



July 2016

# LEVEE SAFETY

## Army Corps and FEMA Have Made Little Progress in Carrying Out Required Activities

# GAO Highlights

Highlights of [GAO-16-709](#), a report to congressional committees

## Why GAO Did This Study

Levees, which are man-made structures such as earthen embankments or concrete floodwalls, play a vital role in reducing the risk of flooding. Their failure can contribute to loss of lives or property, as shown by the devastation of Hurricane Katrina in 2005. It is estimated that there are over 100,000 miles of levees across the United States, many of which are owned or operated by nonfederal entities. The Corps and FEMA are the two principal federal agencies with authorities related to levee safety.

The Water Resources Reform and Development Act of 2014 requires the Corps and FEMA to take the lead on certain national levee-safety-related activities including developing a national levee inventory, which Congress authorized in 2007. The act also includes a provision for GAO to report on related issues. This report examines the Corps' and FEMA's progress in carrying out key national activities related to levee safety required in the act. GAO reviewed pertinent federal laws and executive orders as well as budget, planning, and policy documents from the Corps and FEMA; compared agency activities with federal internal control standards; and interviewed Corps and FEMA headquarters officials.

## What GAO Recommends

GAO recommends that the Corps and FEMA develop a plan that includes milestones for implementing the required national levee-safety-related activities using existing resources or requesting additional resources as needed. The agencies generally concurred with GAO's recommendation.

View [GAO-16-709](#). For more information, contact Anne-Marie Fennell at (202) 512-3841 or [fennella@gao.gov](mailto:fennella@gao.gov)

July 2016

## LEVEE SAFETY

### Army Corps and FEMA Have Made Little Progress in Carrying Out Required Activities

## What GAO Found

The U.S. Army Corps of Engineers (Corps) and the Federal Emergency Management Agency (FEMA) have made little progress in implementing key national levee-safety-related activities required in the Water Resources Reform and Development Act of 2014. More specifically, the Corps has been working to develop a national levee inventory, but the agencies have taken no action on the remaining key national levee-safety-related activities for which they are responsible under the act, as shown in the table below. Agency officials identified resource constraints as a primary reason for their lack of progress in implementing such activities, and Corps officials said that not implementing these activities could potentially result in safety risks and federal financial risks for disaster relief, among other impacts. However, the agencies have no plan for implementing the remaining activities required by the act. Without a plan that includes milestones for accomplishing these activities using existing resources or requesting additional resources as needed, the agencies are unlikely to make progress implementing the activities under the act.

**Implementation Status, as of June 2016, of Key National Levee-Safety-Related Activities in the Water Resources Reform and Development Act of 2014**

Activity	Implementation status	Statutory deadline	Agency responsible
Reconvene the national committee on levee safety	No action	None	Corps
Continue to develop national levee inventory	Ongoing	None	Corps
Implement multifaceted levee safety initiative	No action	Several	Corps and FEMA
Submit a report on the state of U.S. levees, the effectiveness of the levee safety initiative, and any necessary congressional actions	No action	June 10, 2015 and biennially thereafter	Corps
Submit a report including recommendations on advisability and feasibility of a joint dam and levee-safety program	No action	June 10, 2017	Corps and FEMA
Submit a report including recommendations that identify and address legal liabilities of engineering levee projects	No action	June 10, 2015	Corps

Source: GAO analysis of Corps and Federal Emergency Management Agency (FEMA) information. | GAO-16-709

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## **Abbreviations**

Corps	U.S. Army Corps of Engineers
FEMA	Federal Emergency Management Agency

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July 26, 2016

The Honorable James Inhofe  
Chairman  
The Honorable Barbara Boxer  
Ranking Member  
Committee on Environment and Public Works  
United States Senate

The Honorable Bill Shuster  
Chairman  
The Honorable Peter DeFazio  
Ranking Member  
Committee on Transportation and Infrastructure  
House of Representatives

Levees—man-made structures such as earthen embankments or concrete floodwalls—play a vital role in reducing the risk of flooding, and a levee’s failure can lead to the loss of lives or property. The impact of levee failures was brought to national attention in 2005, when waves from Hurricane Katrina resulted in the overtopping and failure of levees in parts of New Orleans contributing to major devastation, including at least 1,300 deaths. Addressing the damage from the hurricane cost the federal government more than \$16 billion in disaster relief, according to data from the Federal Emergency Management Agency (FEMA). It is estimated that, across the United States, there could be more than 100,000 miles of levees, the majority of which—over 85,000 miles—are owned, maintained, or operated by nonfederal stakeholders, such as states, local governments, tribes, and private entities.<sup>1</sup> FEMA data indicate that levees are found in approximately 22 percent of U.S. counties, where almost half of the U.S. population resides. According to the U.S. Army Corps of Engineers (Corps) and FEMA officials, the federal government does not have a program overseeing all levees across the nation, and no national standards exist for levee safety.

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<sup>1</sup>This estimate, which is the most recent available, is based on information contained in a 2009 report from the National Committee on Levee Safety. The committee was established by Congress in 2007 and is no longer active.

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A number of federal agencies have a role in levee-related activities, such as inspections, inventories, assessments, training and assistance, development of standards, mapping, and risk communication; however, the Corps, within the Department of Defense, and FEMA, within the Department of Homeland Security, are the two principal federal agencies with authorities related to levees.<sup>2</sup> The Corps has some responsibility for approximately 15,000 miles of levees under its Levee Safety Program, including levees that the Corps has built and maintains, levees that it has built but does not maintain, and levees that it did not build but rehabilitates.<sup>3</sup> The aim of this program, according to a Corps document, is to better understand, manage, and reduce flood risks associated with levees through such activities as maintaining a national inventory of levees, inspecting and assessing the performance of certain levees, and providing levee rehabilitation to eligible flood-damaged levees. FEMA implements the National Flood Insurance Program, under which public and private levees can be accredited as designed to withstand a certain flood event. The program provided insurance to help protect over 5.1 million policyholders against flood losses in 2015.

In 2007, Congress established the National Committee on Levee Safety to develop recommendations for a national levee safety program.<sup>4</sup> The committee comprised 23 members, including both federal and nonfederal stakeholders. In 2009, the committee recommended, among other things, that federal levee-related programs be aligned to promote levee safety nationwide. More specifically, the committee stated that all federal programs that significantly impact governmental and individual decision making in leveed areas must be aligned toward (1) the goal of reliable

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<sup>2</sup>Other federal agencies with roles related to levee safety include the Natural Resources Conservation Service in the Department of Agriculture; the National Oceanic and Atmospheric Administration in the Department of Commerce; the Department of Housing and Urban Development; the Bureau of Reclamation, U.S. Fish and Wildlife Service, and U.S. Geological Survey in the Department of the Interior; and the Environmental Protection Agency.

<sup>3</sup>The Corps, through its Rehabilitation and Inspection Program, supplements local efforts to repair flood risk management projects, including levees, after they are damaged during a flood. Pub. Law No. 84-99, 69 Stat. 1866 (1955). To be eligible for rehabilitation assistance under this program, the project must meet specified design and construction criteria and the levee sponsor must maintain the levee to specified standards.

<sup>4</sup>Pub. Law No. 100-114 §9003, 121 Stat. 1041, 1288.

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levees, (2) an informed and involved public, (3) shared responsibility for the protection of human life, and (4) mitigation of public and private economic damages. In keeping with this goal, the committee called on the Corps, with assistance from FEMA, to develop voluntary national levee-safety guidelines to help ensure best engineering practices for levees are implemented throughout the nation at all levels of government. Further, the committee discussed the potential for federal levee-related programs to be aligned to provide incentives, such as financial or technical assistance, to nonfederal stakeholders to promote more shared responsibility for levee safety. In its report, the committee stated that the average age of levees within federal levee-safety programs was approximately 50 years but that many nonfederal levees could be much older—100 years old or more.

In June 2014, the Water Resources Reform and Development Act of 2014 was enacted<sup>5</sup> and included provisions to, among other things, increase the capacity of nonfederal stakeholders to promote levee safety. The act requires the Corps and FEMA to take the lead on certain national levee-safety-related activities, including establishing voluntary national levee-safety guidelines and providing financial and technical incentives to nonfederal stakeholders to take various actions to promote levee safety. The act also includes a provision for us to submit a report concerning related issues. This report examines the Corps' and FEMA's progress in carrying out key national activities related to levee safety under the Water Resources Reform and Development Act of 2014.

To examine the progress that the Corp and FEMA have made in carrying out key national levee- safety-related activities under the Water Resources Reform and Development Act of 2014, we reviewed pertinent federal laws and executive orders, including the Water Resources Reform and Development Act of 2014; the Water Resources Development Act of 2007;<sup>6</sup> the Moving Ahead for Progress in the 21st Century Act;<sup>7</sup> Executive Order 11988, *Floodplain Management*;<sup>8</sup> and Executive Order 13690,

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<sup>5</sup>Pub. Law No. 113-121, 128 Stat. 1193.

<sup>6</sup>Pub. Law No. 100-114.

<sup>7</sup>Pub. Law No. 112-141, 126 Stat. 405 (2012).

<sup>8</sup>Exec. Order No. 11,988, 42 Fed. Reg. 26,951 (May 24, 1977).

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*Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input.*<sup>9</sup> We reviewed Corps and FEMA budget, planning, and policy documents concerning the agencies' levee-related programs, as well as documentation about interagency efforts in which they participate. We also reviewed documents developed by the National Committee on Levee Safety, including its 2009 draft report on recommendations for a national levee safety program and its website.<sup>10</sup> In addition, we reviewed our past reports related to levee safety.<sup>11</sup> We also interviewed Corps and FEMA officials who are responsible for implementing the levee-safety-related provisions of the Water Resources Reform and Development Act of 2014. On the basis of our reviews and interviews, we identified the implementation status of key national levee-safety-related activities and compared their status with the requirements in the Water Resources Reform and Development Act of 2014.

We conducted this performance audit from August 2015 to July 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

This section includes information on the types of levee structures and potential levee failures, major levee-related programs of the Corps and FEMA, and selected legislation related to levee safety.

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<sup>9</sup>Exec. Order No. 13,690 (Washington D.C.: Jan. 30, 2015).

<sup>10</sup>*Draft: Recommendations for a National Levee Safety Program: A Report to Congress from the National Committee on Levee Safety* (Jan. 15, 2009). The report was sent to Congress in draft form.

<sup>11</sup>GAO, *Army Corps of Engineers: Efforts to Assess the Impact of Extreme Weather Events*, [GAO-15-660](#) (Washington, D.C.: July 22, 2015) and *FEMA and the Corps Have Taken Steps to Establish a Task Force, but FEMA Has Not Assessed the Costs of Collecting and Reporting All Levee-Related Concerns*, [GAO-11-689R](#) (Washington, D.C.: July 29, 2011).



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## Types of Levee Structures and Potential Failures

The Water Resources Reform and Development Act of 2014 defines a levee as a manmade barrier (e.g., as an embankment, floodwall, or other structure), the primary purpose of which is to provide hurricane, storm, or flood protection relating to seasonal high water, storm surges, precipitation, or other weather events; such a barrier is normally subject to water loading for only a few days or weeks during a calendar year. According to a Corps document, levees are usually earthen embankments or concrete floodwalls, which have been designed and constructed to contain, control, or divert the flow of water so as to reduce the risk of temporary flooding. An American Society of Civil Engineers public information document describes earthen levees as being constructed from compacted soil that is typically covered with various surface materials,<sup>12</sup> such as grass, gravel, stone, asphalt, or concrete, to help prevent erosion. The document further states that a floodwall is a vertical levee structure usually erected in urban areas where there is insufficient land for an earthen levee.<sup>13</sup> Levees can either function passively or can require active operations depending on their components. Some levees have gates and pumps, for example, and may require personnel to operate these devices in times of floods. Levees typically require regular maintenance and periodic upgrades to retain their level of protection. Maintenance can include such actions as removing debris and unwanted vegetation from the levees, areas adjacent to floodwalls, and channels; controlling damage caused by animals (e.g., filling burrows); painting or greasing structural components, such as metal gates; and repairing concrete damage, particularly in northern climates with severe freeze-thaw cycles. Figure 1 depicts an earthen levee and a floodwall as well as their respective components.

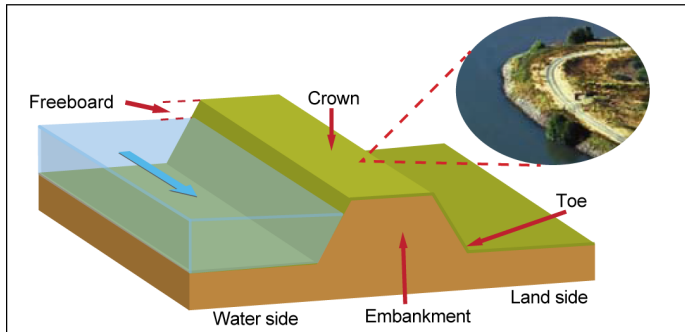
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<sup>12</sup>American Society of Civil Engineers, *So, You Live Behind a Levee!* (Reston, Virginia: 2010).

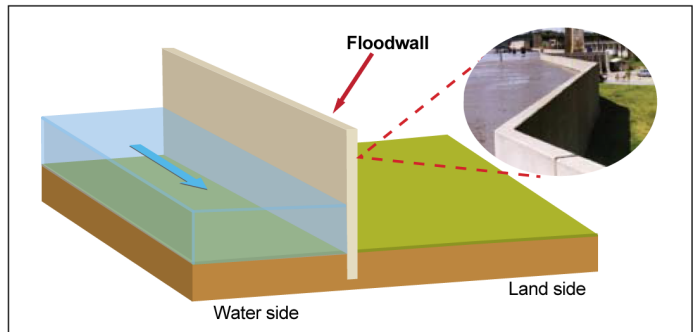
<sup>13</sup>Floodwalls are sometimes constructed on the crown of an earthen levee to increase the levee's height and its ability to control larger floods.

**Figure 1: Illustration of an Earthen Levee, a Floodwall, and Their Components**

**Earthen levee**



**Floodwall**



Sources (left to right): California Department of Water Resources and U.S. Army Corps of Engineers. | GAO-16-709

**Crown:** The flat surface at the top of a levee that is narrower than the base.

**Embankment:** The mound of earth raised to retain or divert water.

**Freeboard:** The height of a levee between the crown and the waterline necessary to control a particular level of water. Typically, freeboard is about two to three feet.

**Land side:** The side of the levee/floodwall closest to the area to be protected.

**Toe:** The edge of the levee where the base meets the natural ground.

**Water side:** The side to the levee/floodwall closest to the water source.

According to FEMA documents, levees are designed to provide a specific level of protection. However, they can be overtopped or fail; they can also decay over time (see fig. 2).

**Interactive Graphic**

Figure 2: Levee Simulator | Levee Failure | Flood Risk | FloodSmart

**Instructions:**

Click on the figure below to access FEMA's "FloodSmart" website and then launch the levee simulator to learn more about levees and how they can fail. After launching the simulator, click on the "Levee Failure" caption, then select from the drop-down menu the type of levee failure you would like to view.

**IF THE  
LEVEE  
BREAKS**

Living near a levee means living with risk.

**Learn How Levees Work**

The FloodSmart Levee Simulator shows different ways a levee can fail. It covers every type of levee failure and reminds everyone that simply living near a levee doesn't guarantee your home's protection.

**LAUNCH LEVEE SIMULATOR**

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## Corps' and FEMA's Major Levee-Related Programs

The Corps and FEMA combined have three primary levee-related programs: the Corps' Levee Safety Program, the Corps' Flood Risk Management program, and FEMA's National Flood Insurance Program.

### Corps' Levee Safety Program

According to Corps documents, the Corps' Levee Safety Program, established in 2007, works to better understand, manage, and reduce the flood risks associated with levees through various activities. For example, the Corps maintains a national inventory of levees and makes the information available in the National Levee Database.<sup>14</sup> In addition, the Corps inspects and assesses the performance of about 2,500 levees, comprising about 15,000 miles, nationwide to determine associated risks. On the basis of information from its assessments, the Corps makes recommendations about future federal investments and to prioritize maintenance, repairs, and other actions on levees.

### Corps' Flood-Risk Management Program

The Corps' Flood Risk Management Program, established in 2006, is intended to work across multiple Corps' programs to reduce and manage flood risk, according to the Corps' website. The program promotes the appropriate use of levees and floodwalls or alternative actions to reduce flood risk, such as land acquisition and flood proofing. The Corps also communicates levee-related concerns to stakeholders and works with stakeholders to develop solutions to reduce flood risk. The Corps accomplishes this outreach and communication through its flood risk management program as well as through other programs such as the Silver Jackets program, which, according to the Corps' website, is intended to bring together multiple federal, state, and sometimes local agencies and tribes to learn from one another and help reduce the risk of flooding and other natural disasters and enhance response and recovery efforts.

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<sup>14</sup>According to a Corps document, the National Levee Database incorporates the best available data on the location and condition of levees and flood walls nationwide and then displays that information in an interactive map on its website. The database helps facilitate the linkage among levee safety activities, such as flood risk communication, levee evaluations for the National Flood Insurance Program, levee inspections, floodplain management, and risk assessments.

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## FEMA's National Flood Insurance Program

FEMA's primary levee-related program is the National Flood Insurance Program, which was first authorized in the National Flood Insurance Act of 1968<sup>15</sup> to, among other things, addresses the increasing cost of federal disaster assistance by providing flood insurance to property owners in flood-prone areas, where such insurance was either not available or prohibitively expensive. This act also authorized subsidies to encourage community and property owner participation. To participate in the program, communities must adopt and agree to enforce floodplain management regulations to reduce the risk of future flood damage. An integral part of the program is the accreditation of any levees near the communities. In exchange for meeting program requirements, federally backed flood insurance is offered to residents in those communities.

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## Selected Legislation Related to Levee Safety

The Water Resources Development Act of 2007 directed the Corps to create and maintain a National Levee Database that includes a national inventory of levees, with information on the location and condition of all federal levees and, to the extent such information is provided to the Corps, nonfederal levees among other things.<sup>16</sup> It also established the National Committee on Levee Safety to develop recommendations for a national levee safety program. The committee, which was composed of 23 diverse professionals from federal, state, and local or regional governments as well as the private sector and Indian tribes, operated from 2007 to 2011. In 2009, it submitted a draft report to Congress that included 20 recommendations for actions to establish a national levee-safety program, in addition to a strategic plan for implementing the program.<sup>17</sup>

The Moving Ahead for Progress in the 21st Century Act, enacted in 2012, called for the Corps and FEMA to align agency processes to allow interchangeable use of information collected for the Corps' Inspection of Completed Works Program and FEMA's National Flood Insurance Program. In 2013, a joint Corps and FEMA taskforce determined that under certain circumstances, Corps risk assessments of levees

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<sup>15</sup>Pub. L. No. 90-448, Tit. XIII, 82 Stat. 476, 572 (codified as amended at 42 U.S.C. §§ 4001-4129).

<sup>16</sup>Pub. Law No. 100-114 §9004 (a)(2).

<sup>17</sup>*Draft Report to Congress from the National Committee on Levee Safety.*

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conducted under the agency's Levee Safety Program could satisfy aspects of levee accreditation under FEMA's National Flood Insurance Program.<sup>18</sup> The effort culminated in a memorandum of understanding signed by the Corps and FEMA in which the Corps agrees to, among other things, provide FEMA with risk assessment results and FEMA agrees to accept and consider the Corps results, when possible.<sup>19</sup>

The Water Resources Reform and Development Act of 2014 amends portions of the Water Resources and Development Act of 2007 and also requires the Corps and FEMA to take the lead in implementing certain key national levee-safety-related activities. More specifically, it established new reporting responsibilities for the National Committee on Levee Safety, required continued development of a national levee inventory,<sup>20</sup> and required implementation of a multifaceted levee safety initiative under which the agencies are to accomplish the following tasks:

- **Develop voluntary national levee-safety guidelines:** The voluntary national levee-safety guidelines are intended to be comprehensive standards that are available for use by all federal, state, and local agencies as well as tribes. Under the act, the voluntary guidelines are also expected to address activities and practices by states, local governments, tribes, and private entities to safely build, regulate, operate, and maintain a wide range of levee types, canal structures, and related facilities. The guidelines are also expected to address federal activities—including levee inspection, levee rehabilitation, local floodplain management, and public education and training—that facilitate state efforts to develop and implement effective state programs for levee safety.
- **Adopt a hazard potential classification system:** A hazard-potential classification system, as described by the National Committee on

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<sup>18</sup>United States Army Corps of Engineers and Federal Emergency Management Agency, *Flood Protection Structure Accreditation Task Force: Final Report* (November 2013).

<sup>19</sup>Memorandum of Understanding between the Federal Emergency Management Agency and the United States Army Corps of Engineers for Alignment of Levee Activities, Information, and Messaging (Nov. 13, 2014).

<sup>20</sup>The Corps was initially charged with establishing and maintaining a national levee inventory as part of the National Levee Database under the Water Resources Development Act of 2007.

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Levee Safety in its 2009 draft report, would be a first step in identifying and prioritizing hazards in leveed areas and is to be based solely on the potential consequences associated with a levee's failure, as opposed to the likelihood or probability of a levee failure. The act provides for such a system to be considered in the development of the voluntary national levee-safety guidelines; under the act, the system is also expected to be consistent with the Corps' levee-safety action-classification tool, which ranks levees based on their likelihood of flooding and the associated consequences. According to Corps officials, the tool is currently being used on levees within the Corps' Levee Safety program.

- **Provide technical assistance and materials:** The agencies are to provide technical assistance and training to help promote levee safety and assist states, communities, and levee owners in (1) developing levee safety programs; (2) identifying and reducing flood risks associated with levees; and (3) identifying local actions that may be carried out to reduce flood risks in leveed areas.
- **Provide public education and promote awareness:** To improve public understanding of the role of levees, the agencies are to carry out public education and awareness efforts about the risks associated with living in leveed areas. Education and awareness efforts are to be directed particularly toward individuals living in leveed areas. These efforts must also promote consistency in how information about levee-related risks is communicated at the state and local level and shared among federal agencies.
- **Develop guidelines and provide assistance for a national state and tribal levee-safety program:** This national program, as described by the National Committee on Levee Safety in its 2009 draft report, would assist states and tribes in developing and maintaining the institutional capacity, expertise, and framework to quickly initiate and maintain their own levee-safety program activities and requirements.<sup>21</sup> The guidelines are to identify the minimum components necessary for an individual state or tribe to participate in the program. The national program provides assistance to help establish state and tribal programs that would meet these requirements. The act also requires that state and tribal levee-safety

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<sup>21</sup> *Draft Report to Congress from the National Committee on Levee Safety.*

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programs will have to adopt the voluntary national levee-safety guidelines to be eligible for assistance.

- **Develop guidelines and provide assistance for a levee rehabilitation assistance program:** This program is to provide assistance to states, local governments, and tribes related to addressing flood mitigation activities that result in an overall reduction of flood risk.<sup>22</sup> The Corps, in consultation with FEMA, is to develop guidelines for floodplain management plans that program participants are required to prepare to reduce the impacts of future floods in areas with levees. Assistance provided under the program may be used for any rehabilitation activity to maximize risk reduction associated with levees that are (1) under a participating state or tribal levee-safety program and (2) not federally operated and maintained. To be eligible, applicants are expected to comply with all applicable federal floodplain management and flood insurance programs, have a floodplain management plan, have a hazard mitigation plan that includes all levee risks, and act in accordance with the voluntary national levee safety guidelines.

In addition, among other things, the act called for several reports to be prepared. Specifically, the Corps is to submit to Congress and make publicly available a biennial report that describes the state of levees in the United States and the effectiveness of the levee safety initiative, as well as any recommendations for legislation and other congressional actions necessary to ensure national levee safety.<sup>23</sup> The Corps and FEMA are also required to submit a report that included recommendations on the advisability and feasibility of, and potential approaches for, establishing a joint national dam and levee safety program, and the Corps is required to submit a report that includes recommendations that identify and address any legal liabilities associated with levee engineering projects.

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<sup>22</sup>This program is separate from Corps' existing Rehabilitation and Inspection Program, authorized in 1955, Pub. Law No. 84-99, 69 Stat. 1866, to supplement local efforts to repair flood-risk management projects, including levees, after they are damaged during a flood.

<sup>23</sup>Under the act, this report is to be done in coordination with the National Committee on Levee Safety and is to be done biennially after the first report is issued.



## The Corps and FEMA Have Made Little Progress on Key Activities under the Act, Citing Resource Constraints, and Do Not Have a Plan for Implementing the Rest

The Corps and FEMA have made little progress in implementing key national levee-safety-related activities under the Water Resources Reform and Development Act of 2014 primarily because of resource constraints, according to officials from both agencies. The Corps has been working on its development of a national levee inventory, but the Corps and FEMA have not begun work on other key national levee-safety-related activities required by the act and do not have a current plan for doing so (see table 1).

**Table 1: Implementation Status, as of June 2016, of Key National Levee-Safety-Related Activities in the Water Resources Reform and Development Act of 2014**

Activity	Implementation status	Statutory deadline	Agency responsible
Reconvene the national committee on levee safety	No action	None	Corps
Continue to develop national levee inventory	Ongoing	None	Corps
Implement multifaceted levee safety initiative			
Develop voluntary national levee-safety guidelines	No action	June 10, 2015	Corps and FEMA
Establish a hazard potential classification system	No action	None	Corps
Provide technical assistance and training	No action	None	Corps and FEMA
Provide public education and promote awareness	No action	None	Corps and FEMA
Issue guidelines that establish minimum components for state and tribal levee-safety program	No action	June 10, 2015	Corps and FEMA
Provide assistance for a state and tribal levee-safety program	No action	None	FEMA
Develop guidelines for preparation of floodplain management plans under the levee assistance programs	No action	Dec. 7, 2014	Corps and FEMA
Provide assistance for a levee rehabilitation assistance program	No action	None	Corps
Submit report on the state of U.S. levees, the effectiveness of the levee safety initiative, and any necessary congressional actions	No action	June 10, 2015, and biennially thereafter	Corps
Submit report, including recommendations, on advisability and feasibility of a joint dam and levee safety program	No action	June 10, 2017	Corps and FEMA
Submit report including recommendations that identify and address legal liabilities of engineering levee projects	No action	June 10, 2015	Corps

Source: GAO analysis of U.S. Army Corps of Engineers (Corps) and Federal Emergency Management Agency (FEMA) information. | GAO-16-709

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Concerning the national levee inventory, a summary document that the Corps developed for us states that the Corps is incorporating levee data that FEMA has provided from the National Flood Insurance Program and is working to incorporate levee data voluntarily provided by state and local agencies. The Corps' actions are an extension of earlier work on the database, which it was directed to establish and maintain under the Water Resources and Development Act of 2007. Corps officials said that improving the inventory will be an ongoing process. The Corps had allocated \$5 million for the inventory in fiscal year 2016, and the Corps' fiscal year 2017 Operations and Maintenance budget justification lists an allocation of an additional \$5 million to further expand the inventory.

The agencies have taken no action on the remaining key national levee-safety-related activities for which they were responsible and have missed several statutory deadlines for developing guidelines and reports. For example, the agencies took no action on developing the guidelines for the preparation of floodplain management plans under the levee rehabilitation assistance program, which were due on December 7, 2014; the voluntary national levee-safety guidelines, due June 10, 2015; or a report, due June 10, 2015, that was to include, among other things, recommendations for legislation and other congressional actions necessary to ensure national levee safety. Additionally, according to agency officials we interviewed, the agencies have no current plan for implementing the remaining activities. Without a plan, including milestones for accomplishing these activities using existing resources or requesting additional resources as needed, the agencies are unlikely to make further progress on implementing the remaining activities required by the act.

Corps officials we interviewed said that they have continued to make progress on other activities that will complement activities required by the Water Resources Reform and Development Act of 2014 and that are within the scope of their existing Levee Safety Program and Flood Risk Management Program. Similarly, FEMA officials stated that they also are working to provide general public education and promote awareness about the risks associated with living behind levees through their existing National Flood Insurance Program.

In a slide presentation that the Corps prepared for us, dated October 2015, the Corps identified resource constraints as a primary reason why the Corps has not been able to carry out certain key national levee-safety-related activities under the Water Resources Reform and Development Act of 2014. Specifically, the Corps' presentation indicated that new appropriations would be needed to (1) provide technical

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assistance and training; (2) develop guidelines and provide financial assistance for a state and tribal levee-safety program; and (3) develop guidelines and provide financial assistance for a levee rehabilitation assistance program.<sup>24</sup> Corps officials we interviewed stated that the remaining national levee-safety-related activities required in the act could be funded using existing appropriations, but these activities would have to compete with existing Corps projects in the Corps civil works program.<sup>25</sup> We reviewed a 2016 Corps budget document and determined that, except for the national inventory of levees, the Corps did not specifically allocate funds for national levee-safety-related activities required in the act.

FEMA officials we interviewed stated that the agency would need additional appropriations to carry out the agency's main responsibility under the act—providing assistance for a state and tribal levee safety program—and told us that the agency had not received any funding directed toward national activities required by the act. They also said that even if these activities were funded, the agency would need additional staffing resources—specifically, in its 10 regional offices—to carry out requirements under the act. As of this report, FEMA has one staff person who is available part-time to implement the national levee-safety-related activities required by the act.

As noted above, the Corps' 2017 budget includes \$5 million for the national levee inventory; however, it does not specify funds for implementing the other national levee-safety-related activities in the Water Resources Reform and Development Act of 2014. Corps headquarters officials told us that not implementing the act's national levee-safety-related activities could result in several potential impacts,

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<sup>24</sup>The latter two programs account for \$55 million of the \$79 million authorized by the act. However, no funds were specifically appropriated for these programs in fiscal years 2015 to 2016. Unlike many other federal agencies that have budgets established for broad program activities, most of the Corps' civil works funds are directed for specific projects. The conference report accompanying the appropriation acts generally lists individual projects and specific allocations of funding for each project.

<sup>25</sup>According to Corps documents, the Corps' Civil Works Program develops, manages, restores, and protects the nation's water resources through studies of potential projects, construction of projects, operation and maintenance of projects, and its regulatory program. Through the program, the Corps also works with other federal agencies to help communities respond to and recover from floods and other natural disasters.

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including that the disaster relief burden for the federal government may increase, safety risks and loss of life may increase, and risk education in communities with levees may not be carried out.

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## Conclusions

Since the devastation of Hurricane Katrina in 2005, Congress has enacted legislation, including the Water Resources Reform and Development Act of 2014 that provided the Corps and FEMA with lead responsibility for undertaking certain national levee-safety-related activities, including some that would increase the capacity of nonfederal stakeholders to promote levee safety. The Corps is working on one of the key national levee-safety-related activities required by the act, namely expanding a national inventory of levees. However, the Corps and FEMA have not taken action to implement the other activities, required by the act, citing resource constraints. Further, Corps officials have identified potential impacts—including safety and financial risks—of not carrying out these activities, but the agencies do not have a plan for implementing these activities. Without a plan, including milestones for accomplishing the activities using existing resources or requesting additional resources as needed, the agencies are unlikely to make further progress implementing the activities under the act.

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## Recommendation for Executive Action

To help ensure that the Corps and FEMA carry out the national levee-safety-related activities required in the Water Resources Reform and Development Act of 2014, we recommend that the Secretary of Defense direct the Secretary of the Army to direct the Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers and that the Secretary of Homeland Security direct the FEMA Administrator to develop a plan, with milestones, for implementing these activities, using existing resources or requesting additional resources as needed. This plan could be posted on the Corps' website and monitored for progress.

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## Agency Comments

We provided a draft of this report for review and comment to the Departments of Defense and Homeland Security. In their written comments, reproduced in appendixes I and II, respectively, both agencies generally concurred with our recommendation. The Department of Defense stated that the agencies are drafting an implementation plan and suggested that we focus our recommendation on finalization of this plan. However, the agencies did not provide a copy of the draft plan or a date when it would be finalized, so we believe that the current focus of the recommendation is appropriate. The Department of Defense further

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stated that, to date, no funding has been allocated to the Corps specifically to implement provisions under the Water Resources Reform and Development Act of 2014, except for the levee inventory activities, as we have acknowledged in our report. In addition, the Department of Defense suggested that the recommendation be revised to include posting the plan on the Corps' website and monitoring the plan for progress. We have modified our recommendation to incorporate this suggestion, which we believe would help inform nonfederal stakeholders who own, maintain, or operate the majority of levees. The Department of Homeland Security said that FEMA will continue to work with the Corps to develop and implement a plan to carry out key national safety-related activities required in the act. Both agencies also provided technical comments that we incorporated, as appropriate.

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We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Secretary of Homeland Security, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or [fennella@gao.gov](mailto:fennella@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

A handwritten signature in black ink that reads "Anne-Marie Fennell". The signature is written in a cursive style with a large initial "A" and a long horizontal line extending from the end of the name.

Anne-Marie Fennell  
Director, Natural Resources and Environment

# Appendix I: Comments from the Department of Defense



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
CIVIL WORKS  
108 ARMY PENTAGON  
WASHINGTON DC 20310-0108

30 JUN 2016

Ms. Anne-Marie Fennell  
Director  
Natural Resources and Environment  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, D.C. 20548

Dear Ms. Fennell:

This is the Department of Defense (DoD), U.S. Army Corps of Engineers (USACE) response to the GAO Draft Report, GAO-16-709, "LEVEE SAFETY – Army Corps and FEMA Have Made Little Progress in Carrying Out Required Activities," dated July 2016 (GAO Code 100279).

The Department appreciates this opportunity to review the report. DoD concurs with comment to the GAO report recommendation. The Army will continue to work with FEMA toward implementing the National Levee Safety related activities authorized in the Water Resources Reform and Development Act of 2014.

Very truly yours,

  
Jo-Ellen Darcy  
Assistant Secretary of the Army  
(Civil Works)

Enclosure

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GAO DRAFT REPORT DATED JULY 2016  
GAO-16-709 (GAO CODE 100279)

**“LEVEE SAFETY - ARMY CORPS AND FEMA HAVE MADE LITTLE  
PROGRESS IN CARRYING OUT REQUIRED ACTIVITIES”**

**DEPARTMENT OF DEFENSE COMMENTS  
TO THE GAO RECOMMENDATION**

**RECOMMENDATION:** GAO recommends that the Corps and FEMA develop a plan with milestones, for implementing national levee safety related activities required in the Water Resources Reform and Development Act of 2014, using existing resources or requesting additional resources as needed.

**DoD RESPONSE:** Concur, with comments.

Comment 1 - Final Recommendation:

Pages 0, 11, 12, and 14

Throughout the report, the recommendation is focused on Corps and FEMA developing a plan with milestones. This leads to the impression that once a plan is developed then implementation on the national levee-safety activities commence.

The final recommendation should be focused on recognizing that the Corps and FEMA have a detailed draft implementation plan and the hindrance is appropriations.

Consider: “Corps officials state that the Corps and FEMA have developed a draft implementation plan that outlines a phased approach for implementation that optimizes value provided to the nation with balancing use of existing resources and the need for additional resources. To date no funding has been allocated to the Corps specifically to implement provisions under WRRDA, except for the levee inventory activities. It is recommended that Corps and FEMA finalize the implementation plan, including milestones for accomplishing the national activities within existing resources or requesting additional resources as needed. This plan should be posted on the Corps WRRDA 2014 website and monitored for progress.”

# Appendix II: Comments from the Department of Homeland Security



July 7, 2016

Anne-Marie Fennell  
Director, Natural Resources and Environment  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Re: Management's Response to Draft Report GAO-16-709, "LEVEE SAFETY: Army Corps and FEMA Have Made Little Progress in Carrying Out Required Activities"

Dear Ms. Fennell:

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department notes GAO's positive acknowledgement of the Federal Emergency Management Agency's (FEMA) collaborative efforts with the U.S. Army Corps of Engineers (USACE), including the signing of a Memorandum of Understanding (MOU) in 2014 that led to the sharing of risk assessments for selected levees, which proved valuable for FEMA's implementation of the National Flood Insurance Program. FEMA is committed to helping carry out key national activities related to levee safety required in the Water Resources Reform and Development Act (WRRDA) of 2014. FEMA will continue to coordinate with USACE to provide a comprehensive levee safety program that will help mitigate the risk to those who live in flood plain areas.

It is important to remember that levees reduce the risk of flooding. They do not eliminate it. The responsibility of living in an area with levees is a shared one. FEMA is responsible for identifying and mapping risk; USACE is responsible for operating and maintaining levees in the Federal levee system; local governments, communities and private levee owners are responsible for maintaining their levees; and citizens are responsible for knowing the risks and taking steps to safeguard their homes, businesses, and families.

The draft report contained one recommendation with which DHS concurs. Please see the attached for our detailed response to this recommendation.



Again, thank you for the opportunity to comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "J. H. Crumacker", with a stylized flourish at the end.

J. H. CRUMPACKER, CIA, CFE  
Director  
Departmental GAO-OIG Liaison Office

**Attachment: DHS Management Response to Recommendation  
Contained in GAO-16-709**

GAO recommended that the Secretary of Defense direct the Secretary of the Army to direct the Chief of Engineers and Commanding General of the U.S. Army Corps of Engineers [USACE] and that the Secretary of Homeland Security direct the FEMA Administrator to:

**Recommendation 1:** Develop a plan, with milestones, for implementing these activities [national levee safety-related activities required in the WRRDA of 2014], using existing resources or requesting additional resources, as needed.

**Response:** Concur. FEMA will continue to work with USACE to develop and implement a plan to carry out key national safety-related activities required in the WRRDA 2014. Based on the roles and responsibilities described in this legislation, USACE has the primary responsibility for implementing and developing this plan with FEMA's Federal Insurance and Mitigation Administration's (FIMA) support. FIMA will actively collaborate with USACE to complete the plan, as appropriate. Estimated Completion Date: To Be Determined.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Anne-Marie Fennell, (202) 512-3841 or [fennella@gao.gov](mailto:fennella@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, key contributors to this report included Vondalee R. Hunt (Assistant Director), Kevin Bray, Patricia Donahue, John Johnson, Armetha Liles, Cynthia Norris, and Kyle Stetler .

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