ENVIRONMENTAL JUSTICE THROUGH THE EYE OF HURRICANE KATRINA

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PREFACE

Researchers and journalists alike have written about the life-threatening repercussions of de facto racial segregation in the Gulf coast, so starkly revealed in television images seen around the globe in the aftermath of Hurricanes Katrina and Rita. However, few have focused on the underlying issues of environmental racism especially prevalent throughout the Gulf region and the urgent need for new environmental justice remedies. In this paper, Reilly Morse analyzes historic patterns of environmental racism found in New Orleans and coastal Mississippi, and makes important recommendations for achievable remedies. He also provides a summation of the environmental justice movement, highlighting its relevance to ensuring effective disaster preparedness planning for the future.

> *"Environmental injustice began long before Hurricane Katrina ever hit, in the basic pattern of settlement in the city." {Remarks by Eugene Robinson, Washington Post columnist, at Joint Center's Never Again Forum, April 11, 2006}*

As Mr. Morse notes, during slavery New Orleans represented an "early southern" pattern of settlement with low-density, residential proximity of whites and Blacks. After Emancipation and the end of the Civil War, this changed into a "classic southern" pattern whereby whites forced African Americans to reside in undesirable areas subjected to frequent flooding; unhealthy air and noise levels; as well as unsanitary water and sewerage conditions. Over the years, such undesirable areas included swamplands at the edge of the city as well as areas adjacent to railway and industrial sites.

Prior to 1964, de jure discrimination in housing and transportation also shaped settlement patterns in New Orleans and coastal Mississippi. All public housing was segregated and suburbs explicitly excluded African Americans through deed covenants. When industrial and chemical plants were first built along the Gulf coast in the 1960s, they were always constructed close to predominantly Black residential areas. The toxic pollution and poisonous wastes produced by these plants caused high rates of cancer within the adjacent African American communities.

By 1979, civil rights advocates had turned their attention to the environmental justice concerns stemming from discriminatory placement of chemical plants and hazardous waste sites next to communities of color. That year, Black homeowners in a suburban Houston neighborhood filed a class action lawsuit to block construction of a "sanitary" landfill in their midst, the first to challenge placement of a toxic waste facility under civil rights law.

In "Environmental Justice in the 21st Century," Robert Bullard describes the landmark Houston case as prelude to widespread protests and more than 500 arrests which took place 3 years later in Warren County, North Carolina. In 1982, the primarily African American residents of rural Warren County were united against construction of a hazardous, PCB landfill. These protests led to a federal General Accounting Office (GAO) study which revealed widespread discriminatory placement of commercial hazardous waste sites in Black communities within 8 southern States. According to Bullard, the Warren County protesters "…put 'environmental racism' on the map."

In his paper, Reilly Morse outlines a number of actions in the 1990's that gave strength to the environmental justice movement. This included the 1993 Executive Order by President Clinton, directing every federal agency to "make achieving environmental justice part of its mission." To comply with President Clinton's order, the federal Environmental Protection Agency (EPA) promulgated regulations that prohibited disparate impact in environmental regulation and created the agency's Office of Civil Rights to ensure enforcement.

In turn, Morse also pinpoints a number of subsequent court rulings and Executive Branch actions between 2002 and 2007 that dealt significant setbacks to the environmental justice movement. He recommends a series of specific legislative and administrative actions to reverse such setbacks. One would be enactment of legislation explicitly authorizing a private right of action under the Civil Rights Act to enforce environmental justice cases under a disparate impact standard. Another would be legislation that requires a specific percentage of federal disaster recovery funds be earmarked for persons of low and moderate income. Yet another would mandate a cost-benefit analysis (based on costs of environmental racism vs. benefits of environmental justice) be used in all government decision-making on transportation, land use planning and public works projects.

This paper is one of a set of disaster mitigation publications commissioned by the Joint Center for Political and Economic Studies' Health Policy Institute. These publications explore a range of underlying causes for the disparate outcomes suffered by African Americans and other people of color in the aftermath of Hurricane Katrina. The authors offer analyses of the social conditions that gave rise to Katrina's tragic outcomes, the reasons behind the grossly inadequate disaster responses at all levels of government, and possible strategies for addressing the legacy of inequality and ensuring effective disaster preparedness in the future.

In closing, we are extremely grateful to Attorney Reilly Morse, author of this paper and currently a Katrina Legal Fellow at the Mississippi Center for Justice. We also wish to thank Marco White who oversaw the design and publication of this paper as well as the other disaster mitigation publications. Most of all, we are grateful for the generous financial support of The California Endowment, which made the entire project possible.

Ralph B. Everett
President and CEO
Joint Center for Political and Economic Studies

I. INTRODUCTION

A bitter gift from Hurricane Katrina was to refocus America's attention on the enduring legacy of racial segregation and poverty in the Gulf South. Early cries that "the storm didn't discriminate" now have been discredited by statistics showing that the storm's impacts often weighed more heavily upon racial minorities and the poor. In addition, the recovery of socially and economically vulnerable storm victims continues to lag behind mainstream society.

What fueled these inequitable outcomes? Over the course of many years, racial segregation in this region established patterns of settlement for many African Americans in less desirable flood-prone areas. Industries attracted by cheap land and weak resistance began to cluster around minority communities, and segregation and poverty forced Blacks into areas occupied by industry. In the 1960s, the civil rights movement began to dismantle *de jure* racial segregation in public accommodations and individual rights, and in the 1980s, the environmental justice movement began to address inequities in community health and resource allocation. Despite these efforts, however, Hurricane Katrina encountered a Gulf South still heavily burdened with social and economic disparities.

This paper uses the framework of environmental justice to analyze how these inequities affected the impacts of Katrina. It examines how patterns of settlement exposed communities to increased damage and erected barriers to disaster precautions and reconstruction. The paper concludes with proposed solutions to remove these barriers and prevent their reoccurrence.

Overview of Environmental Justice

Background

Civil rights and environmentalism, two important social movements that gained prominence in the 1960s, joined forces in the late 1970s to produce the environmental justice movement. Environmental justice originally focused on industry and government practices that disproportionately burdened minority and low-income communities and populations experiencing adverse health and environmental impacts. In its early stages, the movement challenged decisions to site landfills and hazardous waste facilities next to minority communities in the South.[1] Advocates soon expanded their efforts to include promoting environmental law enforcement and remediation.[2] Over the years, the movement has extended its reach even further into social issues of equity in land use planning and zoning, worker safety, resource allocation, economic sustainability, and community empowerment.[3]

In the legal realm, the goal of environmental justice is to secure for all communities and persons the same degree of protection from environmental and health hazards, and the same opportunity to influence the decision-making process. This objective is not met when low-income or minority communities are burdened disproportionately by adverse human health or environmental effects or by barriers to participation in decision making, such as language access.[4] Examples of legal issues with environmental justice implications are the siting of landfills next to minority or low-income communities, discrimination in pollution cleanup and monitoring, exclusionary zoning, and discrimination in flood control projects and wetlands protection.

A key turning point occurred in 1993, when President Clinton directed (Executive Order No. 12898) every federal agency to "make achieving environmental justice part of its mission" and to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."[5] To meet this command, the United States Environmental Protection Agency (EPA) promulgated regulations prohibiting disparate impact in environmental regulation,[6] created the Office of Civil Rights for the purpose of securing compliance with these regulations, and established an administrative review to assess potential violations and determine whether to terminate an agency's EPA funding.[7]

In the social arena, the environmental justice movement pursues broad aims, such as increasing equal access to resources in the natural and built environments, increasing health and safety standards for workers and those living in poverty, and redressing the dislocations caused by global trade.[8] Especially pertinent to this paper are issues such as settlement in areas vulnerable to natural disaster; equity in federal, state, and local reconstruction programs; and disparities in the evacuation and community rebuilding process, including public and subsidized housing.

The goals of the environmental justice movement are elaborated in presentations to two National People of Color Environmental Leadership Summits. The first was held in 1991 in Washington, D.C., and drew over 650 delegates. Seventeen Principles of Environmental Justice were adopted by the delegates as a guide for working on wide-ranging issues of public health, resource allocation, worker safety, housing, and community empowerment.[9] For the second summit in 2002, which was attended by over 1,400 delegates in Washington, D.C., two dozen scholarly papers delved into the environmental justice aspects of health and safety, the built environment, natural resources, community and economic development, and global and international issues.[10] These efforts produced consensus on adherence to the precautionary principle (i.e., to eliminate or reduce a threat before the harm occurs); emphasis on community empowerment; and resistance to stratified environmental protection by people, place, or work.[11]

Nevertheless, some skeptics disputed the existence of environmental inequality, concluding that market forces or land use factors may disprove correlations between race and exposure to pollution hazards.[12] Later studies that focused on distance, cumulative impacts, and temporal analysis have discredited the skeptics and bolstered the conclusions of the original reports concerning racial environmental inequalities.[13] The most recent and persuasive of these is a report titled *Toxic Wastes and Race at Twenty: 1987-2007*, which uses GIS-enhanced distance analysis to examine racial and socioeconomic disparities in the siting of commercial waste facilities across the nation.[14]

Pursuing Environmental Justice Enforcement

Environmental justice enforcement uses the standards of discriminatory intent and discriminatory impact developed under civil rights law. Plaintiffs who bring claims under the Fourteenth Amendment's Equal Protection clause are required to prove that the defendant acted with an explicitly racially discriminatory purpose.[15] Some early litigation failed for lack of proof of discriminatory intent.[16] As a result, alternative legal grounds were explored.

A less onerous standard exists under Title VI of the Civil Rights Act, which prohibits actions having disparate impact upon minorities, regardless of intent.[17] The EPA's discriminatory impact regulations use this test.[18] Efforts in Pennsylvania and New Jersey to compel permitting agencies to consider the disparate impacts of their decisions were successful initially. In the Pennsylvania case, the proof showed that in a Black-majority town, 2.5 million tons of waste were authorized under the permit, compared to a 1,400-ton capacity at the other two white-majority locations.[19] In the New Jersey case, the proof showed that the Black-majority neighborhood targeted for an industrial plant already had numerous industrial sites and Superfund sites, plus a sewage plant.[20]

However, other courts held that Executive Order 12898 did not create any right of judicial review.[21] Only five days after the New Jersey ruling, the United States Supreme Court decided *Alexander v. Sandoval*, which held that no private right of action exists to enforce disparate impact regulations promulgated under § 602 of Title VI.[22] Following *Sandoval*, the U.S. Third Circuit Court of Appeals held that a private party may not alternatively enforce the EPA's disparate impact regulations under the federal civil rights statute, 42 USC § 1983.[23] Together, these decisions have closed the door to private litigants bringing environmental justice claims based upon disparate impact.

Another avenue for action is an administrative proceeding before the EPA's Office of Civil Rights. That office has faced strong criticism because, as of 2002, only one out of 121 claims filed had been decided on its merits after an investigation—and that one case found no discrimination.[24] The EPA's lack of priority in enforcing environmental justice is reflected in two Inspector General reports. In 2004, the Inspector General concluded that the EPA had failed to take basic steps such as identifying low-income and minority communities and defining the term "disproportionately impacted."[25] In July 2005, even as the General Accounting Office faulted the EPA for failing to take environmental justice into account when drafting clean air rules, the EPA proposed to drop race as a factor for identifying and prioritizing populations that may be disadvantaged by the agency's actions, igniting a firestorm of criticism.[26] In 2006, the Inspector General found that 60 percent of the EPA's program and regional office directors had not performed reviews as required by the Executive Order.[27] In fact, 87 percent of the directors reported that EPA management had not requested them to review the agency's programs, policies, and activities.[28] In summary, judicial hostility toward private enforcement, coupled with current executive hostility toward agency enforcement, make it extremely difficult to enforce environmental justice standards.

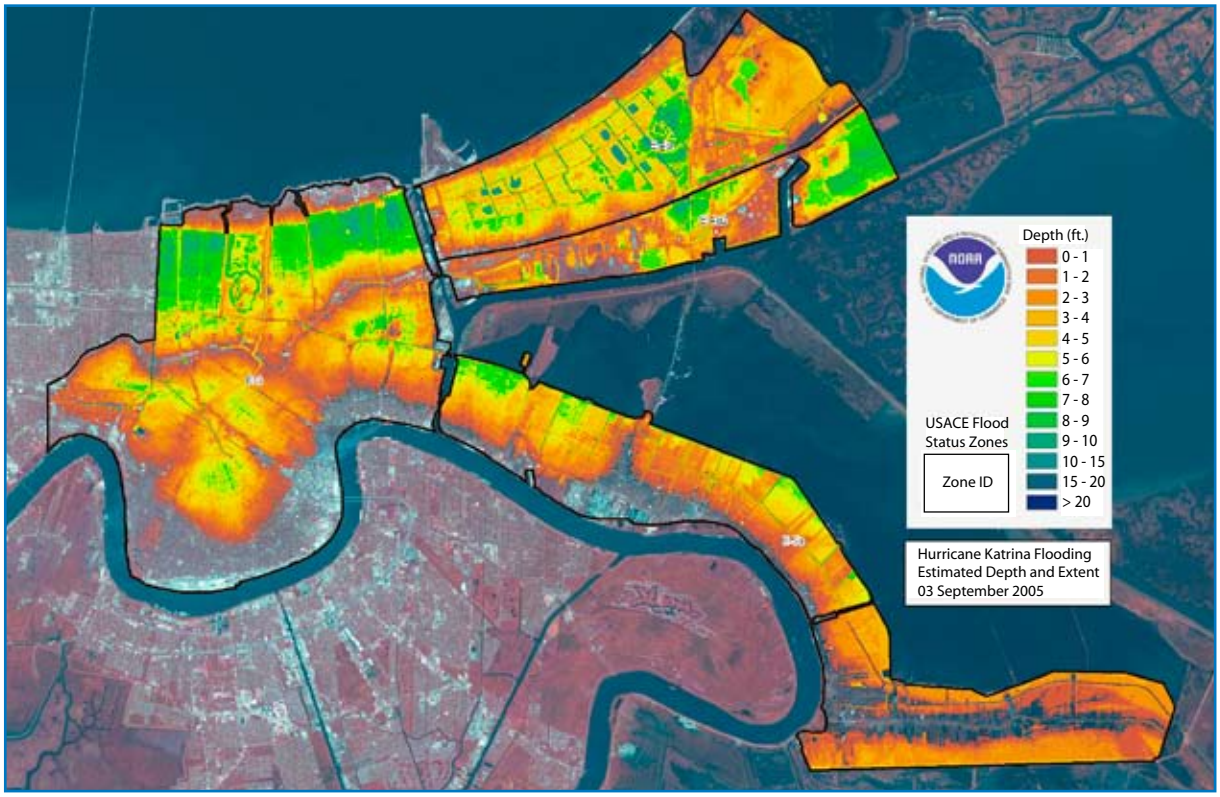
Overview of Demographic Disparities

Hurricane Katrina sent record tidal surges and sustained winds of over 120 miles per hour across coastal Louisiana and Mississippi, and its devastation cut across racial groups and economic classes. In New Orleans, the storm's floodwaters buckled the levees at the Industrial Seaway and Lake Pontchartrain, spread miles inland, and submerged 80 percent of the city (Figure 1). In coastal Mississippi, Katrina's winds and storm surge inflicted catastrophic damage on the 40-mile-long shoreline, but also reached miles inland as storm surges pushed into bayous, rivers, and creeks already swollen with torrential rainfall (Figure 2).

Before the storm's arrival, Mississippi and Louisiana ranked first and second in state poverty rates and had the second- and fifth-lowest state median household incomes, respectively (Figure 3).[29] The percentages of Katrina's victims who were African American, renters, poor, and/or unemployed were larger than the representation of these groups nationwide (Figure 4). This pattern recurs in comparisons between heavily damaged and lightly damaged areas in the affected region (Figure 5), between New Orleans and the region (Figure 6), and between affected neighborhoods within New Orleans (Figure 7). Some of these disparities are due to the size and demographics of New Orleans, which is 67 percent African American and the nation's sixth-poorest metropolitan area.

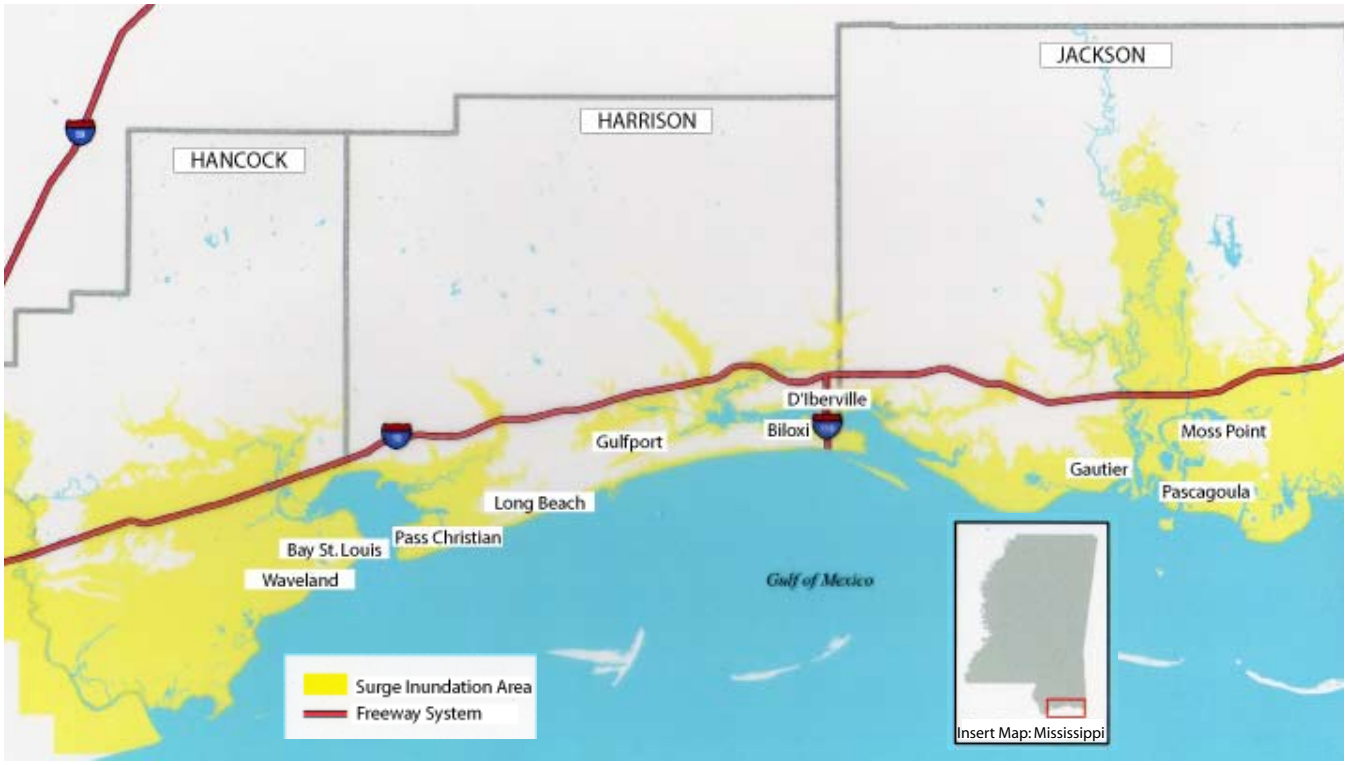
The predominance of minorities and the poor among storm victims is prevalent, but not absolute. Wealthy waterfront white communities in Lakefront New Orleans and beachfront Mississippi were devastated, while some poor Black communities were spared the worst destruction.[30] The disparities of race and poverty also surfaced in storm-damaged

Figure 1: Hurricane Katrina Flooding



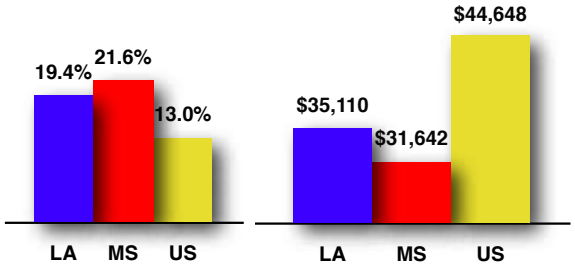
Source: National Oceanic and Atmospheric Administration.

Figure 2: Mississippi Coast Tidal Surge Inundation



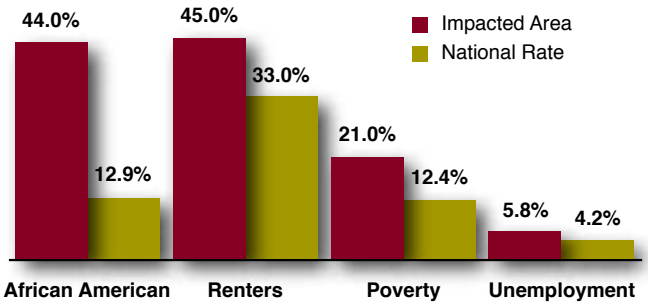
Source: Rand Gulf States Policy Institute.

Figure 3: State Poverty and Median Income



Source: U. S. Census Bureau American Community Survey for 2004

Figure 4: Impacted Areas vs. National Rates



Source: "Hurricane Katrina Social and Demographic Characteristics of Impacted Areas," Congressional Research Service, 2005.

Figure 5: Heavy vs. Light Damage

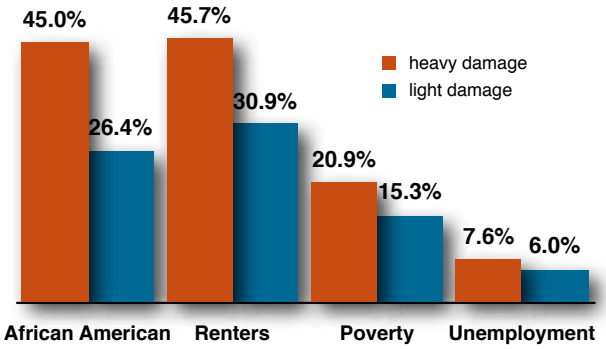
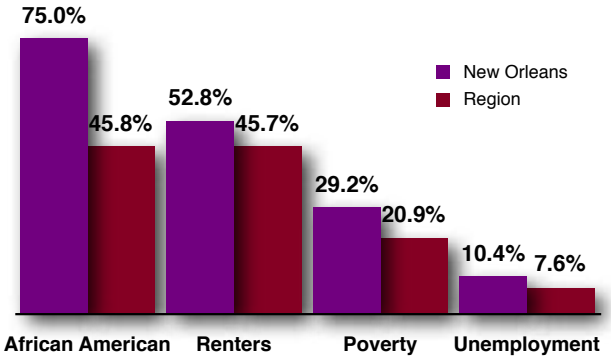


Figure 6: New Orleans vs. Region



Source: J. Logan, "The Impact of Katrina: Race and Class in Storm-Damaged Neighborhoods," Brown University, Table 2, p. 7.

coastal Mississippi communities, but were less pronounced than in their New Orleans counterparts (Figure 8). On the whole, however, minorities and the poor bore a disproportionate brunt of the storm's impacts.

II. INFLUENCES OF GEOGRAPHY, INFRASTRUCTURE, AND RACE

Environmental injustice began long before Hurricane Katrina ever hit, in the basic pattern of settlement in the city.

~ Eugene Robinson, "Never Again" National Forum, Washington, D.C., April 11, 2006.

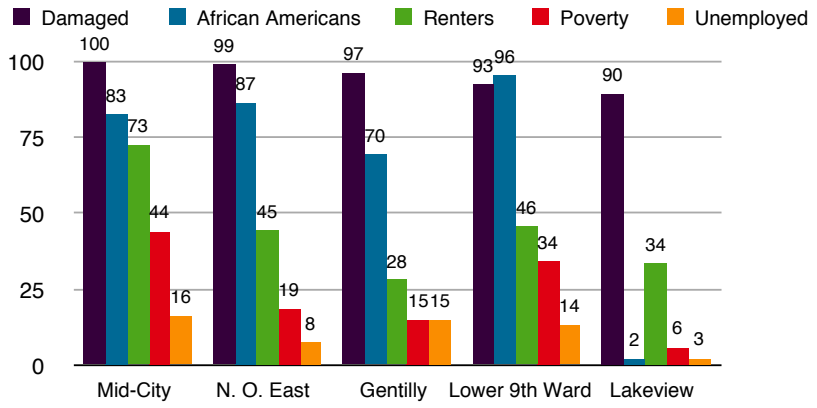
Many differences exist between how African Americans and the poor in New Orleans and the Mississippi Coast experienced the hurricane: the nature of the disaster, the size of the population affected, the complexity of the geography, and the duration of the disparities. But these communities share a common history of discrimination in settlement and other living conditions that disproportionately increased their vulnerability to disaster and the barriers they faced in precaution and recovery. This section explores the roots of these patterns of settlement and living conditions.

New Orleans

"Early Southern" Patterns of Settlement

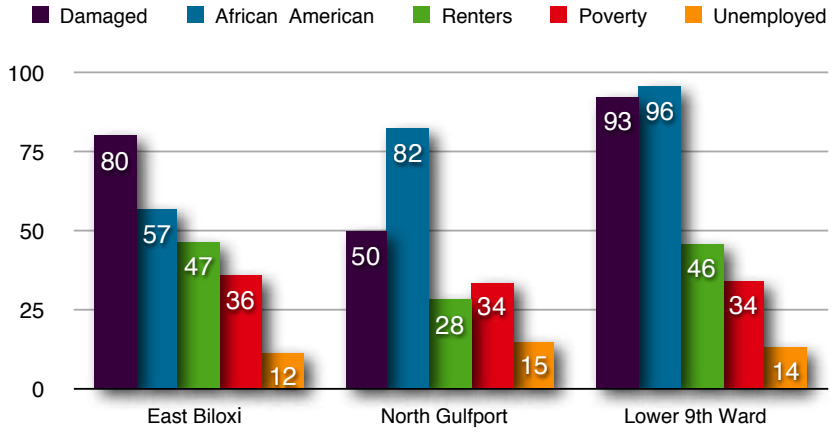
In March 1699, French-Canadian explorer Jean-Baptiste Le Moyne de Bienville learned that Lake Pontchartrain provided a shortcut from the Gulf of Mexico to the Mississippi River without the time and risk of traveling upriver from the mouth.[31] The three-mile portage began in the lake's submerged back-swamps, traversed a gradually rising back-slope, and ended at a naturally occurring ten-foot-high levee on the riverbank, where the city of New Orleans was eventually situated.[32] The levees were formed by low-velocity deposits of alluvial material in the inner bend of the Mississippi River.[33] Settlers favored these well-drained uplands and shunned the swamps and marshes as dangerous; as a result, New Orleans was built on the natural levees and their back-slopes for the

Figure 7: Comparisons of Damaged New Orleans Neighborhoods



Source: *J. Logan, "The Impact of Katrina: Race and Class in Storm-Damaged Neighborhoods," Brown University, Table 2, p. 7.*

Figure 8: Comparison Coastal Mississippi vs. New Orleans' 9th Ward



Source: Logan; U. S. Census Bureau; Mississippi Governor's Commission Report, p. 54; FEMA.

first two centuries.[34] In 1719, the first large shipment of Africans arrived in New Orleans, beginning over 140 years of slavery that permanently influenced New Orleans life.[35]

In the early 1800s, the city expanded upriver as plantations on the wide natural levees were subdivided for urban development. Working-class housing was situated near the river and larger homes were built further inland, forming the roots of the famed "Garden District." In 1810, the city expanded northward with the founding of the Tremé neighborhood, sometimes referred to as the oldest African American neighborhood in America.[36]

The African ancestry population of Antebellum New Orleans was about two-thirds enslaved and one-third Creole *gens de couleur libre*, or free people of color.[37] Slaves increasingly outnumbered Creoles the further upriver one traveled from Canal Street, the principal commercial thoroughfare of the city. The trend reversed in favor of Creoles the further downriver one traveled.[38] Owners required slaves serving as domestics or craftsmen to reside on-site or nearby, although some slaves hired out as labor were given permission to live apart in shacks at the edge of the swamps.[39] Creoles, proud of their free status, Catholic faith, French language, and Caribbean culture, occupied all parts of the city, but concentrated downriver from the French Quarter—in areas that make up the present-day Bywater and the Lower Ninth Ward—and in back-of-town areas such as Tremé and the Seventh Ward.[40] Overall, Antebellum New Orleans corresponded to the "early southern" pattern of low-density residential proximity of the races.[41]

In the decades after the Civil War, Louisiana's white population successfully overthrew Reconstruction.[42] In September

1874, Canal Street in New Orleans was the site of a formal military engagement in which a 5,000-member White League militia defeated 3,500 government soldiers.[43] President Grant sent in federal troops to restore order, an action that contributed to a major national backlash against Grant and in favor of Democrats in congressional elections two months later.[44] Thereafter, whites in the South solidified *de jure* racial discrimination in housing and individual rights.[45]

"Classic Southern" Patterns of Settlement

After the Civil War, the racial geography shifted toward a "classic southern" pattern in which whites selected areas for Blacks to occupy that had various disadvantages, such as flooding, unhealthy air, noise, or inadequate streets, water, and sewerage.[46] A typical geographic marginalization of Blacks was toward low-value, flood-prone swamplands at the edge of the city, far from basic urban infrastructure, such as the original Tremé.[47] In other instances, the clusters were in the vicinity of rail and industrial sites, such as Gert Town.[48]

Segregation was the rule in public housing. In 1937, the Housing Authority of New Orleans (HANO) received funds for slum clearance and publicly subsidized housing and built six projects that were racially segregated, in compliance with the Jim Crow laws of the time.[49] The two white projects occupied higher elevation sites closer to the front of town, while the four Black projects were in low-elevation spots in the back of town.[50] In some cases, HANO clustered additional projects near existing ones; in others, it isolated the projects, such as the 262-building Desire project, cut off from the rest of New Orleans by two canals and two sets of railroad tracks.[51]

Post-World War II concentrations of poverty produced severe social harms and eventually prompted a reaction in the form of Project HOPE, a plan to replace troubled projects with dwellings in which subsidized and market rate units were intermixed.[52] The St. Thomas Housing Project, a 64-acre site with 121 buildings and 1,510 residential units, was demolished and replaced with mixed-use mixed-income structures, including a Wal-Mart.[53]

Beginning in the 1980s, New Orleans underwent an eastward expansion into an area of former marshes that oil-boom developers believed held promise for residential housing. White suburbanites who first moved to New Orleans East in the 1980s were replaced by middle-class Blacks, who then were followed by lower middle-class Blacks attracted to affordable multifamily rentals along Interstate 10, an elevated interstate highway.[54]

Influence of Public Works

Public works projects have shaped the natural environment and patterns of settlement in New Orleans. Some opened up back-swamps to white development. In 1896, New Orleans began work on a drainage system to remove standing water from the low-lying back-swamps. As a result, whites moved toward the shores of Lake Pontchartrain into suburbs that explicitly excluded Blacks through deed covenants.[55] The Lakefront Project, completed in 1934, created new white neighborhoods half a mile into Lake Pontchartrain by building levees and pumping sediments into the contained area to form a new upland.[56] Other drainage measures included the creation of three drainage canals at 17th Street, Orleans Avenue, and London Avenue.[57]

Other projects put Black neighborhoods at greater risk of flooding. In 1918, the New Orleans Dock Board began construction on the five-mile-long Inner Harbor Navigation Canal (the Industrial Canal) to provide a shortcut between the river and the Gulf of Mexico. This canal isolated the predominantly Black Lower Ninth Ward from the rest of the city. In 1958, excavation began on the Mississippi River Gulf Outlet (MR-GO), a 76-mile-long segment of the Intracoastal Waterway, to provide a shortcut for oceangoing vessels to the Port of New Orleans. The hurricane levees along Lake Pontchartrain, the Industrial Canal, and MR-GO, often of sheet-pile construction, ranged between 13 to 18.5 feet, far less substantial than the wide earthen 25-foot-high Mississippi River levees.[58] Maintenance dredging and disposal of sediments had prompted environmental litigation prior to Hurricane Katrina, which ultimately proved successful in compelling the U.S. Army Corps of Engineers to conduct a more thorough environmental impact study.[59]

Artificial levees have profoundly weakened the soils and elevations of the city.[60] Subsidence, or the lowering of the elevation of land in relation to sea level, has occurred in several parts of the city as a result of levees that interrupt the natural deposit of water-laden river sediments.[61] Portions of Central City and the Upper and Lower Ninth Wards have subsided up to ten inches; in the Lakefront area, elevations have fallen over 50 inches in 40 years.[62]

A greater threat is the loss of the wetlands buffer in the adjacent parishes to subsidence and erosion. An additional foot of gulf water surges inland for every 2.7 miles of wetlands that disappear. To the east of New Orleans, MR-GO is estimated to have caused the loss of 27,000 acres of wetlands in St. Bernard Parish since its construction.[63] Hurricane Katrina destroyed over 100 square miles of coastal wetlands, more than half of which was in Breton Sound immediately to the southeast of New Orleans.

Discrimination in transportation also influenced patterns of settlement. Railways made possible the development of otherwise inaccessible areas of early nineteenth century New Orleans, such as Lake Pontchartrain and Carrollton.[65] Convenient transportation made it possible to live farther from the

city and to expand residential real estate development. But access was not equal: Homer Plessy was arrested in 1890 for sitting in a "whites-only" car of a New Orleans train. His appeal established the infamous doctrine of "separate but equal," which buttressed segregation for over half a century.[66]

In 1966, New Orleans saw the construction of an elevated interstate highway, known as "I-10," resulting in the destruction of the quintessentially Creole Seventh Ward's business district.[67] Interstate 10, along with construction of the Mississippi River bridges (1958 and 1988) and the Lake Pontchartrain causeway (1966-71), provided the path for white flight into suburban-style subdivisions in all directions.[68] Interstate 10 also drove development beyond the Industrial Canal into flood-prone swamplands to the east of New Orleans in the 1980s.[69] These developments were supported by federal policies and expenditures on highways, flood protection, and insurance, and reinforced federal bias toward structural flood control solutions instead of natural buffers. At the outer limit of this area, developer momentum finally failed, and a 23,000-acre parcel of wetlands was brought under protection as the Bayou Sauvage National Refuge in the Lake Catherine area, today the largest urban wildlife refuge in the country.[70]

Emergence of Environmental Justice in Louisiana

Over time, the pressure of social, political, and financial influences led minority communities to assert greater control over how their communities and environs were being exploited. In the mid-1990s, two breakthrough environmental justice successes occurred in Louisiana. Upriver from New Orleans, in the stretch referred to as "Cancer Alley," residents successfully challenged on environmental justice grounds the location of three polyvinyl chloride facilities and an incinerator by Shintech, Inc., a Japanese chemical company, in Convent, Louisiana, which had an 82 percent African American population. Residents filed a petition with the EPA's Office of Civil Rights[71] and an action under Title VI alleging racial discrimination.[72] Under pressure from this effort, Shintech announced it was dropping its plans.[73] In north Louisiana, a community group known as CANT (Citizens Against Nuclear Trash) persuaded the Nuclear Regulatory Commission that race played a role in the siting of Louisiana Energy Services' nuclear enrichment facility near Homer, Louisiana, resulting in the withdrawal of the application.[74]

Unfortunately, this momentum did not last. Shintech later renewed its efforts to win permits for its plastic manufacturing facility, and succeeded in 2002.[75] An environmental justice challenge to New Orleans Industrial Canal's work was rejected on the basis that Executive Order No. 12898 afforded no right of judicial review.[76] Also, an environmental justice challenge failed to block the demolition of the St. Thomas Housing project, as the Court relied on lead and asbestos exposure problems to justify demolition.[77]

Coastal Mississippi

In February 1699, Bienville's brother, French-Canadian explorer Pierre Le Moyne d'Iberville, explored the Mississippi Coast, an area of low-lying land, meandering bayous, and shallow, low-energy waters protected from the open waters of the Gulf of Mexico by a string of sandy barrier islands. At that time, Bienville dropped anchor near Ship Island and rowed to the Biloxi peninsula to establish the first European settlement in the lower Mississippi Valley.[78] Later in 1699, d'Iberville established a fort whose occupants suffered from disease, heat, and malnutrition, prompting its relocation to bluffs on the Mobile Bay within a few years.[79]

France's colonization was marked by neglect, speculative catastrophe, and hurricanes.[80] In 1713, Antoine Crozat arrived, but his plans were ruined by a severe hurricane in 1717.[81] Next to try was Scotsman John Law, whose Mississippi Company sold stock and recruited settlers with promises of New World prosperity and fertile land.[82] Up to 4,400 French, German, and Swiss colonists and 600 Black slaves were brought through the Biloxi port of entry between 1719 and 1721, hundreds of whom died for lack of food and water.[83] Law's finances collapsed in a land-bubble, and in 1722, Bienville persuaded French authorities to transfer the capital of the Louisiana colony from Biloxi to New Orleans.[84] Over the next 100 years, political control passed to the British (1763), the Spanish (1783), and then to the United States (1810-12), until Mississippi entered the Union in 1817.

Coastal Mississippi would prove to be an area of frequent severe storms with particularly devastating effects due to its low elevations.[85] In 1722, a hurricane inflicted severe damage on New Orleans and the Mississippi Coast, resulting in the abandonment of Biloxi.[86] In 1740, two hurricanes in one week struck settlers between Mobile and Pascagoula.[87] A hurricane on August 28, 1819, so inundated the Biloxi peninsula as "to loft a schooner completely over it into Back Bay."[88] In 1860, three storms within two months ravaged coastal towns and caused Biloxians to mob an evacuation steamer.[89] A 1901 hurricane unexpectedly *increased* the length of a deep-water channel between Ship Island and the port of Gulfport by three feet.[90]

Patterns of Settlement

Antebellum coastal Mississippi towns, known as the Six Sisters, maintained close economic and cultural ties with New Orleans through a series of resort hotels accessible by steamboat.[91] Shieldsboro (modern-day Bay St. Louis) was a summer retreat for Natchez planters and the New Orleans Creole population.[92] An 1838 New Orleans paper described the Pass Christian Hotel, situated on the Mississippi Sound, as "one of the best situated and best appointed houses in Louisiana... delightfully situated on Lake Pontchartrain."[93] Handsboro,

on the banks of the storm-sheltered Bayou Bernard, was an industrial and manufacturing center, with foundries, sawmills, and gunpowder manufacturing that shipped goods south to Mississippi City and east through meandering bayous to Biloxi.[94] Biloxi became the largest of the coast cities, with the best combination of commercial, seafood, and resort activity.[95] Yellow fever was a persistent health danger that drove New Orleans residents to the Mississippi coast. In 1853, an epidemic broke out that killed 10,000 residents in New Orleans and spread to Mississippi.[96]

The population of the three coastal counties in 1860 was 12,000, with an estimated 3,000 slaves. Free persons of color in two of the counties totaled 133, and none were reported in the third county.[97] Because it had so few cotton plantations, coastal Mississippi's 25 percent average slave population was less than half the statewide average. Slaves worked in mills, boatyards, brick-works, and hotels.[98] However, the entire coastal economy was closely linked to New Orleans and Mobile, and so its fortunes ultimately were rooted in slave labor.[99] In 1859, the Mississippi Legislature ordered all free Blacks out of the state within one year on penalty of enslavement. Mississippi entered the Civil War as the fifth-wealthiest state in the nation and exited as the poorest.[100]

After the Civil War, some emancipated slaves took advantage of the Swamp Lands Act to purchase hundreds of acres of undeveloped swamp land, which produced the historic Turkey Creek community.[101] Other African Americans participated in the construction of roadbeds for an east-west railway connecting New Orleans and Mobile. This railway functioned as a racial dividing line between white beach-front communities and African American communities across the tracks, such as Soria City, the Big Quarters, Gaston Point, Magnolia Grove, and back-of-town Biloxi and Pascagoula.[102] One predominantly African American community, Carrollton, was taken over in the late 1930s to create Air National Guard training bases and soon afterward the adjacent land was converted into a whites-only suburb, Bayou View.[103]

As in Louisiana, coastal Mississippi's public housing was racially segregated. Over time, public housing projects in coastal cities produced severe intergenerational poverty and eventually became targets for demolition and replacement under the federal HOPE VI Program in the 1990s. One HOPE VI development in East Biloxi was on the verge of occupancy at the time that Hurricane Katrina struck, and it was heavily damaged.

Influence of Commerce and Public Works

Beginning in the 1960s, a series of industrial and chemical facilities were built along the Gulf Coast. Near the predominantly African American areas in Pascagoula and Moss Point, three facilities were constructed adjacent to each other: Chevron Refinery, First Chemical, and Mississippi Phosphates. In 1992, dockside gambling was legalized in two coastal Mississippi counties. In East Biloxi, casinos and hotels crowded out long-standing low-income ethnic neighborhoods and seafood processing facilities and set off a real estate and condominium boom that was peaking immediately prior to the arrival of Hurricane Katrina.

Coastal Mississippi's highways and support structures became deeply intertwined with racial discrimination. Just as the Mississippi River created an upriver/downriver racial axis in New Orleans, so the shoreline and interior swamps created a frontwater/backwater racial axis in coastal Mississippi. The area is served by a federal highway, U.S. Highway 90, built during the Depression with bridges crossing St. Louis Bay and Back Bay of Biloxi. Highway 90 was reinforced against hurricane damage by a concrete seawall (1926-28) and a man-made sand beach, constructed with taxpayer dollars (1951).[104] Segregation laws barring African Americans from using these beaches were overturned in 1968 after a nine-year campaign and litigation led by African American Biloxi physician Dr. Gilbert Mason.[105] The rationale that publicly funded beaches were public property established a vital limitation on sites eligible for dockside casino development beginning in 1992.[106] Federal financial assistance for construction was conditioned upon the county maintaining and administering the beach perpetually as a public beach. As a result, the county could not authorize the sale or lease of portions of the beach to private casino development.

Coastal Mississippi also is served by the southern-most of the intercontinental national freeways, Interstate 10. This heavily traveled east-west corridor intersects with U.S. Highway 49 North, the principal hurricane evacuation route, less than a mile northwest of the Turkey Creek community. Encroachment from the nearby airport, heavy industrial sites, northward municipal annexation, and big-box retailers exacerbated flooding problems and resulted in Turkey Creek being named one of the top 10 most endangered historic communities in the state.[107] A Gretna, Louisiana developer's plan to fill hundreds of acres of wetlands to create a commercial corridor along Interstate 10 was abandoned after two African American communities asserted that the development would have disproportionate impacts on the flooding and water quality of their areas.[108]

Further east, Interstate 10's construction was delayed until the nation's first legal challenge under the Endangered Species Act could be heard regarding the Mississippi Sand-hill Crane. Environmentalists' claims were upheld in 1976 and a settlement resulted in the purchase of 1,960 acres of marshland adjacent to the interstate highway to create a preserve for this endangered species.[109] This restricted development from impinging upon a 30-square mile natural floodway.

Emergence of Environmental Justice in Coastal Mississippi

Like other Southern states, Mississippi's experience with environmental justice began with storage of toxic substances. Beginning in 1989, environmental justice issues were raised by an African American minister, Bishop James Black, about military sites adjacent to minority communities in coastal Mississippi.[110] During World War II, toxic chemicals were buried at a back bay landfill at Keesler Air Force Base in Biloxi, releasing poison into the groundwater and contaminating the near-shore subsistence fishing stock frequented by African Americans.[111] Between 1968 and 1977, Agent Orange was stored at the Naval Construction Battalion Center in Gulfport, Mississippi. Spillage and ruptured drums over time resulted in dioxin contamination on- and offsite.[112] The West Gulfport community immediately adjacent to this site is 87 percent African American, with a 37 percent poverty rate.[113]

Prior to Hurricane Katrina, chemical plant pollution issues had attracted attention. In Moss Point, Mississippi, Morton International, Inc., pled guilty in 2000 to criminal violations of federal pollution laws and paid a record $20 million civil fine for environmental violations at a single facility.[114] The offenses included chronic violations of its Clean Water Act permits over a period of at least five years and illegal hazardous waste disposal (including deep injection wells) of toluene and methyl ethyl keton. In 2000, Moss Point was 70 percent African American, with an 18 percent poverty rate.[115]

III. ENVIRONMENTAL JUSTICE ISSUES ARISING FROM HURRICANE KATRINA

The scope of environmental problems following Hurricane Katrina is wider than can be thoroughly addressed in this paper. It includes disaster cleanup and waste management, releases of oil and hazardous substances, damage to previously contaminated sites, contamination in floodwaters and sediments, air quality, drinking water quality, coastal waters impacts, and water and sewage infrastructure facilities. Instead of an exhaustive treatment of these subjects for Louisiana and Mississippi, this section focuses on particular issues that form a basis for drawing lessons from environmental justice. These include the long-lasting impacts of environmental racism, the need to resist emergency cries to undo environmental protections, and the ways in which recovery from natural disaster may solidify or, in rare cases, reverse structural racism.

Direct Impacts in New Orleans

Levee Failures

On the morning of August 28, 2005, Hurricane Katrina drove a vast 18-foot-high mound of seawater westward across Lake Borgne into a V-shaped funnel formed by two levees. The levee walls forced the waters higher and faster down a 10-mile-wide entrance into a 260-foot-wide channel until the surge struck a T-shaped intersection with the Industrial Canal.[116] At about 7:30 a.m., this head of water buckled levee walls on the west side of the canal and unleashed flooding into the Upper Ninth Ward, Bywater, and Tremé.[117] The surge was forced to the north, where it poured into Lake Pontchartrain, and to the south, where it piled up behind closed locks connecting the canal to the Mississippi River. At about 7:45 a.m., two sections of the levee abruptly collapsed on the eastern side of the southern part of the canal, opening a breach of about four hundred yards for a destructive 14-foot-high wall of water to spill into the Lower Ninth Ward.[118] MR-GO, which in the 1960s had been welcomed as a conduit of prosperity, was described in 2005 by New Orleans Councilwoman Cynthia Willard-Lewis as the "highway for tidal surge."[119] The riverside Ninth Ward experienced flooding up to 12 feet and the lakeside Ninth Ward had flooding up to 20 feet.

Hurricane surges rose in the drainage canals extending two to three miles south from Lake Pontchartrain. Between 9:00 and 10:30 a.m., sections of the London Avenue and 17th Street canals ruptured, flooding Gentilly, Lakeview, and the New Orleans metro bowl areas of Carrollton, Broadmoor, and Mid-City.[120] Over the next 24 hours, water poured into the city until the lake level equalized with the floodwaters. Floodwaters along Lake Pontchartrain were up to 15 feet, receding to 8 feet in the mid- and central city areas.[121]

The most striking example of racial disparity in the New Orleans experience of Hurricane Katrina is the relative lack of flood damage in what research professor Richard Campanella terms the "White Teapot," the modern-day geographic relic of colonial white plantations along the natural levee of the Mississippi River (Figure 9,next page).[122] What these neighborhoods—Uptown, Carrollton, University, the Garden District, and the French Quarter—shared were high elevations and low exposure to riverside nuisances such as industrial sites, railroads, and wharves, or back-swamp nuisances such as floods, mosquitoes, unpaved roads, and dumps.[123] They also had convenient access to public transportation and adequate urban infrastructure.[124] Finally, these neighborhoods generally did not find themselves forced to accept intrusive developments, such as overhead highways or industrial canals.

There was very heavy damage in overwhelmingly white Lakeview, next to the 17th Street Canal, and similar neighborhoods on Lake Pontchartrain. However, unlike the neighborhoods discussed below, these areas were opened to development by elimination of the undesirable swamp conditions and were kept white by restrictive deed covenants.[125]

Racial disparities in storm damage stem from centuries of white control over the characteristics of land occupied by African Americans—low elevations with high exposure to

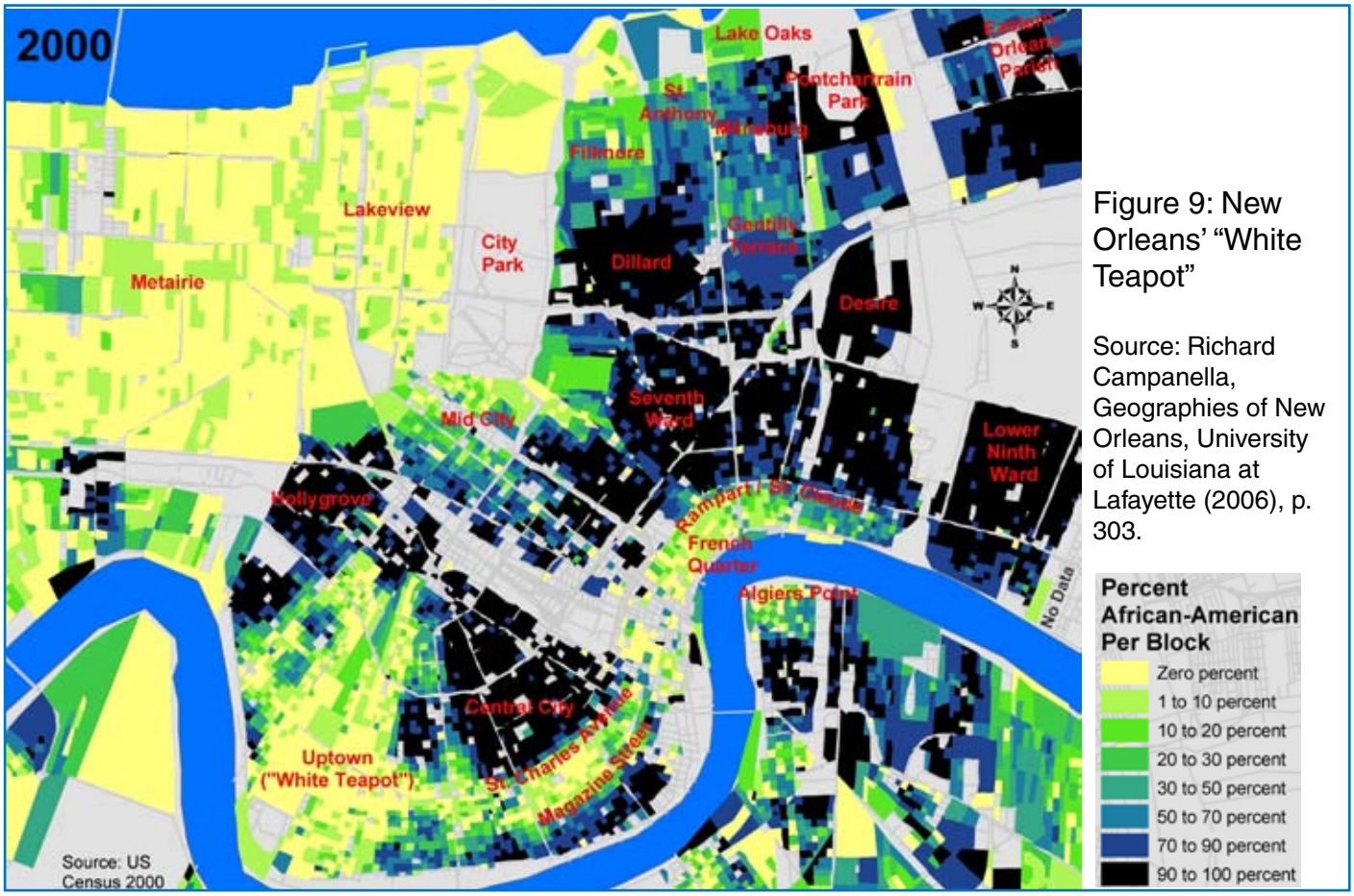


Figure 9: New Orleans' "White Teapot"

Source: Richard Campanella, Geographies of New Orleans, University of Louisiana at Lafayette (2006), p. 303.

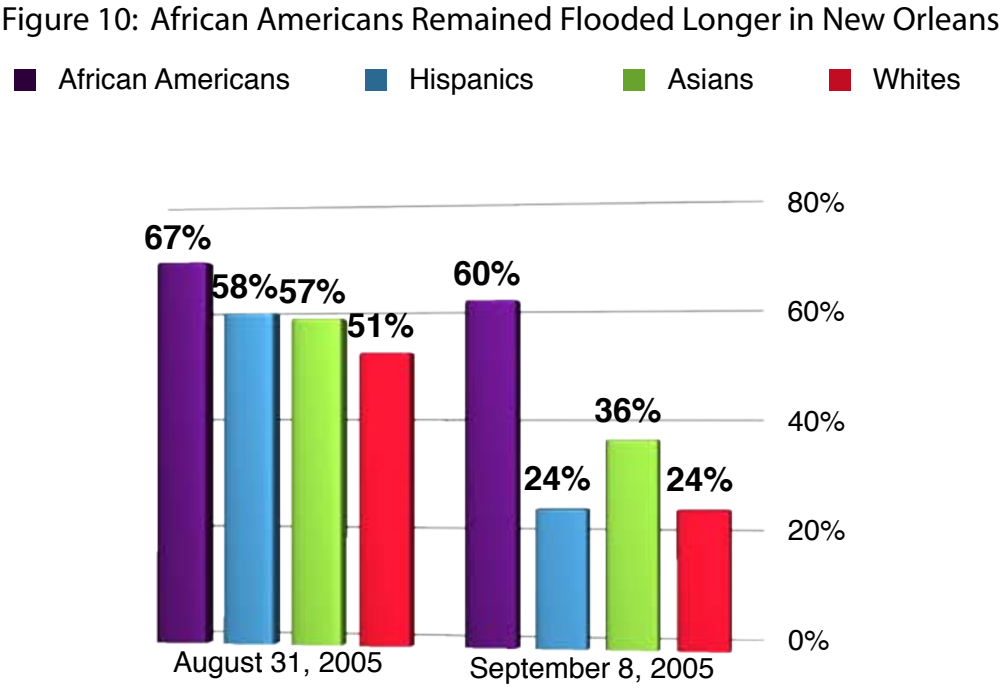
back-swamp flooding and poor access to transportation.[126] These neighborhoods—Mid-City, Bywater, and the Ninth Ward—were built around or targeted for isolating infrastructure such as railways, the Industrial Canal, and Interstate 10. Mid-City and Bywater also hosted many of the city's public housing projects, such as Calliope, Iberville, St. Bernard, Florida, and Desire. The isolation produced by federal housing and transportation policy was disastrous for the thirty percent of households (over 105,000 residents) in Orleans Parish's flooded areas who lacked access to a car.[127] Over a week after the hurricane, a significantly greater percentage of African American residences remained flooded in the metropolitan New Orleans area compared to other ethnic groups (Figure 10).

Contamination and Spills

Chemical contamination of floodwaters was a grave concern in the immediate aftermath of the storm, with widespread fear of a "toxic gumbo."[128] The Army Corps of Engineers estimated the trapped water to be up to 114 billion gallons.[129] The sources of contamination included decaying bodies and sewage, chemicals from properties and vehicles, and oil and gas from damaged tanks and pipes.[130] The floodwaters from the metropolitan New Orleans area were finally removed on October 11, 2005.[131] These waters had concentrations of fecal bacteria at least 10 times above recommended levels for human contact. The floodwaters also had elevated levels of lead, arsenic, and other chemicals that exceeded EPA drinking water standards but—according to the EPA—were not likely to produce immediate illness from skin contact.[132] The EPA approved the removal of floodwaters from New Orleans without the requirement of discharge permits based upon an exception in the Clean Water Act, which authorizes the President to remove discharges from onshore industrial facilities that pose substantial threats to public health or welfare.[133]

New Orleans had a large number of hazardous materials sites, including National Priorities List sites, Total Release Inventory Sites, and hazardous materials locations such as closed landfills. Their geographic distribution echoes the racially disproportionate pattern of settlement (Figure 11). The EPA and the U.S. Coast Guard received hundreds of reports of Katrina-related spills of petroleum or hazardous chemicals, with just eleven spills accounting for a total release of 7 million gallons of oil.[134] EPA and Louisiana Department of Environmental

Figure 10: African Americans Remained Flooded Longer in New Orleans



Source: Campanella, Geographies of New Orleans, U. of Louisiana Press, 2006, p. 401.

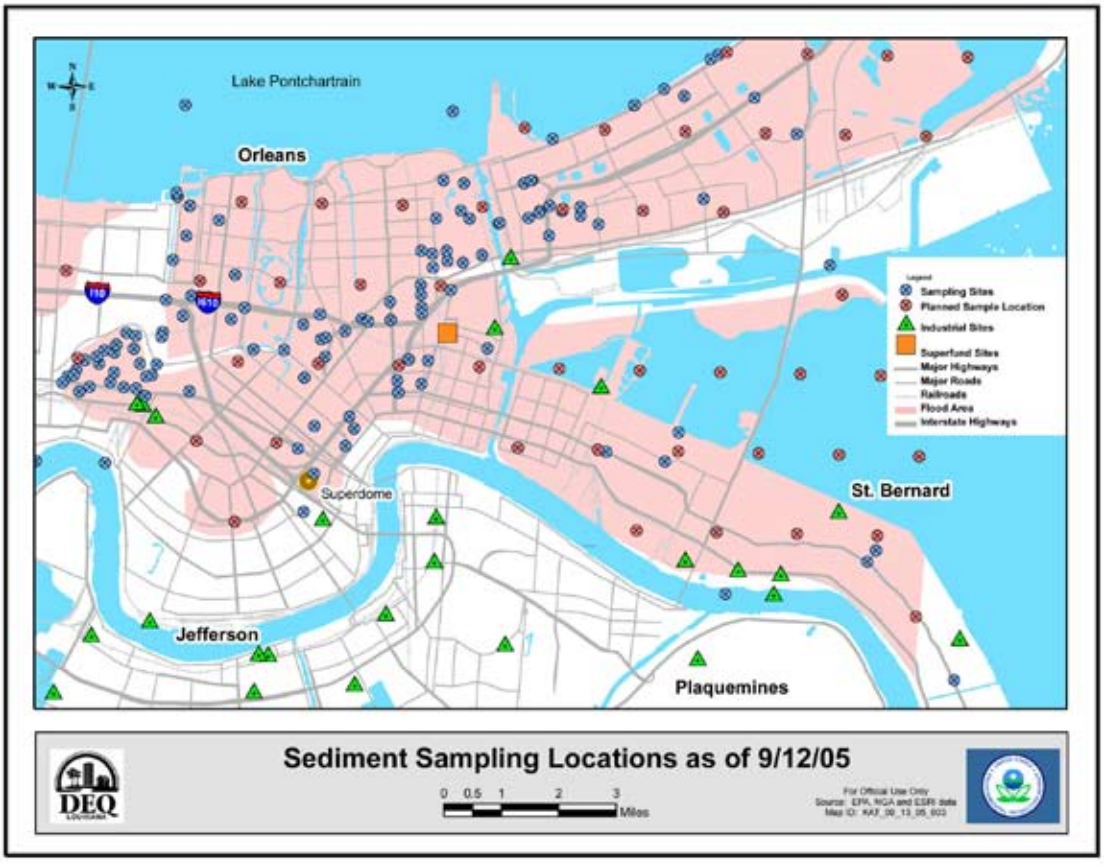


Figure 11: Sediment Sampling Locations in New Orleans

Source: Louisiana Department of Environmental Quality, U.S. Environmental Protection Agency.

Quality (LDEQ) officials, clad in protective gear, undertook a study of 1,800 samples that scanned for 200 individual chemicals, while many residents were barred from or advised against returning home.[135]

The final EPA report deemed most of the New Orleans area to be safe from floodwater sediment contamination. The EPA pledged to monitor Press Park, a public housing complex built on a previously contaminated Superfund site, the Agriculture Street Landfill. Post-Katrina tests detected benzo(a)pyrene levels at almost 50 times the health screening level.[136] Environmental advocates criticized the EPA's report and asserted that concentrations of hazardous chemicals in most districts of the city normally would trigger investigation and soil cleanup requirements under state law.[137] Supporters of the EPA argued that environmental advocates were misusing screening standards and presenting them as health-based standards.[138]

A key difficulty in assessing the hurricane's impact is the presence of contamination before the storm. When proponents of the EPA's view argue that lead levels were similar to pre-Katrina conditions, this does not indicate that lead poses no problem in New Orleans. To the contrary, a 2004 study showed that 40 percent of New Orleans soils exceeded the EPA's lead cleanup standards, and that 20 to 30 percent of inner-city children had blood lead levels in excess of the Centers for Disease Control and Prevention health guidelines.[139]

The hurricane's floodwaters also dislodged an above-ground storage tank at the Murphy Oil Refinery, spilling 25,000 barrels (over 1 million gallons) of crude oil into an adjacent residential neighborhood in Meraux, a blue-collar predominantly white community in St. Bernard Parish, downriver from the Lower Ninth Ward.[140] The spill affected 1,800 homes and several canals and has entailed an extensive cleanup effort. Crude oil contains benzene, long-term exposure to which has been linked to leukemia, and polycyclic aromatic hydrocarbons (PAH), also a carcinogen.[141] LDEQ sediment samplings as of March 2006 found that 92 percent of the indoor samples and 97 percent of the outdoor samples were below the RECAP screening standard, a protective standard based on long-term exposure.[142] Once again, the gap between screening standards and long-term health standards leaves ordinary citizens in doubt over the health risks they face.

Air quality also became a major health concern after the storm. As contaminated sediment dries, it can be disturbed by traffic and breathed in as dust. The burning of disaster debris can expose nearby residents to arsenic, lead, and particulate matter. Preliminary sampling indicated that the chemical concentrations fell below EPA levels of concern.[143] Demolition of structures in Orleans Parish—85 percent of which had regulated asbestos-containing materials—put residents at risk of exposure to this well-known toxic substance.[144] Exposure to mold, mildew, and other fungi is a major risk during the gutting and disposal of flooded residences. Since no federal standard governs mold levels, public health and environmental advocates have undertaken sampling.[145] The sampling results—77,000 spores per cubic meter—are far above the 50,000-spore level deemed to be "very high" by the National Allergy Bureau of the American Academy of Allergy and Immunology. The consequences of such high mold levels are serious allergic and asthmatic conditions that make these homes uninhabitable.[146]

Additional pollution concerns arise from the disposal of an estimated 22 million tons (55 million cubic yards) of disaster debris in Louisiana.[147] Beginning in the 1980s, some unlined New Orleans landfills were discovered to have released contaminants into the groundwater, and were closed. Following Hurricane Katrina, some of these same landfills were reopened to dispose of disaster debris. One study estimates that 1,740 metric tons of arsenic are expected to be contained in the 12 million cubic meters of demolition wood debris.[148] This study warns that leaching of arsenic from pressure treated wood in unlined landfills poses risks of contamination of groundwater.[149]

Federal time limits on payment to remove hurricane debris pressured officials to use emergency powers to reopen unsuitable dumping grounds. The Gentilly landfill is a 230-acre site situated at the throat of the hurricane funnel.[150] It was operated as an unlined solid waste landfill from the 1960s until it was ordered closed in 1983.[151] Groundwater monitoring from 1989 until 2004 detected concentrations of arsenic, cadmium, chromium, and other metals. To the north and northwest are two predominantly Black neighborhoods, the moderate-income Read Boulevard West and the low-income Plum Orchard area. Louisiana reopened this site under an emergency decree in September 2005, but subsequent litigation brought by the Louisiana Environmental Action Network resulted in a temporary agreement to limit capacity to 19,000 cubic yards per day pending further studies on catastrophic contamination risks during a hurricane.[152] In later proceedings, the rate of disposal at the Gentilly landfill was raised to 50,000 cubic yards, subject to compliance with increased monitoring and operational requirements.[153] The remainder of the debris was transported across the Mississippi River to a Jefferson Parish landfill.

While the Gentilly landfill operated at reduced rates, New Orleans Mayor C. Ray Nagin authorized the reopening of the Chef Menteur landfill. The Chef Menteur landfill is situated in the Village de l'Est neighborhood at the eastern edge of the city, adjacent to the Bayou Sauvage National Refuge. This community is 55 percent African American and 37 percent Asian (predominantly Vietnamese), with 30 percent living in poverty.[154] Over 200 mostly Vietnamese residents, led by Rev. Vien Nguyen, pastor of Mary Queen of Vietnam Catholic Church, pursued a successful effort to convince Mayor Nagin

to reverse course and close the site.[155] It later surfaced that Waste Management traded a zoning waiver in return for a donation of 22 percent of its tipping fees back to the city—a cost that the company tacked onto its bill and that the federal government now wants the city to repay.[156]

Direct Impacts in Coastal Mississippi

Storm Surge

As the eye of Hurricane Katrina crossed the mouth of the Mississippi River, a vast and deadly mound of water massed in the Gulf of Mexico. At 5:00 a.m., a buoy 70 miles to the east of the mouth detected peak significant wave heights of 55 feet in open Gulf waters, which approximate to a maximum wave height of one hundred and five feet.[157] Over the next six hours, Katrina pushed a massive tsunami-like 30-foot-high dome of water northeast over the barrier islands and slammed it into the entire 90-mile-long Mississippi coastline.[158] Ivor van Heerden, a Louisiana State University environmental engineering professor, asserts that the surge was magnified as it welled up against the Mississippi River levees. Van Heerden maintains that, had there been no levees, the surge would have fanned out over wetlands and carried far less water to local shores.[159]

In Hancock County, the surge rose to between 24 and 28 feet high in the vicinity of the Bay of St. Louis and pushed upstream against the drainage from the Jourdan and Wolf Rivers.[160] The surge obliterated the predominantly white 26-mile-long ribbon between the beach-front highway and the railroad tracks in Harrison County. The railroad track-bed functioned as a levee in the middle part of the county, shielding older African American "back of town" communities from the surge. East Biloxi was attacked from two sides, however, as the surge encircled the peninsula from the beach-front and the Back Bay of Biloxi. From there, the surge raced westward through a network of bayous, lakes, rivers, and canals to the mouth of the Turkey Creek, where it collided with and overwhelmed hurricane rain-flows draining from African American communities like Forest Heights and Turkey Creek.

The surge measured 17 to 22 feet along the eastern half of the Mississippi Coast.[161] Pascagoula's white and Black neighborhoods were submerged in waters up to 20 feet, but portions of predominantly Black Moss Point remained above water. Storm surges pushed far up the Pascagoula River delta, including the Sand-hill Crane Wildlife Refuge.

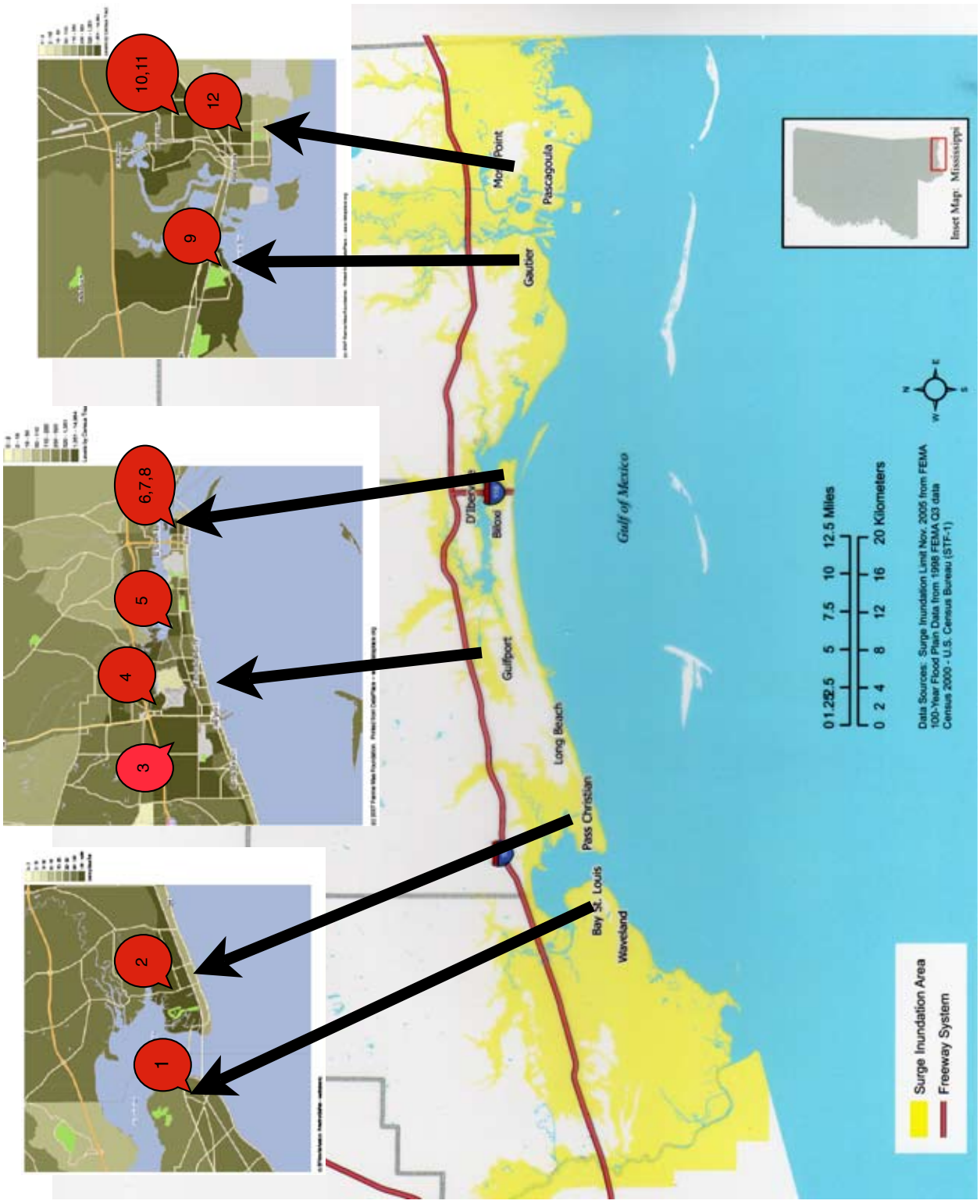
The storm surge did not *disproportionately* affect middle- to upper-income households, contrary to a generally accepted view.[162] Lower-income residents bore the brunt of the impact—57 percent of the storm-damaged housing inside the federal flood zone and 65 percent above the flood zone was occupied by households earning less than the U.S. median income level.[163] In East Biloxi, about 95 percent of households earned below the federal median income, and 80 percent of these suffered extensive or catastrophic damage.[164] Over 40 percent of the households residing in most beach-front census blocks in Gulfport and Biloxi had incomes at or below 80 percent of the area median income.[165] In addition, some African American communities in coastal Mississippi were more

Figure 12: Surge-damaged Coastal Mississippi census tracts with high-proportion African American populations.

location	city	census tract	African American in Census Tract	African American in City	African Americans in Census Tract	surge elevations (feet)
1	Bay St. Louis	28045 0301	22%	16.6%	1275	20-28
2	Pass Christian	28047 0030	37%	27%	1646	21-25
3	Gulfport	28047 0024	82%	33%	2530	16-18
4	Gulfport	28047 0018	84%	33%	2302	17-19
5	Gulfport	28047 0017	37%	33%	2313	25
6	Biloxi	28047 0004	63%	19%	948	20-22
7	Biloxi	28047 0002	30%	19%	682	20-22
8	Biloxi	28047 0003	57%	19%	1621	20-22
9	Gautier	28059 0411	34%	29%	2300	15
10	Moss Point	28059 0416	81%	70%	2530	13-16
11	Moss Point	28059 0414	44%	70%	1419	12-14
12	Pascagoula	28059 0422	42%	28%	2194	15-18

Sources: 2000 Census Data accessed via DataPlace, http://www.dataplace.org
FEMA Surge Maps, http://www.fema.gov/hazard/flood/recoverydata/katrina/katrina_ms_maps.shtm

Figure 12a: Twelve predominantly African American flooded communities in Coastal Mississippi



Sources: Rand Gulf States Policy Institute for Surge Inundation Map, U. S. Census Bureau for census tracts (accessed through www.dataplace.org) Assembly by Author.

heavily damaged than the general population. Twelve surge-damaged communities with relatively high Black populations have been mapped for review (Figure 12).

Contamination and Spills

Mississippi and Alabama made over 5,000 reports of releases of hazardous materials to the EPA Region IV.[166] South Mississippi factories and industrial facilities were flooded, but early reports suggested that only small chemical releases had occurred.[167] Mississippi Phosphates in Pascagoula took 15 to 18 feet of water and experienced a release of anhydrous ammonia gas. Chevron Refinery was flooded and released 40 gallons of jet fuel and 10 gallons of gasoline.[168] The storm surge topped the 25-foot-high levee at Dupont DeLisle and pushed chlorine railcars off their tracks, but did not breach the onsite landfill for waste disposal, according to the Mississippi Department of Environmental Quality.[169]

Early analysis of sediment and surface water samples at eighteen sites showed the presence of volatile organic compounds, heavy metals, and dioxins in excess of preliminary remediation goals.[170] In response, the EPA conducted testing of several industrial locations, each of which was situated adjacent to marshes and/or low-income areas in Pearlington, DeLisle, Gulfport, Biloxi, and Pascagoula.[171] In each instance in which a contaminant exceeded preliminary remediation goals, the EPA concluded that the results fell within acceptable health risk ranges.[171]

A later report covered DuPont DeLisle, a major chemical facility, and the Naval Construction Battalion Center (NCBC) in Gulfport. The DuPont testing detected dioxin at a site "within a heavy area of vegetation adjacent to an industrial area."[173] The sample site is located outside the hurricane levee and immediately adjacent to the shore of the Bay of St. Louis.[174] However, the EPA concluded that this individual instance was within an acceptably low cancer risk range.[175] Testing of soils on and off the NCBC site showed concentrations below levels of concern for public health. As with the DuPont site, dioxin was detected in areas of heavy vegetation, which the EPA considered unlikely to pose risk of significant human contact.[176] The three sites were located in wooded areas across the street from the William Ladnier Public Housing Complex in predominantly African American west Gulfport.[177]

Landfills and Burning

Mississippi's storm debris was estimated at 46 million cubic yards, over one and a half times as much debris as the state creates in a year, and 83 percent as much storm debris as Louisiana.[178] One-third of the debris was estimated to be vegetative, which disaster response officials preferred to burn. Within 60 days of the storm, fourteen burn sites were operating in Harrison County and one in Hancock County.[179] Most were located in the rural interior, but there were three vegetative debris burn sites located south of Interstate 10.[180]

Public complaints arose about the health and odor effects of the smoke. In response, the EPA and the Mississippi DEQ ran air sampling tests. One Gulfport site situated in a community with a 33 percent African American population was listed as a vegetative debris burn site, but air testing showed the presence of arsenic and lead.[181] Sampling at this site also recorded particulate matter at PM2.5 in levels capable of causing problems in populations with respiratory sensitivities—such as children, the elderly, and persons with respiratory illnesses—especially during the first month of operation.[182] Environmental officials concluded that individual readings that exceeded screening standards did not pose a significant long-term public health risk—and nothing was done. This regulatory response was mirrored in other air sampling sites elsewhere across the Mississippi coast.

In sum, catastrophic damage inevitably leads to dramatic increases in demand for solid waste disposal, and chaotic conditions frequently limit opportunities to effectively sort hazardous from non-hazardous debris. Under these conditions, the likelihood remains high that minority and low-income neighborhoods will be burdened disproportionately with water and air pollution from debris removal and burning, given the historic pattern of siting landfills in those areas.

Assurances that New Orleans and coastal Mississippi have received a clean bill of environmental health have failed to persuade non-white populations with bitter experiences of relying—to their detriment—on official public health statements. Some cannot square these promises with their own community's experience of poorly diagnosed respiratory, infectious, and allergic reactions.[183] Others view such statements as untrustworthy in light of recent disclosure that the EPA was pressured to downplay air-pollution risks in New York City following the World Trade Center attacks.[184] Still others prefer precautionary use of screening standards over health risk-based standards.[185] Whatever the reason, many residents remain persuaded that the true story about contamination has not been told, that the floodwaters were toxic, and that a safe return is far from assured. As a result, some are engaging in self-help environmental precautionary cleanup efforts, such as the "Safe Way Back Home" initiative undertaken by the Deep South Center for Environmental Justice and the United Steelworkers.[186]

IV. EVACUATION AND DISASTER RESPONSE

Environmental Justice, Transportation, and Evacuation

The American transportation model unfairly tends to burden minorities and the poor. In general, federal transportation funding is divided so that 80 percent goes to highways and 20

percent goes to public transportation, but states tend to spend less on public transportation.[187] Transportation policy that favors automobiles and highways over public transit systems serves non-metropolitan needs more than metropolitan needs, promotes white flight from urban to suburban areas, displaces low-income urban communities to make room for elevated freeways, weakens inner cities, induces sprawl, and increases air pollution.[188] Even within public transportation, which functions most efficiently in densely developed urban areas with a clear city-center orientation,[189] there is a subsidy bias in favor of higher-income riders using rail service over lower-income riders using buses. This tends to geographically limit the availability of inter-urban passenger rail service.[190]

As public transportation is restricted, personal transportation costs increase. This burden falls significantly more heavily on the lowest income quintile, among whom up to 36 percent of the after-tax household budget is spent on transportation, double what the highest quintile spends.[191] Low-income households who use an automobile to commute spend 7 percent more of their income on transportation than those using public transportation.[192] Nationwide, the amount of income spent on transportation among very low-income households increased by 36.5 percent between 1992 and 2000, double the rate of increase for those in the top quintile.[193]

Environmental justice highlights the systemic effects of transportation policy on the environment, such as the hybrid benefits of a stronger public transit system—reduced carbon footprint, increased social and community connection, and wider access to jobs, goods, and public services for disadvantaged communities. An emphasis on automobiles and highways, viewed from an environmental justice perspective, produces the opposite results—increased pollution, increased social and community isolation, and decreased access to jobs, goods, and public services.

To some, transportation, evacuation, and disaster relief may set the outer limit of the social agenda of environmental justice, but the New Orleans Superdome experience has highlighted the link between increased vulnerability of disadvantaged populations to environmental and natural disasters and decreased governmental response to those populations after disaster strikes. In the realm of evacuation and disaster response, environmental justice mirrors international human rights obligations of government to provide for internally displaced persons, including the right to return and to adequate interim care and treatment.[194]

Evacuation in New Orleans

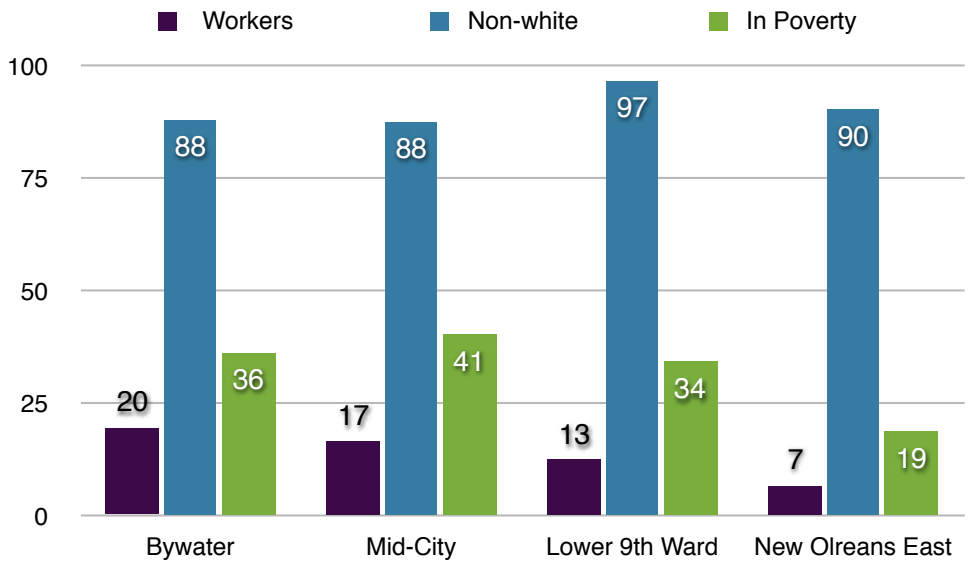
Hurricane Katrina displaced 800,000 Americans from their homes, according to the Department of Homeland Security, "the largest displacement of people since the great Dust Bowl migrations of the 1930."[195] A joint Congressional report estimated a higher number of evacuees, 1.2 million, most of whom evacuated in private vehicles in a phased contra-flow plan.[196] Over one in three African Americans living in New Orleans lacked a vehicle prior to Hurricane Katrina, and almost 60 percent of poor Black households had no vehicle.[197] Four of the worst-hit sections of New Orleans were home to non-white and poverty-level populations with sharply higher usage of public transit (Figure 13). New Orleans' pre-Katrina mandatory evacuation came late and left tens of thousands stranded, causing preventable deaths, increased suffering, and a substantial post-storm evacuation.[198] The city's Comprehensive Emergency Plan assumed that 100,000 citizens without personal transportation would need shelter.[199] However, this plan did not provide for use of the city's 550 municipal buses or hundreds of school buses.[200] On Sunday, August 28, 2005, the city buses were directed to pick up the elderly and the poor at a dozen checkpoints, but the effort failed for multiple reasons, including a lack of marked evacuation bus stops.[201] The city turned down Amtrak's offer to evacuate hundreds of passengers by rail.[202] Sixty thousand people ultimately needed to be rescued from rooftops, and 33,500 were saved by the U.S. Coast Guard.[203]

Six days after the storm, the Federal Emergency Management Agency finalized its request for 1,355 buses to transport evacuees from the New Orleans Superdome and Morial Convention Center to other locations; the buses slowly began to arrive over the next several days.[204] This delay prompted charges that politics and discrimination against minorities and the poor lay behind the lack of urgency. Advocates immediately placed this situation in the context of a long pattern of oversight and neglect of African American populations in both environmental and natural disasters.[205]

Racial discrimination in transportation extended to pedestrian traffic as well. Four days after the storm's arrival, approximately 200 dehydrated, mostly African American New Orleans storm victims, too poor to evacuate by vehicle, walked up Highway 90 toward the Crescent City Connection to cross the Mississippi River into Gretna, Louisiana. They were met by Gretna police officers, guns drawn, who ordered them to turn back. The group attempted to remain on the bridge overnight, but were driven away by gunshots and a police helicopter.[206] Gretna officials justified this refusal on the grounds that their city was in a lock-down, prompted by looting.

Sixty-four years earlier, the United States Supreme Court ruled that California could not isolate itself from dust-bowl-era migration by restraining the transportation of indigent persons across its borders. The Court, speaking through Justice Benjamin Cardozo, observed that the Constitution "was framed upon the theory that the peoples of the several states must sink or swim together, and that in the long run prosperity and salvation are in union and not division."[207] A Louisiana federal judge now must decide whether the indigent

Figure 13: Percent of Workers Using Public Transit to Commute, Non-White and in Poverty



Source: U. S. Census Bureau (2000), see Center for Social Inclusion, ***The Race to Rebuild, the Color of Opportunity and the Future,*** p. 21.

African American pedestrian Katrina victims were unlawfully deprived of the constitutional right to travel the Crescent City Connection or whether Gretna's state of emergency authorized the lock-down of this bridge.[208] In December 2007, a federal judge ordered a trial for claims based upon right to travel and the freedom from unreasonable restraint upon liberty.[209]

The connection between race and personal transportation has contributed to significant shifts in the population of New Orleans metropolitan area, according to a Brookings Institute study of U.S. Census data for the four months after Hurricane Katrina. For this period, the New Orleans metropolitan area population dropped by 30 percent, and became more white, wealthy, and mobile than before the storm.[210] The white population rose from 54 percent to 68 percent, while the Black population fell from 36 percent to 21 percent. Households with incomes above $15,000 rose from 80 percent to almost 85 percent, while households in poverty fell from 14 percent to 8.5 percent. Residents who were able to relocate to a different house, either in the same parish or a different parish, rose from 14 percent to 21 percent.[211] The overall percentage of New Orleans households without an automobile declined from 13.6 percent to 5.8 percent in the second half of 2005. As noted in the Brookings analysis, less wealthy evacuees in more distant places like Houston or Atlanta confront a considerable obstacle to returning to their homes if they lack personal transportation.[212]

From an environmental justice standpoint, the evacuation's almost exclusive dependence on personal transportation disproportionately burdened the lowest-income African Americans in New Orleans. It is unknown to what extent municipal under-spending contributed to the lack of a coordinated plan, to any decreased cooperation among municipal transit workers, or to the lack of evacuation signs. Historian Douglas Brinkley observed that New Orleans' bus drivers were underpaid and working without a contract at the time that Hurricane Katrina struck, which weakened their allegiance to City Hall.[213]

What is known is that the New Orleans public transit system was financially under-resourced and it failed to fulfill its necessary emergency relief function for isolated and impoverished African Americans who were left with no transportation alternative except their feet. No more fundamental expression of environmental injustice can be imagined than for an evacuee to be refused the right to walk away from an environmental hazard, as was seen in the refusal to permit evacuation across the bridge to Gretna. What is also known is that the sluggish response to evacuate these populations from New Orleans to safety echoes a long-standing history of race and class discrimination. Furthermore, a racial divide between two opposing viewpoints about Hurricane Katrina's victims was exposed: over three-fourths of Blacks but fewer than half of whites in America agreed that the storm pointed out persistent problems of racial inequality.[214]

Evacuation in Mississippi

One common theme between New Orleans and coastal Mississippi was the clogged evacuation routes away from the areas of exposure. Mississippi and Louisiana had a contra-flow agreement that provided for evacuation of southeast Louisiana through Mississippi.[215] An extraordinary traffic flow made access to Mississippi's Red Cross shelters 160 miles away an ordeal. In most other respects, however, Mississippi's evacuation experience differed sharply from that of New Orleans, principally because the floodwaters receded within hours instead of weeks or months, enabling a swifter return home. More low-income and minority Mississippians had access to personal transportation compared to their counterparts in New Orleans, although they still lagged significantly behind white populations.[216] Whereas New Orleans' Black population shifted away from the city after Katrina, coastal Mississippi's white population declined from 78 percent to 69 percent and its Black population rose from 17 percent to 27 percent.[217]

However, Mississippi Congressman Gene Taylor highlighted a practical limitation on lower-income households' ability to evacuate, noting that the hurricane struck near the end of the month, at which point persons with limited means simply could not afford the gasoline to evacuate. FEMA Undersecretary Ronald Brown rejected any federal role in providing fuel for evacuees.[218] In addition, within days, the National Guard had put a barbed wire barrier the entire length of the railroad bed in Harrison County and established roadblocks to limit access to the predominantly white residential areas south of the railroad tracks. Although not as stark an example as the confrontation on the Gretna bridge, this barrier was a visible reminder to the minority communities north of the tracks of the deep racial division between the haves and have-nots of the Mississippi coast.

FEMA's Disaster Relief Effort

The Federal Emergency Management Agency's response in minority and low-income communities in the storm's early aftermath was perfectly captured by the alternative formulation, the "Forever Elsewhere Management Agency."[219] Numerous reports confirmed that FEMA personnel simply were not coming into low-income and minority neighborhoods in the months immediately after the hurricane.[220] Ultimately, FEMA provided temporary housing assistance to over 700,000 applicants, but mismanagement and lack of leadership plagued the recovery effort.

Louisiana

Disaster recovery was significantly delayed by the protracted flooding of New Orleans. FEMA never achieved a unified command structure with Louisiana officials.[221] One month after the storm, FEMA had two fixed disaster recovery centers in the New Orleans area, both located across the Crescent City Connection on the West Bank.[222] To comply with President Bush's mid-October deadline to clear out shelters, FEMA strained to acquire and install up to 300,000 mobile homes and travel trailers to house displaced residents. In the meantime, it spent $11 million per day on hotel charges for evacuees.[223]

Mississippi

In Mississippi, the first FEMA disaster recovery center to open permanently was more than 15 miles from low-income communities in Gulfport.[224] Once FEMA arrived, displaced storm victims found themselves confronted with a dysfunctional emergency recovery program. FEMA limited registration to telephones and the Internet, which placed disproportionate burdens on minority and low-income households lacking access to these means of communication.[225]

Shared Issues

One of many examples of FEMA's capricious conduct was that it notified displaced families of termination of temporary shelter benefits *before* the agency had made an initial determination of eligibility.[226] Another was the shared-household rule, which disqualified for benefits those who shared housing at the time of the storm. This penalized the extended-family relationships and private social safety nets that are a common and necessary coping mechanism among many low-income and minority households. Civil rights advocates brought a class action lawsuit to remove procedural hurdles and require clearly articulated standards to be applied in an even-handed manner in the provision of disaster recovery benefits to displaced persons.[227]

FEMA's Individuals and Households Program (IHP) provided inadequate rent, denied utility and deposit assistance, refused assistance to rebuild rental housing, and limited automobile assistance to persons who carried insurance on their vehicles (even though hurricane damage is almost never covered by such policies).[228] These and other policies tended to slant disaster benefits in favor of wealthier storm victims.

The siting of FEMA trailer parks for displaced evacuees evoked hostility from host neighborhoods, closely resembling the tensions in siting public housing facilities. For example, in New Orleans, Mayor Nagin blocked the construction of a FEMA trailer park in a predominantly white West Bank gated community.[229] In Gulfport, Mississippi, local officials set time tables requiring evacuation of commercially operated FEMA trailer parks due to neighborhood concerns about increased crime.[230]

Exposure to hazardous substances was also a problem. FEMA trailers carried the risk of exposure to formaldehyde, a volatile organic compound found in building materials used to construct trailers. Mississippi coast activists heavily pushed for testing concerning this environmental hazard, and were joined in their efforts by Oxfam and the NAACP.[231] Ultimately, FEMA and the EPA bowed to pressure to conduct testing on the air quality and have since announced that no health risks are present, but that certain ventilation precautions nevertheless should be observed to reduce exposure.[232] In December 2007, after Congressional hearings and a federal court order, FEMA began to test for formaldehyde even as it pushed to relocate occupants into other housing.[233]

An additional issue concerned immigrant Hispanic contract laborers hired by American companies under federal contracts for debris removal and demolition. These laborers worked with direct, persistent exposure to hazardous substances, often with inadequate safety gear and always with awareness that lodging complaints risked termination and withholding of wages.[234] Language barriers contributed to social isolation. As a result, this population, which provided the most fundamental recovery assistance, was itself deprived of the basic human right to be protected from environmental hazards at work.[235]

V. RECOVERY AND REBUILDING

An environmentally just recovery for low-income households requires a careful balance of many competing demands. Basic issues of equity in allocation of resources will determine whether or not the cycle of discrimination will be reinforced or broken. Complex environmental justice tradeoffs arise from allocations targeted at housing, transportation, water and sewage, flood control, cleanup, and natural resource restoration. Representative examples are discussed in this section.

Budgeting Disaster Recovery Funding

In December 2005, Congress appropriated $11.5 billion in reconstruction funding directly to Louisiana and Mississippi. Congress also significantly increased the availability of low-income housing tax credits to finance affordable housing. Close to $100 billion more was appropriated for other purposes such as emergency response, temporary housing, evacuations, and debris removal, but those funds were recycled through FEMA, the Department of Defense, and other agencies.[236] Later appropriations increased Louisiana's recovery funding to a total of $10.4 billion.[237] Mississippi's recovery funding totaled $5.4 billion.[238]

The largest share of funding directly targeted at rebuilding was in the form of Community Development Block Grants (CDBG). This formula-based grant confers substantial discretion on states to design and prioritize programs for housing, economic development, and community revitalization. The original program requires that 70 percent of the funds benefit principally persons of low to moderate income (LMI).[239] In response to the hurricane disasters, Congress authorized the Secretary of Housing and Urban Development (HUD) to lower the overall benefit requirement to 50 percent and to waive this requirement on a showing of compelling need.[240] HUD lowered the LMI benefit requirement to 50 percent (referred to as the "overall benefit requirement").[241]

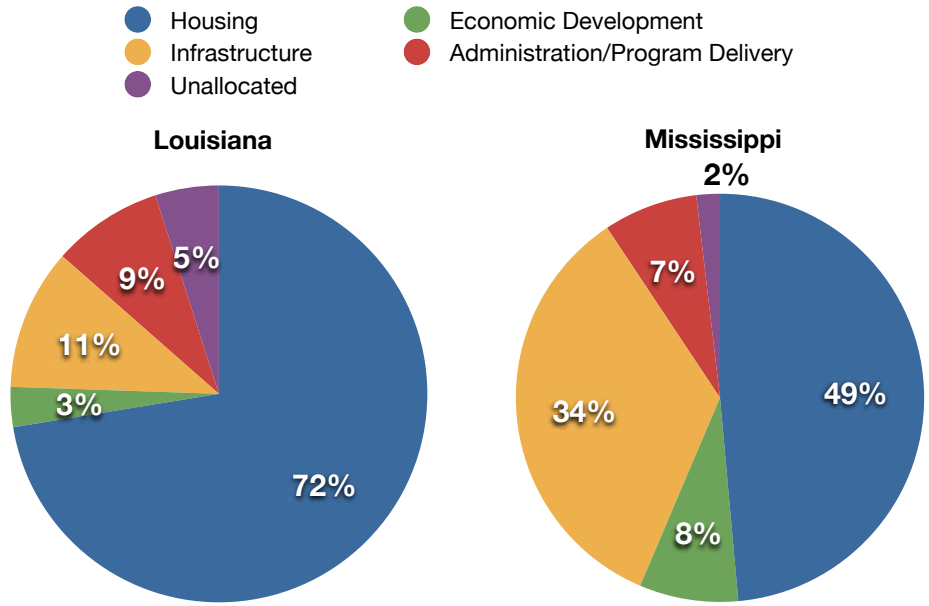
Although Congress and HUD allowed the states to seek a waiver of the overall benefit requirement on a showing of "compelling need," Mississippi was the only state to do so. Mississippi asked for a blanket waiver for the first $5 billion it received. HUD refused, but later approved a series of piecemeal waivers that enabled Mississippi indirectly to disregard the overall benefit requirement. All told, HUD has waived the requirement on programs totaling $4 billion out of $5.4 billion in disaster recovery funds. Currently, only 23 percent of the total CDBG funds in Mississippi is devoted to programs that comply with the LMI benefit requirement.[242] Both states have fallen short of the overall benefit requirement, with Louisiana at 34 percent as of June 2007, and Mississippi at a shockingly low 13 percent as of September 2007.[243]

The two states followed sharply different processes to develop their action plans. In Louisiana, Governor Blanco submitted her plans for state legislative approval. In Mississippi, Governor Barbour vetoed legislation providing for state legislative oversight; as a result, he exercised exclusive control of a sum equal to the state's annual budget, subject only to approval by HUD.[244] Louisiana developed an overall budget that laid out priorities and listed specific program allocations.[245] Mississippi, by contrast, submitted a succession of partial action plans over eighteen months.

Broadly speaking, Louisiana stressed housing while Mississippi emphasized infrastructure and economic development. Louisiana put 78 percent of its funds toward various housing programs while Mississippi put only 49 percent toward housing. Economic development and infrastructure programs amounted to 42 percent of the total in Mississippi, but only 15 percent of the total in Louisiana (Figure 14).[246] Mississippi's preference for economic development over housing is starkly shown by its last major decision in September 2007. The state asserted it had $600 million in surplus housing funds and proposed a lump sum grant to fund a four-fold expansion of the State Port at Gulfport.[247] A Rand Institute report released within weeks of Mississippi's announcement confirmed that the state is lagging in the repair and reconstruction of affordable housing.[248]

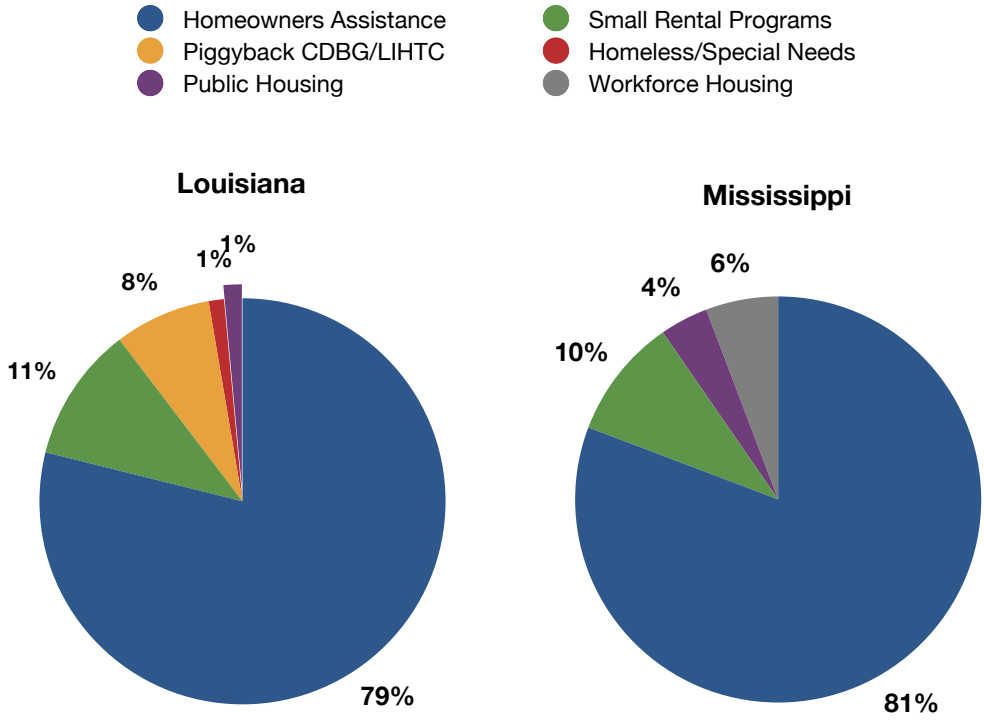
Both Louisiana and Mississippi overloaded recovery funding to homeowners and under-weighted funding to renters. In Louisiana, homeowners are 66 percent of the population, but received 79 percent of housing funds; renters are 34 percent

Figure 14: CDBG Expenditure Priorities



Source: HUD Disaster Recovery Grant Reports for Louisiana (June 20, 2007) and Mississippi (September, 2007), graphs by author.

Figure 15: CDBG Housing Priorities



Source: HUD Disaster Recovery Grant Reports for Louisiana (June 20, 2007) and Mississippi (September, 2007), graphs by author.

of the population, but funding for rental housing was only 20 percent of the total. In Mississippi, homeowners account for 70 percent of the population, but received 81 percent of the housing funds; renters make up 30 percent of the population, but rental reconstruction amounted to only 20 percent of the funding (Figure 15).

In general, Louisiana's home grant program was more inclusive than that of Mississippi. Louisiana had one maximum grant amount—$150,000—and paid affected homeowners regardless of whether their loss was caused by wind, flood, or surge.[249] About 76 percent of the applicants for Louisiana's Road Home program earned less than $50,000, but Louisiana cannot estimate the number of LMI households.[250] Mississippi had two programs limited to homes with storm surge damage, and refused grants to those with wind damage. The first program, known as Phase I, had a $150,000 maximum grant, no income eligibility requirement, and was limited to persons with homeowners' insurance.[251] The second program, known as Phase II, had a $100,000 maximum grant, a 120 percent area median income eligibility requirement, and did not require insurance.[252] Only $255 million of the $1.1 billion paid out to Phase I households went to persons with low or moderate income.[253]

In both states, a reduction of grant benefits for uninsured homeowners particularly harmed lower-income and minority households, who disproportionately were uninsured at the time of the storm.[254] Louisiana's plan penalized uninsured homeowners with a 30 percent deduction from the grant.[255] Mississippi's Phase I program disqualified anyone without homeowner's insurance. The state's Phase II program deducted 30 percent for uninsured persons, but low-income advocates persuaded Mississippi to drop the deduction for persons earning less than 60 percent of the area median income.[256] Recovery in low-lying predominantly minority communities has lagged because the reduced grant award fell far short of the actual cost increases in labor, materials, homeowner's insurance, and foundations elevated to new FEMA flood zone requirements. The disparity in recovery reinforces a vicious cycle of asset impoverishment for minority and low-income residents, particularly those with inherited ties to historically segregated and disaster-prone locations.

Urban Planning

A powerfully discriminatory tendency in planning is for environmentally vulnerable low-income neighborhoods to be deemed disposable, whereas equally vulnerable high-income neighborhoods are deemed indispensable because they are more valuable. This ruthless equation is manifest in the federal requirement that the public benefit, measured by the value of the property protected, must outweigh the cost of any flood control project undertaken by the U.S. Army Corps of Engineers.[257] Before Katrina, programs to curb the chronic flooding in the Turkey Creek, Mississippi watershed were stalled because the cost of certain flood control measures exceeded the value of the low-income neighborhoods that would be protected. Cost-benefit analyses also typically treat as speculative the economic harm from structures, such as the MR-GO and the Industrial Canal, upon communities at large.

Flood control is uniquely important in New Orleans, which for generations has been developed inside an extensive system of levees and pumps. After Katrina, the cost-benefit debate played out in struggles between the right to return home and the risk of future flooding. An early proposal from the Urban Land Institute argued for a reduced footprint for the city of New Orleans and neighborhood investment zones in which heavily flooded locations would potentially be subject to buyout at pre-Katrina prices (Figure 16).[259] In subsequent work, the Bring New Orleans Back Commission, led by Mayor Nagin, identified areas for immediate rebuilding, which included flooded Lakefront white communities and river-hugging sections of the downriver communities, but left out many other poor and heavily African American communities (Figure 17).[260] The BNOB Commission proposed to only fund recovery in neighborhoods demonstrating that a majority of their residents would return and rebuild, which triggered a groundswell of grassroots activism to show community viability. A third effort, the Unified New Orleans Plan, proposed a detailed plan to rebuild all neighborhoods.[261] The UNOP was adopted by the New Orleans City Council in June 2007, an important milestone that enabled the city to access millions of dollars in disaster recovery funds.[262]

In Mississippi, the low-income residents on East Biloxi's barrier peninsula face new flood control requirements and intense development pressure. As in Louisiana, the cost of meeting the FEMA requirement to elevate one's foundation as high as 18 feet all but eliminated the chances of East Biloxi's poor to rebuild, even with elevation grants.[263] Biloxi's economy is heavily tied to casino tax revenues; thus, the first legislative priority was to bring dockside gambling on-shore. New legislation enabled structures to be located up to 800 feet inland from legal casino berthing sites.[264] This landward encroachment posed difficult choices for "slabbed" residents (those whose only remnant of their home is a concrete slab) over whether to rebuild or to sell their properties and exit the area. A condominium boom on the Biloxi peninsula, fueled by disaster recovery tax incentives, added another layer of pressure.

The City of Biloxi employed Living Cities to conduct an urban planning effort. This plan proposed to generally retain intact the African American back-of-town area of Biloxi, but advocated creation of a park in adjacent lowlands to the east inhabited by up to 2,000 Vietnamese residents. The Living Cities report failed to identify or recognize how the park proposal would conflict with the Vietnamese community,

Figure 16: Urban Land Institute Proposal- "Closely Studied Areas in Purple"

Source: Gulf Coast Community Design Studio

Figure 17: Bring New Orleans Back Proposal -"Immediate Opportunity Areas in Yellow"

Source : Wallace Roberts & Todd, Action Plan for New Orleans: The New American City, January 11, 2006 p. 56

and language barriers prevented meaningful participation by Vietnamese American residents.[265] Vietnamese activists subsequently mapped their presence in the area targeted for conversion and have staked out a challenge to the local government (Figure 18).

Low-Income Housing

Following Hurricane Katrina, many public housing authorities gained access to funding that would enable existing low-income projects to be converted into mixed-income developments. In theory, the redeveloped properties would de-concentrate poverty, increase the quality of life of tenants, and make low-income housing more financially sound. In practice, the conversion permanently displaces low-income tenants unable to locate private market landlords willing to accept housing vouchers.[266] One abusive practice uncovered in New Orleans was the rental of slots reserved for low-income tenants to ineligible households and refusal by management to honor preferences for existing tenants.[267] In coastal Mississippi, one year after Katrina, management proposals to dispose of sound, habitable public housing prompted a strong outcry from tenants and forced the housing authority to rethink its plans.[268] In predominantly white St. Bernard Parish, officials passed an ordinance restricting the rental of residential apartments to prevent homeowners from renting out single family housing to anyone other than "blood relatives." Civil rights attorneys forced the suspension of enforcement of this clearly discriminatory rule.[269]

Louisiana and Mississippi predicted that properties financed with Low Income Housing Tax Credits would restore the lion's share of affordable multifamily housing lost in the storm and flood. However, at first, both states financed developments outside the most heavily damaged communities.[270] Policy advocates have urged the states to budget a portion of rebuilding aid to deepen the affordability of such projects.[271] Louisiana committed to this strategy, but results so far have not met the goals.[272] In both states, local opposition to low-income developments prompted local governments to block zoning and construction permits, in some cases with sufficient frequency as to trigger race discrimination charges.[273]

The pressure to complete projects financed with LIHTC funds within a federally imposed deadline of December 2008 prompted an assault on forested wetlands, as developers looked for unused acreage away from storm-vulnerable waterfront areas. Prior to Katrina, the Clean Water Act authorized the filling of one-half acres of wetlands without public comment or detailed environmental analysis under a procedure known as a nationwide permit. After the hurricane, the U.S. Army Corps of Engineers proposed a tenfold increase to five acres, in direct response to developer pressure.[274] Nearly 7,500 objections to this proposal forced the Corps to leave the original rule intact in the Turkey Creek watershed and to scale back the proposal elsewhere to three acres.[275] Thereafter, Congress extended the placed-in-service date for tax credit projects until 2010.

Infrastructure and Environmental Restoration

Substantial public works and restoration projects were required following Katrina, but the pace of funding and implementation for Louisiana's levees and wetlands repair has been slow. In March 2007, Louisiana's only official investigation into the levee failures reported that the U.S. Army Corps of Engineers was to blame for ignoring increases in threat levels, building levees lower than required by law, and committing errors of construction oversight and risk assessment.[276] In November 2007, Congress authorized $7 billion for Louisiana coastal restoration and flood protection projects, passing the bill over a presidential veto.[277] Funding for these authorizations has not been passed. The Army Corps of Engineers failed to meet a December 2007 congressional deadline for a coastal protection plan.[278] As a result, the loss of over 200 square miles of Louisiana's wetlands, which serve as natural buffers against storms, remains unaddressed.[279] As of December 2006, the Army Corps of Engineers had spent only $1.3 billion of the $5.8 billion in levee repair funds.[280] It took a directive from Congress to get the Corps to act upon the closure of MR-GO. In December 2006, the Corps made an interim report to Congress in which it recommended de-authorization of the channel and closure by an armored earthen dam at a cost of $50 million.[281] One year later, the Corps agreed to an expedited plan costing $35 million and a completion date of May or October 2008.[282] The delays in completion of these projects slow recovery in the predominantly African American communities adjacent to the levees.

Mississippi's transportation infrastructure repairs proceeded more quickly. The state signed $606 million in contracts for reconstruction of the Bay St. Louis and Biloxi Bay bridges at heights above the storm surge with peaks at 85 and 95 feet, respectively.[283] These bridges were partially opened for traffic in 2007. As mentioned above, Mississippi proposed to divert $600 million in disaster housing recovery funds into a vast expansion of the State Port at Gulfport.[284] In addition to depriving tens of thousands of households of funds for permanent housing, the port expansion will fill in hundreds of acres in the Mississippi Sound, interrupt barrier island renourishment with a vastly deeper ship channel, and displace hundreds of acres of wetlands for an inland port and highway adjacent to a predominantly African American community.[285]

Hundreds of millions of dollars more are currently earmarked for highways and water and sewer expansions in Louisiana and Mississippi. Both states also have announced ambitious environmental restoration programs, and the Army Corps of Engineers is assessing structural measures such as gates and levees and non-structural measures such as land buyouts and

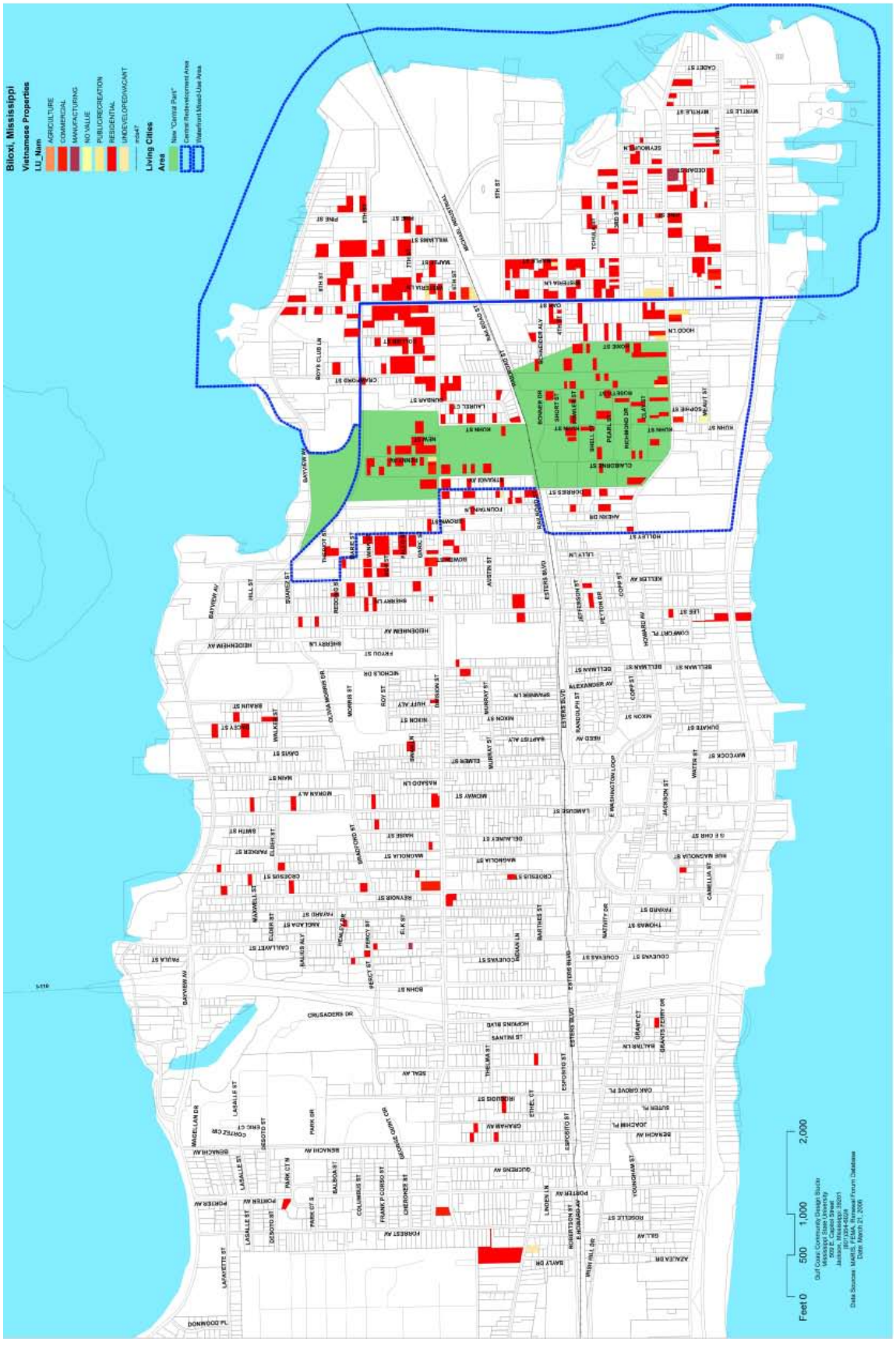


Figure 18: East Biloxi Vietnamese Population and proposed "Central Park"

Source: Gulf Coast Community Design Studio

the selective diversion of Mississippi River flow to increase wetlands renourishment. At present, too little is known and too much is unsettled to comment in detail about these important undertakings.

VI. SOLUTIONS

Minority and disempowered populations are at great disadvantage in securing equitable policy decisions from elected and appointed official bodies through conventional processes because political power tends to be asymmetrical. When the controversy can be brought into federal court, however, and the disparate impact of the proposed action is scrutinized, the power relationship shifts, as shown by the environmental justice successes before the *Sandoval* decision.

In addition to passage of legislation that overrules *Sandoval*, the single most valuable legal tool for bringing environmental justice into the process of prevention and recovery from catastrophes like Hurricane Katrina would be legislation explicitly authorizing a private right of action under the Civil Rights Act to enforce environmental justice cases under a disparate impact standard.[286]

Increasing equity in the appropriation and use of federal disaster recovery funds is another vital priority. Congress must enact a non-waivable requirement similar to the 1974 CDBG Act that a specified percentage of funds be spent to benefit persons of low and moderate income. For regional disasters, Congress should equitably fund disaster recovery across state lines, according to per capita needs, with adjustments for the severity of damage. Also, in regional disasters, Congress should require greater uniformity in state recovery plans so that no disaster victim is left unassisted solely because of residency. To increase overall accountability, Congress should limit piecemeal action plans, require states to submit an overall disaster recovery plan for use of the funds, track and report race and income demographics of states receiving funds, and require governors to obtain state legislative approval of the plan. Finally, Congress should authorize private parties to bring enforcement actions against states or grant recipients who fail to comply with Executive Order 12898.

At the state and local level, the costs of environmental racism and the benefits of environmental justice will need to be factored into everything from land use planning to public works projects and transportation. A fundamental question for historically disadvantaged communities forced generations ago to settle into more vulnerable locations will be whether to rebuild in areas of known high risk. One answer may be for disadvantaged New Orleans neighborhoods to be provided an equal degree of structural flood control measures as the uptown and lakefront communities. Another may be to require a shared obligation among all strata of society to relocate into more protected areas at full and fair compensation.[287] Our answer will depend upon whether we prefer to maintain as much human occupation and investment as possible or as much of the natural coastal zone and its storm barriers as possible. Regardless of which choice is made, Hurricane Katrina has made a compelling case for increasing space for natural processes, since sooner or later, Nature will overwhelm us again.

An environmentally just urban planning effort requires that the communities access the necessary technical expertise to develop their own plan. Two effective examples of locally driven community plans were created by East Biloxi and the North Gulfport/Turkey Creek communities.[288] In each case, the plans tended to place higher priorities on human and environmental quality of life considerations, whereas the city-sponsored plans emphasized commerce and developer accessibility. In Biloxi, as in New Orleans, full engagement by the affected communities increases the prospects of equitable treatment when funds become available.

The availability of affordable housing is tied directly to proximity and transportation issues, and the risks of "NIMBYism" from existing communities are increased isolation and increased difficulty in evacuation and recovery. Construction in Louisiana and Mississippi has been stalled by local government opposition to housing for low-income persons. Moratoriums have been enacted in portions of three Louisiana parishes and a de facto moratorium on multifamily tax-credit developments existed in at least one Mississippi coast city.[289] To overcome this barrier, some combination of strategies will be required. Some options include a fair share requirement for local governments and a mechanism to override local opposition for projects that are properly zoned and abide by local building code requirements. Another proposal is to tie CDBG disaster recovery funds for community revitalization to the elimination of local zoning discrimination against tax credit-funded apartments. Until these solutions emerge, advocates for low-income minority residents must resort to Fair Housing Act litigation.

In addition, every minority and low-income population must gather and record the basic history that created their communities and the sequence of events that has led to any health and environmental conflicts they currently face. Compiling community histories is also a vital self-empowerment exercise in that it provides a civic and political identity and raises the visibility of communities of color in mainstream history. Developing community histories also can lay the documentary foundation for key funding sources for historic preservation of communities following disasters. Further, communities can qualify for protective measures by securing historic preservation status. Even one structure that qualifies for historic designation provides a key asset in environmental justice litigation. An indigenously prepared and curated community history has powerful multiplier effects in restoring political parity to disadvantaged communities.

Health and environmental officials should exercise and encourage greater caution immediately after a natural disaster and resist political pressure to lift health warnings. In assessing spills and toxic exposures, officials should enforce stricter environmental standards, consistent with the precautionary principle. Officials must make an affirmative effort to assess all communities, including communities of color, with the same degree of diligence as the mainstream population. Officials should resist the temptation to reactivate closed landfills following a natural disaster. Too many such sites are inherently unsafe and disproportionately expose minorities to higher levels of pollution. A greater effort should be made to sort and recycle as much of the solid waste as possible, so as to salvage materials for reconstruction and minimize the overall amount of refuse to be discarded.

Environmental justice is generally viewed as a hybrid movement. Whether or not this is a fair perception, one tactical advantage it offers is the power of coalition. Finding the critical mass of people who can successfully communicate their shared vision across cultural differences is an essential element to long-term success. Practicing the skill of articulating the cross-connections between race, health, and the environment is the strongest means to overcome the divide-and-conquer playbook used by mainstream political bodies.

Finally, recognizing how major national policy choices in areas like energy, transportation, and municipal infrastructure affect communities of color is an essential component of environmental justice. Once some background is provided, people from all walks of life readily understand the implications of how different parts of our society interconnect, and it is necessary to push this understanding along to fully grasp the connections between race, environment, and infrastructure systems. An "8-29 Commission"—that is, an in-depth investigation into the disaster and recovery process—is one tool to promote transparency, interdisciplinary solutions, and opportunities to correct structural racial and economic imbalances following natural disasters.

Decisions made centuries ago exerted their influence in the lives and deaths of victims of Hurricane Katrina. A mind-numbing parade of zoning and land-use choices, highway and seaway budgets, and social and political desensitization helped to bring this nation to the flooded rooftops of the Lower Ninth Ward. Along the way, isolated voices sounded alarms about the cumulative effects of these choices and the dangerous territory we were entering. But until now, these voices have been ignored, discredited as fear-mongers, enemies of prosperity, or naïve peacemakers.

Now when people urge protection of the natural systems that protect us from disaster, the example of Hurricane Katrina makes this plea resonate. The same thing now occurs with demands for a strengthened social safety net for our most vulnerable and marginalized citizens, or for greater care in locating and containing facilities that generate hazardous substances, or for recognition of the inherent value of human life when making dry cost-benefit analyses.

This region of our nation has paid an extraordinarily high and unnecessary price for its long history of discrimination against racial minorities and its refusal to rectify systematic economic impoverishment. Ultimately, that price is a shared debt of all Americans, spiritual as well as financial. If this nation truly embraces the sanctity of human life, then it must more forcefully employ the precautionary principle to protect life, from local land-use and zoning decisions to conservation of natural resources, and from the regulation of pollutants and toxins to how we fit our most disadvantaged fellow citizens into the fabric of our communities. Hurricane Katrina's ultimate lesson for communities planning for or recovering from disaster is captured in the words of Justice Cardozo: "prosperity and salvation are in union and not division."

NOTES

1. See *Bean v. Southwestern Waste Management Corp*., 473 F. Supp. 673 (S.D. Tex. 1979); U.S. General Accounting Office, *Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities* (GPO: 1983).

2. Marianne Lavelle and Marcia Coyle, "Unequal Protection," *National Law Journal* (September 21, 1992): S1-2.

3. Manuel Pastor, Robert Bullard, James Boyce, Alice Fothergill, Rachel Morello-Frosch, and Beverly Wright, *In the Wake of the Storm: Environmental Disaster and Race After Katrina* (Russell Sage Foundation, 2006), 17-18; Charles Lee, "Proceedings: The First National People of Color Environmental Leadership Summit," New York, United Church of Christ, 1991.

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