

Quo Vadis Louisiana?

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“In our history there is one spot on the globe the possessor of which is our natural and habitual enemy. It is New Orleans through which the produce of three eighths of our territory must pass to market and from its fertility it will ere long yield more than one half of our whole produce and contain more than one half of our whole population.” Thomas Jefferson (1802)

“an inevitable city on an impossible site.”
 Geographer Peirce Lewis (1973)

On August 29, 2005, the full force of Hurricane Katrina hit New Orleans and the Louisiana Gulf Coast and inflicted catastrophic damage on people, the built environment, and the natural landscape. For most Americans, the memory of that day has faded and they have logically assumed that, in the more than three years since the disaster, the New Orleans “problem” has been addressed. For many who live and work in the region, Katrina’s memory remains etched in their minds because, in many cases, recovery from the hurricane has been limited and complete salvation is not in sight.

A drive today through the city or to the coast can still demonstrate the devastation that was Katrina. In some areas things are back to normal. In many other areas, the best that can be said is that rebuilding is progressing, albeit slowly. The lower 9th Ward, which was among the areas hardest hit by the flood, became the center of attention for those who saw the economically disadvantaged suffering the most. Today, a drive through that area finds tall grass, a few elevated and energy innovative homes built by charitable groups, but almost no people. Even in the Lakeview area, a considerably more affluent neighborhood than the lower 9th, progress has been spotty and rebuilt or new homes

frequently sit next to empty shells. Thirty percent of the residents of New Orleans at the time of Katrina have yet to return to their city.

While Hurricane Katrina created havoc in and around New Orleans, it also attacked the coastal lowlands that sit between the city and the Gulf of Mexico, destroying or badly damaging homes, industries, and over 120 square miles of wetlands. While the oil and gas industry has returned, many other businesses and residents have not.

At the time of Katrina, coastal Louisiana, which also provides the outlet for the drainage of 41 percent of the conterminous U.S., was home for the nation’s largest port, an oil and gas industry that provided access to 35 percent of the nation’s energy supply, a diverse coastal ecosystem that supported a multibillion-dollar fisheries industry, and the largest coastal wetland in the lower 48 states. The New Orleans area was and remains a cultural capital of the South, a major focus of mid-south banking and energy development, and the home for over 700,000 individuals. Lack of long-term plans and accurate knowledge of what the future may bring to the region hinders resettlement and any new development.

Immediately after the hurricane, standing in Jackson Square in the French quarter, President Bush committed the federal government to making “the flood protection system stronger than it has ever been” (Bush 2005). Rhetoric in support of the restoration of the city that was loud and frequent in the months following the hurricane has faded over time. Congressional directives for the immediate preparation of long-term plans have yet to be answered. Support for the restoration of coastal Louisiana wetlands has been pushed into the background by the necessity for funding the rebuilding of the hurricane protection system for

New Orleans to a level that remains below that originally intended for the city. (Would you move back into an area with less protection than you were authorized to have before Katrina?) A growing national economic downturn has exacerbated the funding problem. While many hope that an economic stimulus package will produce public works efforts that include coastal Louisiana, reality says that most national programs do not recognize or appreciate the immensity and complexity of protecting the city of New Orleans and restoring coastal Louisiana.

Many challenges remain to be addressed (Galloway et al. 2009):

- 1) What level of protection should be provided to New Orleans? The U.S. Army Corps of Engineers (USACE) has been authorized by the Congress to rebuild or improve the originally authorized levee system and its attendant supporting features to protect New Orleans against a 100-year flood (one that has a 1 percent chance of occurrence in any given year and a 26 percent chance of occurring during the lifetime of a 30-year mortgage). This effort, the total cost of which approaches \$15 billion, will leave the city with a level of protection that will permit the Federal Emergency Management Agency (FEMA) to exempt those behind the levees from the national requirements to buy flood insurance when you are protected to less than the 100-year level. Given that Katrina was approximately a 400-year surge event and that the Dutch are now seeking to provide protection against a 100,000-year storm, many question the use of the 100-year level of protection for even an interim approach (Battelle 2007).
- 2) Congress and the state of Louisiana have both indicated that more should be done to protect coastal Louisiana. Immediately after Katrina, the state launched a study of the alternatives for restoration and protection that should be considered and, in May 2007, the state legislature approved "Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast," that calls for 200-year or greater protection for the city of New Orleans, 100-year protection for areas south of New Orleans, and restoration of the coastal wetlands, not only for their ecological benefits but also for the benefits they could provide in serving as a buffer against the storms that will attack the region in the future. In 2005, Congress directed USACE to conduct a similar study and to submit its results within two years. However, it now appears that this study will not be completed until mid-2009, if then.
- 3) In considering how to address the disaster, many pundits suggested that part of the solution should include, in the city of New Orleans, either not resettling the lowest areas or elevating the homes to protect them against the flooding that will inevitably occur. The use of these nonstructural techniques has been demonstrated across the country by the USACE in many communities but found little initial support with those who have been displaced by Katrina. Even though the city sought support for such approaches, little funding was forthcoming to support the effort since many saw that any non-structural effort might divert attention from the restoration of the levees. Many of these non-structural proposals also are seen as socially divisive and not supportive of the needs and wishes of the low income and minority population.
- 4) Efforts to deal with the continuous loss of wetlands along the Gulf Coast were not new. Calls for such an effort long preceded Katrina. But, it was only when Katrina clearly pointed out the critical nature of these wetlands in the overall protection of the region and the ecological, economic and technological importance of this natural treasure that more senior officials took wetlands restoration seriously. However, as noted, funding for coastal restoration has taken a back seat to funding of the hurricane protection system (now officially called the hurricane damage risk reduction system) and the outlook for long-term funding for wetland restoration is questionable.
- 5) Flood risk management is replacing flood control and flood damage reduction as a new

paradigm for development of approaches to the challenges being faced by New Orleans. Risk management allows the identification of areas most in need of attention (at risk) and the establishment of priorities to deal with these needs. But managing by level of risk flies in the face of years of providing everyone the same level of protection and is already getting considerable pushback.

- 6) Any work in coastal Louisiana will involve dealing with problems beyond protection against hurricanes. Restoration of the wetlands will require diversions from the Mississippi River into the wetlands to provide sediment and freshwater, but these diversions will also affect the ability of the river channel to serve as the highway for ocean going vessels that rely on the Mississippi and the port facilities that lie along its banks. Nutrients from throughout the Midwest continue to find their way into the Mississippi and down the river to New Orleans and the Gulf of Mexico creating vast dead zones just off the coast. Water quality in the region remains marginal and also must be addressed.

Unfortunately, the hurricane and flood challenges faced by New Orleans are also being faced in many other parts of the country as attention to Katrina's destructiveness uncovered levee systems that were no longer capable of protecting those behind them, and riverine and coastal areas where the need for ecological restoration provides strong competition for Louisiana in its quest for funding.

This special issue of the journal is focused on what is happening and what might happen in New Orleans and coastal Louisiana in the years ahead.

- In the first article, Colonel Alvin Lee, the commander of the New Orleans Engineer District, describes USACE's plan to provide short-and long-term flood risk management for coastal Louisiana.
- Dr. Lewis "Ed" Link, who served as director of the Interagency Performance Evaluation Task Force (IPET) that conducted the post-Katrina forensic examination of the hurricane protection system (IPET 2008), describes the policy and practice issues that were identified by the IPET and the impact this knowledge should have on future actions.
- Dr. Robert B. Gilbert, Brunswick-Abernathy Professor, Department of Civil, Architectural and Environmental Engineering at the University of Texas, Austin, and Robert G. Traver, Department of Civil and Environmental Engineering, Villanova University, describe their experience in evaluating New Orleans' risk at the time of Katrina and poses questions as to directions that should be taken in moving to a risk-based environment and how this environment might be achieved.
- Dr. Earthea Nance, Director of Disaster Mitigation Planning for the city of New Orleans has been in charge of developing a hazard mitigation strategy for the city and describes New Orleans' approach to dealing not only the potential for levee failures, but also with catastrophes such as subsidence, coastal erosion sea level rise and more frequent and stronger storm activity.
- Mark Davis, Esquire, Director of the Tulane Institute on Water Resources Law and Policy addresses the lessons that should have been learned from Katrina and how they affect the trade-offs that must be made in moving forward. He also addresses the challenges in trying to deal concurrently with flood and hurricane protection, ecological restoration, navigation, and other water resource issues.
- Dr. Denise Reed, University of New Orleans, reviews the efforts of an interdisciplinary group to sketch out a new approach to river management in coastal Louisiana to produce a sustainable coastal landscape and assesses the progress that has been made since that review towards implementation of the group's recommendations.
- Dr. Robert Twilley, Associate Vice Chancellor, Louisiana State University and Victor Rivera-Monroy, Louisiana State University, discuss the trade-offs that must be made in developing long-term plans for restoring the Mississippi River Delta to balance the need to move sediment into the wetlands with the need to better control the nutrients that flow in the Mississippi River.

- In the last of the articles on New Orleans-coastal Louisiana, Clive Goodwin, FM Global (Insurance), and Dr. Shirley Laska, University of New Orleans, offer commentary on the above articles and the flood risk management situation in general.
- As school children across the world are taught, the Dutch have become masters of dealing with coastal flooding and must continuously improve their system to protect themselves against the dangers of the North Sea. Dana Woodall and Jay Lund, University of California, Davis, complete the discussion of flooding by examining the approaches and innovations taken by the Netherlands in dealing with their flood challenge and discusses how such policy innovations might be integrated into the flood challenges faced in the state of California.
- The final paper of this issue by Dr. Mary V. Santelmann, Oregon State University, although not directly related to flooding, addresses the challenges faced in providing the intellectual talent necessary to deal with the significant water resource challenges that we face. Dr. Santelmann identifies and discusses the pool of future water resource professionals that exists among women and minorities and urges attention to their recruitment. This discussion is written as a constructive response to issue 139 of the *Journal of Contemporary Water Research and Education* on “A Creative Critique of U.S. Water Education.”

If I were to seek the commonality among papers in this issue of the journal, I would argue that it is represented in the call for accountability. The authors identify many problems and challenges and offer insights into potential solutions. Common among them is their discussion of responsibility or the lack thereof in making determinations on how to address these difficult challenges and problems. It remains for those in the field of water resources education and research to identify the specifics of this accountability and how the lack thereof might be best addressed. The old adage that ‘when everyone is in charge no one is in charge’ is one of the lessons we should have learned from Katrina.

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