Bold Action is Needed to Protect and Restore the Nation's Natural Defenses:

- We Need a Climate Bill: We need a climate bill that will ensure we avoid the unimaginable and manage the unavoidable.
- Pass Clean Water Restoration Legislation: Congress must restore Clean Water Act protections of our wetlands, rivers, floodplains, and upland areas to ensure the protection of headwater basins, intermittent, and ephemeral streams as “waters of the United States.” Additionally, the Environmental Protection Agency must undergo formal rulemaking regarding the definition of “waters of the United States” to provide protection of currently at-risk waters.
- Pass a National Flood Insurance Modernization Act that Truly Modernizes the Risk of Existing Flood Control Structures: Congress must pass legislation that couples a levee safety program with an overall national flood risk management strategy that includes the risk of dams and the role of green infrastructure in reducing these risks.
- Move the U.S. Army Corps of Engineers Beyond the Status Quo: Congress must revise current U.S. Army Corps of Engineers authorities and appropriations to ensure the Corps’ projects are prioritized to utilize taxpayer investment wisely and to address the nation’s pressing flood management needs by shifting federal dollars from the Corps’ high impact flood control projects to Corps projects that invest in land acquisition and the protection and restoration of America’s wetlands, rivers, floodplains, and upland areas.
- Fully Invest in Restoring America’s Natural Defenses: In these economic hard times and as our climate changes, Congress and the Administration must prioritize appropriations for the mitigation, adaptation, and technical assistance programs under FEMAs the Corps of Engineers, Department of Agriculture, and other agencies to send a strong signal that our nation will make the best use of taxpayer dollars by fully investing in green infrastructure.
- Ensure a Unified Approach to Protecting and Restoring Wetlands, Rivers, Floodplains, and Upland Areas: The federal government must adopt revised Principles and Standards for federal water resources projects and require an active Interagency Floodplain Management Task Force so that federal agencies work in a coordinated fashion to ensure the protection and restoration of ecosystems, the minimization of adverse impacts, the avoidance of the wise use of floodplains, and the reduction of risk to public safety.

By taking these bold actions we will safeguard communities from floods, improve water quality, provide recreation, and restore fish and wildlife habitat, among other benefits. Investing in our natural defenses is the most cost effective and reliable solution to protecting people and property from floods and protecting healthy rivers. American Rivers is dedicated to reforming national policies and to helping communities realize the benefits of green infrastructure so that we can thrive in the face of a changing climate.

American Rivers

Natural Defenses
Safeguarding Communities from Floods

American Rivers is the leading conservation organization fighting for healthy rivers so communities can thrive. American Rivers protects and restores the nation’s rivers for the benefit of people, wildlife, and nature. Founded in 1973, American Rivers has more than 65,000 members and supporters, with offices in Washington, DC and nationwide.

About American Rivers:
American Rivers is dedicated to reforming national policies and to helping communities realize the benefits of green infrastructure so that we can thrive in the face of a changing climate. We need a climate bill that will ensure we avoid the unimaginable and manage the unavoidable. Congress must pass a National Flood Insurance Modernization Act that truly modernizes the risk of existing flood control structures. Congress must revise current U.S. Army Corps of Engineers authorities and appropriations to ensure the Corps’ projects are prioritized to utilize taxpayer investment wisely and to address the nation’s pressing flood management needs by shifting federal dollars from the Corps’ high impact flood control projects to Corps projects that invest in land acquisition and the protection and restoration of America’s wetlands, rivers, floodplains, and upland areas.

Acknowledgments
Funding for this report was provided by the Richard and Rhoda Goldman Fund, Weyerhaeuser Foundation, and the Kellogg Foundation. The views expressed in this report are those of American Rivers and do not necessarily reflect the views of our funders.
Safeguarding Communities from Floods

Increasing Flood Risk in a Changing Climate

The impacts of our changing climate are becoming more apparent every day. In the first decade of the new millennium, extreme rainfall events, combined with changes in land use, have resulted in increased flood events and an increase in annual flood losses from $6 billion to $15 billion despite the billions of dollars invested in flood control. As the climate changes, bringing more frequent and intense storms and floods, communities living near streams and rivers and on our coasts are facing increasingly high threats. Lives and property are increasingly at risk, flood damages are straining taxpayer dollars, and deer winner and wildlife habitat are suffering.

Our changing climate, outdated management approaches and policies, underfunded and underutilized green infrastructure, and increasing urbanization are causing a flood management crisis for federal agencies and communities alike.

Traditional Gray Infrastructure Will Continue to Place People in Harm’s Way

Our country is struggling to break out of a long-standing negative cycle. As the climate changes, bringing more frequent and intense storms and floods, communities living near streams and rivers and on our coasts are facing increasingly high threats. Lives and property are increasingly at risk, flood damages are straining taxpayer dollars, and deer winner and wildlife habitat are suffering.

Rising Toll of Floods

Southwest, 2009: A “100 year flood” event dropped an average of 14 to 15 inches of rain, equivalent to 420 billion gallons of water in just 2 days, breaking the monthly record of 17 inches, which exceeded the maximum observed in the past 30 years, according to Katrina and claimed over 30 lives.

Midwest, 2006: A “100 year flood” dropped an average of 17 to 18 inches of rain, claiming over 1,100 lives and causing tens of billions of dollars in damage. This flood hit just 15 years after the epic 1993 flood, another “500 year flood,” which claimed 32 lives and caused $30 billion in damages.

Pacific Northwest, 2007: Widespread flooding forced evacuations and shut down interstate highways in Seattle and Portland. One year later, more massive flooding caused widespread damage and another shutdown of I-5.

Mid-Atlantic, 2006: A “100 year flood” disrupted life in New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and the District of Columbia as it caused 106 deaths, thousands of evacuations, and tens of millions of dollars in damages.

Gulf Coast, 2005: Human and economic losses from Katrina, amounted to 1,700 deaths and $208 billion in damages. The storm affected 8.5 million people across 12 states.

Time for a 21st Century, Green Infrastructure Approach to Flood Management

The rising toll of annual floods sends a clear message: it is time to adopt a 21st century approach to flood management. One that places our “natural defenses”—wetlands, rivers, floodplains, and upland areas—at the core of flood management. This green infrastructure is the most reliable, cost-effective, and flexible option for communities to adapt to a changing climate. These approaches won’t replace traditional engineering but will augment and buffer these traditional approaches. The three critical components of green infrastructure include:

Protecting healthy landscapes like wetlands, rivers, floodplains, and upland areas that store water and other storm protection, among other services;

Reducing degraded wetlands, rivers, floodplains, and upland areas so that they can better store flood water and provide recharge to streams and aquifers; and

Replicating natural systems in urban settings to ensure that more water is absorbed into the ground. This helps protect against flash flooding and prevents stormwater and sewage pollution.

Acknowledging the dynamic processes and functions of natural systems and accommodating flooding provides better protection than fighting floods, and will help protect communities, safeguard the environment, and save tax dollars. The same green infrastructure that helps reduce flood damages also protects other benefits including securing clean water, increasing groundwater recharge, moderating climate change, stimulating local economies, and supporting recreation among others. Flood management is but one way to adapt to the changing climate. In contrast, gray infrastructure like levees has limited benefits, can be very costly, is ineffective, and not as reliable.

Community Snapshots of Natural Defenses in Action

Communities around the nation are already employing 21st century flood management solutions with excellent results. The following communities demonstrate how simple-looking approaches that reduce risk and increase flood storage naturally can help communities become more resilient to flooding and thrive in the face of a changing climate.

Setting Levees Back in Pierce County, Washington: Approximately 10 years ago, in response to the 1996 flood, Pierce County started a plan to reduce the risk of future flood damages and to reconnect the Puyallup River with its natural floodplain through a system of levee setbacks and bank protection measures. Pierce County’s community effort illustrated the broad benefits of floodplain protection, including the protection of 100 homes from Tropical Storm Fay in 2008.

Working With Nature in Charlotte — Mecklenburg County, North Carolina: After the major flooding events in less than 10 years and projections of high population growth, Charlotte-Mecklenburg County invested $2 billion in remerging the major waterways, implemented permanent protection of over 1,000 acres of floodplain habitat for open greenspace, and utilized local stormwater and federal agency funds to buy and maintain floodplains as part of their town management.

Community Offsets: Natural Defenses in Action

Pro-active flood protection efforts helped protect the City of Orting during the 2006 flooding and restored salmon access to the Puyallup River.

National Priorities for Flood Management in a Changing Climate

An increasingly-volatile climate poses a range of threats to communities across the nation, particularly those located in coastal areas and in or near floodplains, some of the nation’s most populated areas. As temperatures rise so too will the capacity for extreme storms and heavy precipitation events causing more severe flooding and degradation of water quality. Already in the 21st century, floods caused more property damage and fatalities in the U.S. than any other type of natural disaster making catastrophic, but attainable shifts in our approaches to flood management, we can protect public safety, clean water, and all of the benefits that healthy wetlands, rivers, floodplains, and upland areas bring to our communities. The federal government has a unique opportunity to put forth a new vision for flood management.

The Federal agencies that play a key role in flood management must instigate reforms that put green infrastructure on the frontline of flood management. The Federal Emergency Management Agency (FEMA) must put in place needed incentives to reduce flood risk and incorporate green infrastructure. The U.S. Army Corps of Engineers must eliminate the institutional bias towards structural approaches and prioritize nonstructural, green infrastructure solutions. And the U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS) should adopt an overarching flood management strategy that ensures increases in land available to store floods.

Although agency reforms are a step in the right direction, these reforms alone will not be enough to meet the challenges we face in a changing climate. Our nation’s existing federal flood management policies that protect and restore the nation’s natural defenses, like our wetlands, rivers, floodplains, and upland areas.
We Need a Climate Bill: We need a climate bill that will ensure we avoid the unmanageable and manage the unavoidable.

Pass Clean Water Restoration Legislation: Congress must pass legislation that removes the definition of “waters of the United States” to provide protection of currently denied waters.

Pass a National Flood Insurance Modernization Act that Truly Communicates and Addresses Risk in a Changing Climate: Congress must pass a National Flood Insurance Modernization Act that recognizes the impact of global climate change on flooding and erosion hazards and the role that mitigation can play in keeping communities safe and our environment healthy.

Pass Legislation that Scandals the Risk of Existing Flood Control Structures: Congress must pass legislation that couples a levee safety program with an overall national flood risk management strategy that includes the risk of dams and the role of green infrastructure in reducing those risks.

Move the U.S. Army Corps of Engineers Beyond the Status Quo: Congress must revise current U.S. Army Corps of Engineers authorities and appropriations to ensure the Corps’ projects are prioritized to utilize taxpayer investment wisely and to address the nation’s pressing flood management needs by shifting federal dollars from the Corps’ high impact flood control projects to Corps projects that invest in land acquisition and the protection and restoration of America’s wetlands, rivers, floodplains, and upland areas.

Fully Invest in Restoring America’s Natural Defenses: In these economic hard times and as our climate changes, Congress and the Administration must prioritize appropriations for the mitigation, adaptation, and technical assistance programs under FEMA, the Corps of Engineers, Department of Agriculture, and other agencies to send a strong signal that our nation will make the best use of taxpayer dollars by fully investing in green infrastructure.

Ensure a Unified Approach to Protecting and Restoring Wetlands, Rivers, Floodplains, and Upland Areas: The federal government must adapt revised Principles and Standards for federal water resources projects and require an active Interagency Floodplain Management Task Force so that federal agencies work in a coordinated fashion to ensure the protection and restoration of ecosystem health, the minimization of adverse impacts, the avoidance of the unnecessary use of floodplains, and the reduction of risk to public safety.

By taking these bold actions we will safeguard communities from floods, improve water quality, provide recreation, and restore fish and wildlife habitat, among other benefits. Investing in our natural defenses is the most cost effective and reliable solution to protecting people and property from floods and protecting healthy rivers. American Rivers is dedicated to reforming national policies and to helping communities realize the benefits of green infrastructure so that we can thrive in the face of a changing climate.

About American Rivers:
American Rivers is the leading conservation organization fighting for healthy rivers so communities can thrive. American Rivers protects and restores the nation’s rivers for the benefit of people, wildlife, and nature. Founded in 1973, American Rivers has more than 65,000 members and supporters, with offices in Washington, DC and nationwide.

Take action at AmericanRivers.org
Bold Action is Needed to Protect and Restore the Nation’s Natural Defenses:

- **We Need a Climate Bill:** We need a climate bill that will ensure we avoid the unmanageable and manage the unavoidable.

- **Pass Clean Water Restoration Legislation:** Congress must restore Clean Water Act protections of our wetlands, rivers, floodplains and upland areas to ensure the protection of headwaters, intermittent, and ephemeral streams as “waters of the United States.” Additionally, the Environmental Protection Agency must undergo formal rulemaking regarding the definition of “waters of the United States” to provide protection of currently at-risk waters.

- **Pass a National Flood Insurance Modernization Act that Truly Communicates and Addresses Risk in a Changing Climate:** Congress must pass a National Flood Insurance Modernization Act that recognizes the impact of global climate change on flood risk to public safety.

- **Pass Legislation that Sculpts the Risk of Existing Flood Control Structures:** Congress must pass legislation that couples a levee safety program with an overall national flood risk management strategy that includes the risk of dams and the role of green infrastructure in reducing these risks.

- **Move the U.S. Army Corps of Engineers Beyond the Status Quo:** Congress must revise current U.S. Army Corps of Engineers authorities and appropriations to ensure the Corps’ projects are prioritized to utilize taxpayer investment wisely and to address the nation’s pressing flood management needs by shifting federal dollars from the Corps’ high impact flood control projects to Corps projects that invest in land acquisition and the protection and restoration of America’s wetlands, rivers, floodplains, and upland areas.

- **Fully Invest in Restoring America’s Natural Defenses:** In these economic hard times and as our climate changes, Congress and the Administration must prioritize appropriations for the mitigation, adaptation, and technical assistance programs under FEMA, the Corps of Engineers, Department of Agriculture, and other agencies to send a strong signal that our nation will make the best use of taxpayer dollars by fully investing in green infrastructure.

- **Ensure a Unified Approach to Protecting and Restoring Wetlands, Rivers, Floodplains, and Upland Areas:** The federal government must adopt revised Principles and Standards for federal water resources projects and require an active Interagency Floodplain Management Task Force so that federal agencies work in a coordinated fashion to ensure the protection and restoration of ecosystem health, the minimization of adverse impacts, the assistance of the wise use of floodplains, and the reduction of risk to public safety.

By taking these bold actions we will safeguard communities from floods, improve water quality, provide recreation, and restore fish and wildlife habitat, among other benefits. Investing in our natural defenses is the most cost-effective and reliable solution to protecting people and property from floods and protecting healthy rivers. American Rivers is dedicated to reforming national environmental policies and to helping communities realize the benefits of green infrastructure so that they can thrive in the face of a changing climate.