabilities that address eligible high hazard potential dams that pose an unacceptable risk to the public?
- g. Does the plan describe the criteria for prioritizing funding for eligible high hazard potential dams that pose an unacceptable risk to the public?

For additional information on state mitigation plan requirements and FEMA procedures for review and approval of state mitigation plans, see FEMA's [State Mitigation Plan Review Guide](#) (FP 302-094-2, March 2015).

Subrecipients

The subrecipient's local hazard mitigation plan will be assessed against 44 C.F.R. Part 201, Mitigation Planning, to determine if the plan complies with the requirement.

Specifically, FEMA will validate whether each of the following elements are included in the local hazard mitigation plan: Does the plan describe the incorporation of existing plans, studies, reports, and technical information for eligible high hazard potential dams?

- a. Does the plan address eligible high hazard potential dams in the risk assessment?
- b. Does the plan include mitigation goals to reduce long-term vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?
- c. Does the plan prioritize mitigation actions to reduce vulnerabilities from eligible high hazard potential dams that pose an unacceptable risk to the public?

For additional information on local mitigation plan requirements and FEMA procedures for review and approval of local mitigation plans, see FEMA's [Local Mitigation Plan Review Guide \(Local Guide\)](#) (October 2011).

d. Financial Integrity Criteria

Prior to making a federal award, the DHS/FEMA is required by 31 U.S.C. § 3321 note, 41 U.S.C. § 2313, and 2 C.F.R. § 200.205 to review information available through any OMB-designated repositories of government wide eligibility qualification or financial integrity information. Therefore, application evaluation criteria may include the following risk-based considerations of the applicant:

- 1) Financial stability.
- 2) Quality of management systems and ability to meet management standards.

- 3) History of performance in managing federal award.
 - 4) Reports and findings from audits.
 - 5) Ability to effectively implement statutory, regulatory, or other requirements.
- e. Supplemental Financial Integrity Criteria and Review

Prior to making a federal award where the anticipated total federal share will be greater than the simplified acquisition threshold, currently \$250,000 (see Section 805 of the National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, OMB Memorandum M-18-18 at <https://www.whitehouse.gov/wp-content/uploads/2018/06/M-18-18.pdf>):

2. DHS/FEMA is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM, which is currently the [Federal Awardee Performance and Integrity Information System](#) (FAPIIS) and is accessible through the [SAM](#) website.
3. An applicant, at its option, may review information in FAPIIS and comment on any information about itself that a federal awarding agency previously entered.
4. DHS/FEMA will consider any comments by the applicant, in addition to the other information in FAPIIS, in making a judgment about the applicant's integrity, business ethics, and record of performance under federal awards when completing the review of risk posed by applicants as described in 2 C.F.R. § 200.205.

2. Review and Selection Process

Applications will be reviewed and recommended for funding by FEMA. Once the application is submitted into Grants.gov, FEMA Headquarters will review the application and Program Work Plan for completeness and eligibility. FEMA Headquarters will make sure there are clearly defined goals and objectives in the applicants' Program Work Plan and necessary critical data. Applicants will be evaluated and selected for funding based on the following:

1. The Applicant has the authority and demonstrates the capability necessary to successfully fulfill the requirements of the HHPD.
2. The dams included on the Applicant's list of eligible dams meet eligibility criteria.
3. The Applicant's risk-based prioritization method meets minimum FEMA requirements (see Section H.2.e, Minimum Requirements for Risk-Based Prioritization).
4. The Applicant demonstrates how HHPD funds will advance the HHPD priorities and performance goals. The Grant Management Plan must clearly describe the SAA's timelines and milestones for implementing the HHPD grant. The Program Work Plan must describe the process for selecting subrecipients. The Grant Management Plan must also describe methodology and data used to measure progress toward achieving the performance outcomes of the HHPD grant.

During the application review period, FEMA may request additional information from the

applicant for clarification and better understanding of the proposed grant activities.

During the application review period for completeness and eligibility, FEMA will validate if the Applicant has a FEMA-approved state mitigation plan that includes all dam risks (See Section H.2.i, Definitions, for the definition of All Dam Risk). If the Applicant has a FEMA-approved state mitigation plan that does not include all dam risks, FEMA will inform the Applicant of the determination and the Applicant may request an extension to the mitigation plan requirement.

D. Federal Award Administration Information

1. Notice of Award

Before accepting the award, the AOR and recipient should carefully read the award package. The award package includes instructions on administering the grant award and the terms and conditions associated with responsibilities under federal awards.

Recipients must accept all conditions in this NOFO as well as any special terms and conditions in the Notice of Award to receive an award under this program.

Notification of award approval is made through the ND Grants system through an automatic e-mail to the awardee point of contact (the “authorized official”) listed in the initial application. The date FEMA approves the award is the “award date.” The awardee should follow the directions in the notification to accept the award.

Recipients must accept their awards no later than 90 days from the award date. The recipient shall notify FEMA of its intent to accept and proceed with work under the award or provide a notice of intent to decline through the ND Grants system. For instructions on how to accept or decline an award in the ND Grants system, please see the ND Grants [Grant Recipient User Guide](#).

Funds will remain on hold until the recipient accepts the award through the ND Grants system and all other conditions of award have been satisfied, or the award is otherwise rescinded. Failure to accept the grant award within the 90-day timeframe may result in a loss of funds.

2. Pass-Through Requirements

All pass-through entities must comply with Section 2 C.F.R. 200.331 Requirements for pass-through entities.

Awards made to the SAA for HHPD carry additional pass-through requirements. Pass-through is defined as an obligation on the part of the SAA to make funds available to eligible subrecipients. Four requirements must be met to pass-through grant funds:

- The SAA must submit a revision or amendment to FEMA for approval that describes the budget and project scope for each subrecipient in accordance with 2 C.F.R. § 200.308;

- The SAA must make a firm written commitment to passing through grant funds to subrecipients;
- The SAA's commitment must be unconditional (i.e., no contingencies for the availability of SAA funds);
- There must be documentary evidence (i.e., award document, terms, and conditions) of the commitment; and
- The award terms must be communicated to the subrecipient, including the requirement for a FEMA-approved mitigation plan that includes all dam risks (See Section H.2.i, Definitions, for the definition of All Dam Risk).

Timing and Amount

The SAA must pass-through the HHPD subaward to eligible subrecipients within 90 calendar days of receipt of the funds. "Receipt of the funds" occurs either when the SAA accepts the award or 15 calendar days after the SAA receives notice of the award, whichever is earlier.

SAA's are sent notification of HHPD awards via the ND Grants system. If an SAA accepts its award within 15 calendar days of receiving notice of the award in the ND Grants system, the 90-calendar days pass-through period will start on the date the SAA accepted the award. Should an SAA not accept the HHPD award within 15 calendar days of receiving notice of the award in the ND Grants system, the 90-calendar days pass-through period will begin 15 calendar days after the award notification is sent to the SAA via the ND Grants system.

It is important to note that the period of performance (POP) start date does not directly affect the start of the 90-calendar days pass-through period. For example, an SAA may receive notice of the HHPD award on August 20, 2020, while the POP dates for that award are September 1, 2020, through August 31, 2023. In this example, the 90-day pass-through period will begin on the date the SAA accepts the HHPD award or September 4, 2020 (15 calendar days after the SAA was notified of the award), whichever date occurs first. The POP start date of September 1, 2020 would not affect the timing of meeting the 45-calendar day pass-through requirement.

3. Administrative and National Policy Requirements

All successful applicants for DHS grant and cooperative agreements are required to comply with DHS Standard Terms and Conditions, which are available online at: [DHS Standard Terms and Conditions](#).

The applicable DHS Standard Terms and Conditions will be those in effect at the time the award was made. What terms and conditions will apply for the award will be clearly stated in the award package at the time of award.

Environmental Planning and Historic Preservation (EHP) Compliance

As a federal agency, FEMA is required to consider the effects of its actions on the environment and/or historic properties to ensure that all activities and programs funded by the agency, including grants-funded projects, comply with federal EHP regulations, laws and

Executive Orders as applicable. Subrecipients proposing projects that have the potential to impact the environment, including but not limited to planning activities, engineering studies, pre-construction, and other construction activities that require analyses that physically affect the environment (for example, geotechnical investigations, collecting soil samples, shear wave velocity tests, cone penetrometer tests, test pits, site surveys, in situ soil and rock testing, or installation of monitoring instrumentation, construction) must participate in the FEMA EHP review process pursuant to FEMA's Instructions on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program requirements, FEMA Instruction 108-1-1 (see <https://www.fema.gov/media-library/assets/documents/118323>).

The EHP review process involves the submission of a detailed project description along with supporting documentation so that FEMA may determine whether the proposed project has the potential to impact environmental resources and/or historic properties. In some cases, FEMA is also required to consult with other regulatory agencies and the public in order to complete the review process. The EHP review process must be completed before funds are released to carry out the proposed project; otherwise, FEMA may not be able to fund the project due to non-compliance with EHP laws, executive order, regulations and policies.

Recipients and subrecipients applying for HHPD projects that have the potential for physical impacts to the environment or cultural resources are encouraged determine the information needed to comply with the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321-4370h) as part of their initial and ongoing planning in order to lessen potential impacts to the environment or cultural resources and to identify the best possible solution for their dam safety initiative. Recipients and subrecipients should be aware that an Environmental Assessment pursuant the requirements of NEPA may be necessary for dam rehabilitation or construction projects funded by FEMA and should therefore be accounted for as initial and ongoing project planning takes place. Recipients and subrecipients should also be aware that approval or funding of a dam rehabilitation plan or study under HHPD does not guarantee that additional EHP review will not be required if FEMA or another federal agency was to fund construction or rehabilitation activities that result from these grant activities.

4. Reporting

a. Federal Financial Reporting Requirements

Recipients must report obligations and expenditures on a quarterly basis through the FFR (SF-425) to DHS/FEMA.

The Federal Financial Report (FFR) form is available online at: [SF-425 OMB #4040- 0014](#)

Recipients must file the FFR quarterly, using the Payment and Reporting System (PARS), throughout the period of performance, including partial calendar quarters, as well as for periods where no grant award activity occurs. The final FFR is due 90 days after the end of the performance period. Future awards and fund drawdowns may be withheld if these reports are delinquent, demonstrate lack of progress, or are insufficient in detail.

The following reporting periods and due dates apply for the FFR:

Reporting Period	Report Due Date
October 1 – December 31	January 30
January 1 – March 31	April 30
April 1 – June 30	July 30
July 1 – September 30	October 30

b. Programmatic Performance Reporting Requirements

Grant recipients are responsible for providing performance reports on a quarterly basis. Performance progress reports should be submitted as either a word document or a pdf file. Performance progress reports are due within 30 days after the end of each reporting period, must be submitted via ND Grants, and must include at a minimum the following:

The recipient must submit a quarterly performance progress report (SF-PPR) for each award. Performance reports should include:

1. Reporting period, date of report, and recipient point of contact (POC) name and contact information.
2. SF-PPR must be used and submitted via ND Grants
3. Project identification information, including FEMA project number, subrecipient, and project type using standard ND Grants/NEMIS project type codes.
4. Significant activities and developments that have occurred or have shown progress during the quarter, including a comparison of actual accomplishments to the work schedule objectives established in the subaward.
5. Percent completion and whether completion of work is on schedule; a discussion of any problems, delays, or adverse conditions that will impair the ability to meet the timelines stated in the subaward; and anticipated completion date.
6. Status of costs, including whether the costs are (1) unchanged, (2) overrun, or (3) underrun. If there is a change in cost status, the report should include a narrative describing the change. Also, include amount dispersed to subrecipient by activity.
7. A statement of whether a request to extend the award POP is anticipated.
8. Incremental funding amounts (SFM) and progress completed.
9. Additional information as required by FEMA to assess the progress of an award.

FEMA may suspend drawdowns from PARS if quarterly performance progress reports are not submitted on time.

The following reporting periods and due dates apply:

Reporting Period	Report Due Date
August 1 – September 30	October 30 (First Report)
October 1 – December 31	January 30
January 1 – March 31	April 30
April 1 – June 30	July 30
July 1 – September 30	October 30 (including Final Report)

c. Closeout Reporting Requirements

Within 90 days after the end of the period of performance, or after an amendment has been issued to close out a grant, recipients must submit the following:

- 1) The final request for payment, if applicable;
- 2) The final FFR (SF-425);
- 3) The final progress report detailing all accomplishments;
- 4) A qualitative narrative summary of the impact of those accomplishments throughout the period of performance; and
- 5) Other documents required by this NOFO, terms and conditions of the award, or other DHS/FEMA guidance.

If applicable, an inventory of all construction projects that used funds from this program must be reported with the final progress report.

After these reports have been reviewed and approved by DHS/FEMA, a closeout notice will be completed to close out the grant. The notice will indicate the period of performance as closed, list any remaining funds that will be deobligated, and address the requirement of maintaining the grant records for three years from the date of the final FFR, unless a longer period applies, such as due to an audit or litigation, for equipment or real property used beyond the period of performance, or due to other circumstances outlined in 2 C.F.R. § 200.333.

In addition, any recipient that issues subawards to any subrecipient is responsible for closing out those subawards as described in 2 C.F.R. § 200.343. Recipients acting as pass-through entities must ensure that they complete the closeout of their subawards in time to submit all necessary documentation and information to DHS/FEMA during the closeout of their prime grant award.

The recipient is responsible for returning any funds that have been drawn down but remain as unliquidated on recipient financial records.

d. Disclosing Information per 2 C.F.R. § 180.335

This reporting requirement pertains to disclosing information related to government-wide suspension and debarment requirements. Before a recipient enters into a grant award with DHS/FEMA the recipient must notify DHS/FEMA if it knows if it or any of the recipient's principals under the award fall under one or more of the four criteria listed at 2 C.F.R. § 180.335:

- 1) Are presently excluded or disqualified;
- 2) Have been convicted within the preceding three years of any of the offenses listed in 2 C.F.R. § 180.800(a) or had a civil judgment rendered against it or any of the recipient's principals for one of those offenses within that time period;
- 3) Are presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses listed in 2 C.F.R. § 180.800(a); or
- 4) Have had one or more public transactions (federal, state, or local) terminated within the preceding three years for cause or default.

At any time after accepting the award, if the recipient learns that it or any of its principals falls under one or more of the criteria listed at 2 C.F.R. § 180.335, the recipient must provide immediate written notice to DHS/FEMA in accordance with 2 C.F.R. § 180.350.

e. Reporting of Matters Related to Recipient Integrity and Performance

Per 2 C.F.R. Part 200, Appendix I § F.3, the additional post-award reporting requirements in 2 C.F.R. Part 200, Appendix XII may apply to applicants who, if upon becoming recipients, have a total value of currently active grants, cooperative agreements, and procurement contracts from all federal awarding agencies that exceeds \$10,000,000 for any period of time during the period of performance of an award under this funding opportunity. Recipients that meet these criteria must maintain current information reported in FAPIIS about civil, criminal, or administrative proceedings described in paragraph 2 of Appendix XII at the reporting frequency described in paragraph 4 of Appendix XII.

5. Monitoring

Per 2 C.F.R. § 200.336, DHS/FEMA through its authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments and management control systems to review project accomplishments and to provide any required technical assistance. During site visits, DHS/FEMA will review grant recipients' files related to the grant award. As part of any monitoring and program evaluation activities, grant recipients must permit DHS/FEMA, upon reasonable notice, to review grant-related records and to interview the organization's staff and contractors regarding the program. Recipients must respond in a timely and accurate manner to DHS/FEMA requests for information relating to the grant program.

6. Termination

The Federal Award may be terminated in whole or in part by FEMA or the pass-through entity if the subrecipient fails to comply with the terms and conditions of the award, for cause, with consent of the non-Federal entity when all parties agree with the termination conditions, or by the non-Federal entity upon sending to FEMA or the pass-through entity written notification of the termination including the reason for the termination.

7. Additional Specific Award Conditions or Terminations in the HHPD Program

FEMA will reconsider determinations of noncompliance, additional award conditions, or its decision to terminate a Federal award. The pass-through entity must send information for reconsideration to FEMA Headquarters within the time specified in the notification

from FEMA. A FEMA decision will uphold or overturn a decision regarding an award based on information provided by the pass-through entity and subrecipient, and application, award, and subaward management records collected by FEMA.

E. DHS Awarding Agency Contact Information

1. Contact and Resource Information

James E. Demby, Jr., PE

National Dam Safety Program
Federal Emergency Management Agency Phone: (202) 646-3435
james.demby@fema.dhs.gov

Gokhan Inci, PhD, PE, PEng, PMP

National Dam Safety Program
Federal Emergency Management Agency Phone: (202) 436 1721
gokhan.inci@fema.dhs.gov

Preston W. Wilson Sr.

National Dam Safety Program
Federal Emergency Management Agency Phone: (202) 646-1648
Preston.Wilson@fema.dhs.gov

Mitigation Plan Requirement Questions

Mitigation Planning provides policy information and guidance regarding the mitigation plan requirement for state and local governments. Questions should be sent to the Senior Mitigation Planner in the Mitigation Division of the appropriate FEMA Regional Office (<https://www.fema.gov/hazard-mitigation-planning-contacts>).

Environmental Planning and Historic Preservation (EHP) Questions

OEHP provides guidance and information about the EHP review process to FEMA programs and its recipients and sub-recipients. All inquiries and communications about EHP compliance for FEMA grant projects or the EHP review process should be sent to:

Portia Ross, CFM, Environmental Officer,

Office of Environmental Planning and Historic Preservation, FEMA / DHS, 500 C Street, SW,
Washington, DC 20472, Desk: 202-212-5929,
portia.ross@fema.dhs.gov

Grants.gov

For technical assistance with Grants.gov, please call the Grants.gov customer support hotline at (800) 518-4726. Applicants experiencing difficulties accessing information or who have any questions, should call the Grants.gov customer support hotline at (800) 518-4726.

ND Grants System

For technical assistance with the ND Grants System, please contact ndgrants@fema.dhs.gov or (800) 865-4076.

F. Additional Information

1. Period of Performance Extensions

Extensions to the period of performance under this program are allowed. Extensions to the initial period of performance identified in the award will be considered only through formal, written requests to the FEMA/ Federal Insurance and Mitigation Administration, Risk Management Directorate and must contain specific and compelling justifications as to why an extension is required. States are advised to coordinate with the FEMA Federal Insurance and Mitigation Administration, Risk Management Directorate as needed, when preparing an extension. All extension requests must address the following:

1. Grant Program, Grant Year, and award number;
2. Reason for delay – this must include details of the legal, policy, or operational challenges being experienced that prevent the final outlay of awarded funds by the applicable deadline. The reason must also be of significant extenuating circumstances (e.g. local flooding disaster);
3. Current status of the activity/activities;
4. Approved period of performance termination date and new project completion date (New recommended POP);
5. Amount of funds drawn down to date;
6. Remaining available funds;
7. Revised delineated budget outlining how remaining federal grant funds will be expended by approved task;

8. Plan for completion including milestones and timeframes for achieving each milestone and the position/person responsible for implementing the plan for completion; and
9. Certification that the activity/activities will be completed within the extended period of performance without any modification to the original Statement of Work approved by FEMA.

Applicants must submit extension requests within sixty (60) calendar days prior to the period of performance end date, through the ND Grants system, for review by the FEMA National Dam Safety Office for final review and Amendment approval consideration.

Extension requests must meet the Extensions requirements as listed above.

2. Other

- a. Conflicts of Interest in the Administration of Federal Awards or Subawards

For conflicts of interest under grant-funded procurements and contracts, refer to 2 C.F.R. §§ 200.317 – 200.326. To eliminate and reduce the impact of conflicts of interest in the subaward process, recipients and pass-through entities must follow their own policies and procedures regarding the elimination or reduction of conflicts of interest when making subawards. Recipients and pass-through entities are required to follow any applicable state, local, or tribal statutes or regulations governing conflicts of interest in the making of subawards.

The recipient or subrecipient must disclose to FEMA, in writing, any real or potential conflict of interest as defined by the federal, state, local, or tribal statutes or regulations or their own existing policies that may arise during the administration of the federal award. Recipients and pass-through entities must disclose any real or potential conflicts to their Program Analyst within five days of learning of the conflict of interest. Similarly, subrecipients must disclose any real or potential conflict of interest to the pass-through entity as required by the recipient's conflict of interest policies, or any applicable state or local statutes or regulations.

Conflicts of interest may arise during the process of FEMA making a Federal award in situations where an employee, officer, or agent, any members of his or her immediate family, his or her partner has a close personal relationship, a business relationship, or a professional relationship, with an applicant, sub applicant, recipient, subrecipient, or FEMA employee.

- b. Mitigation Plan Requirement Extension Requests

FEMA may grant an extension to the FEMA-approved state and/or local mitigation plan requirement in extraordinary circumstances when justification is provided. If this extension is granted, a mitigation plan that includes all dam risks must be approved by FEMA Regional Mitigation Planning within twelve (12) months of the award for recipients and within twelve (12) months of the date FEMA approves the applicants workplan for subrecipients. See Section H.2.i, Definitions, for the definition of All Dam Risk.

Extraordinary circumstances exist when a determination is made by FEMA Regional Mitigation Planning, with concurrence from FEMA Headquarters Mitigation Planning, that the state and/or local jurisdiction has a current FEMA-approved mitigation plan that does not address all dam risks and also meets at least one (1) of the criteria below:

- The jurisdiction meets the definition of small impoverished community (see **Section H.2.i, Definitions**). Applicants must certify and provide documentation of the community or jurisdictional status to FEMA with the Mitigation Plan Extraordinary Circumstances Request through ND Grants. See **Section H.2.h Example Mitigation Plan Extension Request Template**.
- The jurisdiction has been determined to have had insufficient capacity due to a lack of available funding, staffing, or other necessary expertise to satisfy the mitigation planning requirement prior to the application deadline.
- The jurisdiction has a FEMA-approved mitigation plan, but it does not include all dam risk, for reasons beyond the control of the jurisdiction.

The applicant must provide written justification that identifies the circumstance for not meeting the mitigation plan requirement and explains what resources the recipient and/or subrecipient will use to create or amend a mitigation plan that includes all dam risks and is approved by FEMA within twelve (12) months. The recipient and/or subrecipient will acknowledge in writing that a plan will be approved by FEMA within twelve (12) months of the award or subaward. The recipient and/or subrecipient must provide a work plan for creating or updating the mitigation plan in the required time. The requirement shall be incorporated by FEMA Headquarters GPD into the award agreement for Recipients and into any subsequent subawards by the Recipient with subrecipients.

c. Performance Metrics

The following methods may be used to demonstrate performance progress:

For all projects, demonstrate the local buy-in of the program by submitting the total non- federal investment (including in-kind contributions) applied toward eligible activities supporting the rehabilitation of eligible high hazard potential dams under the HHPD grant.

For study, planning, or preliminary engineering activities, demonstrate the increase in risk understanding by submitting the following information:

1. The percentage of eligible high hazard potential dams that have implemented pre-construction rehabilitation activities (risk understanding studies, risk-based prioritization, planning, and preliminary engineering studies, etc.) under the HHPD grant, and submit the Population at Risk (PAR) associated with each dam. (See Section H.2.i, Definitions, for a definition of Population at Risk.)
2. The percentage of dams with subrecipients that have implemented floodplain management plans, and the PAR associated with each dam.

For projects to rehabilitate or remove eligible dams, demonstrate the reduction in consequences by submitting the following information:

- i. Anticipated losses avoided as a result of rehabilitation of the dam and the PAR associated with the dam.
- ii. The losses avoided should be estimated based on the structure damage and loss of benefits of the dam if the risks (associated with the existing unacceptable risk to the public conditions) were not addressed and an adverse event at the dam were to occur (model the most probable failure mode and the design storm/hazard). Include all assumptions made in the estimation of losses avoided.

For example: A state has identified that it has ten (10) dams that meet the eligibility criteria for the HHPD grants, and chooses to move forward with projects for seven (7) of these dams:

- The state would like to further study the failure modes and potential risks associated with four (4) of the dams to better complete risk-based prioritization.
- The state has a good idea of the failure modes and risks associated with two (2) of the dams and is confident that these two dams will be rated high on the risk-based prioritization method, so it chooses to begin preliminary engineering studies for future rehabilitation for these two dams.
- The state has one (1) dam that has been studied, engineering analysis and design have been completed, and the project complies with EHP regulations, so the state would like to proceed with construction.

For this example, the performance metrics the state would submit with their progress report would be: Number of eligible dams: 10

Number of dams being studied for better risk understanding: 4

1. Dam 1: PAR = 267
2. Dam 2: PAR = 315
3. Dam 3: PAR = 502
4. Dam 4: PAR = 640

Number of dams having planning and preliminary engineering studies completed: 2

5. Dam 5: PAR = 991
6. Dam 6: PAR = 853

Number of dams undergoing rehabilitation: 1 7. Dam 7: PAR = 1056

The performance metrics submitted would be:

- Percentage of eligible high hazard potential dam that have implemented pre-construction rehabilitation activities under the HHPD grant: 6/10 = 60%
- Percentage of HHPD grant subrecipients that have developed floodplain management plans: 7/10 = 10% (assuming all projects have developed the floodplain management plan)
- Total non-federal investment (including in-kind contributions) applied toward the rehabilitation of eligible high hazard potential dams under the HHPD grant: Through accounting the state determines they have invested 2 Million and the award was \$3million, so they have invested 67% of the total award. (States should report all non-federal investment in this metric but should be able to show a minimum of 35% of the award.)
- Total losses avoided as a result of dam rehabilitation projects completed under the HHPD grant: Estimated infrastructure, social, and environmental impacts (see below for example assumptions)

Example Assumptions:

- For all eligible dams in the state, the modeling software and breach conditions used to estimate the inundation zone and PAR must be submitted. The software and breach conditions (and any other applicable assumptions) should be the same for all dams in that state.
- The estimate of losses avoided is based on the assumption that a dam breach is avoided by rehabilitation. Estimated damage to infrastructure in the inundation zone is summed to approximate financial losses. Details about how the financial losses are estimated should be included.
- Losses avoided should also include details about social and environmental consequences that would be avoided by bringing the dam into compliance with state dam safety standards. For example: if the dam is a water supply dam, impacts of failure would include loss of revenue and the displacement people who rely on the resource. Breach of the dam would also cause environmental damage downstream and impact a protected wildlife species.

d. Examples Using Funding Formula

The following example demonstrates the funding formula. Assume eleven states apply for funding in a given year, with the number of eligible dams as shown in Table 1.

Table 1: Example – Number of States and Eligible Dams

State	Number Eligible Dams
State 1	3
State 2	10
State 3	2
State 4	5
State 5	8

State	Number Eligible Dams
State 6	7
State 7	14
State 8	6
State 9	4
State 10	9
State 11	5
Total Eligible Dams	73

Step [i]. Using the funding formula, 1/3 of the \$10,000,000 in available funding (\$3,333,333.33) would be divided evenly between the eleven states, totaling \$303,030.30 to each of the eleven states.

Step [ii]. There are a total of 73 eligible dams in the eleven states that submitted applications. The remaining 2/3 of the available funding (\$6,666,666.67) would be distributed as shown:

Table 2: Example – Resulting Funding Using Formula

State	Ratio of State's Eligible Dams to All Eligible Dams	Resulting Funding
State 1	3/73	$\$303,030.30 + \$6,666,666.67 \times (3/73) = \$577,002.91$
State 2	10/73	$\$303,030.30 + \$6,666,666.67 \times (10/73) = \$1,216,272.31$
State 3	2/73	$\$303,030.30 + \$6,666,666.67 \times (2/73) = \$485,678.70$
State 4	5/73	$\$303,030.30 + \$6,666,666.67 \times (5/73) = \$759,651.31$
State 5	8/73	$\$303,030.30 + \$6,666,666.67 \times (8/73) = \$1,033,623.91$
State 6	7/73	$\$303,030.30 + \$6,666,666.67 \times (7/73) = \$942,299.71$
State 7	14/73	$\$303,030.30 + \$6,666,666.67 \times (14/73) = \$1,581,569.12$
State 8	6/73	$\$303,030.30 + \$6,666,666.67 \times (6/73) = \$850,975.51$
State 9	4/73	$\$303,030.30 + \$6,666,666.67 \times (4/73) = \$668,327.11$
State 10	9/73	$\$303,030.30 + \$6,666,666.67 \times (9/73) = \$1,124,948.11$
State 11	5/73	$\$303,030.30 + \$6,666,666.67 \times (5/73) = \$759,651.31$

Maximum Funding Amounts. Using the example provided, the maximum amount that could be awarded to any subrecipient in FY20 is \$1,250,000. Using the funding formula, the resulting funding for State 7 exceeded the maximum amount, so State 7 would still receive \$1,581,569.12. However, no subrecipient would be awarded more than \$1,250,000.

A state may have multiple subrecipients; if the amount of funding is not sufficient for all eligible subrecipients, the state will have to prioritize dams using a risk-based prioritization method (see Section H.2.e, Minimum Requirements for Risk-Based Prioritization) to choose which subrecipients to fund.

Example (use Table 2 above): Assume State 2 submitted five (5) activities with their application. Assume the cost estimates for each activity are as follows: \$200,000 for Activity 1, \$500,000 for Activity 2, \$600,000 for Activity 3, \$400,000 for Activity 4, and \$1,000,000 for Activity 5. FEMA reviewed the five activities and determined that Activity 1 is not eligible for funding. State 2 must use the risk-based prioritization method to determine which of the remaining four eligible activities (Activities 2-5) to fund. Note that some of the activities may not be fully funded.

e. Minimum Requirements for Risk-Based Prioritization

To meet the minimum FEMA criteria, the risk-based prioritization method must:

1. Evaluate static, hydrologic, and seismic failure modes.
2. Evaluate downstream consequences resulting from a dam incident.
3. Comply with FEMA's "*Federal Guidelines for Dam Safety Risk Management*" (FEMA, 2015), available at <https://www.fema.gov/media-library/assets/documents/101958>, for screening-level risk analysis.
4. Be objective and reproducible. It is noted that some subjectivity is likely to exist with any prioritization method, however this should be limited to the extent possible.
5. Be consistent across the dam inventory for calculations or numerical estimates (e.g. estimate PAR for the same failure scenarios in the same way for each dam considered).
6. Document all assumptions used in the process.

States should consult with FEMA to determine if their method meets the intent of the risk-based prioritization method for the program. Throughout the application development phase, FEMA will be delivering outreach and training in the form of presentations and webinars to help applicants understand the risk-based prioritization method requirement.

f. Unacceptable Risk to the Public Determination

For purposes of the HHPD, the determination of unacceptable risk to the public is to be made by the state dam safety program, the agency of the state that is authorized by state statute to manage the state participation in the NDSP. See **Section H.2.i., Definitions**, for the definitions of unacceptable risk to the public and official regulatory notice.

g. Eligible Activities

FEMA will evaluate proposed activities for eligibility. Eligible activities include repair, removal, or any other structural or nonstructural measures to rehabilitate an eligible high hazard potential dam. Note that all eligible activities included in the list must also have non-federal sponsors that can meet the cost-share requirements and have taxing ability.

For the purposes of this grant program, the activities shown in Table 3 could qualify for funding. This list is not exhaustive; other activities may also be eligible. Note that all grant-funded activities must comply with Federal Environmental Planning and Historic Preservation (EHP) regulations. See Section C.3, Environmental Planning and Historic Preservation (EHP) Compliance, for more information about EHP Compliance.

Table 3: Examples of Eligible Activities

Category	Activity
Administrative	Administrative actions associated with grants management
Preparedness Planning	Development of evacuation plans, plans for flood fighting, or community response plans to include in the floodplain management plan Coordination of EAP and EOPs for different release conditions
Planning	Activities and studies that determine risks associated with eligible dams Environmental studies for NEPA compliance Development of floodplain management plans (including evacuation plans, plans for flood fighting, or community response plans, and coordination of EAP and EOPs for different release conditions as part of the floodplain management plan) Development of operation and maintenance plans
Preliminary Engineering	Dam risk and consequence assessments Feasibility studies Preliminary engineering studies Alternatives analysis Mapping, engineering survey, and inundation modeling
Engineering Design	Engineering design Development of specifications
Construction projects	Repair or rehabilitation of the dam removal Construction monitoring Installation of early warning systems associated with the eligible dam project
Other Nonstructural Activities	Removing/relocating the downstream hazard
Outreach and Risk Communication	Public education and awareness of flood risks associated with the eligible dam project

h. Example Mitigation Plan Extension Request Template

Mitigation Plan Extraordinary Circumstances Request - Applicant Template (States)

Mr. James E. Demby, Jr., PE
Senior Technical and Policy Advisor National Dam Safety Program
Federal Emergency Management Agency 400 C Street, SW
Washington, DC 20472

Reference: Request to approve use of the “Mitigation Plan Extraordinary Circumstances” under the *Rehabilitation of High Hazard Potential Dams Grant Program*

Dear Mr. Demby:

The *[insert Applicant name]* in consultation and coordination with *[insert name of agency/ies responsible for updating the FEMA-approved state mitigation plan]* requests approval for the Mitigation Plan Extraordinary Circumstances extension as stated on page 31 of the [Rehabilitation of High Hazard Potential Dams \(HHPD\) Grant Program Notice of Funding Opportunity \(NoFO\)](#).

We understand that if the extension to having a FEMA-approved mitigation plan than includes all dam risks is approved, the requirement will be incorporated into the HHPD award agreement and the recipient will need to update the state mitigation plan to include all dam risks as described on page 24 of the NoFO and receive FEMA-approval within 12 months of the grant award or FEMA will recoup the award.

[For local mitigation plan(s) that require updates, insert the following text] With respect to the following local government and/or nonprofit organization subrecipients, I/we have included the documentation requested on page 21 of the NoFO (6.c.) to the request the use of mitigation plan extraordinary circumstances for the following FEMA-approved local mitigation plans in order to meet the requirements to include all dam risks as described on page 25 of the NoFO:

- *[Insert list]*

These subrecipients understand that the plan must be updated, including FEMA approval, within 12 months of the subgrant award or FEMA may terminate the award.

If you have any questions, please contact me at *[insert phone # and email address]*.

Sincerely,

[Recipient / Applicant name], *[title]* and *[Agency Responsible for Updating HM Plan]*,
[title]

*[Sponsoring Agency Departmental Name]**[Agency Departmental Name]*

cc: FEMA Regional National Dam Safety Program Point of Contact

Attachments:

- Workplan for updating State mitigation plan, including FEMA approval
- Documentation supporting the determination of Extraordinary Circumstances for each subrecipient
- If needed, include assurance from the state agency responsible for updating the FEMA-approved state mitigation plan

If needed, include requests from subrecipient (local governments and nonprofit organizations) for the use of mitigation plan extraordinary circumstances

- i. Definitions

All Dam Risk

For the purposes of the HHPD program, all dam risk includes the incremental risk, non-breach risk, and residual risk associated with each eligible high hazard potential dam, as well as the reason(s) the state has determined the dam is an eligible high hazard potential dam.

Applicant

The entity (i.e., the state under this grant program) applying to the Federal Emergency Management Agency (FEMA) for a Federal award that will be accountable for the use of the funds. Once funds are awarded, the applicant becomes the recipient or pass-through entity or both.

Dam (Source: 33 USC § 467(3))

- (C) any artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water, that—
- (iii) is 25 feet or more in height from—
 - (I) the natural bed of the stream channel or watercourse measured at the downstream toe of the barrier; or
 - (II) if the barrier is not across a stream channel or watercourse, from the lowest elevation of the outside limit of the barrier;
- to the maximum water storage elevation; or
- (iv) has an impounding capacity for maximum storage elevation of 50 acre- feet or more; but
- (D) does not include—
- (v) a levee; or
 - (vi) a barrier described in subparagraph (A) that—
 - (I) is 6 feet or less in height regardless of storage capacity; or
 - (II) has a storage capacity at the maximum water storage elevation that is 15 acre-feet or less regardless of height;

Dam Safety Deficiency (Source NID)

A load capacity limit or other issue that can result in a failure of the dam or appurtenant structure. It is a characteristic or condition that does not meet the applicable minimum regulatory criteria.

FAIR (Source: NID Condition Assessment definition)

No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action. Note: Rare or extreme event is defined by the regulatory agency based on their minimum applicable state or federal criteria.

Other Circumstances:

- Lack of maintenance requires attention to prevent developing safety concerns.

- Maintenance conditions may exist that require remedial action greater than routine work and/or secondary studies or investigations.
- Interim or permanent risk reduction measures may be under consideration.

Eligible High Hazard Potential Dam (Source: 33 USC § 467(4)(A))

- (E) a non-federal dam that—
- (vii) is located in a state with a state dam safety program;
 - (viii) is classified as “high hazard potential” by the state dam safety agency in the state in which the dam is located;
 - (xi) has an emergency action plan approved by the relevant state dam safety agency;
- and
- (x) the state in which the dam is located determines—
 - (III) fails to meet minimum dam safety standards of the state; and
 - (IV) poses an unacceptable risk to the public.
- (F) Exclusion: The term “eligible high hazard potential dam” does not include— (xi)a licensed hydroelectric dam; or
- (xii) a dam built under the authority of the Secretary of Agriculture.

Expected life of the dam

Estimated number of years the rehabilitation will be effective. For example, major infrastructure typically have a 50-100 year expected life.

Incremental Risk

The risk (likelihood and consequences) to the pool area and downstream floodplain occupants that can be attributed to the presence of the dam should the dam breach prior or subsequent to overtopping, or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but loss of the pool can result in significant consequences in the pool area upstream of the dam.

Interim Risk Reduction Measures (Source: <https://www.usace.army.mil/Missions/Civil-Works/Levee-Safety-Program/Risk-Reduction/>)

Effective, interim actions taken to reduce flood risk while longer term solutions are planned and implemented. Interim risk reduction measures are a critical part of responsible, adaptive flood risk management.

Non-Breach Risk

The risk in the reservoir pool area and affected downstream floodplain due to ‘normal’ dam operation of the dam (e.g. large spillway flows within the design capacity that exceed channel capacity) or ‘overtopping of the dam without breaching’ scenarios.

Non-Federal Entity

A state, local government, or nonprofit organization that carries out a federal award as a recipient or subrecipient

Nonprofit

Eligible nonprofit organizations are those organizations that are described under section 501(c)(3) of the Internal Revenue Code of 1986 (IRC) and exempt from tax under section 501(a) of such code. Refer to links below for additional information:

- <https://www.irs.gov/charities-non-profits/charitable-organizations/exemption-requirements-section-501-c-3-organizations>
- <https://www.irs.gov/publications/p557/ch03.html>
- <https://www.irs.gov/charities-non-profits>

NOT RATED (*Source: NID Condition Assessment definition*)

The dam has not been inspected, is not under state or federal jurisdiction, or has been inspected but, for whatever reason, has not been rated.

Official Regulatory Notice

A specific Dam Safety Deficiency (meeting the NID definition) is recognized and cannot be resolved with routine maintenance. The state dam safety agency has issued an official regulatory notice to the dam owner that includes all of the following elements:

1. The dam owner is notified of the specific deficiency and a regulatory requirement to immediately implement risk-reduction measures. (Required risk-reduction measures may include activities such as hiring an engineer to conduct risk-based failure mode studies, design of risk-reduction measures, construction of risk-reduction measures, or other actions.)
2. The regulatory notice indicates whether temporary risk-reduction measures (such as reservoir restrictions) are required.
3. The regulatory notice indicates a specific time allowance for the completion of the risk-reduction measures.
4. The regulatory notice includes a statement of the state dam safety's authority to issue regulatory actions and/or specific regulatory enforcement actions for failure to comply.

Pass-through Entity

A non-federal entity that provides a subaward to a subrecipient to carry out part of a Federal program.

Period of Performance (POP)

The time during which the non-federal entity may incur new obligations to carry out the work authorized under the federal award. The federal awarding agency or pass-through

entity must include start and end dates of the POP in the federal award.

POOR (Source: *NID Condition Assessment definition*)

A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. POOR may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.

Other Circumstances:

- Dam has multiple deficiencies or a significant deficiency that requires remedial work.
- Lack of maintenance (erosion, sinkholes, settlement, cracking, unwanted vegetation, animal burrows, inoperable outlet gates) has affected the integrity or the operation of the dam under normal operational conditions and requires remedial action to resolve.
- Critical design information is needed to evaluate the potential performance of the dam. For example, a field observation or a review of the dam's performance history has identified a question that can only be answered by review of the design and construction history for the dam. Uncertainty arises when there is no design and/or construction documentation available for review and additional analysis is needed to better understand the risk associated with operation under normal operational conditions.
- Interim or permanent risk reduction measures may be under consideration.

Population at Risk (PAR) (Source: *USACE ER 1110-2-1156*)

The population downstream of a dam that would be subject to risk from flooding in the instance of a potential dam failure; usually documented in numbers of persons at risk.

Pre-award Costs (Source: *2 C.F.R. § 200.458*)

Pre-award costs are those incurred prior to the effective date of the federal award directly pursuant to the negotiation and in anticipation of the federal award where such costs are necessary for efficient and timely performance of the scope of work. Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the federal award and only with the written approval of the federal awarding agency.

Recipient

A non-federal entity that receives a federal award directly from a federal awarding agency to carry out an activity under a federal program. The term recipient does not include subrecipients.

Rehabilitation (Source: *33 U.S.C. § 467(12)*)

The repair, replacement, reconstruction, or removal of a dam that is carried out to meet applicable state dam safety and security standards.

Routine Operation and Maintenance

Activities performed to prevent deterioration of structures and equipment to keep a dam in a safe and functioning condition throughout the expected life of the dam. These activities can be a scheduled or recurring action outlined in the operation and maintenance plan or performed after an inspection reveals an unusual observation that requires corrective restoration. Identifying and correcting problems before they become serious is an important part of routine operation and maintenance. Typical routine operation and maintenance activities can include (but are not limited to) mowing, removal of woody vegetation, addressing erosion, repairing concrete structures, replacement of equipment and gates, and servicing gates.

Residual Risk *(Source: ER 1110-2-1156)*

The risk that remains after all mitigation actions and risk reduction actions have been completed. With respect to dams, FEMA defines residual risk as “risk remaining at any time” (FEMA, 2015, p A-2). It is the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with a condition that was judged to not be a credible dam safety issue.

Risk

The product of the likelihood of a structure being loaded, adverse structural performance, (e.g., dam failure), and the magnitude of the resulting consequences

SATISFACTORY *(Source: NID Condition Assessment definition)*

No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines.

Typical Circumstances:

- No existing deficiencies or potentially unsafe conditions are recognized, with the exception of minor operational and maintenance items that require attention.
- Safe performance is expected under all loading conditions including the design earthquake and design flood.
- Permanent risk reduction measures (reservoir restrictions, spillway modifications, operating procedures, etc) have been implemented to eliminate identified deficiencies.

Small Impoverished Community

A small impoverished community must:

- a. Be a community of 3,000 or fewer individuals identified by the applicant as a rural community that is not a remote area within the corporate boundaries of a larger city or jurisdictional area or boundary
- b. Be economically disadvantaged, with residents having an average per capita annual income not exceeding 80 percent of the national per capita income, based on best

available data. For the most current information on the national income, see <http://www.bea.gov>

- c. Have a local unemployment rate that exceeds by 1 percentage point or more the most recently reported, average yearly national unemployment rate. For the most current unemployment information, see <http://www.bls.gov/eag/eag.us.htm>
- d. Meet other criteria required by the applicant in which the community is located

State (Source 33 U.S.C. § 467(13))

The term “state” means each of the several states of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

State Dam Safety Agency (Source 33 U.S.C. § 467(14))

The term “state dam safety agency” means a state agency that has regulatory authority over the safety of non-federal dams.

State Dam Safety Program (Source 33 U.S.C. § 467(15))

The term “state dam safety program” means a state dam safety program approved and assisted under section 467f(e) of this title

Subaward

An award provided by a pass-through entity to a subrecipient for the subrecipient to carry out part of a federal award received by the pass-through entity. It does not include payments to a contractor or payments to an individual that is a beneficiary of a federal program. A subaward may be provided through any form of legal agreement, including an agreement that the pass-through entity considers a contract.

Subrecipient

A non-federal entity that receives a subaward from a pass-through entity to carry out part of a federal program; but does not include an individual that is a beneficiary of such program. A subrecipient may also be a recipient of other federal awards directly from a federal awarding agency.

Unacceptable Risk to the Public

For purposes of the HHPD, the determination of *unacceptable risk to the public* is to be made by the state dam safety program, the agency of the state that is authorized by state statute to manage the state participation in the National Dam Safety Program. A dam poses *unacceptable risk to the public* when the dam requires remediation or risk reduction measures due to deficiencies caused by inadequate dam design, construction methods, or the results of inadequate operation and maintenance.

For a dam to be considered an *unacceptable risk to the public* for funding under the HHPD, it must meet all the following conditions:

1. Does not meet the minimum dam safety standards of the state (not including routine operations and maintenance actions)
2. State dam safety program has documented the deficiencies at the dam that must be reduced, eliminated or mitigated
3. Official Regulatory Notice (see definition) of the determination of the documented deficiency (s) has been communicated to the dam owner to address the *unacceptable risk to the public* to implement interim risk reduction measures until permanent risk reduction measures are implemented in a manner that is acceptable to the state. Official Regulatory Notice must be on official state or state dam safety program letterhead and may include official citations issued from the state dam safety program to the dam owner.

UNSATISFACTORY (Source: NID Condition Assessment definition)

A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

Typical Circumstances:

- A critical component of the dam has deteriorated to unacceptable condition or failed.
- A safety inspection indicates major structural distress (excessive uncontrolled seepage, cracks, slides, sinkholes, severe deterioration, etc.), advanced deterioration, or operational deficiencies which could lead to failure of the dam or its appurtenant structures under normal operating conditions.
- Reservoir restrictions or other interim risk reduction measures are required.
- A partial or complete reservoir drawdown may be mandated by the state or federal regulatory agency.

Appendix B – Risk-based Methodology for Dams

RISK-BASED METHODOLOGY FOR DAM SAFETY IN WASHINGTON STATE TWENTY YEARS OF SUCCESS

*Doug Johnson
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September 2000
Last Updated: May 2019*

Introduction

This paper discusses the application of probability and risk concepts in the state of Washington's dam safety program. Our approach can be characterized as employing risk concepts in a standards-based framework, and using a risk-based prioritization scheme to correct dam safety deficiencies. Under this approach, probability methods, risk concepts and elements of risk assessment are combined with decision making in setting performance standards that provide acceptable minimum levels of protection. This approach has been quite successful since its implementation in 1990. For similar downstream hazard settings, it has provided consistent levels of protection against flood induced overtopping failures across diverse climatic regions. It has been less successful in addressing the difficult, rapidly evolving seismic concerns confronting the Pacific Northwest. Furthermore, this approach has allowed us to make great progress in repairing the backlog of dams with identified safety deficiencies, as well as design new dams to more consistent standards across the State of Washington.

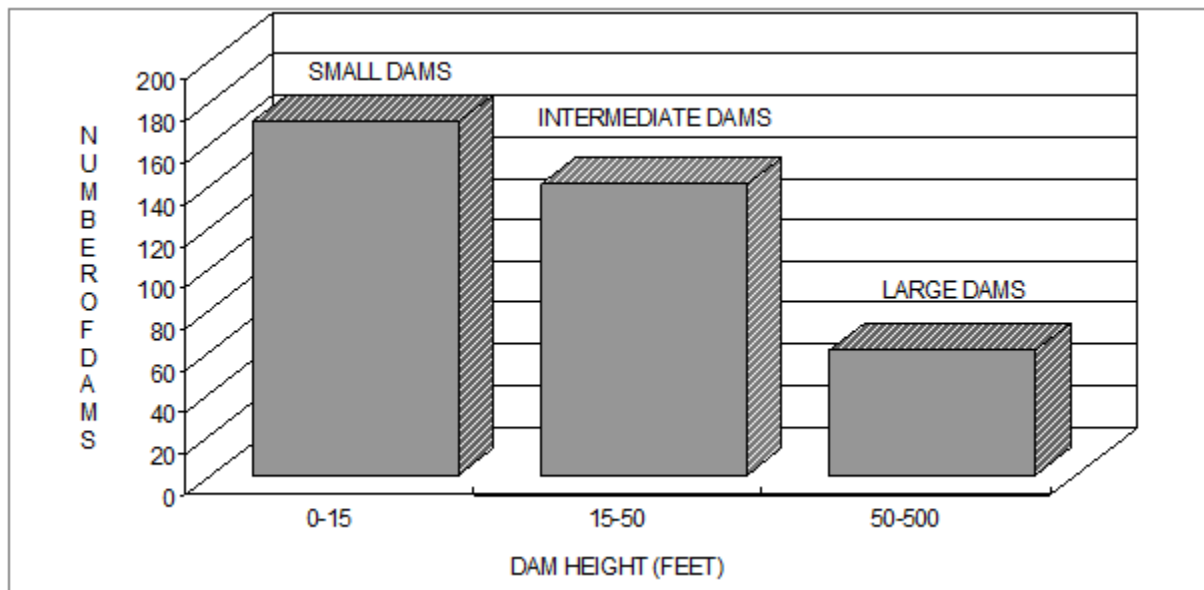
Why Choose Probabilistic Over Deterministic Approach?

The use of risk-based approaches in the dam safety community is still highly controversial. There is much fear and trepidation among dam safety engineers when "risk" is mentioned in conjunction with dam safety. To many, the word risk implies that we would be designing to accept failure and loss of life, or more insidiously, that risk assessment is a way of avoiding making expensive structural repairs to a dam. In addition, many think that using risk entails quantitative risk assessment, a highly complex and time-consuming analysis. Conversely, many dam safety professionals believe that using deterministic standards imply that a dam can pose zero risk to the public (as well as no liability risk to the engineer). Unfortunately, this viewpoint is based on misconceptions in the engineering community about the Probable Maximum Precipitation (PMP) and the Maximum Credible Earthquake (MCE). In reality, these values are estimates of the theoretical maxima that commonly approach, rather than meet, the theoretical upper limits. For example, studies have shown¹ that the annual exceedance probabilities (AEPs) of PMP events vary widely across the nation, from about 10^{-5} to perhaps 10^{-9} . In the Pacific Northwest, PMP events have AEPs that vary from about 10^{-5} on the coast, to 10^{-6} in the Puget Sound region to 10^{-9} in some areas of Eastern Washington¹. Thus, the use of these values may not only not provide zero risk; they likely do not provide consistent levels of protection across broad geographic areas.

The situation is further complicated when we look at smaller dams where only a few lives would be at risk. This situation represents the majority of dams regulated by Washington and, we believe, most other states (Figure 1). Regulatory organizations have long recognized that PMP and MCE loadings are too stringent for the design/analysis of these smaller projects. Consequently, some percentage of the theoretical maximum PMP is used for hydrologic assessment. An earthquake with a larger probability of

exceedance is utilized in the seismic stability assessment. For example, 50% of the PMP is frequently used by many regulatory agencies as the lower bound for smaller dams where only a few lives are at risk. However, when ratios of the PMP are taken, wildly differing levels of protection may result. For example, based on a regional analysis of some 10,000 station-years of precipitation data covering the Pacific Northwest, 50% of the PMP is only about a 100-year event in the marine climate on the Pacific Coast, while being closer to a 10,000-year event in parts of the arid eastern half of the state. Thus, by using ratios of PMP for design or repair of smaller, lower hazard dams, not only are we accepting that the dam is not zero risk, we often have no idea what the level of risk is!

Figure 1– Dams Sited Above Populated Areas in Washington State



Selection of Risk Based Approach

Recognizing that the PMP/MCE (much less %PMP) approach is not zero risk and provides unbalanced protection across the state, the Dam Safety Office elected to employ a risk-based design approach. This approach was selected based on a number of considerations. The first consideration was the need to provide consistent minimum levels of protection across the state for similar downstream hazard settings. There was also a need to provide methods of analysis that were manageable with limited resources. The state is responsible for over 800 dams, and has limited staffing and resources to apply toward detailed risk assessment. Likewise, most of the regulated community has smaller dams with limited project budgets. Finally, we needed an approach that could be used for the design of new projects as well as for analysis of existing dams. Performing quantitative risk assessments for every project would not be feasible given these considerations. However, employing risk concepts and procedures in a standards-based framework allowed us to address these issues, while realizing the benefits of using a risk-based approach in a relatively simple and inexpensive manner.

We decided to utilize probability and risk concepts in two main areas. The first was to develop risk-based standards for dam design and evaluation of existing dams. These standards were applied through the design step format, which is detailed later in this paper. The second area where these concepts

were applied was in the development of a risk-based ranking scheme to prioritize compliance and enforcement efforts on existing dams with identified safety deficiencies. The combination of both areas was integral to the success of Washington’s dam safety program and is detailed in the following sections.

Design Philosophy

The philosophy of the Washington dam safety program utilizes several design principles that provide a framework for evaluating and establishing what design/performance levels are appropriate for the various elements of a dam project. The primary principles related to risk are *Balance Protection* and *Consequence Dependent Design Levels*.

Balanced Protection – A dam is comprised of numerous critical elements, and like the old chain adage, “is only as strong as the weakest link”. The goal of the *Balanced Protection* concept is to establish an appropriate common Annual Exceedance Probability (AEP) as the minimum design level for the evaluation of each critical project element. The term critical project element refers to an aspect of the structure, whose failure could precipitate an uncontrolled release of the reservoir. This office has only achieved partial success in this endeavor. As is noted below, the seismic design aspects lag behind the progress made in the hydrology arena.

Consequence Dependent Design Levels – Standard practice in the civil engineering community is that the degree of conservatism in design should correspond with the consequences of failure of a given element. If failure of a given element could pose a threat of loss of life, design levels are typically much more conservative. That conservatism increases with an increase in the potential magnitude of loss of life and property at risk. This concept is called *Consequence Dependent Design Levels*.

Design Step Format

The philosophies of Balanced Protection and Consequence Dependent Design are implemented through the Design Step Format. This format utilizes eight steps, where the design events become increasingly more stringent as the consequences of failure become more severe. Design Step 1 has an annual exceedance probability of 1 in 500, and would apply where the consequences of dam failure are minimal and there would be no chance for loss of life. Design Step 8 applies to large dams where a dam failure would be catastrophic, with hundreds of lives at risk. In this situation, extreme design loads are used to provide the extremely high levels of reliability needed to properly protect the public. Thus, the AEP of Step 8 is set at 1 in 1,000,000, or the theoretical maximum events (PMP, MCE), whichever is smaller. The design Step 8 AEP of 10^{-6} is based on existing design standards (EPRI²) and a review of recommendations for engineered structures with extreme consequences of failure, such as nuclear power plants.

The design step format was completed by providing uniform performance increments between the design steps such that the AEP’s decrease tenfold for every two design steps. Figure 2 shows the 8-step format employed by the Washington dam safety program.

Figure 2. Design Step Format

Design Step	Exceedance Probability	Consequence Rating Points
1	1 in 500	< 275
2	1 in 1000	275 – 325
3	1 in 3000 (actually 3160)	326 – 375
4	1 in 10,000	376 – 425
5	1 in 30,000	426 – 475
6	1 in 100,000	476 – 525
7	1 in 300,000	526 – 575
8	1 in 1,000,000 (or theoretical maximum)	> 575

Benchmarks for Selecting Design Steps

A critical question when using risk-based design is “what is ‘acceptable’ (or tolerable) risk?” This is probably the most controversial aspect of using risk assessment in dam safety. This implies that above some threshold design event/performance level, loss of life would be tolerated. This is actually a common engineering precept used in bridge design, the UBC, and other engineering codes and standards. At the time we were developing our standards, there was very little guidance on tolerable risk criteria in the dam safety field. Thus, rather than try to come up with a definition of tolerable risk on our own, we decided to utilize design levels that would be consistent with the levels of safety provided by other engineering disciplines and governmental regulation. Because the actual levels of protection in many engineering applications are obscured by standards and codes (sometimes intentionally), the actual design levels and probabilities of failure had to be back calculated. This back calculation had been done for the establishment of performance goals in the design and evaluation of Department of Energy facilities¹⁰. That information, as well as other sources provided background information for setting the benchmarks shown in Figure 3.

**Figure 3 – Benchmarks for Calibrating Point Rating Algorithm
For Use in Decision Framework**

Benchmark	Characteristics of Idealized Projects	Minimum Design Step	Design/Performance Goal AEP
1	1 or More Lives at Risk	3	3×10^{-4}
2	Large Dam, over 50 feet High No Downstream Hazard	3	3×10^{-4}
3	Intermediate Dam No Commercial Development 10 Residences at Risk	4	10^{-4}
4	Large Dam Limited Commercial Development 34 Residences at Risk	6	10^{-5}
5	Large Dam Significant Commercial Development 100 Residences at Risk	8	10^{-6}

Note: AEP – Annual Exceedance Probability

Additional guidance in setting design levels was obtained by examining the levels of risk to which the public is exposed to in ordinary life. Several of those risks are shown in Figure 4

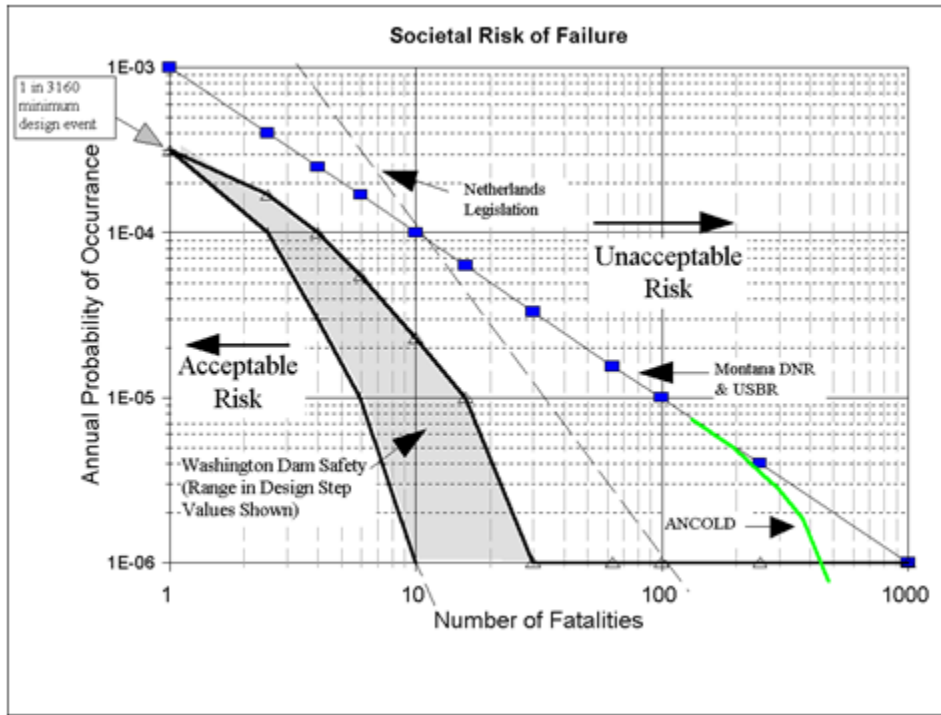
Figure 4 – Listing of Risks and Performance Levels

ACTIVITY/ITEM	TYPICAL NUMBER OF PERSONS AT RISK	RISK LEVEL	PERFORMANCE LEVEL
NATIONAL FLOOD INSURANCE PROGRAM · Risk from Natural Flooding	Varies Widely		1/100 AEP 100 Year Flood
FATAL DISEASE ³ · All Causes	1	1/120 AC	
ASCE STRUCTURAL CODE ⁴ · Performance of Individual Structural Members for Ordinary Buildings Subject to Natural Hazards due to Wind and Earthquake Loads	Typically 1-20		1/1000 AEP
EXISTING OFFSHORE DRILLING PLATFORMS ⁵ · Performance Subject to Wind, Wave and Earthquake Loads	Varies 0-25		1/1000 AEP
ACCIDENTAL DEATH ⁶ · All Causes	Few 1-3	1/2000 AC	
ACCIDENTAL DEATH ⁴ · Motor Vehicles	Few 1-6	1/3000 AC	
ACCIDENTAL DEATH ⁴ · Non-Motor Vehicles	Few 1-3	1/6000 AC	
UNIFORM BUILDING CODE ⁷ · Performance Of Essential Buildings such as Hospitals and Emergency Response Facilities to Maintain Building Functionality and Protect Occupants for Buildings Subjected to Wind and Earthquake Loads.	Typically 50-200		1/5,000 AEP
BRITISH SPILLWAY DESIGN ⁸	Small Community More than 30		1/10,000 AEP 10,000 Year Flood
DEPT. OF ENERGY BUILDINGS ⁹ · Performance of Building to Contain Radioactive or Toxic Materials and Protect Occupants for Buildings Subjected to Wind, Flood or Earthquake Loads	Varies Often Large Numbers of People at Risk		1/10,000 AEP
DEPT. OF ENERGY BUILDINGS ⁷ · Very High Confidence of Containment of Radioactive or Toxic Materials and Protection to Occupants for Buildings subjected to Wind, Flood or Earthquake Loads	Varies Often Large Numbers of People at Risk Both Onsite and Offsite		1/100,000 AEP
NUCLEAR POWERPLANTS ¹⁰ · Damage to Core of Nuclear Power plant from Earthquakes	Varies Potentially Very Large Number of People		1/100,000 AEP
AIR TRANSPORTATION ⁴ · Fatalities – All Aircraft	Varies 1-300	1/150,000 AC**	
AIR TRANSPORTATION ⁴ · Fatalities – Commercial Airlines	Varies 50-350	1/700,000 AC**	
NUCLEAR POWERPLANTS ⁸ · Performance Goal for Radioactive Releases Greater than 25 REM	Varies Potentially Very Large Numbers Of People at Risk		1/1,000,000 AEP

Note: AC - Annual Chance of Occurrence AEP - Annual Exceedance Probability ** - Based on an "Average Traveler"

A review of both these tables shows a basic trend. In those activities where few lives are at risk, the public accepts the nominal values of protection. Conversely, as the number or persons at risk and the consequences of a failure increase, the level of protection expected by society and the engineering profession increases significantly. This viewpoint is termed "risk-averse" with regard to loss of life. This is illustrated in Figure 5, which shows DSO criteria compared to other risk criteria such as Montana and the USBR¹¹, which are risk neutral (i.e., a constant value of risk of 1 in 1000 loss of life/year).

Figure 5 – Comparison of Societal Risk Criteria



Additive Point Rating Scheme

The next step in developing the risk-based standards was the development of an additive weighting scheme to determine numerical ratings of the consequences of dam failure. This scheme reflects the relative importance and range of severity of the impacts posed by each consequence. Cumulative rating points with values between 200 and 800 points were used to define the working range for the eight-step format. Factors were selected within the three general categories shown in Figure 6, which described the nature of the consequences of dam failure.

Utility curves or consequence rating tables were developed for each of the indicator parameters in Figure 6 to implement the additive weighting scheme. A worksheet (Appendix B, Ref 14) was then developed for compiling the rating points and selecting an appropriate design step. The point rating scheme was calibrated using a wide cross-section of project types and downstream settings to yield results (design steps) consistent with the five benchmarks shown in figure 3.

Figure 6 – Numerical Rating Format for Assessing Consequences of Dam Failure

CONSEQUENCE CATEGORIES	CONSEQUENCE RATING POINTS	INDICATOR OPARAMETER	CONSIDERATIONS
CAPITAL VALUE OF PROJECT	0 – 150	DAM HEIGHT	Capital Value of Dam
	0 – 75	PROJECT BENEFITS	Revenue Generation or Value of Reservoir Contents
POTENTIAL FOR LOSS OF LIFE	0 – 75	CATASTROPHIC INDEX	Ratio of Dam Breach Peak Discharge to 100 Year Period
	0 - 300	POPULATION AT RISK	Population at Risk Potential for Future Development
	0 - 100	ADEQUACY OF WARNING	Likely Adequacy of Warning in Event of Dam Failure
POTENTIAL FOR PROPERTY DAMAGE	0 – 250	ITEMS DAMAGED OR SERVICES DISRUPTED	Residential and Commercial Property Roads, Bridges, Transportation Facilities Lifeline Facilities Community Services Environmental Degradation from Reservoir Contents (Tailings, Wastes.)

Probabilistic Design Data

Before we could implement the risk-based standards described above, magnitude-frequency relationships were needed for extreme events such as floods and earthquakes. Unfortunately, this type of information is not readily available to most states, and much work is still needed around the United States to develop probabilistic precipitation and seismic data for extreme events. In Washington State, we benefited from Dr. Mel Schaefer’s detailed studies of extreme storms in the Northwest^{12, 13}, and his development of probabilistic based procedures¹⁴ for generating precipitation magnitude-frequency relationships for any location in the state. Thus, Washington State has the necessary hydrologic data to employ them in a logical and consistent manner in our risk based design/performance practice. This data is used in determining a design storm event with an appropriate AEP to match the design/performance step for the dam in question. This storm is then used to compute the inflow design flood to size the spillway(s) for a new project, or to determine the adequacy of the spillway for an existing dam.

In the seismic arena, we are encountering difficulties on design Set 1 and above in Western Washington and Step 3 and above in Eastern Washington in dealing with the population of existing dams. Our difficulties stem from the severity of the earthquake loadings projected for the Pacific Northwest. Seven interface earthquakes of Moment Magnitude (M_w) 8 or larger are believed to have struck the coast in the last 3500 years¹⁵. The last event in 1700 was estimated from Japanese tidal records to have been an M_w 9. Thus, all projects in the western half of the state must consider a seismogenic source capable of generating minutes of strong ground motion at a mean recurrence interval of 500 years. With the exception of California, Oregon and Alaska, few other states have to deal with such intense ground motion on so short a mean recurrence interval. In addition, the intensity and duration of shaking yields a high probability of liquefaction. Thus, a significant fraction of the analyses must predict the post-liquefied, deformation response of soils. This is an area of active research in the geotechnical profession.

While data is being generated at considerable expense on high profile projects, little guidance is available for extrapolating to the small dams that comprise the majority of the projects under our purview. Here, any rigorous assessment scheme would face the same difficulties confronting us. In much of the rest of the country, the appreciably less intense seismic setting would minimize the difficulties of implementing our design step scheme.

Design Standards for Other Critical Elements

For critical elements at new dam projects where a design loading is not readily applicable (e.g. conduit, seepage), a qualitative approach is used, where redundancy and survivability concepts are employed to achieve adequate reliability against failure. For these critical elements on existing dams, a qualitative approach is used, rather than a quantitative assessment. This is achieved through review of the design and identification of deficiencies for the critical element, coupled with a qualitative assessment of the likelihood of failure based on past experience and engineering judgement. However, we are considering the utilization of some of the more formal risk assessment procedures for these elements currently employed by the Bureau of Reclamation.

Risk Prioritization Scheme

At the close of the 1980's, the Dam safety Office had over 60 dams listed as having safety deficiencies. Many of these dams were projects inspected under the National Dam Safety Program from 1977-81, and had not action toward making repairs in 10 years. With such a large number of unsafe dams, and limited staffing, it became clear to the DSO that some way of prioritizing these projects was in order. Thus, in conjunction with the development of the risk-based standards described previously, in 1990 the DSO developed a prioritization-ranking scheme for dams with safety deficiencies.

The scoring and ranking algorithm developed by the DSO is simple in concept and application, but was found to be more than adequate for producing an initial ranking of projects. The algorithm is contained within our Microsoft Access database, and a report showing the ranking of projects can be generated by the touch of a key. This ranking is then used as a starting point where other project specific intangibles can be considered by management. The number of projects targeted for enforcement action at any time are chosen to maximize compliance, while not jeopardizing other critical functions of the dam safety program. Typically, this represents an active enforcement workload of about 10 projects.

The underlying logic in the development of this algorithm is fairly simple, and includes the following key ideas:

- For dams with similar deficiencies, those dams with the greatest consequences should be given higher priority.
- For dams with similar consequences, those dams with the more serious deficiencies should be given higher priority.
- For dams with similar deficiencies and similar consequences, those dams with a poorer change for warning to the public should be given higher priority.
- Dams with only minor deficiencies should be ranked lower than dams with significant deficiencies, regardless of the consequences.
- The risk associated with three minor deficiencies is ranked just below that of one moderate deficiency.

- The Risk associated with two moderate deficiencies is ranked just below that of one major deficiency.
- All things being equal, older dams should be given a higher priority.

These concepts were then incorporated into developing the equations for computing the number of priority points. Two different equations were developed for computing the priority points. The first equation is for dams where one or more of the safety deficiencies are rated moderate, major or emergency. The second equation is for a project where all deficiencies are rated minor. These equations are shown in Figure 7. Rating points were then developed for the consequences, adequacy of warning, and seriousness of deficiencies, as shown in Figure 8. The points were selected and calibrated to meet the underlying logic goals discussed previously.

Figure 7: Equations for Prioritization Ranking

One or More Safety Deficiencies Rated Moderate, Major or Emergency	Priority = [Hazard Class] + [Warning] + [Σ(Seriousness of Deficiencies)] + [Age]2
All Safety Deficiencies Rated Minor	Priority = 0.5 * [Hazard Class] + [Warning] + [Σ(Seriousness of Deficiencies)] + [Age]2

Figure 8: Rating Points for Prioritization

Rating Points for Consequences – By Hazard Class

Hazard Class	Rating Points
High Hazard Hazard Classification 1A – (100+ homes at risk)	500 Points
High Hazard Hazard Classification 1B – (11-99 homes at risk)	400 Points
High Hazard Hazard Classification 1C – (3-10 homes at risk)	300 Points
Significant Hazard Hazard Classification 2 – (1 or 2 homes at risk)	100 Points
<i>Low Hazard</i> Hazard Classification 3 – (0 homes at risk)	0 Points

Rating Points for Adequacy of Warning

Adequacy of Warning	Rating Points
Inadequate Warning – (< 10 minutes advanced warning)	100 Points
Marginal Warning – (between 10-30 minutes)	50 Points
Adequate Warning – (greater than 30 minutes)	0 Points

Rating Points for Seriousness of Each Deficiency

(Primary focus on deficiencies that could lead to a dam failure of uncontrolled release of reservoir)

Deficiency Seriousness	Rating Points
Emergency Condition	250 Points
Major Deficiency	145 Points
Moderate Deficiency	65 Points
Uncertain Seriousness	65 Points
Minor Deficiency	20 Points

The seriousness of safety deficiencies are evaluated based on the matrix in Figure 9. This matrix is intended for guidance only, and ultimately, the final rating of seriousness of deficiencies is based on knowledge of the project and on engineering judgement.

Figure 9 – Matrix for Evaluating Seriousness of Deficiencies

CONDITION	HYDRAULIC ADEQUACY	EMBANKMENT STABILITY	SEEPAGE ON EMBANKMENTS, FOUNDATION, ABUTMENTS	OUTLET CONDUIT(S)
<i>SATISFACTORY</i>	Can accommodate IDF	Meets criteria for static and seismic stability	Minimal seepage consistent with past behavior	KSU Conduit Rating > 8
<i>MINOR DEFICIENCIES</i>	Can only accommodate flood 1 step below Design Step	Meets criteria for static stability, marginal seismic stability under design earthquake	Minor seepage quantity, inconsistent with past behavior. No evidence of internal erosion	KSU Conduit Rating 6-8
<i>MODERATE DEFICIENCIES</i>	Can only accommodate flood 2 steps below Design Step	Marginal static stability $1.3 < FS < 1.5$ Inadequate seismic stability or liquefaction under design earthquake	Moderate seepage quantity Or Anomalous increase in quantity. Minor concerns of piping	KSU Conduit Rating 4-6
<i>MAJOR DEFICIENCIES</i>	Can only accommodate flood 3 steps below Design Step	Inadequate static stability $< FS < 1.3$ Inadequate seismic stability or liquefaction under design earthquake	Relative Large Seepage Quantity Multiple Points of Seepage And/or Significant concern of piping	KSU Conduit Rating 2-4
<i>EMERGENCY</i>	Cannot Accommodate 25-year Flood	Significant slope failures that intercept dam crest or involve major portion of the embankment	Large or rapidly changing seepage quantity Multiple points of seepage and ongoing piping	KSU Conduit Rating 0-2

Conclusions

Since its implementation in 1990, the use of the risk-based standards approach has been quite successful in Washington State. It has provided a consistent level of protection against failure between projects located across the state, despite significant differences in seismicity and rainfall. For new dams, we have been able to apply risk concepts in a standards-based approach that is fairly straightforward and easy to use.

For the evaluation of existing dams, we have been able to utilize a combination of probabilistic methods, risk concepts and risk-based standards to determine if the dam has an adequate level of protection against failure. If dams do not meet state standards, we are able to estimate the relative level of risk they currently pose, and prioritize our compliance efforts on those projects with the greatest risk. It has also allowed us to inform dam owners not only that their dams are “unsafe”, but also educate them as to what level of risk their unsafe project poses to the downstream public. In addition, we have utilized a prioritization scheme for compliance efforts on unsafe dams, based on the relative risk of each project. These combined approaches have resulted in great progress in repairing the backlog of dams with identified safety deficiencies in the State of Washington

Aspects of risk assessment that may be valuable to state programs

Based on our experience, we feel that several aspects of risk assessment and risk management can be of benefit to other dam safety organizations. No matter what standards are used, all dam safety professionals are in the business of managing risk, and the more knowledgeable we are about risk, the better we can make decisions that protect public safety. Using probability and risk concepts allows a dam safety professional to understand the risks and manage them better.

At the 1999 ASDSO/FEMA Specialty Workshop on Risk Assessment for Dams in Logan, Utah, several areas were identified as being potentially of use to state dam safety programs. The areas showing the most promise for the states included qualitative risk assessments such as Failure Mode Evaluation and Analysis (FMEA), prioritization and portfolio approaches, and developing risk-based standards for spillway and/or seismic design, as in Washington and Montana. These areas are highlighted as follows:

- FMEA can be a useful tool, even for those regulators that exclusively use deterministic standards. FMEA allows the regulator a better understanding of the potential site-specific failure modes, the possible failure scenarios and potential consequences, and effective risk reduction measures and dam safety related actions.
- Risk prioritization and portfolio approaches, such as Washington’s, can be valuable tools for states to manage their limited resources toward fixing unsafe dams. Using a prioritization scheme, unsafe projects can be ranked for compliance and enforcement activity, based on the risk that they pose to downstream population. The most critical projects can then be targeted for enforcement action.
- Washington’s risk-based standards approach may be of interest to some states, especially in spillway design. In fact, Montana’s dam safety program has used our example to develop risk based spillway standards of their own. The drawback to implementing these standards on a broader scale is the current lack of probabilistic precipitation data in the U.S. beyond the 500-year event. It can be quite expensive for states to undertake this effort on their own. The Logan workshop identified the need for large-scale regional studies to be performed for probabilities of

extreme rainfall events across the U.S. If these studies are completed, then it may be more attractive for some states to implement risk-based spillway standards.

- States using %PMP as a design level for analysis of spillways are already using a non-deterministic standard and by default are accepting risk, but the probability of the %PMP event, and corresponding risk to public safety is unknown. These states may benefit from the aforementioned regional precipitation studies, which would allow them to learn the probability of their %PMP standards. Depending on the results, the states may elect to go to risk-based standards, or may decide to adjust the percentage of PMP to increase or decrease the risk level.
- Quantitative risk assessment is not likely to be a useful tool for most state dam safety programs, due to the lack of probabilistic data, inadequate staffing levels, and amount of effort required to perform an assessment for each dam. Most states regulated a large number of small to medium sized dams, and would not have adequate staffing or resources to complete comprehensive studies on each dam.

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Appendix C – Required Subapplicant Information

Washington Department of Ecology
High Hazard Potential Dams (HHPD) Grant Program - FY 2020
Required Subapplicant Information

1. Subapplicant Organization
2. Dam Name
3. Project Name:
4. FEMA Funds Requested: (65% of FEMA subgrant total)
5. Matching funds: (35% of FEMA subgrant total)
6. FEMA Subgrant Total
7. Total Project Costs (if different than subgrant total because FEMA grant is part of larger project)
8. Source and type of matching funds
9. FEMA-Required Information
 - a. Scoping Narrative. Provide a narrative of the work to be completed with the grant and how it fits into the overall work at the dam to reduce risk. List the HHPD Grant Program Objectives that this project will support (see Section 1.2 of the FEMA guidance document). Provide information to demonstrate how the work supports the Performance Metrics in Section 5.3 of the FEMA Guidance.
 - i. Scope of Work
 - ii. Schedule
 - iii. Cost Estimate (budget narrative and budget worksheet)
 - b. Link to or copy of FEMA-approved hazard mitigation plan, specifically referencing section(s) that includes all dam risk.
 - c. Request for Mitigation Plan extraordinary circumstance, **if applicable**, including written justification that identifies the circumstance for not meeting the mitigation plan requirement and explains how a mitigation plan will include all dam risks and be approved by FEMA within twelve (12) months.
 - Section 5.9, Mitigation Plan Extraordinary Circumstances in [2020 HHPD Grant Guidance](#).
 - See Appendix C: Mitigation plan extraordinary circumstance request templates and plan review tools in [2020 HHPD Grant Guidance](#).
 - d. Floodplain management plan that addresses potential measures, practices, and policies to reduce loss of life, injuries, damage to property and facilities, public expenditures, and other adverse impacts of flooding in the area protected by the project. The floodplain management plan must also include plans for flood fighting and evacuation; and public

education and awareness of flood risks. If the Floodplain Management Plan is not in place, then a statement (as defined below) must be included.

- e. Information to demonstrate conformance with 44 CFR [Part 9](#) and [Part 10](#) and including all available information relating to known historic, archaeological, or environmentally sensitive areas.
- f. Documentation of consideration of alternatives that avoid or minimize harm to the environment or historic resources.
- g. Demonstration that the non-federal entity can meet the cost share requirements.
- h. Required assurance statements include:
 - i. Statement of project approval from the relevant state/territory dam safety agency.
 - ii. Statement that the Subapplicant participates in, and complies with, all applicable federal flood insurance programs.
 - iii. Statement that the Subapplicant acts in accordance with the state/territory dam safety program.
 - iv. Documentation that the dam has an emergency action plan approved by the relevant state/territory dam safety agency, and that the dam is classified as “high hazard potential” by the state/territory dam safety agency in the state or territory in which the dam is located.
 - Use EAP submitted to DSO.
 - v. Statement from the state or territory that the proposed project dam fails to meet minimum state/territory dam safety standards and poses an unacceptable risk to the public (as determined by the state or territory) with official documentation that the dam owner has been notified of the deficiencies and unacceptable risk.
 - Use last 5-year periodic inspection report performed by DSO.
 - vi. Operation and Maintenance Agreement where all applicable parties enter a legally binding contract to provide operation and maintenance of the project for the 50-year period following completion of rehabilitation.
 - See section 5.5.2 O&M Agreement of the [2020 HHPD Grant Guidance](#).
 - The O&M Agreement may be attached to or incorporated into the O&M Plan. See Appendix G.1, Sample O&M Agreement and Financial Plan, for an example of a combined O&M Agreement and Financial Plan in the [2020 HHPD Grant Guidance](#).
 - vii. Assurance that the Subapplicant will have adequate funding resources for Operation and Maintenance activities to be carried out over 50-year period following completion of rehabilitation project.
 - See section 5.5.3 O&M Financial Plan of the [2020 HHPD Grant Guidance](#).

- viii. A statement that activities relating to the public in the area around the dam are performed in accordance with the hazard mitigation plan.
- See section and all subsections of 5.6 HHPD Floodplain Management Plan Requirements in the [2020 HHPD Grant Guidance](#).
- ix. If the Floodplain Management Plan is not in place, a statement that the plan will be developed not later than one (1) year after the date of execution of a project agreement and implemented not later than one (1) year after the date of completion of construction of the project must be included.
- See Appendix H: Sample HHPD Floodplain Management Plan Outline in the [2020 HHPD Grant Guidance](#).
- x. A statement that the Subapplicant will comply with section 5196(j)(9) of title 42 (as in effect on December 16, 2016). [See Section H for language](#).
- xi. A statement that the Subapplicant will comply with chapter 11 of title 40; Selection of Architects and Engineers. The language can be viewed at:
<http://uscode.house.gov/view.xhtml?path=/prelim@title40/subtitle1/chapter11&edition=prelim>.