

Did NEPA Sink New Orleans?

Shawna M. Bligh

Hurricane Katrina did not flood New Orleans; poorly constructed levees did. New Orleans survived Katrina relatively dry and free of damage. Then the levees broke, and one of America's great cities sank below the floodwaters of Lake Pontchartrain. The aftermath has been marked by efforts to assign and avoid blame. It did not take long for fingers to be pointed at environmental requirements, principally the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4370f.

According to a number of media accounts, NEPA prevented the federal government from building the kind of levee system that would have protected New Orleans. Responding to these reports, Senator James Inhofe (R-Okla.), chair of the Senate Committee on Environment and Public Works, quickly asked the Justice Department to collect information on every NEPA suit that blocked flood-protection projects of the U.S. Army Corps of Engineers (Corps). See Dan Egan, *Senate Panel Investigating Challenges to Levees*, WASH. POST (Sept. 17, 2005). Did NEPA sink New Orleans? Or are these claims proving to be as fanciful as other media reports about widespread murders, sexual assaults, and general unlawfulness?

Typical of these media reports was a September 9, 2005, article in the *Los Angeles Times*. This article reported that a NEPA lawsuit prevented the Corps from completing a series of barriers and levees that would have prevented the flooding that devastated New Orleans. A former general counsel of the Corps, Joe Towers, was quoted as saying, "[I]f we had built the barriers, New Orleans would not be flooded." Towers continued, "my feeling was that saving human lives was more important than saving a percentage of shrimp and crab in Lake Pontchartrain." To understand this, you need to know something about the two competing protection plans considered by the Corps.

The Flood Control Act of 1965 authorized the Lake Pontchartrain and Vicinity Hurricane Protection Act. Pub. L. No. 89-298, § 204, 79 Stat. 1073, 1077. The project was to provide hurricane protection to areas around Lake Pontchartrain through construction of a series of control structures, concrete floodwalls, and levees. Two alternative project designs emerged: the "barrier plan" and the "high-level plan."

The barrier plan included a series of levees along the Pontchartrain lakefront, concrete floodwalls along the Inner Harbor Navigation Canal, and control structures,

including barriers and flood control gates. These structures were intended to prevent storm surges from entering Lake Pontchartrain and overflowing the levees along the lakefront. The original lakefront levees were intended to be 9.3 feet to 13.5 feet high. The high-level plan focused on raising the height of levees along the Pontchartrain lakefront to between 16 feet to 18.5 feet. This plan did not include the construction of control structures such as barriers or flood-control gates. The high-level plan simply employed higher levees to prevent storm surges from overflowing into protected areas.

The barrier plan was selected over the high-level plan because its projected costs were less than the high-level plan and would be quicker to construct. The estimated cost of this plan was \$85 million (1961 dollars) with an estimated completion date of 1978. Work commenced on the barrier plan. Then, NEPA was enacted and, so the stories go, everything changed.

NEPA is the "basic national charter for protection of the environment." 40 C.F.R. § 1500.0. The statute requires all federal agencies to identify and consider the environmental impacts of actions they propose and to consider alternatives and mitigating measures that will avoid or reduce such impacts before taking action. To these ends, Section 102(2)(C) of the Act declares:

The Congress authorizes and directs that, to the fullest extent possible . . . (2) all agencies of the Federal Government shall . . . include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on (i) the environmental impact of the proposed action. . . .

42 U.S.C. § 4332(2)(C). This mandate is intended to inject environmental considerations into the federal agency's decision-making process and to inform the public that the agency took a "hard look" at all environmental concerns prior to making a decision to proceed with a project. *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 837 (D.C. Cir. 1972).

NEPA law now is encapsulated largely by regulations promulgated by the Council of Environmental Quality (CEQ). NEPA created and authorized CEQ to issue guidance to agencies for compliance with NEPA. 40 C.F.R. Part 1500. These regulations define what constitutes agency action and the process for determining whether the action or program significantly affects the quality of the human environment. CEQ regulations mandate that every

Ms. Bligh is with The Session Law firm in Kansas City, Missouri, and can be reached at SBligh@session.com.

agency comply with NEPA “unless existing law applicable to the agency’s operations expressly prohibit or makes compliance impossible.” 40 C.F.R. § 1500.6. The regulations also require federal agencies to adopt supplemental procedures to ensure agencies’ compliance with NEPA. 40 C.F.R. § 1507.3. However, regardless of whatever NEPA regulations an agency may promulgate, any agency regulations must comply with CEQ regulations. *Id.*

CEQ regulations require that an agency prepare an environmental assessment (EA) to determine whether an action may significantly affect the environment, and if so, prepare an environmental impact statement (EIS), or if not, a finding of no significant impact (FONSI). 40 C.F.R. §§ 1501.3, 1501.4, 1508.9. In some instances, agencies may avoid the preparation of either an EA or an EIS in considering the environmental impacts of a proposed action. An agency may adopt a “categorical exclusion” where the agency determines that, absent extraordinary circumstances, the category of action at issue normally will have no appreciable effect on the environment. 40 C.F.R. § 1508.4.

Where the culmination of the NEPA process is the preparation of an EIS, the EIS must present a thorough review of all of the reasonably foreseeable environmental impacts associated with a contemplated federal agency action. The EIS requires the generation of reasonable alternatives to the proposed program or project, including a “no action” alternative and mitigation of any environmental impacts. 40 C.F.R. §§ 1502.14, 1508.9, 1502.16.

CEQ’s regulations helped clarify and provide more certainty to the requirements agencies have to meet to comply with NEPA. These regulations largely mirrored case law as it existed at the time of promulgation. Thus, by the time an environmental group, Save Our Wetlands, challenged the Corps’ barrier plan, there already was a well-established basis for rendering NEPA decisions even prior to the promulgation of CEQ’s regulations.

Did Save Our Wetlands v. Rush Kill the Barrier Plan?

NEPA lawsuits have been the death knell of a number of projects. *See, e.g., Cronin v. United States Dep’t of Agriculture*, 919 F.2d 439, 443 (7th Cir. 1990). Did the NEPA lawsuit here kill New Orleans? In 1977, Save Our Wetlands (SOW) sued the Corps. SOW argued that the EIS the Corps prepared addressing the construction of barrier complexes and associated structures at Chef Menteur Pass and the Rigolets portions of the Lake Pontchartrain Hurricane Protection Plan was inadequate. *Save Our*

Wetlands v. Rush, Civ. A. No. 75-3710 (E.D. La. Dec. 30, 1977). The court agreed. The presiding judge, Judge Schwartz, held the Corps’ EIS failed to satisfy the statutory requirements of 42 U.S.C. § 4332.

Among other deficiencies, Judge Schwartz found that the Corps failed to utilize an interdisciplinary approach in preparing the EIS. When evaluating the potential adverse environmental effects of the proposed construction, the Corps consulted with only one expert, a hydrology/marine biology expert named Dr. Gordon Gunter and this by the way of a single telephone call. Gunter never submitted a written report, and he was not requested to review the EIS in either its draft or final form. While the EIS referenced a number of engineering studies, these did not adequately reflect a cross-section of related disciplines. The EIS also failed to demonstrate that the Corps gave serious consideration to or evaluated alternatives to its barrier plan or that it performed an adequate cost-benefit analysis of the proposed plan. Judge Schwartz enjoined the Corps from further construction of the barriers and associated structures at Chef Menteur Pass and the Rigolets portions until such time as the Corps revised its EIS to comply with the statutory requirements. The Corps never appealed the injunction.

Ultimately, the Corps decided to abandon the barrier plan. Instead, it implemented the high-level design plan. Why was the barrier plan abandoned? The Corps could have proceeded with the barrier plan after cor-

recting the EIS deficiencies identified by the court. Was the schedule so critical that any delay, such as that resulting from the NEPA injunction, was sufficient to undermine the otherwise viable barrier plan? Or did the NEPA injunction provide the Corps the opportunity and justification to truly reconsider its approach and decide to employ a different, better response? Available facts suggest the latter.

Even before the *Save Our Wetlands* lawsuit, the barrier plan was in serious trouble. The plan had experienced massive delays and cost overruns caused largely by the Corps’ inability to obtain access to rights of way and the necessary land to build levees and control structures. GAO, COST, SCHEDULE, AND PERFORMANCE PROBLEMS OF THE LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA, HURRICANE PROTECTION PROJECT, GAO/PSAD-76-161 (Aug. 31, 1976). When the Flood Control Act of 1965 authorized the Lake Pontchartrain and Vicinity Hurricane Protection Act, the project was expected to cost \$85 million and take thirteen years to complete. By 1976, the costs had increased to \$352 million and its expected completion had been extended by another thirteen years. By 1982, the New Orleans district of the Corps favored the high-level design plan “because it would cost less than the barrier

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plan” and “have fewer detrimental effects on Lake Pontchartrain’s environment.” GAO, IMPROVED PLANNING NEEDED BY THE CORPS OF ENGINEERS TO RESOLVE ENVIRONMENTAL, TECHNICAL AND FINANCIAL ISSUES ON THE LAKE PONTCHARTRAIN HURRICANE PROTECTION PROJECT, GAO/MASAD-82-39 (Aug. 17, 1982).

Assertions that the barrier plan would have provided better protection or even prevented the flooding of New Orleans altogether are refuted in the General Accountability Office report released in the aftermath of Hurricane Katrina. GAO, ARMY CORPS OF ENGINEERS: LAKE PONTCHARTRAIN AND VICINITY HURRICANE PROTECTION PROJECT, GAO 05-1050T (Sept. 28, 2005). The report indicates that the change in design plans “are not believed to have had any role in the levee breaches recently experienced as the high-level design selected was expected to provide the same level of protection as the original barrier design.” *Id.* at 6. In fact, the report states “Corps staff believe that flooding would have been worse if the original proposed design had been built . . .” *Id.*

Why Did the Levees Fail? How Should Protection Be Improved?

Hurricane Katrina made landfall in Louisiana at 6:10 a.m. on Monday, August 29. Katrina struck the Gulf Coast as a Category 4 storm with wind speeds near 150 mph. While New Orleans suffered some damage due to these high winds and accompanying rain, it was the subsequent flooding that devastated the city and forced its abandonment.

Approximately 75 percent of metropolitan New Orleans was flooded. This flooding was a result of levee breaches. Emerging scientific evidence suggests erosion and weak foundational soils underlying the levees rather than overtopping of the levees were the cause for or contributed to the breaches. See Preliminary Report on the Performance of the New Orleans Levee Systems in Hurricane Katrina on August 29, 2005, Report No. UCB/CITRIS-05/01 (Nov. 2, 2005), available at <http://hsgac.senate.gov> (August 29 Preliminary Report).

New Orleans is at risk of flooding from three sources: Lake Pontchartrain, Lake Borgne, and the Mississippi River. Hurricane Katrina produced storm surges on both Lake Pontchartrain and Lake Borgne, and these resulted in levee breaches and the consequent flooding of New Orleans. Flooding from Lake Pontchartrain was not due to water flowing over the top of its levees, however. Instead, the storm surge flowed up two outlet canals, the 17th Street and London Avenue Canals that typically flow into Lake Pontchartrain. Three levee failures

occurred along these canals, one breach of the floodwall along the 17th Street Canal and two breaches of the floodwall along the London Avenue Canal.

The exact cause of the 17th Street Canal breach has yet to be established. However, preliminary studies indicate that soil failure may well have been a “significant contributing factor.” See *Testimony of Peter Nicholson, Ph.D., P.E., Associate Professor of Civil and Environmental Engineering and Graduate Program Chair, University of Hawaii, on Behalf of the American Society of Civil Engineers, Before the S. Comm. on Homeland Security and Governmental Affairs* (Nov. 2, 2005). The breach was likely due to weak foundational soils underlying the levees. *Id.* These weak foundational soils allowed the levees to move out of place, causing the breach.

The breaches occurring along the London Avenue Canal also do not indicate evidence of overtopping. Rather, the north breach of the London Avenue Canal showed large displaced soil masses due to a rotational type soil failure. *Id.* Inspections also revealed large amounts of sandy soil deposited in the area of the breach and were believed to be from the underlying foundation with “material scoured from the canal bottom.” *Id.* Soil profiles provided to engineers studying the breaches indicated sand used in the subsurface of the levees. High water pressures flowing through this type of subsurface are supposedly known to cause significant internal stability problems with levees. The other two breaches occurring along the London Avenue Canal demonstrated similar evidence—little to no overtopping and significant soil movement. *Id.*

Flooding from Lake Borgne resulted from a hurricane surge that entered the lake from the Gulf of Mexico and proceeded up the Mississippi River Gulf Outlet Canal to the Industrial Canal. See August 29 Preliminary Report. Severe overtopping of the levees occurred, which resulted in erosion. *Id.* Erosion consequently caused multiple levee failures along the Mississippi River Gulf Outlet canal in St. Bernard Parish. *Id.* Many portions of the levees were breached or severely distressed. Some of the levee sections were completely destroyed. Even here, however, it appears that the parts of the levee that failed were constructed of highly erodible materials, such as sand and shell fill. *Id.* These breaches resulted in devastating flooding and, in most cases, complete destruction of thousands of homes and businesses.

The mounting evidence seems to be suggesting that faulty construction rather than a poor design contributed to the flooding of New Orleans. Is the answer, then, to protecting New Orleans in the future ensuring that the levees are rebuilt or repaired properly, to build the levees

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right this time and build more of them? Available information suggests that this actually might not be the right response or at least not a *complete* response.

It is well-known that the system of levees surrounding New Orleans provided protection only for a Category 3 hurricane. Prior to Katrina, efforts to enhance New Orleans' protection from hurricanes ran into problems because of the cost. For instance, the Bush administration rejected a Corps of Engineers request for \$27 million to pay for hurricane projects along Lake Pontchartrain and proposed a budget of only \$3.7 million. GAO, ARMY CORPS OF ENGINEERS: LAKE PONTCHARTRAIN AND VICINITY HURRICANE PROTECTION PROJECT, GAO 05-1050T (Sept. 28, 2005); Andrew Martin & Andrew Zajac, *Flood-Control Funds Short of Request*, CHI. TRIB., Sept. 1, 2005. Congress ultimately appropriated \$5.7 million for the projects, but the Corps still had to delay seven levee improvement projects.

Even when Congress has appropriated money to enhance protection of New Orleans, the Corps apparently has not been in a hurry to complete levee improvement projects. In 1999, Congress appropriated money for a \$12 million study to determine how much it would cost to protect New Orleans from a Category 5 hurricane, but the study had not even been launched as of September 2005. Andrew Martin & Andrew Zajac, *Corps: Lack of Funds Did Not Contribute to Flooding*, CHI. TRI., Sept. 2, 2005.

With the cost of rebuilding New Orleans competing with the cost of enhancing the city's protection, there is no reason to believe that the current and future administrations and Congresses will have the will to sustain the costs of doing both. Hard-structured flood protection requires not only initial capital funds to build these structures but also continuing funds to maintain the structures. There is an alternative means of protection.

Wetlands are a natural protection against floods. Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater, and floodwaters. Wetland vegetation slows the speed of floodwaters and distributes them more slowly over the floodplain. This combined water storage and braking action lowers flood heights and reduces erosion. Wetlands and Louisiana marshlands have and can act as a buffer for hurricanes that come out of the Gulf. Unfortunately, wetlands are disappearing into the ocean. Louisiana marshlands are depleting at a rate of 25 to 30 miles per year. Since 1930, the state has lost over 1,900 square miles of wetlands. See National Wetlands Research Center, United States Geological Survey. The disappearance of these wetlands literally is bringing the coast and the ocean closer to the city further heightening the city's risk of hur-

ricane-associated flooding. Ivor van Heerden, a professor in the department of civil and environmental engineering at Louisiana State University and deputy director of the university's hurricane center, when referencing Hurricane Katrina's damage, pointed out, "[W]here you had wetland, the levees were not eroded, and where you did not have wetlands, the levees were annihilated." John Schwartz, *For Category 5 Safety, Levees Are Piece of a \$32 Billion Pie*, N.Y. TIMES, Nov. 29, 2005. In light of this, Professor van Heerden concluded, "levee work must be coupled with the restoration of coastal marshes and barrier islands that can blunt the progress of a storm." *Id.* There are also other well-known ecological benefits associated with wetlands, including enhancement of water quality.

NEPA Did Not Break the Levees and It Could Still Save New Orleans

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Hurricane Katrina was a catastrophic event that resulted in devastating damages and loss of life. In Louisiana, over 1,070 people lost their lives and approximately 288,700 families were left homeless. Did the *Save Our Wetlands v. Rush* NEPA lawsuit force the Corps to not pursue the "barrier plan" that would have protected New Orleans from catastrophe? Emerging evidence strongly suggests that the levee breaches occurred from factors unrelated to choice of design plan, including shoddy construction. Emerging evidence also indicates that the barrier plan was already being sunk by huge cost overruns and extensive schedule delays when the Corps was sued. Rather than addressing deficiencies in the EIS for the barrier

plan, the Corps chose to abandon the plan for an alternative that the Corps testified was not only cheaper but also possibly more protective. The NEPA process, supplemented by *Save Our Wetlands v. Rush*, appears to have worked exactly as it should have in this instance and to the benefit of the citizens of New Orleans and the taxpayers. An equal or better flood protection approach was implemented at a cheaper cost. The problem is that this better alternative was constructed poorly. This should be a story about a NEPA success not a NEPA failure.

Now consideration is being given to how to enhance protection of New Orleans. Before decisions are made about how to enhance protection, thorough consideration of all reasonable alternative protection means, including restoring lost wetlands, should be considered. NEPA provides a tested method and established framework for weighing competing plans assisted by multidisciplinary expertise. It is time to apply NEPA again, but hopefully to apply it adequately at the beginning. 