January 4, 2011

Senate Committee on Environment and Public Works
ATTN: Ms. Heather Majors
410 Dirksen Senate Office Building
Washington, D.C. 20510

Subject: DRAFT NCLS Response to Congressional Inquiry for the Hearing Record

Senators Boxer and Inhofe,

It was my honor to appear before the Committee on Environment and Public Works on November 17, 2010 to offer testimony on the recommendations for a National Levee Safety Program made by the National Committee on Levee Safety.

Please find below responses to the questions posed for the hearing record by Senator Boxer, Senator Carper, Senator Cardin, and Senator Inhofe.

The efforts of the NCLS represent a great example of federal, state, and local government representatives working closely and cooperatively with the private sector and professional associations to address a national problem and arrive at effective recommendations for solutions. The Committee was formed at the direction of Congress, in Section 9003 of the Water Resources Development Act (WRDA) of 2007, to develop recommendations for a National Levee Safety Program. On January 15, 2009, the Committee completed a draft report containing 20 recommendations for a National Levee Safety Program.

We are at a critical juncture in our nation’s history – the flood risk to people and infrastructure is growing at an alarming rate as a result of inadequate attention and funding for the nation’s levee systems. The stark reality of our nation’s levee systems, both federal and nonfederal, is that they are generally inadequate and deteriorating, and that we lack sufficient information to predict accurately their level of performance. These levee systems serve as protection from flooding for a great portion of the nation’s population and infrastructure. The enactment of a National Levee Safety Program, potentially as part of a broader national flood risk management approach is critical to protecting the public and other infrastructure investments and preserving our nation’s economic welfare.

On behalf of the Committee, I urge you to consider legislation to implement the recommended National Levee Safety Program and include for your convenience a copy of the Legislative Framework developed by the NCLS in the spring of 2010.

If you have any additional questions for either me or the NCLS, we would be happy to provide further information or meet with you or your staff.

Sincerely,

Stephen W. Verigin, P.E., G.E.
Responses for Questions from Senator Barbara Boxer
From Steven W. Verigin, Vice President – GEI Consultants, Inc.
Member of National Committee on Levee Safety

1) How can a new National Levee Safety Program help to achieve the goals of comprehensive and consistent national leadership and alignment of existing federal programs for levee safety? Why is a new program needed in addition to the current Federal programs focused on levee safety?

A National Program is Needed to Assess the Levee Situation in the U.S. and Prioritize Actions
Currently, responsibility for levees is often uncoordinated and incomplete, distributed across all levels of government (federal, state, regional, local) and housed in different agencies and functions within each level of government. This shared and diffused responsibility impedes development of comprehensive policies and programs, impairs ongoing coordination, and prevents a sustained focus on this issue.

The vast majority of the levees across the nation are not part of any federal program, yet levees are abundant and integral to economic development in many communities in the nation. There are approximately 14,800 miles of levee enrolled in U.S. Army Corps of Engineers programs (including those built by the Corps and locally maintained) and another 14,000-16,000 miles estimated to be operated by other federal agencies (U.S. Bureau of Reclamation, National Resources Conservation Service).

In addition, the NCLS estimates there may be as many as 100,000 miles of additional levees in the nation with tens of millions of people living behind them. These levees are not federally operated or maintained, and with few exceptions, are not subject to any federal or state oversight, levee safety criteria, standards, or guidelines. Recent surveys by the Association of State Dam Safety Officials and the Association of State Floodplain Managers found that only 10 states keep any listing of levees within their borders and only 23 states have an agency with some responsibility for levee safety.

Federal investment in all types of public infrastructure is located behind these levees – roads, bridges, schools, water and wastewater treatment plants, post offices, court houses, etc. – and they are all at risk from flooding. When flooding does occur, not only does the federal government have to pay to repair its facilities, but communities turn to the federal government to help provide relief. While many of these structures have afforded the country economic prosperity, they have also had the unintended consequence of obligating the U.S. taxpayer to pay for disaster damages and repairs when these same levees fail. Best information from the National Flood Insurance Program indicates that the value of residential and commercial properties (structures and contents) located in leveed areas constitutes a total national exposure of more than $375 billion ($5 to $10 billion annual exposure based on rough estimates extrapolated from State of California historic flood damage data).

For the most part, existing federal programs are neither aligned nor coordinated, creating a situation of uncertain and often times, unknown risk for many communities. For example:

- Several federal and some state agencies have varying policies and criteria concerning the many aspects of levee design, construction, operation and maintenance. But there are no national policies, standards or best practices that are comprehensive to the issues of levee safety and that can be adopted broadly by governments at all levels. Several federal agencies have built and/or operate levees according to their own standards and guidelines, including the U.S. Army Corps of Engineers, the Federal Energy Regulatory Agency, the U.S. Bureau of Reclamation, and
the International Boundary and Water Commission. The level of protection and robustness of design and construction vary considerably across the country, helping to create a wide-ranging profile of risk exposure, risk understanding, risk levels and consequently, public safety.

- The Federal Emergency Management Agency (FEMA) identifies flood hazards, assesses flood risks, and provides appropriate flood hazard and risk information to communities nationwide as part of administering the National Flood Insurance Program.
- Three federal agencies administer programs to fund emergency levee repairs, flood fighting, and (to varying degrees) permanent repairs: USACE’s Rehabilitation & Inspection Program, the Natural Resource Conservation Service’s Emergency Watershed Program; and FEMA’s Rehabilitation Assistance for Levees and other Flood Control Works under the Stafford Act.
- Regulatory programs in various agencies, including the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Army Corps of Engineers impact the design, construction, operations, and maintenance of the nation’s levees.
- The lack of national standards for levees creates a scenario where licensed professional engineers, levee owners and governments cannot rely on an accepted standard of care while performing critical services in design, construction, and certification of levees. This legal environment appears to be making such work increasingly riskier and effectively reducing the private sector’s interest and ability to provide these services.

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A National Levee Safety Program is Needed to Lead the Development and Implementation of a Consistent National Approach That Will Require a Broad Set of Disciplines

The nation needs a single National Levee Safety Program that would help move the county away from a reactive disaster assistance environment and toward a proactive, safety-oriented culture where the general public and governments are informed and able to participate in shared responsibility of risk management and where levees are reliable. A national program would be charged with a leadership role in understanding and communicating risks associated with levees, developing national safety standards, facilitating dialogue and research on important levee related topics, and providing technical materials and assistance to all levels of government – in short, overseeing all aspects of the National Levee Safety Program. Specifically, the NCLS envisions a Commission with program responsibilities to:

- Expand and maintain the National Levee Database (NCLS Recommendation 2);
- Adopt a Levee Hazard Potential Classification System (NCLS Recommendation 3);
- Develop and adopt National Levee Safety Standards (NCLS Recommendation 4);
- Develop Tolerable Risk Guidelines (NCLS Recommendation 5);
- Address growing concerns regarding liability for damages resulting from levee failures (NCLS Recommendation 8);
- Lead the public involvement and education/awareness campaign to understand risk and change behavior in leved areas (NCLS Recommendation 9);
- Provide technical materials, assistance, and training to states, communities, and levee owners/operators (NCLS Recommendations 10 and 11);
• Develop and implement measures and practices to more closely harmonize levee safety activities with environmental protection requirements and principles (NCLS Recommendation 12);

• Conduct research and development to support efficient and more cost-effective levee safety technologies and practices (NCLS Recommendation 13);

• Design, delegate, and oversee Levee Safety Program responsibilities to states (NCLS Recommendation 14); and

• Coordinate federal agency activities and programs.

**A National Levee Safety Program is Needed to Change the Way People and Governments Think About Levees**

Many government officials and the general public have only a limited understanding of levees and the risks associated with them. Clear and consistent communication on issues related to levee safety is an important role for the National Levee Safety Commission, including coordinating key messages with other federal agencies and sharing those messages with states, levee owners and operators, communities, and residents living and working behind levees. A National Levee Safety Program is needed to develop a comprehensive national public involvement and education awareness campaign to communicate risk and change behavior in leveed-areas.

**An Independent National Levee Safety Program is Needed to Forge a New Era of Shared Responsibility Across Federal Agencies and Levels of Government**

The NCLS believes an independent federal agency with strong guidance by state, tribal, and local governments and the private sector is the ideal model for the National Levee Safety Commission. To be effective in aligning federal agencies and working with states and local governments will require a level of independence from any one agency. A national Commission should have the following characteristics.

• Independence to address levee safety holistically, unconstrained by the momentum and priorities of existing programs, and the ability to make politically challenging and unpopular decisions when necessary;

• Leadership for the significant horizontal integration of effort across federal agencies and alignment of their programs, as well as for the vertical integration to achieve strong and balanced participation at all levels of government and in the private sector;

• Organizational capabilities spanning regulatory policy development, program implementation and oversight, grants management, technical expertise, public communications expertise and environmental policy and program experience.

While the National Committee on Levee Safety strongly believes that an independent agency is preferable, it also considered the possibility of embedding the National Levee Safety Program in a single existing federal agency, particularly on an interim basis as a permanent governance solution is created. The National Committee on Levee Safety determined that neither the U.S. Army Corps of Engineers nor the Federal Emergency Management Agency alone has the full suite of expertise needed in the key areas of: 1) levee engineering; 2) risk mitigation in leveed areas; and 3) administering incentives. The National Committee on Levee Safety was also concerned that housing a national program in an existing agency would further stretch the resources of these agencies by expanding their existing large missions,
and provides challenges to that agency in managing alignment of other federal agencies’ programs. Should Congress determine that this governance model is appropriate, the National Committee on Levee Safety would like to recommend that a part-time advisory committee be established to provide national leadership and comprehensive and consistent approaches to levee safety.

2) **During the hearing, you stated that there are levees in the U.S. that do not protect against a 100-year flood, let alone provide a 200 to 500-year level of protection that many urban areas need. Would you please provide any information that you have that indicates how many levees in California have a federal nexus and how many are entirely under state and local level ownership and operation? Also, could you indicate what portions of these levees are known to have less than a 100-year level of protection?**

The California Department of Water Resources (DWR) has developed a California Levee Database (CLD) and populated it with information submitted voluntarily by local government agencies. The CLD identifies 2,129 miles of levees built by the U.S. Army Corps of Engineers out of 13,726 miles of levees in total. The remaining 11,000 plus miles of levees include state, local or regional government /agency and private ownership. The 11,000 plus miles also includes levees with a federal nexus that were not built by the Corps, such as non-federally constructed levees enrolled in the Corps’ PL 84-99 program, levees built by the Natural Resources Conservation Service, and canal embankments built by the U.S. Bureau of Reclamation. The information in the CLD has not been verified in the field and may change substantially based on site visits.

Information is not readily available regarding the portion of these levees known to have less than a 100-year level of protection. However, DWR has contacted FEMA and may be able to develop some additional information for a follow-up response. In addition, DWR is evaluating about 2,000 miles of federal levees (and closely associated nonfederal levees) in California’s Central Valley. The levee evaluations are not aimed at determining whether levees provide 100-year flood protection; rather, the evaluations rate the likely performance of levees and whether they meet certain design criteria. Preliminary results from the levee evaluations and other important information on Central Valley levees will be presented in DWR’s Flood Control System Status Report, which should be available in spring 2011. DWR will provide a copy of the report to the Committee when it is available.

Levee information developed by DWR is used by local communities to evaluate their levee systems for 100-year flood protection and for design of State-local Early Implementation Projects (EIP). EIPs in urban areas are planned for 200-year flood protection pursuant to California law (Senate Bill 5, from 2007). To date, DWR has entered into cost sharing contracts with local agencies for eight EIPs, totaling $742 million ($539 million State bond funds and $203 million local funds). We have included a map of federal levees in the Central Valley of California that indicates the 1,600 miles of levees the U.S. Army Corps of Engineers built.

**Confusion Regarding National Levee Safety Standards**

Many government officials and individuals have come to think that the 1-percent-annual-chance (100-year) flood, which was designated by the National Flood Insurance Program for insurance purposes is a levee safety standard. This is not true and a dangerous belief – it is based on neither sound scientific foundations nor statistical analyses of safety, but purely for insurance purposes. The NFIP uses the 1-percent-annual-chance flood to determine where the “mandatory purchase requirement” for flood
insurance applies to properties secured by federally regulated mortgage lenders. Currently, homeowners living behind levees designed, built, and maintained to meet or exceed that 1%-annual-chance flood standard often are exempt from the mandatory purchase requirement. Further, the area behind the levee is mapped as if no levee were present.

There is also misunderstanding about what the 100-year flood actually means. Many believe this means that a destructive flood will only occur every 100 years. In reality, it means there is a 1% chance every year that a flood of that magnitude or greater will occur, translating to a 26% chance that a flood of that magnitude or greater will occur during a typical 30-year mortgage.

While never intended to be a safety standard, the 1%-annual-chance flood standard has become a design criterion for many communities, with many local building codes following it. The National Committee on Levee Safety believes that the inappropriate use of the 1%-annual-chance flood standard as a safety standard has allowed an increase in the numbers of people and amount of property at risk from flooding in leveed areas. The exemption from flood insurance requirements also led many individuals and communities in leveed areas to mistakenly believe that they do not need flood insurance, and that they are protected from all flooding by that levee.

However, no levee provides full protection from flooding – even the best flood control system or structure cannot completely eliminate the risk of flooding. Levees are designed to provide a specific level of protection, and larger flood events can cause them to be overtopped or fail. Levees also decay and deteriorate over time. Regular maintenance and periodic upgrades are needed to ensure that they retain their designed level of protection. Maintenance can become a serious challenge as a levee system gets older. When levees do fail, they often fail catastrophically – the damage may even be more sudden and significant than if the levee was not present.
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November 2000
Responses to Questions from Senator Thomas R. Carper
From Steven W. Verigin, Vice President – GEI Consultants, Inc.
Member of National Committee on Levee Safety

1) **What are some innovative financing and project delivery tools that you have seen work in your organizations that could help reduce the backlog of projects, lower project costs, and deliver projects more efficiently and effectively?**

The NCLS has attempted to address the issue of efficiency and reduced costs by recommending direct federal funding to the state and local agencies through the development of a National Levee Rehabilitation, Improvement and Flood Mitigation Fund to provide funds to reduce risk associated with non-federally operated levees. This recommendation addresses gaps in existing federal programs for recapitalization of levee infrastructure and is intended to reduce the existing barrier many state and local agencies are confronting – the inability to move quickly to implement levee improvements through the traditional Corps processes. We feel this fund will be more efficient, effective and timely than existing Corps programs and provide more timely risk reduction for the following reasons:

- Will not be limited to restrictions of existing Corps authorities and so will allow flexibility to address both structural and non-structural measures so long as the combination of measures maximizes overall risk reduction. This flexibility will also allow communities to combine levee repair, rehabilitation with other objectives such as natural resource protection, where appropriate, reducing costly delays and improving stakeholder acceptance of projects;
- Funding would be provided to states based on a screening level risk-informed priority system based in part on information in the National Levee Database thereby focusing efforts on areas with the highest risk first, giving the greatest benefit for dollars spent;
- Providing funds directly to the states, and not set by a federal timeline or budgeting cycle, allows states to plan construction activities in a manner consistent with other community and infrastructure improvements and at a pace that is most cost-effective – reducing costly starts and stops; and
- Eligibility for funding would require owners and operators to maintain a high level of upkeep of their levees and engage in responsible activities related to the public protected by these levees such as: 1) provide data to the National Levee Database; 2) demonstrate financial means for ongoing operations and maintenance in alignment with national standards, once developed; 3) notify public of flood risk through communications and buyer notification; 4) promote purchase of flood insurance; 5) develop an emergency response plan and an inspection of completed works program; 6) develop an overall floodrisk management plan; and 7) have community participation in the National Flood Insurance Program. These robust set of eligibility requirements would ensure that the community was aware of and addressing the levee-related risks and has the wherewithal to maintain its levees into the future.

In time, this approach will lower overall disaster relief costs as well as promote a rational, efficient process for risk reduction.

The NCLS has suggested that this program be cost shared with the federal government 65/35, but has since heard from stakeholders that a broader array of options should be considered such as low/no interest loans and other ideas. The NCLS has not fully explored the full nature of options and
innovations but has been interested in the applicability of research and analysis conducted by the Government Accountability Office (GAO) in response a recognized gap in water and wastewater management infrastructure, namely GAO-99-657 Clean Water Infrastructure: A Variety of Issues Need to Be Considered When Designing a Clean Water Trust Fund.

Currently, states and local governments across the country, including special districts such as levee boards or flood management districts, have a variety of tools at their disposal for funding levee construction, operation, and maintenance based on state/local laws and authorities. These schemes are available, but are not used widely, perhaps due to lack of awareness of their actual risks or other factors. Examples include:

- The State of Texas authorizes the collection of fees on flood insurance premiums, generating $6.2 million biannually to support floodplain management throughout the state;
- State and local jurisdictions use a portion of collected property taxes or fees to support levee inspection, operations, and maintenance;
- Public-private partnerships have been used to finance some projects, including generating funding for non-structural components of flood risk reduction approaches (such as preserving or increasing green space to allow for flooding and to prevent harm to people or properties in the event of levee overtopping or failure, or developing constructed wetlands); and
- State and local governments use bonding to fund significant levee improvement or rehabilitation projects.

In trying to promote an ethic of shared responsibility, the NCLS feels that innovative ways of funding all aspects of levee safety should be considered.

2) How can our water resources policy and our surface transportation policy be crafted in a way that is mutually beneficial and that creates jobs, helps our economy, and builds smart infrastructure?

The National Committee on Levee Safety did not directly develop any recommendations for this important policy question, but recognize that water resources, transportation, and natural resources policies and programs are inextricably linked. The NCLS’s recommendations for a National Levee Safety Program are prefaced by the recognized need for a broader national flood risk management approach, which in turn is part of a national water resources policy approach currently lacking in the United States. The NCLS also recognizes as communities plan for resource needs to address climate change, flood management efforts will have to be more integrated into water resource questions and transportation investments. We would like to provide the following thoughts to assist in Congressional discussions and deliberations and would be happy to provide additional thoughts and suggestions on this question supported by research and deliberation, if so desired. Please find included responses to aspects of the question the NCLS did consider.

Levee Safety Can Serve as a Catalyst for Integrated Resource and Transportation Policies

One of the most important recommendations of the National Committee on Levee Safety is to conduct a one-time, federally funded inventory of all the nation’s levees. In so doing, the nation will also learn about the location and condition of other types of public infrastructure that connect with levees (e.g. road and rail embankments) and public infrastructure located in leveed areas (e.g. water and wastewater infrastructure, public buildings, hospitals, etc.). Conducting this inventory will teach us
much about the risk to the existing water and transportation infrastructure as well as the risk to personal property and loss of life. These new data will enable communities to better understand the relationships between levees and other public and private infrastructure and help them make informed choices related to siting of transportation and other public infrastructure, long-term risk reduction efforts, investments in flood proofing, improving or moving critical infrastructure such as hospitals, police stations, schools, etc.

**Recommendation to Align Federal Programs Aims at Integration and Harmonization of Water Resource Policies, Transportation Policies, and More**

Another critical recommendation calls for the study and alignment of federal agency programs and processes. The NCLS recommends that all federal programs that significantly impact governmental and individual decision-making in leveed areas be aligned toward the goal of reliable levees, and an informed, involved public, and shared responsibility for protection of human life and mitigation of public and private economic damages. Federal programs should not only be aligned with each other, but can be used as an enticement for responsible levee stewardship.

**Levee Repair and Rehabilitation Creates Jobs in Communities**

Levee evaluation, repair, remediation and reconstruction work creates jobs and contributes to the economy through the performance of inspections, evaluations, engineering and capital improvement projects. At the time when the NCLS report was drafted, statistics from economic stimulus initiatives tracked by the Corps IMPLAN economic modeling system indicate that for every $1 billion in infrastructure investment, we create over 47,000 jobs in the economy, using regional labor rates and job categories. So, identifying and fixing the problems in our levee systems not only is a good return on initial investments, but creates a multiplier effect in the overall economy. The NCLS recommends that a National Levee Rehabilitation, Improvement and Flood mitigation Fund be established. Not only will this create jobs, but it is intentionally designed to promote integrated thinking between levee safety and overall water resources by providing flexibility to fund a combination of structural and non-structural measures as long as the combination maximizes risk reduction.

**Reliable Levees Help Protect Against Loss of Jobs, Business Interruption and Social Disruption**

Best information from the National Flood Insurance Program indicates that the value of residential and commercial properties (structures and contents) located in leveed areas constitutes a total national exposure of more than $375 billion ($5 to $10 billion annual exposure based on rough estimates extrapolated from State of California historic flood damage data).

While we tend to measure flood impacts in terms of damage to property, public infrastructure and loss of life, we observe and intuit that impacts of flooding to individuals, businesses, and communities goes far beyond those paltry measures. Waterborne diseases due to contaminated public water systems are often the norm. Loss of local and regional employment and erosion of tax base coincide with needed community investment for recovery and rebuilding, and increases in physical and mental health problems. Included are some sobering statistics from the Gulf Coast, 5 years after Hurricane Katrina. In addition to exposure, other types of losses are experienced during severe flooding such as business interruption, etc. For example, 5 years after Hurricane Katrina:

- Flooding displaced 1 million residents. 600,000 were still displaced one month later. Some were still in temporary housing 5 years later.
• The population of New Orleans fell to half, and then rebounded to 80%, but percentage of households with children has dropped dramatically.

• Post-Katrina housing is unaffordable with 58% of renters in the City paying more than 35% of their pre-tax income on rent and utilities.

• Violent crime is twice that of the national rate; and

• Post Traumatic Stress Disorder in Katrina survivors is 63%, 20 times the national average.
Responses for Questions from Senator Benjamin L. Cardin
From Steven W. Verigin, Vice President – GEI Consultants, Inc.
Member of National Committee on Levee Safety

1) The Committee recommends the development and implementation of national levee safety standards; however, many levees nationwide have failed to meet current safety standards. In 2007, the Corps identified about 120 levees with unacceptable maintenance problems. What are the Committee’s recommendations for addressing high-risk maintenance problems immediately?

Need for National Levee Safety Standards
There are currently no national standards for levee design, construction, operation, maintenance, rehabilitation, repair, improvement (improving the level of flood risk reduction provided by a levee system), or removal. This fact is often misunderstood and confused with levee accreditation as it relates to flood insurance under the National Flood Insurance Program (NFIP).

Multiple federal agencies have guidelines for levee design and construction (e.g., Corps and the Federal Energy Regulatory Commission). Other federal agencies, such as the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service, may have regulatory authority over certain aspects related to operations, maintenance, and repair of levees (e.g., under the National Environmental Protection Act or the Endangered Species Act).

The 120 levees that received an “unacceptable” rating during their inspections in 2007 were federally designed and constructed levees that were turned over to local sponsors to operate and maintain. Aside from annual inspections to retain eligibility for participation in the USACE Rehabilitation & Inspection Program, these levees are not subject to any significant federal or state enforcement of operation and maintenance requirements. Without a single set of national levee safety standards, the level of flood risk reduction and the robustness of levee design and construction will continue to vary considerably across the country, creating a situation of uncertainty and unknown risk for those living in leveed areas. Lacking clear national standards and policies, individuals, engineers providing levee services, levee owners/operators, and even governments, do not know where to turn for the most useful information and up-to-date guidance regarding levees and public safety.

The importance of establishing and adopting national levee safety standards is woven throughout the recommendations for a National Levee Safety Program developed by the NCLS. Three recommendations, in particular, lay the groundwork:

- Develop and adopt a set of national levee safety standards for common, uniform, use by all federal, state, and local agencies. The national standards should incorporate policies, procedures, standards and criteria for a range of levee types, canal structures, and related facilities and features. The national levee safety standards should be comprehensive and include standards for levee design, construction, operation, inspection, maintenance, emergency management, rehabilitation, improvement, and removal. These standards must, of course, also account for regional differences and variations. Once national levee safety standards have been established, the NCLS has recommended that federal legislation should be passed requiring that all federal agencies with authority over levee planning, design, regulation, or funding, or that own, operate, or maintain levees adopt and enforce the Standards. The NCLS
has also recommended that states, in an approach akin to the Uniform Building Code, adapt and adopt the national levee safety standards.

- Develop and adopt the recommended Hazard Potential Classification System to assist federal, state, and local governments to better understand the risk and consequences of levee failure. The Hazard Potential Classification System will be useful in setting priorities for action (e.g., where high hazard levees require immediate action) and funding. This is an interim step until the adoption of national tolerable risk guidelines and will be an important first step in addressing high-risk maintenance problems immediately.

- Develop and adopt national tolerable risk guidelines for levees. Tolerable risk guidelines help answer the question: How much protection is reasonable to provide populations against the risk of property damage or personal injury due to floods? Tolerable risk guidelines enable the following: informed prioritization of public investment where there is a possibility of high consequence (e.g., large population at risk if the levee fails) and also where the probability of failure is high, improved citizen and government knowledge and understanding regarding risk, and enhanced public debate regarding the true benefits and costs of flood risk mitigation alternatives.

Confusion Regarding National Levee Safety Standards

Many government officials and individuals have come to think that the 1-percent-annual-chance (100-year) flood, which was designated by the National Flood Insurance Program for insurance purposes is a levee safety standard. This is not true and a dangerous belief – it is based on neither sound scientific foundations nor statistical analyses of safety, but purely for insurance purposes. The NFIP uses the 1-percent-annual-chance flood to determine where the “mandatory purchase requirement” for flood insurance applies to properties secured by federally regulated mortgage lenders. Currently, homeowners living behind levees designed, built, and maintained to meet or exceed that 1%-annual-chance flood standard often are exempt from the mandatory purchase requirement. Further, the area behind the levee is mapped as if no levee were present.

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While never intended to be a safety standard, the 1%-annual-chance flood standard has become a design criterion for many communities, with many local building codes following it. The National Committee on Levee Safety believes that the inappropriate use of the 1%-annual-chance flood standard as a safety standard has allowed an increase in the numbers of people and amount of property at risk from flooding in leveed areas. The exemption from flood insurance requirements also led many individuals and communities in leveed areas to mistakenly believe that they do not need flood insurance, and that they are protected from all flooding by that levee.

However, no levee provides full protection from flooding – even the best flood control system or structure cannot completely eliminate the risk of flooding. Levees are designed to provide a specific level of protection, and larger flood events can cause them to be overtopped or fail. Levees also decay and deteriorate over time. Regular maintenance and periodic upgrades are needed to ensure that they retain their designed level of protection. Maintenance can become a serious challenge as a levee system
gets older. When levees do fail, they often fail catastrophically – the damage may even be more sudden and significant than if the levee was not present.

**NCLS Recommendations for Addressing High-Risk Maintenance Problems Immediately**

Our nation’s levee problems took generations to build and will not be solved overnight. The average age of levees within Corps programs is approximately 50 years, and the age of many non-federal levees can be much older – 100 years or more. Much of our nation’s levee infrastructure is decades old, and was built without the benefit of modern engineering. Even responsible levee owners, following operation and maintenance plans developed when their levee was built, may not be using the most current and best engineering practices, potentially increasing the risk of levee failure. In addition, changes in demographics have led to increased development behind earthen levees originally built to protect cropland from flooding and often built without meeting engineering standards appropriate to residential or commercial development in the leveed area.

While upkeep of maintenance is critical to good levee safety, lack of maintenance is often not the biggest risk factor. For example, New Orleans had dozens of levee failures during Hurricane Katrina, none of which were due to inadequate maintenance. Under designed levees (e.g., levee of protection/height of levee is too low for a concentrated urban areas) can become overtopped or fail after overtopping. Inadequately designed levees are also an issue – many of our older levees were built upon unsatisfactory materials and added onto over the years from original piles of dirt pushed together by farmers trying to protect their fields from flooding.

That considered, the NCLS developed a suite of 20 recommendations that is focused primarily on risk reduction – understanding and addressing the worst problems first. Below are a few key examples of how this would be achieved:

- Immediately conduct a one-time federally funded inventory and inspection of all levees in the nation so as to better understand where the risks are greatest;

- Establish a National Levee Safety Program to:
  - Develop National Levee Safety Standards to ensure that best practices are available and implemented nationwide; and
  - Develop a Comprehensive National Education and Awareness Campaign to Communicate Risk and Change Behavior in Leveed Areas.

- Establish the National Levee Rehabilitation, Improvement and Flood Mitigation Fund to aid in the rehabilitation, improvement or removal of aging of deficient national levee infrastructure. The covered items are intentionally broad to allow for a potential combination of activities, structural and non-structural that would maximize overall risk reduction. The NCLS further recommends the fund be initially focused in areas with the greatest risk to human safety.

2) **The Committee recommends a Research and Development program to advance new and environmentally-friendly technologies and practices. Can you describe some of these new advancements and their potential benefits?**

While levees and their maintenance can result in negative environmental effects (e.g., cutting off the river from its floodplain, altering the natural hydrology of the area by reducing recharge of aquifers, preventing seasonal overbank flooding that can provide needed nutrients to soils, and enabling increased development that can lead to destruction of ecologically important riparian and coastal
ecosystems such as wetlands and marsh), it is often these same levees that protect critical infrastructure such as wastewater treatment plants and drinking water filtration plants, which have been located in floodplains in proximity to surface waters. Levees prevent flood waters from overwhelming such structures, thereby safeguarding potable water supplies and preventing release of sewage and other pollutants into the surrounding fragile ecosystem. The NCLS believes that a balance between public safety and environmental stewardship can and must be struck – the two fundamental needs have to be brought into harmony.

The NCLS has recommended that a National Levee Safety Program, in conjunction with federal and state environmental and natural resource agencies, conduct research and development efforts to meet the following objectives:

- Operation and maintenance practices should be improved to mitigate or reduce negative impacts on the natural environment or ecosystem without compromising public safety.
- Levees or flood risk mitigation projects, including operation and maintenance activities, should be designed or modified to reduce negative environmental impacts or enhance or restore the environment.
- Innovative technology for levee inspections, repairs, operations, and maintenance could improve both the natural environment and public safety, increasing efficiency without shortcutting either the environment or public safety?

Specific ideas include:

- Evaluate O&M practices for existing projects and develop cost-effective measures to make O&M practices more compatible with present-day natural resource management practices.
- Evaluate rapid assessment tools of levee geotechnical characteristics and integrity to include initiatives that would improve the use of helicopter electromagnetic and ground-based electrical resistivity surveys.
- Develop innovative technology for repairs and improved engineering methods that would lead to more reliable levees and the most cost-effective approaches.
- Development of technology and tools to enhance the security of levees at the operation level.
- Evaluate and establish guidelines and a program for the forensic investigation of levee failures and/or severe levee distress.
- Conduct research on increasing the resilience of levees (e.g., types of armoring).
- Develop innovative and cost effective rapid repair levee breach tools.
- Consolidate the large body of R&D knowledge both nationally and internationally and make the information easily accessible to owners, operators, regulators, etc.
Responses to Questions from Senator James M. Inhofe
From Steven W. Verigin, Vice President – GEI Consultants, Inc.
Member of National Committee on Levee Safety

1) Was the Committee able to develop any cost estimates for its recommendation to expand the National Levee Database to include a one-time federal inspection of all levees and its recommendation to establish a grant program to rehabilitate, improve, or remove aging or deficient levees?

Levees are abundant and integral to economic development in many communities in the United States, but there is no definitive record of how many levees there are in the nation, or what condition they are in. Based on information from the U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Agency (FEMA), and the State of California, the NCLS has estimated that there may be more than 100,000 miles of levees nationwide. FEMA estimates that levees are found in all fifty states and in approximately large percentage of the nation’s counties.

Cost Estimates for an Initial Inventory and Inspection of All the Nation’s Levees
The Corps has conducted an inventory and inspection of approximately 14,800 miles of levees within its programs. These levees are already included in the National Levee Database. This includes levees that are owned, operated, and maintained by USACE (2,000 miles); levees that were constructed by USACE and operated and maintained by a non-federal sponsor (10,830 miles); and levees that are enrolled in the USACE Rehabilitation and Inspection Program (RIP) (2,030 miles). Based on this work, the Corps estimates it would cost approximately $625 million to conduct an initial inventory and inspection of 100,000 miles of the nation’s non-federal levees. The Corps would also need additional authorities to conduct this work.

Cost Estimates to Establish Rehabilitation, Improvement, and Flood Risk Mitigation Fund
The NCLS has proposed funding a Levee Rehabilitation, Improvement, and Flood Risk Mitigation Fund at $600 million per year for the first five years of the Fund’s implementation, and then at $1 billion per year thereafter. This funding level is likely not sufficient to rehabilitate the entire nation’s aging levee infrastructure, but is an important step in addressing the levees with the greatest consequences and highest risk of failure. The American Society of Civil Engineering’s 2009 Report Card put the rough estimate to repair and rehabilitate the nation’s levees at around $100 billion and proposed investing $50 million over a 5 year period. Until the initial inventory and inspection is complete, we, as a nation, do not have a precise estimate of the overall need or consequences.

To promote the smartest, most cost-effective risk reduction measures, the Committee has recommended the Fund would be available to rehabilitate, improve, remove, or replace levees (structural measures) as well as conduct nonstructural measures, so long as the combination of measures maximizes overall risk reduction. For example, in some communities, the greatest risk reduction may be achieved by removing the levee altogether and focusing on increasing land available for water conveyance and flood storage.

While the NCLS recommended the Fund be authorized to be cost shared between the federal government and non-federal sponsors at 65% federal and 35% non-federal, stakeholders at seven workshops held in 2010 to solicit feedback and comments on the recommendations for a National Levee
Safety Program have suggested alternative approaches for funding such as no-interest or low-interest loans, sliding-scale matches based on a local tax-base, or other innovative financing approaches.

2) Did the Committee make any estimates of anticipated savings for the federal government by, as you said, “moving us from a reactive disaster assistance environment to a proactive safety-oriented culture”?

There is no comprehensive national data on the location or condition of the nation’s levees or on the flooding damages or loss of life resulting from levee failure or overtopping, so annual estimates of economic damages or loss of life particularly related to levee failure or overtopping is difficult to calculate with any specificity. Improved data collection and analysis is recommended to help alleviate this problem. That said, we have more than enough data and examples to understand the devastating impacts of levee-related flooding on individuals, communities, regions, and the nation. While we continue to refine savings estimates, here are some important points.

Flood Damages and Flood Risk Is Increasing in the U.S.
Annual flood losses have increased steadily from $1.5 billion in 1930 to more than $3 billion in 1996. Demographic trends indicate that populations in coastline counties in the U.S. has grown in recent decades, from 47 million people in 1960 to 87 million people in 2008 (NOAA: Coastline Population Trends in the United States, May 2010). The U.S. Census Bureau estimates that an additional 40 million people will be added to the U.S. population in the next 40 years. If trends hold, we have every reason to believe that more and more people will be living in flood prone areas and behind levees, increasing the importance of their reliability and the importance of informing residents of their risks.

When Levees Fail, They Often Do So Catastrophically
Food risk reduction is a complicated formula when it comes to levees and floodwalls. On the one hand, they can buy time for people to evacuate and move their belongings out of harm’s way. On the other hand, over reliance on levees as a primary (and sometimes exclusive) solution to managing flood risk has drawn more people to live and work behind levees, intensifying development and increasing consequences should the levee fail or be overtopped. This scenario, when combined with what we know about the condition and aging of our levee systems is a perfect storm for catastrophic failures with significant loss of life and property damage.

We have experienced catastrophic levee-related failures and are certain to experience more
As a nation, we have several salient examples of severe flooding for which levee failures and overtopping contributed to the damages and loss of life. Because our record keeping does not distinguish between losses of life related directly to levees, we are providing the following examples of significant recent flood events for which we know levee breaches and failures played a significant part. The examples do not provide data for hard analysis of annualized loss of life or rate of return on levee investment; rather they underscore recent examples of events that are not uncommon and often widespread:

- The Great Flood of 1993 – was widespread along the Mississippi River Basin, covered nine states and 31,000 square miles of inundation. In some places, flooding lasted for more than 200 days. Damage by this record flood stage was massive. More than 200 counties were declared federal disaster areas, including the entire state of Iowa. 72,000 homes suffered major damage along with 45,000 commercial structures. 12 airports were closed and more than 1,000 miles of road,
including major interstates. 40 of the 229 federal levees were overtopped or damaged during the flood event. Estimates of the losses from this flood are $15.6 billion (1994 dollars).

- **California’s Central Valley 1997** – 30 levees failed killing nine people, and damaging over 23,000 homes and businesses, agricultural lands, bridges, roads and flood management infrastructure – valued at about $2 billion.

- **Grand Forks in 1997** – In April 1997, the Red River crested at 54 feet in Grand Forks, ND, and East Grand Forks, MN, overtopping levees and dikes that had been raised to 49 feet, the level of the previous record-setting 1979 floods. Following a season of record snowfall, this historic flood covered over 2,000 square miles, an area about twice the size of Rhode Island. As it became clear the levees would be overtopped, 50,000 residents were evacuated from East Grand Forks. The flood damaged 83% of affected homes and impacted all downtown businesses. In East Grand Forks, only eight homes were left undamaged by floodwaters. Every business in downtown Grand Forks and East Grand Forks was damaged. The total cost of damages was estimated to reach $3.6 billion ($4.7 billion in 2009 dollars).

- **Hurricanes Katrina and Rita in 2005** – 1810 people died, a majority of these people were over the age of 60. Over $200 billion in direct economic damages to property and untold damage to the regional economy. More than 1 million people were displaced (see text box for more detailed information). The Corps is spending $15 billion to upgrade the flood protection system. FEMA invested more than $75 billion in emergency relief alone.

- **Midwest Flood of 2008** – affected the states of Indiana, Illinois, Iowa, Michigan, Missouri, Minnesota, and Wisconsin including 35,000 people evacuated for weeks at a time. Iowa’s agricultural losses alone are estimated to exceed $2 billion. In Cedar Rapids, alone, flood waters covered 1,300 city blocks inundating city hall, the county jail, the fire and police departments, the public library and 3,900 homes. $2.7 billion have been spent in federal flood relief. Two dozen people lost their lives.

*We Are Heavily Reliant on Levees*

Our recent experience with levee and floodwall failures is sobering and indicative of a type of catastrophe that could be suffered by other major cities in the U.S. According to the Corps, 33% of communities with populations of at least 50,000 have some portion of their community protected by a Corps’ levee. If you live in a community of more than 1 million, your chance of having a portion of your community protected by a levee increases to 50% including densely populated portions of many of our large cities such as Sacramento, St. Louis, New Orleans, Des Moines, Kansas City, and Washington, D.C. The NCLS estimates that there are potentially 100,000 miles of state and local levees in the nation.

*An Ounce of Prevention is Worth a Pound of Cure – Mitigation is a Good Investment*

The NCLS believes that investments in the National Levee Safety Program will return many dollars in benefits for every dollar spent. This is supported by the Corps estimates that for every dollar invested in flood damage reduction projects there is a $6.48 return on that investment in flood damages prevented. Further, the Multihazard Mitigation Council in a recent report to Congress entitled, *Natural Hazard Mitigation Saves: An Independent Study to Asses the Future Savings from Mitigation Activities* concluded that mitigation efforts such as flood proofing, evacuation planning, etc. pay off in the long run for communities and the federal government. They concluded that for every dollar spent on mitigation, society saves an average of $4 on losses avoided (e.g. property damage, business interruption, deaths/injury, costs of emergency response, etc.). It was separately calculated that a dollar spent from
the U.S. Treasury on FEMA mitigation grants potentially saves the Treasury about $3.65 in avoided post-disaster relief costs and increased federal tax revenues.

3) **Did the Committee discuss, or do you have a personal opinion, whether a newly created levee safety program should be integrated with the existing National Dam Safety Program, either upon establishment or after some period of time for implementation?**

While the NCLS was charged with developing recommendations for Congress for a National Levee Safety Program, it considered the structure, responsibilities, and authorities of the National Dam Safety Program. The NCLS used the National Dam Safety program as a guide to develop the National Levee Safety Program recommendations and took the opportunity to apply lessons learned over the past 30 years. The Committee, however, felt the current scope of the National Dam Safety program was too limiting to achieve the vision of “An involved public and reliable levee systems working as part of an integrated approach to protect people and property from floods.”

Clearly there are some areas of synergy and overlap between dam and levee safety. There are shared engineering approaches. Many professionals, both public and private, who are engaged in one are also engaged in the other. Where nascent levee programs exist at the state level, they are typically co-located with dams, etc. There are also critical differences related to ownership, residual risk, operation and maintenance requirements, etc. Any long-term goal would be to provide better flood protection continuity between these frequently enjoined structures, sharing the same watershed.

**NCLS Review Team Feedback on Combining the NLSP and the NDSP**

Opinions about combining or segregating the National Dam Safety Program and a National Levee Safety Program have been mixed in feedback received from a Review Team assembled to provide feedback on the recommendations for a National Levee Safety Program as they were developed, as well as from a series of seven stakeholder workshops held across the country in 2010. The NCLS and many of the stakeholders they consulted – both those in the dam safety and levee safety communities – expressed concern that a combined program would force limited resources to be allocated to either dams or levees at the detriment of the other. If a national flood risk management program were to be developed, it would be logical that dam safety and levee safety would be two elements of that program.

**NCLS Recommends Additional Study Regarding Combining Dam and Levee Safety Programs**

Although there are similarities in the structure proposed for the National Levee Safety Program and the current National Dam Safety Program, there are also major concerns identified by the NCLS, and the NCLS has recommended that the two programs not be combined into a single program at the outset. The NCLS has also recommended that the National Levee Safety Program, once established, specifically consider the benefits and drawbacks of combining with the National Dam Safety Program and recommend a course of action to Congress. The NCLS has called for a study of the possible integration of the two programs prior to the National Dam Safety Program reauthorization scheduled in 2012.
Introduction
Congress created the National Committee on Levee Safety (NCLS) to develop recommendations for a national levee safety program, including a strategic plan for implementation of the program. The NCLS adopted the vision of an involved public and reliable levee systems working as part of an integrated approach to protect people and property from floods, and has been working toward this vision since October 2008.

The NCLS developed twenty recommendations for creating a National Levee Safety Program, and presented these in *Recommendations for a National Levee Safety Program: A Report to Congress from the National Committee on Levee Safety* on January 15, 2009.

The specific recommendations of the NCLS for a National Levee Safety Program embrace three main concepts: (1) the need for leadership via a National Levee Safety Commission, which would support state delegated programs, provide national technical standards and risk communication, and coordinate environmental and safety concerns; (2) the building of strong levee safety programs in all states, which would provide oversight, regulation, and critical levee safety processes; and (3) a foundation of well-aligned federal agency programs.

Legislation is needed to fully implement 12 of the 20 recommendations at a national level. The US Army Corps of Engineers (USACE) and Federal Emergency Management Agency (FEMA) are working within existing authorities and funding to begin the first steps in implementing several of the recommendations that address the basics of communication and outreach, use of common language and refinement of their existing programs. Further, USACE is considering NCLS recommendations in the development of its own levee safety standards and risk assessment and communication methodologies.

The nonfederal members of the NCLS have drafted a proposed legislative framework establishing a National Levee Safety Program and addressing the areas where the NCLS sees that legislation is needed to implement their recommendations. The proposed legislative framework is a starting point, an outline of the elements needed to implement the NCLS’s recommendations for a National Levee Safety Program.

Disclaimer: This draft legislative framework has been developed by the nonfederal members of the National Committee on Levee Safety and is not endorsed by nor should it be construed as an Army or Administration position.
Proposed Legislative Framework to Create the National Levee Safety Program

To direct the President to carry out programs and activities to enhance the safety of levees in the United States.

A BILL

To direct the President to carry out programs and activities to enhance the safety of levees in the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION I. SHORT TITLE

This Act may be cited as the ‘National Levee Safety Act of 2010.’

SECTION II. FINDINGS, PURPOSES AND MEANS

(a) FINDINGS – Congress finds the following:

(1) Levees are now abundant in many communities in the United States, although the number, location, and condition of all the levees in the Nation is unknown. Preliminary estimates indicate there may be more than 100,000 miles of levees across the nation, and tens of millions of people live and work behind them;

(2) The reliability of many levees is not commonly known;

(3) Levees have often been the primary tool in flood risk management, protecting not only people and property, but also other critical infrastructure (e.g., roads, hospitals, drinking and wastewater facilities, power generating facilities) and in some cases the environment;

(4) Although constructed to protect property, levees have often inadvertently increased flood risks by attracting development to the floodplain. Many levees originally constructed to protect agricultural fields now protect large urban communities;

(5) Risks are growing as population and economic investment behind levees increases, infrastructure ages, and storm severity increases due to climate change;

(6) Levees only reduce the risk of flooding for communities, but they do not eliminate it;

(7) Many individuals and communities in leveed areas do not understand their flood risk. Many believe that levees – by themselves – make the public safe from flooding;

(8) Many urban areas protected by levees, particularly those in deep floodplains, place people who live behind them at an unacceptably high risk. Failure of such levees has recently resulted in high loss of life, property damage, economic losses, environmental damages, and the disruption of social and cultural community fabric;

(9) There are currently no national policies, standards or best practices relating to the safety of levees;

(10) Responsibility for levee safety is often ignored, and when addressed it is often done in an incomplete and nonsystematic manner and distributed across all levels of government,
within different agencies and functions. This impedes a comprehensive approach, impairs coordination, and prevents a sustained focus on the issue; and

(11) There is currently no overall flood risk management policy to guide related efforts such as zoning and building codes, emergency evacuation, flood warning, and public awareness and education, creating a situation where many community leaders and citizens have only a limited understanding of the role and condition of levees and the risks associated with them.

(12) Therefore:

(A) There is an urgent need to establish a National Levee Safety Program to provide national leadership, delegate levee safety programs to states, and align federal agencies;

(B) Knowing the location condition and ownership of levees, as well as understanding the population and infrastructure at risk in leved areas, is necessary for identification and prioritization of activities associated with levees according to hazard potential;

(C) This National Levee Safety Program should apply to all federal, tribal, state, local, regional and private levees within the United States and its territories; and

(D) This National Levee Safety Program should be part of a larger, national flood risk management strategy.

(b) PURPOSES. The purposes of this Act are to:

(1) Employ sound technical practices in levee design, construction, operation, inspection, assessment, security, and maintenance;

(2) Ensure effective public education and awareness of risks involving levees;

(3) Establish and maintain competent levee safety programs and procedures that emphasize the protection of human life; and

(4) Implement feasible governance solutions, incentives, and disincentives that encourage and sustain effective levee safety programs at all levels of government, including basic hazard reduction and mitigation measures related to levees.

(c) MEANS. By:

(1) Providing Comprehensive and Consistent National Leadership – through a National Levee Safety Commission charged with understanding and communicating risks associated with levees, developing national safety standards (e.g., a National Levee Safety Code), facilitating dialogue and research on important levee related topics (e.g., research and development, facilitating dialogue with environmental interests), providing technical materials and assistance to all levels of government, encouraging improved safety measures and programs through grants, and overseeing national and state levee safety program development and implementation activities;

(2) Building and Sustaining Strong Levee Safety Programs in all States – recognizing that the cornerstone of an effective National Levee Safety Program is effective state programs following a consistent set of national safety standards and mitigation protocols. Similar to their role in dam safety, states are well positioned to provide assistance and oversight to local owner/operators, and to coordinate activities in a systems approach among entities within and among states; and
(3) Aligning Existing Federal Programs – in order to ensure that investment in our nation’s levees and programs to protect the people who live behind them are effective, all federal programs that impact community and individual behavior in leveed areas should be aligned toward the same goals of risk reduction, developing resilient and reliable levees, and protection of human life and property.

SECTION III. APPLICABILITY

(a) This Act applies to all federal, tribal, state, local, regional and private levees within the United States and territories.

(b) Levees and canal structures are exempt from regulation under this Act if they meet the following conditions:

(1) Highway and railroad embankments not functioning as part of a flood damage reduction system; or

(2) A canal constructed completely within natural ground without any manmade structure such as an embankment or retaining wall to retain water, or where water is retained only by natural ground; or

(3) Canals regulated by the federal government, provided that applied federal safety criteria meet or exceed the National Levee Safety Code, or, prior to development of the National Levee Safety Code, interim Levee Safety Standards or Guidelines, developed and adopted by the Commission; or

(4) The levee or canal structure meets all of the following criteria:

   (A) Not part of a federal flood control project, and

   (B) Not recognized within the National Flood Insurance Program as providing protection from the 1-percent-annual-chance or greater flood, and

   (C) Not greater than 3 feet high, and

   (D) Not protecting a population greater than 50 people, and

   (E) Not protecting an area greater than 1,000 acres.

SECTION IV. DEFINITIONS

For purposes of this Act, the following definitions apply:

(a) CANAL STRUCTURE. The term “canal structure” means an embankment, wall, or structure along a manmade canal or watercourse that constrains water flows and is subject to frequent water loadings, but that does not constitute a barrier across a watercourse.

(b) COMMISSION. The term “Commission” means the National Levee Safety Commission established under Section V.

(c) COMMISSIONER. The term “Commissioner” refers to those individuals appointed to the Commission as set forth under Section V.

(d) FEDERAL AGENCY. The term “federal agency” means a federal agency that designs, finances, constructs, owns, operates, maintains, or regulates the construction, operation, or maintenance of levees.
(e) Flood Mitigation. The term “flood mitigation” refers to both structural and non-structural measures that reduce risks by either lowering the probability of failure, or the consequences of failure, or both.

(f) Independent Technical Review. The term “independent technical review” means a review—by subject matter experts not involved in the design or construction of, and without vested interest in, the levee system— which evaluates the completeness and adequacy of the engineering analyses and conclusions.

(g) Levee.

(1) In general
The term “levee” means a manmade barrier (embankment, floodwall, or structure)—

(A) 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; and

(B) that is normally subject to water loading for only a few days or weeks during a year.

(2) Unless otherwise stated, the term “levee” refers to a levee system, inclusive of canal structures and highway and railroad embankments, as defined below.

(3) Inclusion. The term includes levees and canal structures that constrain water flows and are subject to more frequent water loadings, but that do not constitute a barrier across a watercourse. Highway and railroad embankments can be considered levees only if they are integral to performance of a flood control system and to the extent that such structures provide some level of flood protection.

(4) Exclusion. The term does not include shore line protection or river bank protection systems, such as revetments or barrier islands.

(h) Levee Feature. The term “levee feature” means a structure that is critical to the functioning of a levee, including, but not limited to, embankment sections, floodwall sections, closure structures, pumping stations, interior drainage works, and flood damage reduction channels.

(i) Levee Segment. The term “levee segment” means a discrete portion of a levee system that is owned, operated, and maintained by a single entity, or discrete set of entities.

(j) Levee System. The term “levee system” means one or more levee segments and other features that collectively provide flood damage reduction to a defined area. Failure of one feature within a levee system may constitute failure of the entire system. The levee system is inclusive of all features that are interconnected and necessary to ensure protection of the associated leveed areas. Unless otherwise stated, the term “levee” refers to a levee system, inclusive of canal structures and highway and railroad embankments.

(k) Leveed Area. The term “leveed area” means the lands from which flood water is excluded by the levee system.

(l) National Levee Database. The term “National Levee Database” means the levee database authorized to be established under Sec. 9004 of the National Levee Safety Act of 2007.

The national standards incorporate engineering policies, procedures, standards, and criteria for a range of levee types, canal structures, and related facilities and features.

(n) REHABILITATION. The term “rehabilitation” means the repair, replacement, reconstruction, or removal of a levee carried out to meet applicable national levee safety standards.

(o) STATE. The term “state” means any of the 50 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.

(p) DELEGATED LEVEE SAFETY PROGRAM. The term “Delegated Levee Safety Program” means a state or tribal levee safety program approved by the National Levee Safety Commission.

(q) RESIDUAL RISK. The term “residual risk” means that portion of risk that remains after structural and non-structural risk reduction measures are in place.

(r) TOLERABLE RISK. The term “tolerable risk” means:

(1) Risks society is willing to live with so as to secure certain benefits; and

(2) Risks society does not regard as negligible or something it might ignore; and

(3) Risks that society is confident are being properly controlled by the owner; and

(4) Risks the owner keeps under review and reduces still further if and as practicable.

(s) TRIBE. The term “tribe” means a federally-recognized tribe.

(t) UNITED STATES. The term “United States” means all of the states, territories and tribes.

SECTION V. ESTABLISH A NATIONAL LEVEE SAFETY COMMISSION

NOTE: The National Committee on Levee Safety defined the following characteristics of a National Levee Safety Commission as essential:

(a) Independence to address levee safety holistically, unconstrained by the momentum and priorities of existing programs, with the ability to make politically challenging decisions when necessary;

(b) Leadership for significant horizontal integration of effort across federal agencies and alignment of their programs, with vertical integration to achieve balanced participation at all levels of government; and

(c) Organizational capabilities spanning regulatory policy development, program implementation, oversight, and grants management; and significant experience in the relevant technical, public communication and environmental areas.

The preference of the National Committee on Levee Safety is to establish a Commission as a new independent federal agency with functional and operational responsibility, with the National Levee Safety Program placed therein.

(a) ESTABLISH A NATIONAL LEVEE SAFETY COMMISSION. The President shall establish an independent National Levee Safety Commission (Commission) to provide national leadership and comprehensive and consistent approaches to levee safety, including standards, research and development, technical materials and assistance, training, public involvement and education, design and oversight of delegated programs, and the ability to align federal programs;
(b) ESTABLISH ADVISORY COMMITTEES OF THE COMMISSION. The Commission shall be supported by Advisory Committees, comprised of volunteers from all levels of government and the private sector with specific responsibility to advise the Commission on matters related to the National Levee Safety Program. The following four (4) Standing Advisory Committees shall be established simultaneously with the establishment of the Commission:

(1) **Standing Committee on Delegated Programs** – to advise the Commission concerning the development and implementation of delegated levee safety programs in qualified states, sustainment of delegated programs, rescission of state delegated programs, management of incentives and disincentives (including grant programs) for state, tribal, local and regional entities;

(2) **Standing Committee on Technical Matters** – to advise the Commission on matters related to the management of the National Levee Database, development and maintenance of the National Levee Safety Code, processes and materials for technical assistance and training, and research and development associated with levee safety;

(3) **Standing Committee on Public Involvement, Education and Awareness** – to advise the Commission in the development, fielding, and evaluation of targeted public outreach programs to gather public input, provide education, raise risk awareness, communicate information on delegated programs and track public understanding and behavior changes;

(4) **Standing Committee on Environment and Safety** – to advise the Commission on operations and maintenance permitting processes for existing projects, coordination of environmental and safety concerns on removal, rehabilitation and new levee projects, and efforts for environmental and safety collaboration in leved and adjacent areas; and

(5) The Commission is authorized to create additional Advisory Committees as it deems necessary.

(c) COMMISSION MEMBERSHIP, LEADERSHIP, AND MANAGEMENT.

(1) **MEMBERSHIP.** The President shall appoint full-time Commissioners which represent interests from the following areas: state government, local government, tribal government, regional government, and the private sector. A single Commissioner may represent more than one identified area. Two Commissioners will be appointed from the federal government representing the U.S. Army Corps of Engineers and the Federal Emergency Management Agency. Commissioners will serve for a term of up to 3 years on a staggered basis.

(2) **QUALIFICATIONS OF MEMBERSHIP.** Appointed Commissioners shall be knowledgeable in the fields of water resources and risk management, and as a Commission, represent the diversity of skills needed to lead the Commission including engineering, public communications, program development and oversight, and environment and public safety collaboration.

(3) **LEADERSHIP.** The leadership activity shall be the responsibility of Chair and shall be exercised by chairing the Commission to coordinate national efforts to improve the safety of levees in the United States. The Commissioners shall appoint the Commission Chair from their membership to serve a term of up to 2 years.
(4) MANAGEMENT. The Administrator shall be responsible for managing the day to day activities of the National Levee Safety Program at the direction of the Commission. The Commission will hire the Administrator.

(5) DUTIES and AUTHORITIES.

(A) The Commissioners shall have the authority and responsibility to perform the following duties and responsibilities to oversee and represent the National Levee Safety Program, including, but not limited to:

(i) Oversee the establishment of the National Levee Safety Program including the program elements and Advisory Committees;

(ii) Hire the National Levee Safety Program Administrator;

(iii) Examine potential incentives and disincentives for good levee safety behavior and coordinate alignment of federal programs related to leved areas;

(iv) Review and approve all key regulatory and programmatic changes to the National Levee Safety Program once established;

(v) Review and approve criteria, process, and timing for delegation of the National Levee Safety Program;

(vi) Review and approve criteria, process, and timing for rescission of a delegated program for nonperformance;

(vii) Provide periodic recommendations to the President on the effectiveness of the National Levee Safety Program, including needed authorities, budgets, coordination with other federal agencies and programs, and improvements to governance;

(viii) Communicate risks associated with levees to the people of the United States;

(ix) Address policies, procedures and legal issues (e.g., liability) related to levee safety;

(x) Chair and manage the Interagency Committee on Levee Safety; and

(xi) Conduct and submit annual evaluations to Congress on the state of the nation’s levees and the effectiveness of the National Levee Safety Program, including progress achieved by federal agencies, recommendations for legislation and other Congressional actions considered necessary.

(B) The Administrator, supported by Commission staff, shall have the authority and responsibility to perform the following duties and responsibilities to create and maintain the National Levee Safety Program, including, but not limited to:

(i) Carry out the day to day activities of management of the National Levee Safety Program;

(ii) Hire National Levee Safety Program staff;

(iii) Conduct rulemaking to support elements of the National Levee Safety Program;
(iv) Provide technical and financial assistance to states and other entities (e.g., grant making);
(v) Review and evaluate eligibility for state delegation and rescission per regulation;
(vi) Provide support to the Advisory Committees of the National Levee Safety Program;
(vii) Measure and report to the Commission Chair the performance of the National Levee Safety Program;
(viii) Provide technical and financial support for delegated programs as established by rulemaking;
(ix) Develop a comprehensive National Public Involvement and Education/Awareness Campaign to communicate risks and change behaviors in leveed areas; and
(x) Provide management and technical expertise to all elements of a National Levee Safety Program not assigned to the Commissioners.

(d) COMPENSATION and CONTRACTS

(1) FEDERAL EMPLOYEES. Each member of the Commission who is an officer or employee of the United States shall serve without compensation in addition to compensation received for the services of the member as an officer or employee of the United States.

(2) OTHER MEMBERS. The Commissioners who are not an officer or employee of the United States shall be compensated by the Commission for labor, travel, and expenses.

(3) ADVISORY COMMITTEE MEMBERS. Advisory Committee members will serve in a voluntary capacity and be reimbursed for travel and per diem only.

(4) CONTRACTS WITH FEDERAL AGENCIES. The Commission may use the expertise of federal agencies and enter into contracts to carry out the National Levee Safety Program.

(e) APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT. The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Commission or its standing Advisory Committees.

(f) REGULATIONS. The Commission is authorized to develop and enforce regulations as needed to implement the National Levee Safety Program.

(g) AUTHORIZATION OF APPROPRIATIONS. There is authorized to be $30 million to establish the National Levee Safety Commission and $30 million annually for each of fiscal years 2011 through 2015.

(1) A total of $15 million will be designated for funding Commissioners, Commission staff, Advisory committees, and managing state program delegation;
(2) A total of $11 million will be designated for Technical Programs, including development of codes, publications, training, technical assistance, and research and development;
(3) A total of $3 million will be designated for public involvement and education programs; and
(4) A total of $1 million will be designated for environment and public safety efforts.
Alternative Governance Option: **EMBED THE NATIONAL LEVEE SAFETY PROGRAM IN AN EXISTING FEDERAL AGENCY WITH THE COMMISSION AS AN ADVISORY BODY.**

**GENERAL** – While the National Committee on Levee Safety strongly believes that an independent agency is preferable, it also considered the possibility of embedding the National Levee Safety Program in a single existing federal agency, particularly on an interim basis as a permanent governance solution is created. The National Committee on Levee Safety determined that neither the U.S. Army Corps of Engineers nor the Federal Emergency Management Agency alone has the full suite of expertise needed in the key areas of: 1) levee engineering; 2) risk mitigation in leveed areas; and 3) administering incentives. The National Committee on Levee Safety was also concerned that housing a national program in an existing agency would further stretch the resources of these agencies by expanding their existing large missions, and provide challenges to that agency in managing alignment of other federal agencies’ programs. Should Congress determine that this governance model is appropriate, the National Committee on Levee Safety would like to make the following recommendations for a part-time Commission supporting an embedded National Levee Safety Program:

(a) **ESTABLISH AN ADVISORY COMMISSION.** The Secretary of the Army or the Administrator of the Federal Emergency Management Agency shall establish a National Levee Safety Commission to provide national leadership and comprehensive and consistent approaches to levee safety, including standards, research and development, technical materials and assistance, training, public involvement and education, design and oversight of delegated programs, and ability to align federal programs.

(b) **LEADERSHIP, QUALIFICATIONS and COMPENSATION.** The membership, appointments and qualifications of Commissioners and Administrator should be identical to the requirements set forth in Section V for the National Commission on Levee Safety with the following exceptions:

(1) The National Levee Safety Program’s Administrator shall be hired by the Secretary of the Army or the Administrator of the Federal Emergency Management Agency in consultation with the Commissioners; and

(2) The Commissioners shall serve on a part-time basis with compensation for labor, travel and per diem.

**SECTION VI. ELEMENTS OF NATIONAL LEVEE SAFETY PROGRAM**

(a) **GENERAL.** The President shall establish a National Levee Safety Program to institute comprehensive and consistent approaches to levee safety as detailed in the report entitled “Recommendations for a National Levee Safety Program” developed by the National Committee on Levee Safety, dated January 15, 2009, including, but not limited to:

(1) an inventory of federal and non-federal levees;

(2) a national levee database that includes federal and non-federal levees;

(3) a national public involvement and education/awareness program with an emphasis to communicate risk and change behavior;

(4) periodic and on-going inspection of levees;

(5) national levee safety standards;

(6) a hazard potential classification system;

**Disclaimer:** This draft legislative framework has been developed by the nonfederal members of the National Committee on Levee Safety and is not endorsed by nor should it be construed as an Army or Administration position.
(7) independent technical review of levee system data and documentation in order to comply with the National Flood Insurance Program requirements;

(8) ongoing research and development;

(9) harmonizing of levee safety activities and environmental protection;

(10) technical materials and assistance;

(11) levee safety training;

(12) tolerable risk guidelines;

(13) delegation of program elements to qualified states;

(14) grants to assist states in developing levee safety programs;

(15) grants to rehabilitate, improve, replace, or remove levees;

(16) alignment of federal programs to incentivize good levee safety behavior;

(17) mandate purchase of risk-based flood insurance in leved areas;

(18) augment floodplain mapping of leved areas;

(19) align federal departments, agencies and programs; and

(20) address legal and liability issues related to levees.

(b) LEVEE DATABASE. 33 USC 3303. SEC. 9004

(1) CONTENTS – shall be amended as follows: The database shall include – (A) location information of all federal and non-federal levees in the nation [including Geographic Information Systems (GIS) information] and collection of updated levee information provided by the states, federal agencies, and other entities.

(c) INVENTORY AND INSPECTION OF LEVEES. 33 USC 3303. SEC. 9004.

(1) FEDERAL LEVEES – shall be amended as follows:

(A) FEDERAL AND NON-FEDERAL LEVEES. The Secretary of the Army is authorized, at federal expense, to conduct a one-time inventory and inspection of all federally and non-federally owned and operated levees. Ongoing maintenance of the National Levee Database shall be the responsibility of the Secretary.

(d) AUTHORIZATION OF APPROPRIATIONS FOR LEVEE INVENTORY AND INSPECTION. 33 USC 3303. SEC. 9006.

(1) There is authorized to be appropriated to the Secretary of the Army to carry out Subsection (c) $125,000,000 for each of fiscal years 2011 through 2015.

(e) DEVELOP NATIONAL LEVEE SAFETY STANDARDS

Within five years of enactment, the Commission shall develop and adopt a National Levee Safety Code. Policies, procedures, standards and criteria should be linked to Levee Hazard Potential Classifications and should include concepts of tolerable risk. The National Levee Safety Code shall be updated at least every ten years. All federal agencies and delegated levee safety programs are required to adopt the National Levee Safety Code.

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As in interim step, within one year after enactment and appropriation for this activity, the Commission shall establish Interim National Levee Engineering Guidelines, including policies, procedures, standards and criteria, for levees, canal structures, and related facilities and features using the International Code Council code development process.

(f) DEVELOP TOLERABLE RISK GUIDELINES

The Commission shall assemble a panel of experts knowledgeable of tolerable risk concepts with the purpose of assessing and developing National Tolerable Risk Guidelines for levees. Within two years, the Commission shall submit a Report to Congress including recommendations for the development and adoption of National Tolerable Risk Guidelines including any needed legislation or rulemaking.

(g) INDEPENDENT TECHNICAL REVIEW FOR LEVEE INFORMATION FOR THE NATIONAL FLOOD INSURANCE PROGRAM

Congress shall direct the Federal Emergency Management Agency to require independent technical review of levee data and documentation provided by a professional engineer as part of the process for determining compliance with National Flood Insurance Program regulations.

(h) HARMONIZE LEVEE SAFETY ACTIVITIES WITH ENVIRONMENTAL CONCERNS RELATED TO LEVEES

The Commission shall address operation and maintenance permitting processes for existing projects and coordination of environmental and safety concerns related to levees. The Commission shall require delegated levee safety programs to establish an approach to facilitate operations and maintenance permits among each of the state environmental and resource agencies. After two years, the Commission shall deliver a Report to Congress that recommends a series of actions to better understand and remove barriers to effective levee operations and maintenance.

(i) RESEARCH AND DEVELOPMENT

The Commission shall establish a Research and Development Program that includes innovative technology for repairs and improved engineering methods that would lead to more reliable levees and more cost effective approaches, technical and archival research of current technologies for repair and improved engineering methods, dissemination of research products, technologies and tools to enhance security, establishment of guidelines and a program for forensic investigations of levee failures and severe distress, and cost effective measures to make operations and maintenance practices more compatible with natural resource management principles.

The Commission’s Standing Committee on Technical Matters should seek advice from representatives from academia, the National Science Foundation, the National Research Council, the White House Office of Science and Technology, the National Science and Technology Council and the U.S. Army Corps of Engineers Engineering Research and Development Center regarding this effort. The National Science Foundation shall focus some of its research on improving rapid assessment of levee geotechnical performance.

(j) DEVELOP A COMPREHENSIVE NATIONAL PUBLIC INVOLVEMENT AND EDUCATION/AWARENESS CAMPAIGN TO COMMUNICATE RISK AND CHANGE BEHAVIOR IN LEVEED AREAS

The Commission shall develop a comprehensive national public involvement and education awareness campaign to communicate risk and change behavior in leveed areas,
ensure consistency of messages across government agencies, and provide national leadership in risk communication for implementation at the state and local levels. The Commission shall guide development and implementation of the public involvement and education/awareness campaign.

(k) AUGMENT FEMA’s FLOOD HAZARD MAPPING PROGRAM

The Federal Emergency Management Agency shall:

(1) Identify levee systems, including structures along canals, and associated levee system failure consequence zones, in accordance with development of the National Levee Database;

(2) Improve risk identification and communication in leved areas by re-designating Zone A/AE or Zone X areas impacted by levees as either AL or XL, respectively; and

(3) Depict on FEMA’s website additional flood hazard information (e.g., 200-year level of protection) that may be provided by local/region/state entities.

(4) AUTHORIZATION OF APPROPRIATIONS.—There is appropriated to the Federal Emergency Management Agency to carry out this Section $10,000,000 annually for each of fiscal years 2011 through 2015.

(l) ALIGN COMMUNITY RATING SYSTEM TO REWARD DEVELOPMENT OF STATE LEVEE SAFETY PROGRAMS

FEMA shall revise the National Flood Insurance Program Community Rating System (CRS) Program to provide communities additional credits based on an approved delegated levee safety program and augment/decrease maximum credits allowed for certain CRS activities.

(m) DEVELOPMENT OF TECHNICAL MATERIALS AND TRAINING

The Commission shall establish a national levee safety training program to develop and deliver technical assistance materials, curricula and training. The Commission may rely on the U.S. Army Corps of Engineers, Federal Emergency Management Agency, the U.S. Bureau of Reclamation, and others to provide technical assistance materials, curricula and training as appropriate.

(n) ALIGN FEDERAL PROGRAMS TO PROVIDE ADDITIONAL INCENTIVES AND DISINCENTIVES RELATED TO LEVEES

The Commission, in consultation with federal agencies, shall identify opportunities for alignment of federal programs to provide incentives and disincentives to governments and the citizenry to promote shared responsibility for levee safety and incentivize the development of strong state and tribal levee safety programs. The Commission shall chair the Interagency Committee on Levee Safety (Section VII) and make recommendations to Congress for needed legislative changes.

SECTION VII. INTERAGENCY COMMITTEE ON LEVEE SAFETY

(a) GENERAL. In order to ensure that levee investments provide the maximum benefit, all federal programs that significantly impact governmental and individual decision-making in leved areas must be aligned toward the goal of reliable levees, an informed and involved public, and shared responsibility for protection of human life and mitigation of public and private economic damages and environmental protection. Federal programs shall not only be aligned with each other, but shall be used as an enticement for development of state and tribal levee safety
programs. In aligning federal programs and creating incentives and disincentives, the following principles should be followed:

(1) Immediate disaster response functions should not be included as incentives and disincentives; and

(2) Ensure that promoting synergies between the National Levee Safety Program and other federal programs (e.g., the National Flood Insurance Program) does not result in unintended adverse impacts.

(b) ESTABLISHMENT. There is established an Interagency Committee on Levee Safety with broad representation from each of the affected federal departments and agencies—

(1) Composed of a representative of each of the following: the Department of Agriculture, the Department of Defense, the Department of Energy, the Department of Homeland Security, the Department of Housing and Urban Development, the Department of Interior, the Department of Labor, the Environmental Protection Agency, the Federal Emergency Management Agency, the Federal Energy Regulatory Commission, the Nuclear Regulatory Commission, the United States Section of the International Boundary and Water Commission, and other federal agencies, departments or programs with a nexus to levee safety as determined by the Commission; and

(2) Chaired by the Commission.

(c) DUTIES. The Interagency Committee on Levee Safety shall encourage the establishment and maintenance of effective federal and state programs, policies, and guidelines intended to enhance levee safety for the protection of human life and property through:

(1) Facilitating information exchange among federal agencies and state levee agencies;

(2) Analyzing possible alignment of federal programs to identify incentives and disincentives to governments and the citizenry that have delegated state levee safety programs; and

(3) Coordinating activities among federal agencies concerning implementation of the Report to Congress from the National Committee on Levee Safety.

SECTION VIII. DELEGATION OF NATIONAL LEVEE SAFETY PROGRAM TO STATES AND TRIBES

(a) AUTHORITIES NEEDED FOR DELEGATION OF A NATIONAL LEVEE SAFETY PROGRAM.

Responsibilities of the National Levee Safety Program may be delegated to states and tribes. To qualify for delegation, a state or tribe must have authority to do the following:

(1) Participate in the National Levee Safety Program;

(2) Receive such funds as the federal government may make available for program implementation and distribute some portion of those funds to local government entities, consistent with National Levee Safety Program requirements;

(3) Adopt or establish standards for levee classification, inspection, construction, operation, maintenance and emergency preparedness;

(4) Perform or require inspection of levees during and after construction, and to prepare or require preparation and submittal of inspection reports and records;

(5) Perform or require development and implementation of emergency action planning procedures;
(6) Prepare reports on levees within the jurisdiction, including location, condition, maintenance, areas protected, and risks posed thereby, and to publish and distribute such reports to public or private entities;

(7) Communicate with and educate local government, levee owners and operators, and the public about the risks and benefits associated with levees and other flood risk reduction measures, and to promote prudent practice with regard to levees;

(8) Require that local governments develop and implement emergency action planning procedures and evacuation plans for imminent or actual levee failure;

(9) Enter public or private property for safety inspections or to perform emergency action; and

(10) Promulgate rules, regulations and procedures to implement statutory authorities.

(b) RULES, REGULATIONS AND PROCEDURES NEEDED TO IMPLEMENT A DELEGATED STATE LEVEE SAFETY PROGRAM. To qualify for delegation, a state or tribe must promulgate rules, regulations and procedures to implement the aforementioned statutory authorities including:

(1) Coordinate levee safety activities with neighboring states and among entities within the state owning, operating, regulating or using levees and between those entities and the National Levee Safety Program;

(2) Receive and review application packages from entities within the state for grants from the National Levee Safety Program, to submit acceptable applications to the National Levee Safety Program, and to receive and disburse grant funding from the National Levee Safety Program;

(3) Request an initial federal inspection by the U.S. Army Corps of Engineers for levees within the state’s or tribe’s jurisdiction;

(4) Inspect or require the inspection of levees by a registered engineer within the state’s or tribe’s jurisdiction at least annually and after all significant high water events;

(5) Provide information to the National Levee Database for the levees within the jurisdiction and provide updates at least annually, following the database standards;

(6) Implement a levee risk communication and public outreach/education program, including publication of an annual report on the delegated Levee Safety program, and on the results of levee inspections, and providing levee owner and operator notification and public notification of the maintenance ratings and risk behind levees;

(7) Adopt the National Levee Safety Code for all levee projects under the state’s or tribe’s jurisdiction or involving state or tribal funds or, prior to development of the National Levee Safety Code, Interim Levee Safety Standards or Guidelines, developed and adopted by the Commission;

(8) Require all communities that are protected by Significant or High Hazard Potential Levees, as defined by regulation, develop emergency action and evacuation plans in accordance with National Levee Safety Program guidance;

(9) Adopt measures as needed to require consideration of non-structural measures associated with any levee related activities;
(10) Have a Hazard Mitigation Plan approved by the Federal Emergency Management Agency; and

(11) Provide liaison and coordination on environmental permitting actions related to operation and maintenance of levees.

(c) TO QUALIFY FOR A STATE DELEGATED LEVEE SAFETY PROGRAM. To qualify for delegation, a state or tribe must have in place funding, qualified personnel, equipment and vehicles to conduct elements of a delegated program.

(d) TO MAINTAIN A STATE DELEGATED LEVEE SAFETY PROGRAM. To maintain delegation, a state or tribe must meet the performance standards as promulgated through rulemaking.

(e) RESCISSON OF DELEGATION. Delegation to a state or tribe may be rescinded upon finding that the state or tribe is not performing to the minimum requirements established for a delegated program.

(f) ABSENCE OF DELEGATION. In the absence of delegation to a qualified program, the Commission shall implement the following program measures:

(1) After an initial federal inspection and assessment, conduct or cause to be conducted an inspection of High or Significant Hazard Potential Levees after significant flood events, and at least every five years, and update the National Levee Database;

(2) Provide inspection reports and findings to local emergency management officials;

(3) Conduct a program of public information concerning the presence of levees, their condition and their associated risks, including notification of the state legislature and governor; and

(4) Other and further action as the Commission deems appropriate to encourage, publicize the benefits of, and foster support for a qualified state program.

(g) PHILOSOPHIES OF INCENTIVES AND DISINCENTIVES FOR STATE LEVEE SAFETY PROGRAMS. During the first 5-10 years of the National Levee Safety Program, delegated programs will be highly encouraged through direct support (e.g., program start-up grants, technical assistance, and training) with no penalties for non-participation. By the end of the start-up period, after states and tribes will have been afforded ample opportunity and assistance to ensure the safety of their populations through strong levee-related mitigation activities and the maintenance of resilient and reliable levees, an increasingly substantial set of disincentives should be applied. Over time, increasingly stringent disincentives will be applied, making it more difficult for states, tribes, regional and local governments to secure federal investment in areas located behind uncertain or unreliable levees. This phased approach toward application of incentives and disincentives recognizes two equally important principles:

(1) Significant time and assistance is needed for governments and owner/operators to understand and address their levee situation; and

(2) Continued federal investment in areas protected by levees where states, tribes and local governments do not invest in protecting the people and property located behind them (e.g., participate in a minimum delegated program) is both fiscally irresponsible and places citizens at unacceptable risk.

(h) Within three years, Commission shall submit a report to Congress describing how to employ incentives and disincentives to promote coordinated, positive behavior in leveed areas.
SECTION IX. ASSISTANCE TO CREATE STRONG LEVEE SAFETY PROGRAMS IN ALL STATES AND TRIBES

(a) IN GENERAL. To encourage the establishment and maintenance of effective delegated programs intended to ensure reliable and resilient levees, as well as increase capacity to assess whether a structural solution is the most appropriate risk reduction measure, the Commission shall provide financial assistance to assist states and tribes in establishing and maintaining levee safety programs in all states in accordance with:

(1) the criteria specified in Section VIII; and

(2) more advanced requirements and standards established by the Commission.

(b) CRITERIA AND BUDGETING REQUIREMENT. For a state or tribe to be eligible for assistance under this subsection, a delegated levee safety program must be working toward meeting the criteria included in Section VIII.

(c) WORK PLANS. The Commission shall enter into a contract with each state or tribe receiving assistance to develop a work plan necessary for the delegated levee safety program to reach a level of program performance specified in the contract.

(d) MAINTENANCE OF EFFORT. Assistance may not be provided to a state or tribe under this subsection for a fiscal year unless the state or tribe enters into such agreement with the Commission that the state or tribe will maintain the aggregate expenditures of the state or tribe from all other sources for programs to ensure levee safety for the protection of human life and property at or above a level equal to the average annual level of such expenditures for the two fiscal years preceding the current fiscal year.

(e) COST SHARING. The federal share of the cost for which a grant is made to a state or tribe for Assistance for Delegated Levee Safety Programs under this Section may not exceed 75 percent of the eligible cost of implementing the delegated levee safety program.

(f) CONTRACTUAL REQUIREMENTS.

(1) IN GENERAL. As a condition on the receipt of a grant under this Section, a state or tribe that receives the grant shall require that each contract and subcontract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design, engineering, surveying, mapping, and related services entered into using funds from the grant be awarded in the same manner as a contract for architectural and engineering services is awarded under—

(A) Chapter 11 of Title 40, United States Code; or

(B) an equivalent qualifications-based requirement prescribed by the State.

(g) AUTHORIZATION OF APPROPRIATIONS. There is authorized to be appropriated to the Commission to carry out this Section $113 million for each of the fiscal years 2011 through 2015.

SECTION X. ASSISTANCE FOR LEVEE REHABILITATION, IMPROVEMENT AND FLOOD MITIGATION

(a) GENERAL. The Commission shall establish a program to provide financial assistance for use in rehabilitation, improvement, and removal of publicly-owned levees and other flood mitigation measures in leved areas. These funds would only be authorized pre-disaster and shall not replace or substitute for any Federal Emergency Management Agency Hazard Mitigation Assistance Programs funding.
(b) AWARD OF FINANCIAL ASSISTANCE.

(1) APPLICATION.

(A) IN GENERAL. An entity interested in receiving a grant under this Section may submit to
the Commission an application for the grant; and

(B) REQUIREMENTS. An application submitted to the Commission under this Section shall
be submitted at such time, be in such form, and contain such information as the
Commission may prescribe by regulation.

(c) ELIGIBILITY. In order to be eligible to receive federal assistance a grant applicant must:

(1) Provide the minimum data to populate the National Levee Database;

(2) Demonstrate the financial means to provide their cost share contribution for the initial
rehabilitation and to operate and maintain the levee system in accordance with the National
Levee Safety Code;

(3) Evaluate an array of non-structural alternatives/activities, and where applicable identify a
non-structural/structural blend of flood risk management approaches, and demonstrate
that the appropriate combination of hazard mitigation measures are being implemented to
best reduce flood risk and maximize net benefits to society;

(4) Engage in public outreach/notification;

(5) Provide buyer notification of flood risk;

(6) Promote purchase of flood insurance;

(7) Develop an emergency response plan;

(8) Develop and implement good levee safety practices including routine and periodic
inspections and other activities of a safety program;

(9) Provide a flood risk management plan as part of a public safety element of a general/master
land use plan that demonstrates the local community plan to manage land use over time to
move substantially towards the established national tolerable risk guidelines; and

(10) Participate in the National Flood Insurance Program or be located entirely within one or
more participating communities.

(d) GRANT.

(1) IN GENERAL. The Commission may make a grant in accordance with this Section for
rehabilitation, improvement and flood mitigation of a levee to a state or tribe.

(2) PROJECT GRANT AGREEMENT. The Commission shall enter into a project grant agreement
to establish the terms of the grant and the project, including the amount of the grant.

(3) Funds under this program can be applied to the combination of activities, both structural
and non-structural, that combined would maximize overall risk reduction.

   (A) Priority System. The Commission shall develop a risk-based priority system for use in
identifying levees for which grants may be made under this Section.

   (B) Use of Funds. Funds provided in the form of a cost shared agreement shall be used only
for levees that are not federally operated and maintained.
(4) Funds may not be used to:
   (A) perform routine operation or maintenance of a levee; or
   (B) make any other modification to a levee that is not associated with the rehabilitation or improvement of the levee system.

(e) COST-SHARING. The federal share of the cost of rehabilitation, improvement, removal, replacement and flood mitigation of a levee for which a grant is made under this Section may not exceed 65 percent of the cost of the rehabilitation, improvement, removal, replacement and flood mitigation.

(f) NO PROPRIETARY INTEREST. A contract awarded in accordance with this Section shall not be considered to confer a proprietary interest upon the United States.

(g) AUTHORIZATION OF APPROPRIATIONS. There is authorized to be appropriated to the Commission to carry out this Section $600 million for each of the fiscal years 2011 through 2015.

SECTION XI. MANDATORY RISK – BASED FLOOD INSURANCE IN LEVEED AREAS

(a) SPECIAL FLOOD HAZARD AREAS. Not later than 180 days after the date of enactment of this title, the Administrator of the Federal Emergency Management Agency shall issue final regulations establishing a revised definition of areas of special flood hazards for purposes of the National Flood Insurance Program.

(b) RESIDUAL RISK AREAS. The regulations required by subsection (a) shall—

   (1) include any area previously identified by the Federal Emergency Management Agency as an area having special flood hazards under Section 102 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a); and
   
   (2) require the expansion of areas of special flood hazards to include areas of residual risk, including areas that are located behind levees.

(c) MANDATORY PURCHASE REQUIREMENT.
   
   (1) IN GENERAL. Any area described in subsection (b) shall be subject to the mandatory purchase requirements of Sections 102 and 202 of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a, 4106).
   
   (2) ACCURATE PRICING. The Director shall ensure that the price of flood insurance policies in areas of residual risk accurately reflects the flood risks and the level of flood protection provided by any levee in such area.