



**Emergency
Preparedness
Conference**



Recovery Lessons from New Orleans

A Review of a City's Efforts to Recover from
Hurricane Katrina and Implications for
Emergency Management in
British Columbia

Pacific Northwest
Preparedness Society

April 20, 2009

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Implications for Emergency Management in British Columbia

A Project of the Pacific Northwest Preparedness
Society in Collaboration with the University of
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Authors

Karen Basi, Manager, Emergency Program, City of Coquitlam
Magdalena Blasiak, Manager Disaster Management, BC Lower Mainland, Canadian Red Cross
Wayne Greene, Chair, Pacific Northwest Preparedness Society
Jim LaMorte, President, Smart Risk Control, Inc.
John Lavery, Executive Director, Emergency Management Unit, BC Ministry of Health Services

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1.0 Introduction

When disasters occur elsewhere in the world, British Columbians pay attention. Perhaps it is because we enjoy relative safety here, considering the death and destruction unleashed by earthquakes, tsunamis, and violent storms attack other corners of the globe, seemingly every week. Maybe we know that our turn for a catastrophic event is coming, and the floods, wildfires, and snowstorms we have suffered to date merely portend bigger things to come.

When Hurricane Katrina hit the Gulf Coast states of Louisiana, Mississippi, Alabama, and Florida in late August of 2005 – with 170-kph winds, 8-metre storm surges, and collapsing levees – we watched with the knowledge that BC could experience disasters of similar scale.

Although hurricanes are rare in our region, history warns that the lower Fraser River could overtop or breach the nearly 300 kilometres of dikes that protect more than half of BC's population of 4 million. A major earthquake located near an urban centre, like Vancouver or Victoria, could lead to the extent of building and infrastructure damage evident in New Orleans. BC's smaller communities face relatively equal risks from a wide range of natural hazards, including wildfires, floods, and land-slides.

With this awareness, a handful of emergency management professionals from BC accepted an invitation to visit New Orleans in October of 2008. We spoke directly with our counterparts in a wide range of organizations, asking questions and recording observations on behalf of the many emergency managers in BC who seek direction on recovery planning.

We set our overall objective to review the recovery and reconstruction of the Gulf Coast in general, and the City of New Orleans in particular, to identify the successful principles that could be applied to BC communities.

2.0 Evacuation

While seeking lessons in recovery, we heard much about evacuations. We wondered why so many people ignored the call to evacuate the city in the face of such potential devastation.

While hurricanes were a known threat in New Orleans, the prospect of levee failure and its related impacts were not widely understood. Residents were therefore not inclined to seek safety inland. In fact, several people noted the common practice of "vertical evacuation" during a hurricane, simply moving to upper floors of a building to avoid the more common flooding caused by heavy rainfall.

During past hurricanes, the outer barrier islands and wetlands protected New Orleans from most damage. Even when Hurricane Betsy ravaged the city in 1965, few left their homes. Hurricane Andrew threatened again in 1992, but caused little impact. More than a decade passed with no hurricane damage, and residents gradually came to ignore the threat.¹ Leaving the city was simply not on most people's radar.

When Hurricane Ivan presented a Category 4 storm in 2004, people evacuated using the newly designed Contra Flow Evacuation Plan for the first time. However, many motorists became mired in unbelievable traffic. It took some evacuees eight hours to complete a trip that normally required one hour. In the end, Ivan turned away, resulting in little impact and tens of thousands of frustrated residents.

In the summer of 2005, Hurricane Cindy inflicted little harm, and Hurricane Dennis veered east like the others. The public speculated that the cooler Mississippi River water turned hurricanes away from New Orleans. Thus, when Hurricane Katrina approached in late August of that year, many residents were reluctant to leave.²

¹ Rick Barton, University of New Orleans

² Rick Barton, University of New Orleans

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By most standards, efforts to evacuate New Orleans before Katrina struck were successful. About 82 percent of city residents left. However, more than 100,000 people remained for a variety of reasons. Some had endured past hurricanes and believed it was safe to do so again. Others recalled the frustration of past evacuations, and how often such storms had bypassed the city. Still others lacked their own transportation, and did not seek assistance in leaving, or lacked friends or relatives outside the danger zone they could stay with. Leaving home for several days costs money; some simply did not have the financial resources needed to evacuate for repeated hurricane threats. Others feared for their possessions, suspecting that empty houses invite burglary and vandalism, and vowed to shelter in place this time.

Those who remained suffered severe storm winds as Katrina struck the city with a glancing blow, veering to the northeast as it made landfall. Levee failures in the face of an extreme storm surge subjected those who stayed behind to nightmare flood conditions that claimed more than 1,500 lives in Louisiana alone. As many as 20,000 residents took shelter at the Louisiana SuperDome, the city facility identified as a "shelter of last resort."

After the experience of Katrina, the city worked hard to improve evacuations for the next hurricane. Emergency managers developed a regional evacuation plan, working with other jurisdictions, and communicated its principles to residents through public talks, school presentations, brochures, and websites.

The city also adopted a well-defined trigger for ordering an evacuation, based on scientific expertise. Sixty hours before a Category 3 or greater hurricane is expected to cross the coast, the Mayor announces the need for evacuation. This point is triggered when scientists agree there is at least a 38 percent chance of a Category 3 hurricane reaching the New Orleans coast. To ease traffic congestion, the evacuation proceeds in phases. Low-lying areas nearer the coast leave first at 50 hours before landfall, followed by residents in secondary risk areas when the hurricane is 40 hours away. Finally, all residents remaining in the evacuation area leave when the storm is 30 hours out.

Citizens needing evacuation assistance, such as those without vehicles or with impaired mobility, are invited to register with the city ahead of time,

with the help of advocacy services. Those who report to pick up locations are moved to the central rail station and evacuated either by bus or train. Residents can also receive text messages on their cell phones to alert them to hazardous situations once they are registered.

When Hurricane Gustav threatened in September of 2008, the city was able to test its new evacuation plan. Things had improved since Katrina. The evacuation rate climbed to 98 percent of the population, due to both advances in evacuation procedures and public awareness about the risks of remaining in place. The city-assisted transportation plan worked well, moving hundreds of needy residents to safety in record time. An effective evacuation for Gustav meant fewer rescues, which allowed the city to move into recovery mode sooner.³

Still, evacuation problems persisted with Gustav. Some residents waited too long to register for evacuation services, and last-minute phone calls shut down the registration system. Those who did evacuate sought shelter offered by churches, community centres, fairgrounds, and schools in other communities. However, evacuees with vehicles reached these shelters first and claimed many of the beds before city-assisted residents arrived. The municipality is now setting aside shelters for city-assisted evacuees only, and developing means of tracking real time availability of shelter beds.

3.0 Key Hurricane Impacts

It is difficult to relate the magnitude of Hurricane Katrina impacts to the British Columbia stage. The area affected, the numbers of fatalities, the businesses impacted, and the amount of debris in New Orleans alone are, for the most part, unfathomable until witnessed first hand. Even many local residents continue to marvel at the scope of the damage.

Perhaps the most relevant fact is that the events triggered by Katrina struck on a scale large enough to render useless all response and recovery plans designed for lesser emergencies.

The human loss statistics are staggering: Nearly 2,300 residents are dead or missing, with the elderly accounting for 70 percent of the fatalities. While the city's main business district

³ Col. Jerry Sneed, New Orleans Office of Homeland Security and Emergency Preparedness

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along the Mississippi River was relatively undamaged, 71 percent of New Orleans' occupied housing units suffered some impact. Large areas of residential neighbourhoods were flooded, inundating 107,000 occupied housing units. An additional 27,000 homes sustained wind damage.⁴

Katrina Impacts ... by the Numbers

82%	New Orleans evacuated pre-storm
20,000	Sought shelter of last resort
1,577	Fatalities in Louisiana
705	Still missing
150,000	Decline in city population to date
134,000	Homes damaged by wind or flooding
8,000	Businesses affected
80%	New Orleans properties under water
8 weeks	Time required to pump water from city
320 million	Trees killed by wind and salt water
485 million	Tons of debris

As the people we interviewed quickly pointed out, the high winds and storm surge were not alone responsible for the destruction in New Orleans. Most damage was due to breaks in the levees designed and constructed by a federal agency, the US Army Corps of Engineers.⁵ This became a significant factor in recovery.⁶

Applied to the British Columbia landscape, the area impacted by levee-failure flooding would reach from the sea-dikes in Richmond to the Port Mann Bridge in the Lower Mainland.

To compound the flooding, the levee breaches triggered the release of hazardous materials, contaminating some residential properties. One above-ground crude oil storage tank, lifted and compromised by the flooding, released more than 4 million litres of crude oil into an adjacent neighbourhood with 1,700 homes.

⁴ The Brookings Institution Metropolitan Policy Program & Greater New Orleans Community Data Center. The New Orleans Index. August, 2008. Anniversary Edition – Three Years after Katrina.

⁵ "Storm surge" refers to an abnormal rise in sea level accompanying a hurricane or other intense storm.

⁶ Commercial insurance purchased to cover hurricane impacts often excluded flooding due to levee failure. Attempts to sue the Corps of Engineers for negligence were turned aside when the US District Court determined that under a 1928 law, the Corps is immune from suit related to the levees. – US District Court, Eastern District of Louisiana (www.laed.uscourts.gov/CanalCases/CanalCases.htm). However, the effect of the Miss. River Gulf Outlet (MRGO), a transportation project not flood protection, is still under review by the U.S. Federal District Court.

3.1 Impacts on Local Government

The study team was particularly interested in exploring specific impacts to the City of New Orleans organization and public services. In BC, we count on local government to lead the emergency planning effort, and to coordinate response and recovery to major incidents. How did New Orleans manage these tasks following such a devastating event? We received a sobering reply in terms of damage to city property, impacts on municipal employees, and inability to rebuild.

Direct hurricane damage and flooding caused by levee failure affected 95 percent of city-owned properties. Virtually every local government facility was rendered inoperable, ranging from city hall and community centres, to parks and stormwater drainage pumping stations, and first responder facilities. City losses amounted to \$400 million in facilities alone, without considering equipment and inventory.⁷ The local government public services that residents depend on simply ceased.

Most city employees left the community with the evacuation order before the Storm. Contacting staff members to call them back to work later was all but impossible without regular phone service and knowing where they were. Managers were confused about which city employees were essential to critical functions, and who needed to be in place immediately to get things moving again. Most employees found it difficult to return to help with the early stages of recovery. Some had no homes to return to, no office to work from, and no schools for their children.

Even when essential staff came back, the city faced the daunting task of returning processes without adequate information. All city records had been destroyed. Even first responders – including some who never left – had trouble assuming a "systems normal" status. The decision structure had been impaired at all but the highest level. New Orleans needed to reconstruct the city government as much as the damaged structures, and building a new organization took time.⁸ As a telling example, the city was unable to establish a recovery office until 16 months after Katrina, significantly delaying individual and community recovery.

⁷ Jim Amdal, New Orleans City Planning Commission

⁸ Earthea Nance, City Disaster Mitigation Planning

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To compound the challenge, flood damage to residences and businesses meant a loss of more than \$168 million in annual revenue for the city. Three years after Katrina, the local governments consisting of the Orleans Parish and the more rural Plaquemines Parish, south of New Orleans, have received less than half of the FEMA public assistance funds obligated to them.⁹ The local government was forced to lay off staff, up to 50 percent of the pre-Katrina workforce. At a time when the city needed more resources than ever, they had access to minimal staff and even fewer dollars.

3.2 Impacts to Educational Facilities

Among the myriad of Katrina's impacts, we were interested in hearing how the schools and universities fared. School administrators shared with us much about both the magnitude and importance of educational facilities, often by relating their personal experiences with Katrina and the aftermath.

As may be expected, school and university buildings in the flooded areas suffered as much damage as other structures. High water levels destroyed classrooms, offices, building services equipment, gymnasiums, and student records, leaving behind mouldy walls and muddy debris. Katrina caused more than \$1 billion in damages to school buildings in New Orleans and neighbouring parishes.

The absence of schools throughout the region quickly highlighted their importance in community recovery. Employees in local businesses, institutions, and government could not return to work unless their children had schools to attend. Educational facilities represent one of those cornerstones upon which the rest of a community depends. Without schools nearby, evacuees were less inclined to return to their homes and jobs, and to begin the recovery process.

School administrative policies in place at the time failed to address the unique requirements following a disaster. In trying to apply established funding principles – such as a certain amount for each enrolled student – state administrators neglected to recognize the

unusual needs of affected schools after Katrina. Just months following the storm, in November 2005, the state legislature cut funding for the Louisiana school system based on falling enrolments, ignoring the needs of communities to reconstruct school buildings. The state adopted a policy of “let the money follow the student,” and moved funds to state schools that had temporarily absorbed children evacuated from New Orleans. This policy essentially abandoned the concept of schools as a centre-piece of a community. Many children were bussed across town, diminishing the social networks that schools promote.

Some expected the promised federal support to pick up the slack. The Federal Emergency Management Agency (FEMA) offers funding for disaster recovery, but does not provide financial assistance for schools whose poor condition was due to deferred maintenance, as was the case with many schools in the New Orleans area. Funding for maintenance has always been the responsibility of the local school district through taxation, and many neighbourhoods are poor. The end result was the same. No funds to rebuild schools, which meant delays in community recovery at all levels.

Inaction did not sit well with some local educators. Doris Voitier, Superintendent for the St. Bernard Parish Public Schools in one of the hardest hit communities, refused to accept the state decree against school recovery. Working with volunteers from all walks of life, faith-based organizations, and NGOs, Doris oversaw the construction of two schools -- the first two public buildings built after Katrina. There was no government coordination of these ad hoc and volunteer efforts.¹⁰

Ms. Voitier also recognized the need to continue paying school staff for as long as possible, to help them with their personal recovery, and to keep them in the school system. With funds from the school board account, she continued meeting the payroll obligations for as long as possible. Because checks could not be mailed to staff members who had lost their homes, Doris arranged for automatic deposits where possible. Automatic payroll deposits are now mandated for all school staff.

⁹ The Brookings Institution Metropolitan Policy Program & Greater New Orleans Community Data Center. The New Orleans Index. August, 2008. Anniversary Edition – Three Years after Katrina.

¹⁰ Doris Voitier received the John F. Kennedy Profile in Courage Award on May 21, 2007 for her efforts to rebuild St. Bernard schools “in the face of pervasive devastation and bureaucratic indifference.”

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A large number of children still have not re-entered the schools they attended before Katrina. Public and private school enrolment in the metro area has lagged behind the return of residents. By the third school year after Katrina, only about 50 percent of the pre-Katrina levels of public school students have returned.¹¹

Affected universities faced similar challenges: Water damage to classrooms and equipment, loss of records, mud and debris, scattered staff, and payroll challenges. Equally as frustrating, everyday state policies designed to support universities failed in a disaster of this magnitude. The University of New Orleans (UNO) provided one example.

As with the staff in the public school system, most UNO educators and administrators left before the Storm. Unfortunately, no one later knew how to contact them at their destinations, and staff had no central office to call. It therefore took time to inform staff that the university intended to resume educational services as soon as possible. What the university needed then, and has now, is an emergency email system for situations like this.¹²

Amid the confusion and uncertainty, UNO officials knew one thing: Employees were counting on being paid on time. Failure to do so would simply add to the disaster. Through heroic efforts, administrators retrieved the financial records from the nearly submerged UNO campus, and were able to get the payroll out within a few days.

Administrators at UNO also knew that students were depending on them to resume course services so they could graduate and meet their other educational goals. UNO made a commitment to reopen the university by a designated date, six weeks after the Storm.

UNO also needed to replace the damaged student housing, to somehow help the resident students return to school. FEMA offered to build a trailer park on university grounds, and delivered 400 trailers to the campus in January of 2006. But in a snarl of red tape, the trailers were never connected to sewer, water, and electrical services. Students sometimes had to

travel for hours each day to and from the campus, taunted by the sight of trailers that were in place but unusable.

The state began to pressure senior administrators at the university to lay off staff, announcing there would be no funds for recovery. Instead, UNO reassigned personnel to the jobs that really needed doing, and were reprimanded by superiors for their bull-headed determination. In the end, the state forced the University of New Orleans into "financial exigency," and they had to lay off some staff and educators.

In summary, it was more than interesting to hear that the most profound obstacles to educational recovery were constructed by the very institutions designed to support them. Success in disaster recovery only occurred where individuals refused to give up the fight for education in the community in the face of seemingly overwhelming odds. Even today, the educational delivery system is being re-designed to fix problems observed before Katrina. And it all takes time.

3.3 Impacts to Health Facilities

Like schools, health care represents one of those organs that help a community live. Even before Katrina, the health system was in crisis. About 25 percent of the New Orleans population lives below the poverty line; 20 percent lack adequate health insurance. Prior to the Storm, most of these vulnerable residents received health care through the Louisiana State University hospital system, which included the University Hospital and Charity Hospital.

Katrina and the levee failures brought significant destruction to the health care infrastructure in and around New Orleans. Both public and private hospitals were damaged by high winds and, more directly, by flood waters from the breached levees. Health care providers were displaced by the evacuation and widespread flood effects to their homes. Medical records were lost. The nearest health care services required transportation some of the most vulnerable population could not afford.

University Hospital re-opened after the flood waters receded, but the state deemed Charity Hospital as unsalvageable. As a result, access to health care that was a problem prior to Katrina became worse following the hurricane,

¹¹ The Brookings Institution Metropolitan Policy Program & Greater New Orleans Community Data Center. The New Orleans Index. August, 2008. Anniversary Edition – Three Years after Katrina.

¹² Rick Barton, University of New Orleans

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especially for those without private health care. Because residents were unable to access primary care physicians and medications, the overall health of New Orleanians declined.

Most significantly, the state is now redesigning Louisiana's health care delivery system as part of the recovery process, which will inevitably lead to controversy and delay. The state is developing a new vision for the system, revising the location, size, and function of a range of hospital facilities. This extensive recovery process will require up to 10 years of consultation and planning.

One option would see a more decentralized system without services in downtown New Orleans, where the most vulnerable reside. The state may demolish the Charity Hospital and combine services with the University Hospital under a new model, offering both private and public health care. This approach may not provide appropriate care to the indigent population of New Orleans, and lead to a loss of long-term care beds.

As with the education system, successful recovery in the health field depends on access to employees. Many health staff members have left the area and are not returning, leading to one of the biggest challenges in recovery. A sustainable health care system depends on a skilled workforce. There have not been enough staff members to operate some facilities, and recruiting staff is very difficult given the state of the housing, schools, and public amenities. The hospitals that have reopened are losing money because federal Medicare payments have not been adjusted to accommodate the increased cost of doing business post-Katrina.

As with schools, full recovery of the health care system in New Orleans is critical to the success of the community.

3.4 Impacts to Other Infrastructure

Other levels of government suffered similar impacts. The US Postal Service, for example, experienced flood damage to their facilities and vehicles. Some residents went a year without mail delivery, impairing their ability to receive correspondence about their insurance coverage, grant applications, and their family members.

Dozens of other infrastructure elements suffered in similar ways. There were no functioning

courts or prisons in the affected parishes, impairing police efforts to secure public safety. Telephone and cellular phone services were interrupted. Some neighbourhoods were without electrical power for months. Pipelines delivering potable water to residential areas had to be replaced, again taking many months. The slow return of infrastructure greatly delayed the recovery of the entire community.

4.0 Hard Lessons in Community Recovery

The magnitude of the levee-failure impacts brought unprecedented challenges as New Orleans and neighbouring parishes engaged in community recovery. The number and importance of urgent needs overwhelmed recovery plans that government and non-government organizations may have prepared before Katrina. After three years, though, we were hopeful that recovery efforts had progressed enough to provide a model for BC communities.

We found instead desperate organizations learning hard lessons.

By the summer of 2008, only 72 percent of the pre-Katrina households in the City of New Orleans were occupied, and the rate was slowing. The city faced more than 65,000 uninhabited residential properties and empty lots, which translated into a wrenching decrease in local tax revenues.¹³

Rents for housing units in safe areas were 46 percent higher than before the Storm, although wages had not increased proportionally. The combination meant that many essential service workers were unable to afford housing. As a result, the labour market was tight as the demand for service and construction workers remained high.

"How is this possible that in a country so wealthy you could have this type of devastation and lack of progress?"

- *Delegation of Indonesian residents while visiting New Orleans 10 months after Katrina*¹⁴

¹³ The Brookings Institution Metropolitan Policy Program & Greater New Orleans Community Data Center. The New Orleans Index. August, 2008. Anniversary Edition – Three Years after Katrina.

¹⁴ "Tsunami Recovery Outpaces Katrina Rebuild, N.O. Delegates Say". Sep 25, 2006.

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Worst of all, the latest risk analysis from the Corps of Engineers shows that several neighbourhoods continue to be exposed to two-to-three meters of floodwaters from a “one percent” hurricane, in spite of levee improvements. The Corps is considering a larger and more expensive commitment to coastal restoration, which could take years. Meanwhile, another Katrina could destroy much of the reconstruction accomplished to date.

The lack of progress in recovery was staggering, yet we heard messages of determination, wisdom, even hope as the people we interviewed related their stories. Collectively, our contacts offered seven core recovery messages for British Columbians to consider, below.

4.1 *Community Recovery is Interdependent*

It quickly became apparent in New Orleans that, following a disaster that affects so much of a community, focusing on residents was not enough in spite of the devastation among homeowners and renters. Community recovery cannot succeed if putting people back in their homes is the sole objective. For residents to return, they must also be able to work, attend nearby schools, access daily and emergency health care, and use the dozens of social and retail services modern communities offer.

We also learned that the recovery of any one community organization – a school, government agency, institution, or business – depends on individual and family recovery among their workers. Employers need policies and procedures to assist employees in helping themselves. Employers must continue to pay workers as long as possible, even if they may not be performing their original job functions.

We encountered several “Catch-22” obstacles to recovery that highlight these interdependencies. Here are just a few examples:

- A Cascade of Requirements – The US federal government offers financial assistance to individuals and families, as we do here in Canada. Following Katrina, the federal government empowered the State of Louisiana to distribute these funds. However, before allocating financial assistance to residents, the state required the City of New Orleans to prepare a recovery plan that addressed mitigation.
- The city, in order to prepare the plans, required residents to demonstrate their individual neighbourhoods were “viable.” In other words, residents were expected to determine the number of neighbours who intended to live again on their properties. However, most residents were dispersed throughout the country by the evacuation, and each faced a number of unknowns, such as if they had a job, if their insurance would help them rebuild, or if they would qualify for federal assistance. Although each government requirement seemed to make sense individually, the combination resulted in delays and confusion, which further impeded the progress of recovery.
- Temporary Housing Too Little, Too Late – Because displaced residents cannot rebuild their homes from a distance, homeowners needed temporary housing in the community to take control of their own recovery. The federal government promised residential trailers, which began to arrive four months after the disaster. Some trailers were not connected to water, sewer, or electrical services and therefore could not be occupied. FEMA trailers proved to be too small for families of four or more, especially for the long-term recovery process that was unfolding for most residents. Some trailers emitted dangerous levels of toxic formaldehyde gas, a by-product of materials used in constructing the trailers.
- Chicken and Egg Problems with Schools – Residents with children could not return to rebuild their lives until schools were operating. However, the schools and universities were informed by their state administrators that no funds were available for reconstruction due to low student enrolments. In fact, schools and universities were expected to lay off staff because so many residents were unable to return.
- Slow Return of Residents Reduces City Taxes – While residents waited for temporary homes and reconstruction of municipal infrastructure, the City of New Orleans was having its own problems. Few city staff members were available just to pick up the normal work load of running the municipal government, such as providing building permits, performing inspections, and managing waste disposal.

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The city also faced the overwhelming task of rebuilding its infrastructure, including roads, traffic lights, water systems, storm water drainage, and sewer systems. This required additional staff. But because residents and businesses had not returned, tax revenues were down and the city was forced to lay off employees. As a result, essential infrastructure repairs are still pending, further slowing the return of residents.

In one sense, disasters expose the inter-connectedness that characterizes our communities as a new “vulnerability”. Several critical elements of New Orleans recovery seemed to be trapped in a negative feedback loop characteristic of networked systems. Successful recovery of any one community feature depends on the concurrent return of other elements. Like links in a chain, they all succeed, or fail, together.

4.2 Community Groups Need Coordination

In the absence of early and concerted government action, a number of community support groups stepped up to fill the gaps. In typical fashion, an existing organization or newly emerged group would observe a need related to their mandate and organize itself to meet it. Such organizations ranged from small, local efforts on a neighbourhood scale to newly created and celebrity-promoted international foundations. Some of the more prominent examples are summarized below:

- Non-Government Organizations (NGOs), such as the American Red Cross, served those in need of food and clothing in the early stages of recovery. Community service organizations arranged access to child care services in the absence of schools, assisted residents in finding temporary shelter, and helped the poor receive medical attention.
- Faith-Based Organizations, according to our contacts, provided a phenomenal level of support to New Orleans residents, and helped fill the gaps caused by government delays. In one example, church members in a New Orleans East Vietnamese community banded together to help themselves, led by their church pastor, to remove debris, demolish damaged structures, and reconstruct homes fast enough to encourage the return of critical utilities. Even before the disaster, faith-based organizations in New

Orleans shared evacuation kits, identified vulnerable members of the community, and arranged transportation for the needy.

- Private foundations served as conduits to funnel donated funds to service providers, outside the glacial realm of government restrictions. This form of funding needs to be flexible to enable essential recovery work. Foundations can enlist executives with managerial skills to help expedite essential services. We heard about such organizations as the Make It Right Foundation, Habitat for Humanity, and several other associations dedicated to building new homes for those impacted by flood waters.
- Volunteer groups emerged from committed community members who saw needs and took the initiative to meet them. In one example, the many trees and other plants damaged by the salt water intrusion in City Park were replanted and are maintained by a neighbourhood volunteer group who call themselves the “Mow-Rons.”

“Recovery occurred because of NGOs and faith-based organizations, and despite government.”

- Marshall Truehill, Director, Operation Brothers Keeper

These and dozens of other similar community groups assisted with all facets of recovery.

As these groups emerged to tackle recovery, they unfortunately lacked the means for coordinating their actions. Each organization responded to what it perceived as needs, regardless of what others had underway. Gaps and duplication in services abounded, resulting in missed opportunities, waste, and frustration. In one example, the Lower Ninth Ward – prominent in the international news – attracted most of the foundation effort to build replacement housing, in spite of equal needs elsewhere in the region.

Lack of coordination led to further delays in recovery, which meant fewer donated funds. Donations tend to dwindle as the focus of the news media shifts to other worldwide events, even if recovery needs have not been met. One director remarked that they lost millions of dollars in aid simply due to the lack of coordination.

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In time, the NGOs, faith-based groups, and other recovery organizations eventually organized themselves to assist parish governments, residents, businesses, and each other. The Greater New Orleans Disaster Recovery Partnership (GNODRP - pronounced "no drip") now coordinates agencies providing volunteer assistance, provides leadership in long term recovery and rehabilitation, and fosters coordination and integration using a case management approach.

Eventually, the American Red Cross, Salvation Army, United Way, and many other agencies charged with allocating donated funds discovered common ground. They joined the Coordinated Assistance Network (CAN), which still functions today in New Orleans to share client information through a secure database, and to coordinate timely assistance without duplication.¹⁵ With CAN, the many organizations active in New Orleans overcame the challenges of amalgamating funds from different sources, reducing gaps in services, and ensuring equity in disbursements.

Their advice to BC emergency managers is to form local and regional committees to develop the coordination structures needed in community disaster recovery ahead of time. Established service providers can meet with government officials to prepare flexible collaboration guidelines, pool collective resources, create standards for client service delivery, and agree to share client files to avoid duplication. A permanent recovery multi-agency group should be formed to coordinate the many organizations that hold pieces of the recovery puzzle.¹⁶

4.3 Recovery Requires Coordinated Community Planning

Recovery of the scope required following Katrina involves urban and regional planning more than any other single discipline. Federal, state, and local governments would not allocate recovery funds unless they could be assured that reconstruction would progress wisely, through the development of a master community plan. While this sounds reasonable on one level, the time required while different levels of

government competed in the planning process significantly delayed recovery.

New Orleans has never had a Master Plan to guide development. So, after Katrina hit and in the midst of chaos and urgent human needs, all three levels of government attempted – independently – to prepare plans to guide community recovery. The following milestones hint at the lack of coordination:

- Sep 2005 – Mayor appoints *Bring New Orleans Back Committee* and contracts with the Urban Land Institute to prepare a plan.
- Jan 2006 – Urban Land Institute report recommends Council shrink the city's footprint, consolidate residential areas, test neighbourhood viability, and place a moratorium on building permits. Neighbourhood viability plans are due May 20. Reaction among affected residents is intense.
- Feb 2006 – Citizens mobilize themselves, with the help of non-profit organization, to create *Neighbourhood Recovery* plans and prove viability.
- Feb 2006 – The federal government, through *FEMA*, attempts regional coordination of recovery planning among 19 parishes in the Gulf States. Federal planning ceases three months later.
- Apr 2006 – Council hires *Lambert* planning consultants to prepare neighbourhood plans for flooded areas.
- Oct 2006 – *Unified New Orleans Plan* for both flooded and dry areas.
- May 2007 – State sponsors *Louisiana Speaks Regional Plan* by planners and urban design consultants. They hold a number of visioning sessions and prepare a plan that recommends Venice-like canals. Public reaction is negative.

All levels of government agreed that a plan was needed before work could begin, but there was no concurrence on a single approach. Perhaps unity was too much to expect when tensions were high and many residents were absent. The result was – again – delay.¹⁷

¹⁵ See www.can.org for more information on CAN.

¹⁶ The state of Mississippi now funds Long-Term Recovery Committees in each coastal county to help local leaders with collaboration of many stakeholders. They deal with residents using a case management model for individual recovery. - Ashley Edwards, October 21, 2008.

¹⁷ At the time of our visit, the City had announced the development of its first Master Plan, with a 20-year horizon, now being prepared by the Boston firm of Goody-Clancy.

Recovery Lessons from New Orleans

The planning dilemma reflected the conflicting and sometimes narrow requirements of multiple stakeholders. For example, the city's decision to reconstruct water and sewer infrastructure in all original neighbourhoods depended on mitigation plans by the Corps of Engineers. Will the Corps repair the marshlands, close the Mississippi River-Gulf Outlet to surge waters, and rebuild the levees? If not, there are vast areas that may remain too risky to rebuild infrastructure.

Our interviews suggest a more sustainable approach to recovery planning: Incorporate natural and technological hazards into a Master Plan (called an Official Community Plan in BC) in advance of a disaster, one that anticipates the widespread destruction of neighbourhoods. Integrating recovery in local authority planning before an event occurs should involve all levels of government and the citizens to address such questions as:

- What geographic areas of the community are subject to persistent hazards?
- Should residents be allowed to reconstruct homes in high-risk locations?
- If not, what would constitute safe housing alternatives?
- Would those required to move have access to financial assistance to do so?

In short, recovery requires coordinated planning, which the local government should undertake as part of an ongoing dialog with its citizens before a major disaster strikes.¹⁸

4.4 Recovery Requires Special Funding

We heard horror stories of organizations attempting to fund disaster recovery using day-to-day fiscal policies. Relying on school enrolment numbers to allocate funds after a disaster, when enrolments are down, ignores the extra costs that are needed for reconstruction and staff time following a disaster.

Dismissing municipal staff because of lower tax revenues means a local government cannot revive infrastructure and public services. Significantly increasing property taxes for small businesses already struggling to cope with disaster-related economic losses means more bankruptcies. These are the policies – often

overlooked until after a disaster – that can doom a community.

As in British Columbia, local governments, institutions, businesses, and individuals in the US who suffer catastrophic losses not covered by insurance may be eligible for public financial assistance. Administered through FEMA and regulated through the Stafford Act, funds are available to help communities rebuild.

However, the promised US federal aid did not arrive in time. While participants in the National Flood Insurance Program encountered few problems in receiving funds, the many homeowners who did not sign up for flood insurance were forced to turn to the program created by the state and funded by FEMA and the federal Department of Housing and Urban Development (HUD). Some are still waiting for their first check.

Local governments faced similar obstacles. Existing state laws prohibit parishes from spending money if they do not have the funds. While reasonable under normal conditions, such laws slow or even halt disaster recovery efforts. Following Katrina, the Orleans Parish was forced to borrow money from the Regional Planning Commission for infrastructure repairs.¹⁹

Here in Canada, disaster financial assistance policies require local governments to expend their own funds for recovery projects before seeking provincial and federal support. Our local governments could face significant delays in recovery if costs are massive, as expected following a major flood, wildfire, or earthquake.

In addition to FEMA, funding sources for local government recovery after Katrina included the Corps of Engineers (for some levee work), federal Community Development Block Grants, and state surplus funding grants. Meeting the requirements of different funding was like putting a jigsaw puzzle together without the picture. An important key to releasing recovery funds, whether from government or foundations, is to have well-defined construction projects ready. One municipality found a way to overcome bureaucracy among funding agencies by setting up a revolving development fund to help individual projects in the community.²⁰

¹⁸ One or more of the options for Large Group Intervention could be applied to pre-disaster community planning. Refer to authors Barbara Bunker and Billie Alban.

¹⁹ Jeffrey W. Roesel, Regional Planning Commission
²⁰ Mayor Tim Kerner, Town of Jean Lafitte, Louisiana

Recovery Lessons from New Orleans

4.5 *Cut the Red Tape*

One of the most common warnings from our contacts dealt with the impact of bureaucracy. The amount of red tape at all government levels following Katrina was overwhelming.

Understandably, all funding sources sought to invest wisely in recovery projects and avoid the types of mismanagement, criminal behaviour, and excesses that sometimes accompany chaotic situations. There are legitimate reasons for concern and protective measures. Accountability is important and cannot be brushed aside in disaster recovery.

We heard several stories of price gouging and funding abuses by businesses and individuals. Hotels charged \$168 per night for evacuee rooms because they knew FEMA would pay. Some contractors charged whatever the funding ceiling permitted at the time, not actual costs. Too few FEMA employees were available to check every contractor and construction project, and the pressure to approve projects was intense. These and other similar accounts led to increasing caution among funding agencies.

However, when the delays of well-intentioned accountability reduce or even eliminate the benefits of public financial assistance, there is a need to sharpen the system. Accountability is important, but it should not hamstring the recovery process for fear of wasteful spending. The normal checks and balances of government must be streamlined so financial assistance reaches those in need in a timely manner while preserving accountability.

British Columbia emergency managers should take note: Pay attention to the effects of accountability measures on the larger objective of assisting disaster clients. Streamline and combine processes to facilitate the financial and other intended aid. Or as Albert Einstein once quipped, "Things should be made as simple as possible, but not simpler."

4.6 *Psycho-Social Care is Essential to Recovery*

The psycho-social impacts of Katrina were still evident in the eyes and voices of those we met in all disaster recovery organizations. People seemed tired, and not just because Hurricane Gustav had threatened the area five weeks before our visit. Most have been working without

a break for three years, either struggling with personal recovery issues or facing the daily frustrations of bureaucracy. Sometimes both.

Psycho-social care (or Disaster Behavioural Health, as it is called in BC) was available at the onset of the disaster. Counselling was offered for a short time when residents first had to deal with the loss of their homes and belongings.

However, individuals were afforded only three sessions to work through their emotional issues. No one anticipated the sequence of stress support victims require after a disaster, and the stages at which individuals are receptive to assistance. Early in the process, people progressed through a "refrigerator phase" and a "debris phase," and were not ready for psycho-social programs that offered more in-depth support for rebuilding their lives.

Later needs for emotional support have not been widely funded. Talk lines, radio talk shows, and web blogs provided some means of expression, but stress debriefing programs delivered by professionals were not available. Ultimately, this may lead to later increases in social problems and crime, and more demand for various health care services that are already stretched.

There was also an urgent need to provide psycho-social care to first responders and caregivers. Call takers with the local 9-1-1 service reported horrendous experiences, as panicked residents called to report rising waters had trapped them in attics. Recovery case workers likewise absorbed painful stories while helping their clients.

The lesson to bring back to British Columbia is clear. Anticipate widespread programs in Disaster Behavioural Health, and ensure these services continue long enough to be of value. Recovery plans should include emotional care for case workers supporting the recovery effort.

4.7 *Recovery Should Address Mitigation*

Mitigation should be considered in any disaster recovery effort, but it is not a simple matter in large-scale events. Mitigation consists of any measures enacted before a major emergency that reduce the likelihood or consequences of the event without the need for post-event action. The sidebar lists some of the flood mitigation measures being considered to mitigate future flood risks in New Orleans.

Recovery Lessons from New Orleans

Examples of Flood Mitigation Projects to Protect New Orleans²¹

Corps of Engineers

- Move pumping stations to lakefront
- Reconstruct major levees
- Redirect river sediment to marshlands
- Close the Mississippi River-Gulf Outlet, and provide a barrier to block storm surges from the v-shaped funnel to which MRGO contributes.

City of New Orleans

- Install local flood controls, secondary levees
- Harden critical city infrastructure
- Prepare a Master Plan to control development
- Require elevation-in-place for residences
- Help residents move from high-risk locations

It was useful to learn, when considering mitigation for New Orleans, that the residents most affected by the levee breaks did not understand the risks they faced, let alone accept them. They were invited to occupy dangerous lands and assumed the cost of risk while others benefited.

The potential for flooding between the Mississippi River and Lake Pontchartrain had been recognized for generations. Maps dating back to 1890 labelled the area north of the city as "Cypress Swamp." In the 1950s, the levees were constructed and the land was drained to allow developers to build housing.²² People purchased and moved into their homes believing they were protected by these structures. After all, they reasoned, the city issued building permits in the area. In essence, the levees presented New Orleans with a new hazard.

After Katrina, mitigation became a central issue in community recovery. It was unthinkable to simply allow residents to return and face continued exposure to hazardous conditions. Scientists predicted more frequent and more severe hurricanes for the next ten years.²³ The erosion of the marsh lands and barrier islands, which once served to weaken hurricane intensity before they reached New Orleans, meant an increase in storm surge levels.

²¹ Earthea Nance, City Disaster Mitigation Planning

²² Jim Amdal, New Orleans City Planning Commission

²³ Lt. Col. Jerry Sneed, October 20, 2008, based on predictions by the National Oceanic and Atmospheric Administration (NOAA)

But critical questions remained: What should be done to reduce the risk? How much would effective mitigation cost? Would the benefits of allowing residents to re-occupy their properties justify the costs? Who should pay for mitigation?

The mitigation challenge was compounded by the roles of multiple agencies. Decision-makers that influence hurricane mitigation in Greater New Orleans are found within the US Congress, the Army Corps of Engineers, the Environmental Protection Agency, the Federal Emergency Management Agency, the State of Louisiana, the City of New Orleans, lending institutions, commercial insurers, and many other organizations. Coordinating decisions about even the most obvious mitigation measures took time, money, and political support.²⁴

For some recovery specialists, taking advantage of disaster situations to mitigate natural hazards does not go far enough. If a community, an organization, or resident intends to rebuild, why not promote other types of improvements that mean long-term sustainability? The City of New Orleans Office of Recovery Management sees recovery opportunities as more than reducing exposure to hazards. The recovery process allows them to address other long-standing problems at the same time, including improvements in energy conservation, power generation, and environmental protection.²⁵

Three conditions offer the best opportunity for implementing mitigation: 1) When buildings or systems are initially constructed, 2) During planned repairs and renovations, and 3) Following the full or partial destruction of the community. In these situations, the costs of mitigating risks are lowest, and property owners are more willing to invest in the future.²⁶

Our contacts in New Orleans advise us to plan ahead for mitigation during the recovery period, and develop specific projects that support hazard reduction, renewable energy, and environmental protection before disaster strikes.

²⁴ The State of Mississippi set up a hurricane insurance fund called "Wind Pool" that offers significantly reduced rates if buildings incorporate mitigation. Mitigation in this area must include elevation and appropriate building design. See www.msplans.com for more information.

²⁵ Earthea Nance, City Disaster Mitigation Planning

²⁶ Adapted from EIIIP Virtual Forum Presentation — September 24, 2008. Stafford Act Reform - A Group Discussion on Recommended Changes. Andrew Sachs, Vice President, Crisis and Consequence Management, James Lee Witt Associates

Recovery Lessons from New Orleans

5.0 Conclusions

5.1 Summary of Resident Experience

One of the many ways of understanding the challenges of disaster recovery after Katrina is to view the experience through the eyes of New Orleans residents themselves. The Appendix offers an incomplete list of the factors that confront residents as they continue to recover their lives. The full complement of traumas, frustrations, sorrows, and disappointments help explain the state of New Orleans recovery today.

This list emphasizes a compelling point: It is insufficient to focus simply on returning residents to their homes. Recovery must address all the elements needed to make a community function.

5.2 Conclusions

In one sense, it may be too early to draw conclusions about recovery in New Orleans. Impacts continue to unfold. The Brookings Institute, which tracks the status of recovery since the Storm, concluded in August of 2008, that major challenges remain, including thousands of blighted properties, rising rents, a tight labour market, and growing demand for the restoration of full public transit services.²⁷

Others point to the complexity of the issues surrounding community disaster recovery following Katrina and hold that consensus on the state of the recovery is currently impossible.²⁸

Few would disagree, however, that this disaster exposed deep vulnerabilities in New Orleans. While governments endeavoured to “do no harm,” the resultant delay in itself added to the toll. Federal financial payments promised within days of the Storm have yet to materialize for some residents three years later, and counting. This disaster emphasized the folly of independent recovery efforts among New Orleans residents, schools, hospitals, jobs, and local government that are inextricably connected.

²⁷ The Brookings Institution Metropolitan Policy Program & Greater New Orleans Community Data Center. The New Orleans Index. August, 2008. Anniversary Edition – Three Years after Katrina.

²⁸ The ‘Mother of Rorschachs’: Katrina Recovery in New Orleans. Shirley Laska, PhD. Professor of Sociology. Director, Center for Hazards Assessment, Response and Technology, University of New Orleans. NAS Disaster Roundtable. October 17, 2007

These same susceptibilities are inherent in all Western societies, where co-dependences create the lattice upon which our communities function. The implications are deep and wide: Disaster recovery cannot be managed without coordination. There are too many public, non-profit, and private organizations active in recovery to simply allow things to unfold.

If there is a central theme from our research of vital interest here in British Columbia, it revolves around the compelling need to build relationships before a disaster.

Emergency managers should identify the wide range of organizations with inter-connected roles in disaster recovery. Local governments must talk with schools about mutual support following catastrophic events. Community service groups must understand the type of support health care providers may require.

Provincial and federal governments should advise local authorities on sustainable practices in rebuilding in high risk zones, and involve residents in community planning. NGOs that provide invaluable service in an emergency must understand and coordinate with faith-based organizations, grassroots groups, and volunteers that emerge to fill the inevitable gaps in recovery.

Local emergency managers face the unique challenge of bringing these organizations together before a disaster so they can get to know each other. This would be a good time to discuss and select recovery policies that foster collaboration and joint decision-making at the local, regional, and provincial levels.

Key public and non-profit organizations should develop joint plans that support a unified recovery effort. An effective plan for disaster recovery may consist of no more than a structure for coordinating the many organizations, with the knowledge that no organization may make progress unless all march forward together.

Getting people to plan ahead for community disaster recovery will not be easy. After all, everyone is busy and funds are tight. But as the saying goes, “Pay now or pay more later.” With the Katrina aftermath as an example of the “pay later” option, perhaps communities in BC should be willing to move forward now.

Recovery Lessons from New Orleans

– Appendix – Examples of New Orleans Resident Experiences with Recovery

Early Recovery

- Evacuees are scattered throughout the US, unable to assess damage or initiate recovery.
- Unable to locate family members, even young children separated during evacuation.
- Evacuees move in with family members in overcrowded single family homes.
- Frustration at being prevented from re-entering damaged areas.
- Some residents return home to discover the loss of a loved one.
- Loss of primary residence, clothing, keepsakes, furniture, other possessions.
- Water remains for 8 weeks in some areas until pumped out.
- Mould leads to more property damage and affects human health.
- Debris everywhere, with no obvious effort to remove it.
- No electrical power, water, sewer services, road repair, or mail delivery for months.
- Refrigerators damaged beyond repair, even in areas without flooding.
- Limited transit services.
- Uncertainty about job. No pay check.
- No access to cash. Local banks are closed, account information is frozen.
- Vehicles damaged, auto insurance staff overworked, causing delays in claims.
- No vehicles available for rent or purchase locally.
- No fuel for weeks.
- Stress counselling limited to three sessions.

Later Recovery

- Renters forced into units that still contain mould because so few affordable rental properties are available.
- Some streets continue to be closed for months waiting repair.
- No street signs, property addresses for contractors and deliveries.
- No place to live while rebuilding, or too far from property.
- FEMA trailers for some, too small for family of four or more.
- Some insurance companies slow to assess or fail to pay for damage caused by water.
- Delays in federal financial assistance for recovery.
- Qualified architects and designers in short supply to prepare reconstruction plans.
- Too few local contractors. Outside contractors do not know systems.
- Dishonest contractors.
- Building materials in short supply.
- Price gouging for building materials, fuel, hotel rooms, food.
- Delays in city building permits and inspections for recovery.
- Schools not open.
- Older children sometimes lived alone in the city or with distant family friends to attend open schools.
- Limited access to local health care.
- Church buildings damaged and closed.
- Uncertain if neighbours will return.

Still Later Recovery

- Evacuees gone for so long, they put down roots elsewhere.
- Lower income residents lack family and friendship support and safety networks.
- Uncertain neighbours will return to their properties.
- Residents still owe mortgages for homes with much reduced value.
- Property insurance is very expensive, affecting decisions to rebuild.
- Rents increase nearly 50 percent.
- Large increases in property taxes for small businesses.
- Business revenues fall, leading to further layoffs.
- Long-term stress continues to affect health.