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Coastal Restoration and Protection and the Future of New Orleans

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New Orleans and coastal Louisiana are joined at the hip. It is impossible to understand New Orleans apart from the coast, and the fate and future of each is inextricably tied to that of the other. Those ties, often invisible to many—even to a generation or more of the city’s own residents and leaders—have come into much clearer focus following the 2005 and 2008 hurricane seasons and the 2010 BP Deepwater Horizon blowout, an entirely man-made disaster. Those painfully acute catastrophes have combined with the chronic and largely induced collapse of coastal Louisiana, one of the continent’s greatest estuarine and wetland regions, raising fundamental questions about the sustainability of both the coast and the city. They have also given rise to reborn awareness of the importance of both and to an emergent “civics of sustainability” movement that may represent the best hope for the future of these treasures and, by extension, for other parts of the nation that are facing their own struggles with survival and sustainability.

The blowout of BP’s Deepwater Horizon well on the eve of the fifth anniversary of Hurricane Katrina, the storm that devastated New Orleans in August 2005, provoked eerily familiar feelings of uncontrolled vulnerability among the residents of the city and its adjacent coastal communities. There was no boarding up, no evacuation, and no stocking up on food and water, but there was

deep and abiding fear about the effects that the spill would have on the wetlands, shorelines, and waters of the region and the cultures and economies that were dependent upon them. To be sure, the coast has been in a long and steep decline for decades, but it has never been stark enough to garner the attention necessary to do something about it—or to prompt an honest, open discussion about the human, economic, and environmental costs of letting it go.

Hurricane Katrina and its successors—Rita, Gustav, and Ike—raised the level of concern in some circles, but by and large they drew attention only to the fallibility of the levees around New Orleans and the need for storm protection elsewhere.¹ Somehow it got lost that due to Katrina and Rita, 217 square miles of land had been lost across south Louisiana, converted to open water, in a span of one month.²

The BP spill was different. It did not flood cities or strand people on roof tops. It coated marshes, reefs, and beaches. It threatened fish, birds, and wildlife. And it left adrift thousands of businesses, workers, and families who depend on the coast: fishers, boat operators, guides, inn keepers, restaurant workers, grocers, and more. The BP spill did what no hurricane had: it revealed the powerful but fragile connection between a functioning coast and a functioning culture and economy.

But whether the threat to the coast comes from nature or from human hands, it is now clear that a threat to the coast is a threat to a vital web of human society, exemplified by the connection between the coast and New Orleans. The future of the city is a work in progress, and it will turn on number of factors, not all of which are within its control. First and foremost, it hinges on the future that its residents and leaders are willing to shape for themselves. Second, it depends on the degree to which state, national, and private actions can be reconciled to achieve a meaningful and purposeful outcome. Finally, it will take a measure of luck, since even the best plans will not bear fruit if natural or political forces dictate a different outcome.

If we leave aside the things that cannot be controlled, the future of New Orleans depends fundamentally on whether the benefits of regrowing the city outweigh the risks. Put another way, do our collective hopes as a people for the future of New Orleans and the coast that it is part of outweigh our fears about dealing with—or even acknowledging—the challenges of creating conditions conducive to sustainability? Perhaps the best way of approaching that question is by considering the past.

History: A City Defined by Its Relationship with Water

Nowhere is the power of hope and fear to sculpt the history and development of New Orleans clearer than in the case of the city's relationship with the rivers, wetlands, and estuaries that surround it and the city's vulnerability to water-driven risk. The city always had a troubled relationship with its watery environs. On one hand, its proximity to the Mississippi River and the Gulf made the city's founding and rise to prominence inevitable. On the other hand, the risk of flooding from the river, torrential rains, and the Gulf made it a hard bargain with nature from the beginning.

Water also shaped the distinctive culture of the city and the region. The port of New Orleans made the city one of the great points of entry for immigrants coming to America from around the world, giving the city a cosmopolitan flavor that was apparent in only a handful of other American cities. In stark contrast to the metropolis of New Orleans, the meandering bayous, bays, lakes, swamps, and marshes of the surrounding delta gave isolating refuge to Native Americans, expatriate Acadians (today's Cajuns), runaway slaves, Vietnamese, and others forging a network of landscape-oriented cultures that remain to this day—for the time being, at least.

Coastal Louisiana is not so much a place as it is a process. It is the result of roughly 7,500 years of work by rivers, mostly the Mississippi, bringing freshwater, sediment, and nutrients to the shallow water shelf at the southern end of the North American continent. In time a system of swamps, marshes, and estuaries covering nearly 7,000 square miles, or 4.5 million acres, was built between the uplands of the Pleistocene Terrace and the Gulf of Mexico.³ It was continually being shaped by the natural forces of rivers, the Gulf, soil subsidence, and erosion. It never stayed the same, but it was in functional equilibrium when Europeans colonized the delta in the early eighteenth century.

This is the coast that New Orleans was founded in. Its location was not a mistake. Its location was strategically chosen based on its proximity to the Gulf of Mexico and the Mississippi River (the mouth of the river was difficult to navigate at that time). Combine that with its modest but vital elevation (it was not below sea level then, and much of it is not today) and its distance from the Gulf, and you get, as geographer Peirce Lewis has called New Orleans, an "impossible but inevitable city."⁴

In settling the area, the Europeans—first the French, then the Spanish, followed by the English and the Americans—brought with them concepts and techniques that the coast had never seen. They were claiming property, building empires, and subduing a wilderness, and they had the tools, the capital, and the legal systems and theology to do it. The first levees on the Mississippi River were erected or raised (hence the term “levee,” from the French “lever,” “to raise”) when the French established the settlement of New Orleans. New Orleans was never intended to be a mere outpost; because it was envisioned as a metropolis, the expansion of its flood protection and the settlement and leveeing of the banks of the Mississippi and its distributary channels followed in short order.⁵ The walling off of the river from its flood plain had begun.

The first half of the twentieth century ushered in an unprecedented level of state, federal, and private actions that sent the coast into a steep decline. Navigational improvements such as the Gulf Intracoastal Waterway, oil and gas exploration and production, and the federalization of flood protection on the Mississippi River that followed the great flood of 1927 radically altered the hydrology of the coast. As early as the late 1920s, keen observers were already sounding an alarm, but by and large they were not being heard. Conservationist Percy Viosca, lamenting the loss of the state’s wetlands, wrote in 1928:

Reclamation and flood control as practiced in Louisiana have been more or less a failure, destroying valuable natural resources without producing the permanent compensating benefits originally desired. Reclamation experts and real estate promoters have been “killing the goose that laid the golden egg.”⁶

Such sentiments were not shared by many, and the Flood Control Act of 1928 made the levees on the lower Mississippi River the nation’s business and an overarching priority.⁷ By the 1930s, Louisiana’s coastal wetlands had shrunk to 3.2 million acres.⁸ Today less than 2 million acres remain.

This is the coastal landscape that New Orleans finds itself in today as it tries to recover and create a viable future for itself. It is increasingly clear that any prospects that the city has to recover and prosper are tied to reestablishing some semblance of sustainability in the landscape that is collapsing around it. This is not a challenge covered by old school urban renewal, new urbanism, smart growth, or any other catchy planning approach. The future of New Orleans is dependent upon nothing

less than a mutual survival pact with nature—starting with the wetland ecosystem of coastal Louisiana.

The fate and fortune of New Orleans and the communities around it is tied to that of the coast. That aspect of direct and immediate dependence on an ecosystem sets New Orleans apart from most other places, where the connections are less clear or at least less immediate. For over a century, the vulnerability of New Orleans to storms and rising seas has been growing as the buffering coast began to unravel. Since the causes of the collapse of the coast are mostly traceable to things that people did for economic reasons it was easy—indeed, it was policy⁹—to discount the growing risks. State and federal agencies feared the social and political costs of confronting the threats of an imploding coast more than they did the actual risks that coastal collapse posed to the viability of the entire economic, cultural, and ecologic web of the region. The riskiness of that approach was laid bare by a series of hurricanes that started with Katrina and by the BP spill. The lesson—that a new approach to living with nature and with risk was needed—had been cruelly taught and taught again, but was anyone learning? The answer to that question is a hopeful but uncertain maybe, and much will turn on the degree to which the Katrina/BP catastrophes force fundamental changes in policy and practice at the local, state, and federal levels.

Hurricane Katrina and Its Aftermath: A Moment of Uncertainty, a Moment of Possibility

Recovery from something like Hurricane Katrina is no simple matter. Unlike most natural disasters, which hit and leave fairly quickly and affect—however gravely—hundreds or thousands of people, the flood waters from Hurricane Katrina hit, destroyed, and stayed for nearly a month. Hundreds of thousands of people were displaced, and even homes and business that were high and dry had no utilities for months. There were no schools, hospitals, or grocery stores to come back to. Without people to serve, how could they reopen? Without basic services, how could people return? The fabric of the city was ripped apart. In such a situation the question isn't so much one of recovery but of rebirth—and as what?

It is no secret that New Orleans had a long and well-deserved reputation for civic indifference. It was an easy place to live well without much effort. No city in America was more loved by its residents, and none was

more neglected. To be sure, people had hopes that things would improve, but for the most part the city's plans were not well-formed and they did not galvanize the community. Among the high-profile projects pursued by the city were quick fix ideas such as casinos, race tracks, and amusement parks. They may have been fine ideas, but they were rooted largely in enticing more visitors to visit the city and spend money rather than in building an educated, well-paid workforce or fostering any kind of a sustainable relationship with the surrounding environment. In short, New Orleans was a city in love with itself but with almost no sense of its future. Its deep traditions made for an oddly cohesive and resilient city, but one that feared change. If there was one thing that Katrina and the BP oil spill delivered in spades, it was change.

New Orleans in the fall of 2005 and spring of 2006 was a city facing its own mortality. There were no guarantees; indeed, some observers pointedly suggested that New Orleans had been a mistake from the beginning and should not be rebuilt.¹⁰ What was the point of rebuilding a wrecked city in a collapsing coast in an era of warming climates and rising seas? That was, and is, a fair question, and the answer lies in both the city's past and a new but growing realization that the city can rebound and prosper if it fundamentally changes the nature of its relationship with water.

For all of the attendant problems, the reasons for rebuilding New Orleans are the largely the same as the reasons for its founding. It still occupies a strategically and commercially important location. While it has lost some of its stature as a port, it is still the place where shallow-draft vessels from the nation's heartland meet ocean-going deep-draft vessels. Perhaps most important, the city is not fatally vulnerable to storms and flooding. It was not the city's proximity to the Gulf that left it inundated; it was a poorly designed, built, and maintained set of flood walls, pumps, and levees that turned a bad storm into a catastrophe. If the city gets smart about how it manages and lives with water, it can sharply reduce its level of risk while enhancing the value of its abundant water resources—a luxury that few American cities have today. However, that won't just happen. The city will need to frame a vision of its future that is based on well-informed hopes and an honest assessment of the things that it should fear—like rising seas and a collapsing coast.

There is evidence that that is happening. Restoring wetlands and accommodating sea level rise are now broadly recognized as essential components of flood protection and the sustainability of the region.¹¹

The state has recognized the need for smarter land use choices and has adopted a statewide building code.¹² Thanks to relentless civic and environmental activism, the Mississippi River–Gulf Outlet, a fifty-year-old monument to wishful economic development and disdain for the environment, has been deauthorized.¹³ And the Army Corps of Engineers has shifted from providing a levee system with a high-protection target (against 1-in-300-year events) and a low-confidence level to a system with a lower level of protection (against 1-in-100-year events) and a higher confidence factor.¹⁴ That may not sound like an improvement, but it is at least based on a more honest assessment of just how safe the city is, and in New Orleans today honesty counts when it comes to living with water.

In March 2010 the White House released a “roadmap” to guide the federal efforts to successfully restore the ecosystems of coastal Louisiana and coastal Mississippi.¹⁵ That was the first comprehensive policy commitment concerning the restoration of coastal Louisiana ever to come from Washington. To be honest, it was not clear just where that roadmap would lead or who would be at the wheel. When the BP Deepwater Horizon well blew out, blew up, and sank, it was anything but clear whether there was anything left of that roadmap or if anyone was really looking beyond the spill to the fate and future of the coast

But as the oil came in—closing fisheries; killing birds, endangered turtles, and dolphins; covering marshes, reefs, and barrier shorelines; and putting fishers, workers, and business owners at least temporarily out of work—the importance of the marshes, islands, and estuaries came in to focus in a way that volumes of studies could not convey. Suddenly there was somebody—BP—at least partially on the hook for the damage to that system and for doing something to redress it. Finally the coast mattered. The federal roadmap now had a context for action and a driving urgency supplied by the duty of BP under the Oil Pollution Act to assess the natural resource damage that it had caused and to restore natural functioning or compensate for its loss. That point was driven home by President Obama in his Oval Office address on June 15, in which he committed not only to undoing the damage done by the spill but also to going further—to reversing the chronic decline the of the entire Gulf Coast.¹⁶ Perhaps most important, the president appointed Ray Mabus, the secretary of the navy and a former governor of Mississippi, to lead the effort. For the first time, the viability of the coast was more than just one of the dozens of unreconciled federal interests in the area—it was a White House priority and it was someone’s job to find a way to make it work.

The president's pledge has led to at least some encouraging interim actions. In September 2010 Ray Mabus issued a report with a set of wide-ranging recommendations, including most notably a recommendation that a new permanent federal/state/tribal task force be created to coordinate ecosystem restoration efforts in the Gulf.¹⁷ Ultimately such a commission will require congressional authorization, but an ostensibly temporary version of the Gulf Coast Ecosystem Restoration Task Force has been created; it is chaired by the administrator of the U.S. Environmental Protection Agency.¹⁸

The task force was charged with developing by the end of October 2011 an implementation strategy for restoring the ecosystems of the Gulf. As bold as that charge is, the challenge of shaping a shared vision for the Gulf and an agreement on what needs to be done and how to do it will likely be difficult to surmount due to the competing and fractious nature of the various state, federal, and tribal interests involved. Those factors, plus the complicating reality of the necessity of congressional support, suggest that progress on the Gulf will come hard and only if nongovernmental stakeholders do much of the heavy lifting.

With respect to the state of Louisiana, its relationship with the coast was transformed by hurricanes Katrina, Rita, Gustav, and Ike. The drowning of New Orleans (and dozens of other communities that never reached the nation's attention) and the loss of 217 square miles of coastal land as a result of Katrina and Rita in the span of one month was a revelation. After years of plans, pronouncements, and ribbon cuttings it was clear that whatever Louisiana was doing to keep and restore its coast was failing. Indeed, it was apparent that balanced against the state's desire to spur economic development, not offend powerful interests, and avoid hard budget choices, saving the coast had never been a serious priority. It was not that the state was overtly cynical about its commitment to the coast (though at times it came awfully close); it was more a matter of finding it so much easier to issue platitudes about the environment than to take on the hard work of stewardship, which it inevitably put off until later. Katrina forced a reckoning.

In the space of six months, Louisiana fundamentally revamped its entire approach to dealing with the coast. In a dicey but essential move, storm protection, wetland conservation, and coastal restoration were integrated under a single state authority, the Coastal Protection and Restoration Authority. By the middle of 2007, the state had developed a

master plan that took a more honest and urgent look at the coast and the state's future.¹⁹ The master plan is to be updated every five years. In 2006, the state took what many had thought was an unimaginable step, filing suit against the federal Minerals Management Service (MMS) to block lease sales on the grounds that a fresh look at the environmental impacts of offshore oil and gas development was necessary after the savage impacts Hurricanes Katrina and Rita revealed both a greater vulnerability and a deeper connection to the impacts of oil- and gas-related activity than had been widely acknowledged.²⁰ The disdainful response of MMS and the petroleum industry to the state's demand was a chilling portent of the profoundly dysfunctional approach to safety and environmental risk management that became clear after the Deepwater Horizon well blew out. That suit was ultimately settled, but not before so many of MMS's dysfunctional practices had been revealed that the political landscape shifted enough to allow the federal government to begin sharing the revenues that it received from outer continental shelf (OCS) oil energy development with states like Louisiana, which served as the support base for that activity. By law, Louisiana dedicated all of its share of those OCS revenues to coastal protection and restoration.²¹

None of the steps taken by Louisiana so far are enough to save the coast.²² Furthermore, there have been unsettling signs that when push comes to shove, the state will settle for living behind levee walls instead of doing what will be necessary to strike a sustainable balance between environmental stewardship, economic development, and storm protection.²³ But in fairness, the state has at least put itself in a position in which it can make those choices if it can summon the will.

Even New Orleans, which has always viewed itself as being apart from the coast, has come to see that it is not. The recently adopted master plan for the city is predicated in substantial part on a new relationship with water, one that aspires to a minimum of a 1-in-500-year level of protection from flooding and that recognizes the importance of restoring the coast to the future well-being of the city.²⁴ That point was reemphasized in Mayor Mitch Landrieu's inaugural address on May 3, 2010, in which he stated that "we have a responsibility to not only shield and clean up our shoreline [referring to the BP spill], but to restore our coast once and for all."²⁵

Much more will be needed, however. The real proof will come when the hard choices are made about which communities will get higher levels

of protection—and when. It will come when the decisions are made on whether to fully commit to conserving and enhancing Louisiana's coastal wetlands. It will come when land use planning is made a priority, with the force of law. It will come when decisions are made about how to mitigate the impacts of the BP spill and to avoid such catastrophes in the future. And it will come when the state and the nation decide to develop and implement effective strategies for contending with climate change and rising seas.

None of this will be easy, but as the BP oil spill reminds us, there is no sustainability in standing pat. In Louisiana and elsewhere, a fundamental question must be answered: Are we as a people willing to make the laws, policies, investments, and commitments necessary to give ourselves a shot at a vibrant and sustainable future? Five years after Katrina there are hopeful signs in New Orleans and coastal Louisiana that we are finally on the verge of making the kinds of commitments and taking the actions that will be necessary. Will they be enough or taken in time to matter? Right now, we honestly do not and cannot know. But most other cities—which are, whether they admit it or not, facing their own version of a sustainability crisis—face the same question.

The fact that there are deep uncertainties is not itself cause for pessimism. Uncertainty is not destiny. At least in the case of New Orleans and the surrounding coast, it is a measure of opportunity to shape destiny. Prior to Katrina the future of New Orleans and the coast were far more certain—they were decidedly unsustainable. Today, because of the actions under way at the city, state, and federal levels—and perhaps most important, at the civic level—the city and the coast have a fighting chance. They cannot be what they were, but they can be made healthier, more resilient, and more sustainable. The window of opportunity is not large and the margin of error is slim, but concerted effort has given these remarkable natural, cultural, and economic resources another decisive turn at bat. The game is still on, and at stake is much more than just the parochial interests of a city and a region. Whatever the outcome, this is the place where the hardest lessons about stewardship and survival are being taught. If the wisdom, knowledge, and willingness needed to act can be assembled in time to make a difference in New Orleans and coastal Louisiana, then there is a better chance that we can do right by many of the nation's other threatened communities and natural treasures. This is the heart of the matter, and what happens here will echo across the country and for generations to come.

Notes

1. This point is perhaps best illustrated by contrasting the Louisiana Coastal Area (LCA) program and the Louisiana Coastal Protection and Restoration Authority (LACPR), both of which were authorized by Congress in the wake of Hurricane Katrina. The LCA program, which had been under development for years, is a coordinated and comprehensive program aimed at restoring the coastal ecosystems in southeast Louisiana to some state of functional sustainability. The program was authorized as part of the Water Resources Development Act of 2007 (Public Law 110-114, Sections 7001-7011) and contained nearly \$2 billion in program and project authorizations. As of February 2011, none of those authorizations had been funded. By contrast the LACPR, which was authorized and funded through the Energy and Water Development Appropriation Act of 2006 (Public Law 109-103), was aimed at developing a comprehensive hurricane protection plan for South Louisiana that would provide protection against storm surges equivalent to those from a category 5 hurricane.

2. John A. Barras, "Land Area Changes in Coastal Louisiana after Hurricanes Katrina and Rita," in *Science of the Storms: The USGS Response to the Hurricanes of 2005*, U.S. Geological Survey Circular 1306, edited by G. S. Farris and others (2007), p. 98.

3. Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, "Coast 2050: Toward a Sustainable Coastal Louisiana" (1998), p. 22.

4. As quoted by Craig E. Colten, *An Unnatural Metropolis: Wrestling New Orleans from Nature* (Louisiana State University Press, 2005), p. 2

5. Percy Viosca Jr., "Louisiana Wet Lands and Value of Their Wild Life and Fishery Resources," *Ecology* 9, no. 2 (1928): 216, 229

6. *Ibid.*, p. 229.

7. Prior to the Flood Control Act of 1928, levees were primarily the responsibility of state and local governments. The existence of a larger federal interest had been recognized much earlier, such as in the 1879 creation of the Mississippi River Commission by Congress. But the federal interest had not yet been translated into the federalization of the flood control system on the lower Mississippi river, although through such pronouncements as the Army Corps of Engineers "Levees Only" policy in 1861 (A. A. Humphreys and H. L. Abbot, *Report upon the Physics and Hydraulics of the Mississippi River*, Professional Papers of the Corps of Topographical Engineers, United States Army, No. 4, page 417 (Washington: 1861, reprinted 1876), it did shape how flood control was practiced in the valley long before 1928. For a more complete discussion of the evolution of the federal role in Mississippi River valley flood protection, see John M. Barry, *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (Simon and Shuster, 1997).

8. Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, "Coast 2050," pp. 47-48.

9. See, for example, Viosca, "Louisiana Wet Lands and Value of Their Wild Life and Fishery Resources"; Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, "Coast 2050"; and Colton, *An Unnatural Metropolis*.

10. For example, see the August 2007 issue of *National Geographic*, the cover story of which was "New Orleans: Should It Rebuild?"

11. Coastal Protection and Restoration Authority, “Integrated Ecosystem Restoration and Hurricane Protection: Louisiana’s Comprehensive Master Plan for a Sustainable Coast” (2007) (www.coastal.la.gov/index.cfm?md=pagebuilder&tmp=home&nid=82&pnid=76&pid=28&catid=0&elid=0)

12. Act 12 of the 2005 First Extraordinary Legislative Session (Louisiana).

13. The Mississippi River Gulf Outlet was intended to be an economically beneficial shortcut from New Orleans to the Gulf of Mexico. The project was constructed before any environmental studies of the sort required by the National Environmental Policy Act were mandated. The channel never produced the hoped-for navigational benefits, but it did contribute to wetland degradation south of New Orleans and played a contributing role in conveying storm waters from Hurricane Katrina into the city. Congress passed legislation deauthorizing the channel in section 7013 of the Water Resources Act of 2007.

14. U.S. Government Accountability Office, statement of Anu Mittal, director, Natural Resources and Environment on Lake Pontchartrain and Vicinity Hurricane Protection Project, GAO-05-1050T, September 28, 2005 (www.gpo.gov/fdsys/pkg/GAOREPORTS-GAO-05-1050T/html/GAOREPORTS-GAO-05-1050T.htm); and *Elevations for Design of Hurricane Protection Levees and Structures*, U.S. Army Corps of Engineers, New Orleans District, October 9, 2007 (www.mvn.usace.army.mil/ENG/ElevationsforDesignofHurricaneProtectionLeveesandStructures.pdf).

15. Louisiana-Mississippi Gulf Coast Ecosystem Restoration Working Group, “Roadmap for Restoring Ecosystem Resiliency and Sustainability” (2010) (www.whitehouse.gov/administration/eop/ceq/initiatives/gulfcoast/roadmap).

16. The White House, “Remarks by the President to the Nation on the BP Oil Spill,” news release, June 15, 2010 (www.whitehouse.gov/the-press-office/remarks-president-nation-bp-oil-spill).

17. *America’s Gulf Coast: A Long-Term Recovery Plan after the Deepwater Horizon Oil Spill* (September 2010) (www.restorethegulf.gov).

18. The Gulf Ecosystem Restoration Task Force was created by presidential executive order on October 5, 2010.

19. “Louisiana’s Comprehensive Master Plan for a Sustainable Coast,” April 2007.

20. *Blanco v. Burton*, 2006 U.S. Dist. LEXIS 56533.

21. Louisiana Constitution, article 7, section 10.2(E).

22. See, for example, Michael. D. Blum and Harry H. Roberts, “Drowning of the Mississippi Delta due to Insufficient Sediment Supply and Global Sea-Level Rise,” *Nature Geoscience* 2 (2009): 488–91.

23. For example, a proposed hurricane protection levee has been delayed by disagreements over its alignment. Local government officials and both of Louisiana’s U.S. senators have advocated for an alignment that would protect more homes but also bisect a major estuary. U.S. EPA and others have cautioned against such an environmentally risky alternative. See Paul Rioux, “Donaldsonville-to-the-Gulf Levee Alignment Decision Is Postponed,” *Times Picayune*, April 20, 2010.

24. Adopted August 13 by New Orleans City Council, Ordinance Calendar No. 28.069. New Orleans Master Plan and Comprehensive Zoning Ordinance, “Plan for the 21st Century: New Orleans 2030,” Executive Summary, pp. 96, 98 (<http://nola.masterplan.org/documentsandresources.asp#C12>).

25. Inauguration speech of Mayor Mitch Landrieu, as published in the *Times-Picayune*, May 3, 2010.