

**WRITTEN TESTIMONY OF STEVE COCHRAN
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ENVIRONMENTAL DEFENSE FUND**

FOR THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

“OVERSIGHT: MODERNIZING OUR NATION’S INFRASTRUCTURE”

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Chairman Barrasso, Ranking Member Carper, and members of the Senate Committee on Environment and Public Works, thank you for the opportunity to submit written testimony on the importance of considering natural features as we work collectively to modernize our nation’s infrastructure.

My name is Steve Cochran, and I am the Associate Vice President for Coastal Protection for Environmental Defense Fund (EDF). EDF is a national environmental advocacy organization with more than two million members. Placing a strong emphasis on our core strengths of science and economics, we are dedicated to finding innovative approaches to solving some of the most difficult national and international environmental challenges. Whenever possible, we collaborate with private-sector partners, state and federal leaders, academic institutions, and other environmental organizations interested in maximizing incentives for market-based solutions to environmental problems.

We believe there is an immediate and compelling need for rebuilding America’s worn and damaged infrastructure – the basic physical and organizational structures, systems, and facilities needed for the operation of our nation and its economy. This need is particularly critical within our coastal counties, which comprise only 10% of our nation’s landmass but account for 42%¹ of the nation’s GDP. Approximately 159.6 million people live in these densely packed coastal communities.²

Within these coastal communities, our infrastructure focus needs to be beyond buildings, roads, levees, and power supplies and instead inclusive of what has become known as “natural infrastructure” – natural and enhanced landscape features such as barrier islands, dunes, wetlands, coastal forests, and reefs. Simply put, focusing on these kinds of elements in our coastal areas can provide essential, sustainable and powerful protections in the face of rising seas. This need to restore and enhance our traditional natural coastal protection stems from the fact that our nation’s coasts have been stripped of their natural protections under the pressures of erosion, development, and straightjacketed rivers. In the face of now rising seas that has left major cities like New York and New Orleans swamped by storm surge; military installations such as Naval Station at risk, and caused billions of dollars in damage to economically significant ports, highways and other infrastructure.

¹ Kidlow, J.T., Colgan, C.S., & Scorse, J., National Ocean Economic Program, [State of the U.S. ocean and coastal economies](#), 2009.

² United States Census Bureau, [Statistical Abstract of the United States: 2012](#) (131st Edition), 2011.

Natural infrastructure is our first line of defense against the effects of damaging storms. Shellfish and coral reefs serve as speed bumps for waves, reducing their damaging energy. Dunes are wave shock absorbers and act as natural dams to deflect storm surges. Maritime forests and mangroves reduce wind speeds, slow the passage of water, and catch building-damaging debris. Wetlands and riparian floodplains are natural retention basins reducing the height of floods. A recent study found that existing coastal wetlands prevented \$625 million in property damages during Hurricane Sandy, and that they can reduce annual storm damages by more than 20%³. Projects like San Francisco Bay's proposed horizontal levee⁴ are using natural coastal features in combination with traditional infrastructure to provide protection, decrease the cost of dikes, and improve habitat and recreational space.

In my home state of Louisiana, over the last century more than 1,800 square miles of wetlands and barrier islands – a total land area the size of Delaware – have disappeared. Losing this protective natural infrastructure, the oil and gas industry is now facing major infrastructure problems as thousands of miles of oil and gas pipelines that were once buried underground are now exposed above water. The Port of South Louisiana complex – which handles more tonnage per year than any other port district in the western hemisphere – includes three of the world's top 10 ports most at risk due to natural disasters⁵. And recent estimates show the direct and indirect impacts of Louisiana's coastal land loss put between \$5.8 and \$7.4 billion in annual output at risk⁶. Extreme weather events and sea level rise are causing major coastal military installations – from Hampton Roads, Virginia to Ventura County, California – to put a priority on coastal resilience.

Restoring our natural infrastructure creates jobs as well. One study found that restoring our coasts can create more than 30 jobs for each million dollars invested⁷. In southeast Louisiana, the water management industry – which includes coastal restoration, coastal protection and urban water management – is growing faster than any other major sector in Louisiana's coastal zone. The sector includes entry to mid-level jobs in numerous fields and has a high average wage among key industries – \$69,277 per year. At a time when other commodity based sectors such as oil and gas have been shrinking, water management has already created approximately 44,000 jobs across Louisiana's Gulf coast⁸. In Florida, restoring the Everglades wetlands is expected to generate an additional 440,000 jobs over the next 50 years⁹.

Finally, investing in improving natural coastal infrastructure would provide great returns on the federal government's investments by reducing post-disaster recovery payments. Floods,

³ Narayan, S., Beck, M.W., Wilson, P., Thomas, C., Guerrero, A., Shepard, C., Reguero, B.G., Franco, G., Ingram, C.J., Trespalacios, D., [Coastal Wetlands and Flood Damage Reduction: Using Risk Industry-based Models to Assess Natural Defenses in the Northeastern USA](#), Lloyd's Tercentenary Research Foundation, 2016.

⁴ The Bay Institute, [Green Infrastructure for the Global Warming Era: Horizontal Levee Coastal Storm-Surge Barrier](#), 2016.

⁵ RMS, [RMS Analysis Reveals the Ten World Ports at Risk of Highest Insurance Loss Due to Catastrophe](#), 2016 and [Port of South Louisiana Complex](#).

⁶ Louisiana Coastal Protection and Restoration Authority, [Louisiana's Comprehensive Master Plan for a Sustainable Coast: 2017 Draft Plan Release](#), 2017.

⁷ Restore America's Estuaries, [Jobs & Dollars: Big Returns from coastal habitat restoration](#), 2011.

⁸ Restore the Mississippi River Delta, [Growth in Water Management Sector in Coastal Louisiana](#), 2016.

⁹ Everglades Foundation, [Everglades Restoration: A 4-To-1 Return on Investment](#), 2012.

hurricanes, and severe storms account for the majority of FEMA's disaster spending, and it is well known that spending money upfront on preventing disasters is more cost-effective than responding to them; one study indicated prevention at least 4 times more cost effective¹⁰. In contrast, Hurricane Katrina continues to remind us of the human and economic costs that result from the failure to prepare and invest ahead of the next storm. Yet we continue to spend money in this "after the storm" approach.

It is absolutely possible to invest more thoughtfully. In Louisiana for example, the state has developed a comprehensive Coastal Master Plan for rebuilding its coast and protecting its cities, communities and industries, and has begun to invest heavily to do so. The plan includes both "grey" and "green" infrastructure – e.g., barrier islands, marsh creation, levees, and it features the dramatic use of natural assets like the Mississippi River through sediment diversion projects – controlled structures that allow nutrient-rich silt from the Mississippi River to disperse into adjacent areas to rebuild wetlands at massive scale. If completely implemented – and the state will need additional resources over time – the plan will help sustain the region's nationally-significant industries (e.g., shipping, energy, fisheries), help to protect 2 million people in South Louisiana from powerful Gulf storms, and reduce expected damages by **\$150 billion** over the next 50 years.

The bottom line is that coastal restoration and protection should be front and center in the growing discussion of how best to rebuild America. When done well, it is extremely cost-effective, safeguards industry, creates jobs, protects American communities and safeguards national security – all compelling reasons to include it prominently on our national agenda for rebuilding America's infrastructure. We look forward to working with all members of the Committee on the development of a Congressional infrastructure proposal.

¹⁰ Multihazard Mitigation Council, [Natural Hazard Mitigation Saves: An independent study to assess the future savings from mitigation activities](#), 2005.