

Why GAO Did This Study

The effects of climate change on water resources have already been observed and are expected to continue. The Corps and Reclamation own and operate key water resource management infrastructure, such as dams and reservoirs. Adaptation—adjustments in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects—can be used to help manage the risks to vulnerable resources. In 2009, a law—commonly referred to as the SECURE Water Act—and a presidential executive order directed federal agencies to address the potential impacts of climate change.

GAO was asked to review agency actions to address climate change impacts on water infrastructure. This report examines (1) actions taken by the Corps and Reclamation since 2009 to assess and respond to the potential effects of climate change on water infrastructure and (2) challenges, if any, faced by the Corps and Reclamation in assessing and responding to the potential effects of climate change on water infrastructure, and the steps the agencies are taking to address them. GAO analyzed the agencies' climate change adaptation guidance and planning documents and interviewed agency officials and other key stakeholders, including water users, environmental groups, and researchers.

GAO is not making any recommendations.

CLIMATE CHANGE

Federal Efforts Under Way to Assess Water Infrastructure Vulnerabilities and Address Adaptation Challenges

What GAO Found

The Department of Defense's U.S. Army Corps of Engineers (Corps) and the Department of the Interior's Bureau of Reclamation (Reclamation) have assessed water resource and infrastructure vulnerabilities and taken steps to develop guidance and strategies to adapt to the effects of climate change. Specifically, since 2009, the Corps has completed a high-level assessment of the vulnerabilities to climate change of various agency missions. The assessment found, for example, that the effects of increasing air temperatures on glaciers could negatively impact mission areas including navigation and flood damage reduction. The Corps has also conducted pilot studies to help identify adaptation guidance and strategies; it has completed 5 of the 15 pilot studies initiated and plans to start another study in 2013. Similarly, Reclamation has completed baseline assessments of the potential impacts of climate change on future water supplies for the major river basins where it owns and operates water management infrastructure. Reclamation, in collaboration with nonfederal entities, is now conducting more focused assessments, known as Basin Studies, through which Reclamation seeks to identify water supply vulnerabilities and project future climate change impacts on the performance of water infrastructure. According to agency officials, these studies will also help Reclamation develop adaptation strategies to address these impacts, such as operational or physical changes to existing water infrastructure or development of new facilities. Three Basin Studies have been completed, an additional 14 are under way, and 2 more are planned. Reclamation next plans to initiate feasibility studies for adaptation strategies identified in completed Basin Studies. Both agencies are incorporating what they have learned from their efforts into agency policies, planning, and guidance, according to agency officials.

In 2009, the Corps, Reclamation, the National Oceanic and Atmospheric Administration, and the U.S. Geological Survey (USGS), jointly published a study that identified several challenges that climate change poses for water resource managers, and the Corps and Reclamation are collaboratively addressing these challenges. Specifically, these agencies are

- identifying the data and tools needed by water managers to address climate change, which will help guide federal research efforts;
- obtaining needed climate data by collaborating with other agencies to help ensure that the data are collected, such as by sharing some costs associated with maintaining USGS's stream flow measurement activities, which are valuable to Corps water planning and management;
- integrating climate science into water resource management decision making through activities such as developing and communicating science to inform climate adaptation strategies; and
- collaborating in the development of a climate change science training program for federal and nonfederal water resources managers.

The Corps and Reclamation have collaborated together and with others in a manner that is generally consistent with practices that GAO has identified as important to enhancing and sustaining collaboration among agencies. The Corps and Reclamation have made collaboration a key element of their policy and plans for adapting to the effects of climate change and have reinforced accountability for collaboration through agency performance management systems.