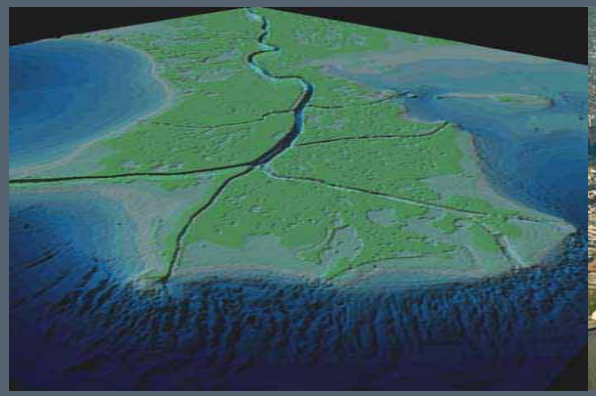


Katrina Environmental Research and Restoration Network: Resilient Urban Ecosystem Project

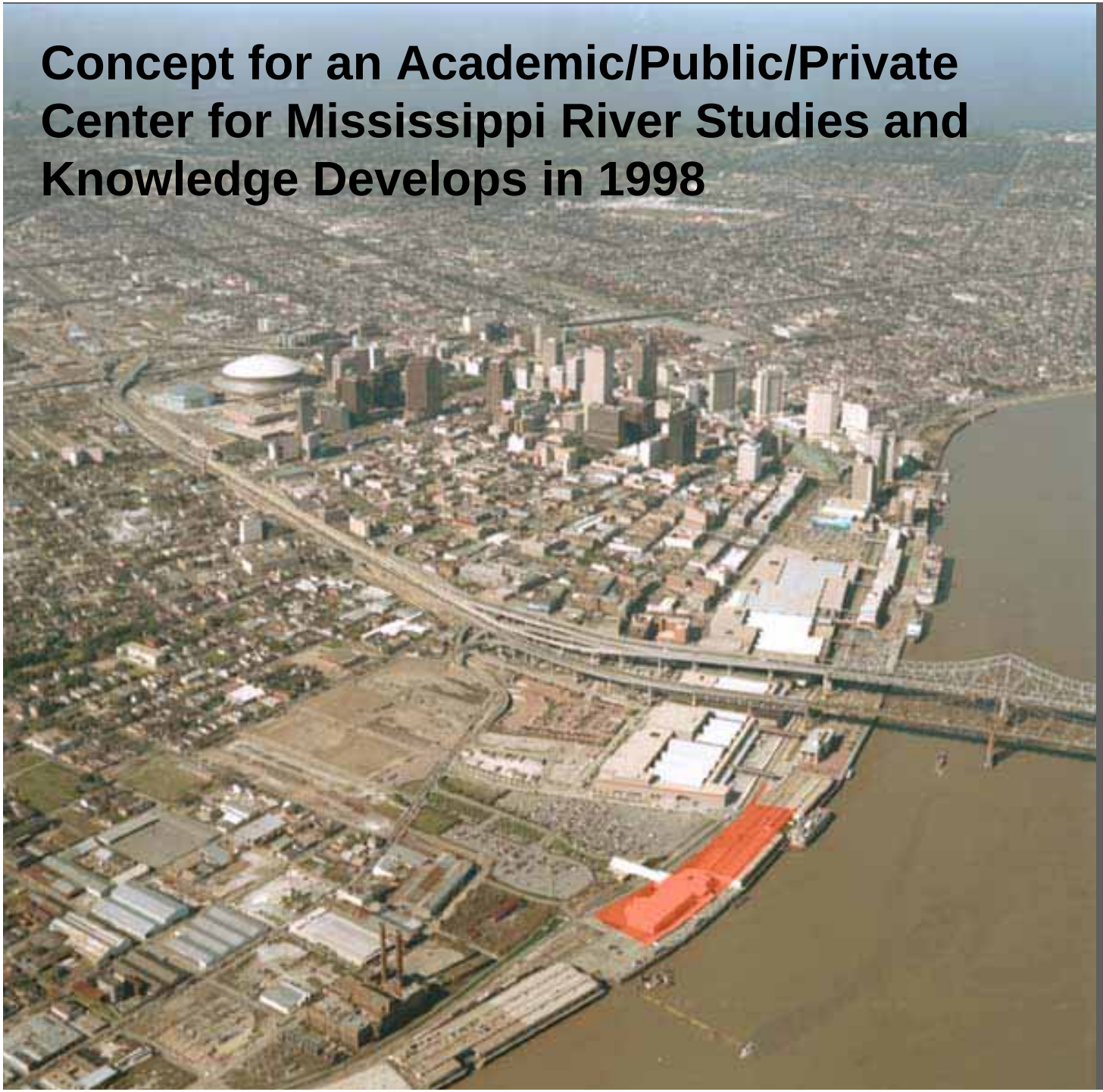
Douglas J. Meffert, D. Env., MBA
Eugenie Schwartz Professor for River & Coastal Studies
Deputy Director, Tulane/Xavier Center for Bioenvironmental Research
Co-Chair Sustainability Subcommittee, Bring New Orleans Back Commission

2 June 2006
Tulane Engineering Forum
New Orleans, LA

Tulane/Xavier Center for Bioenvironmental Research

- Inter-, multi-, and transdisciplinary research
- Major strengths such as Programs in Systems Biology and Translational Research; River - Coastal Studies; Arts and the Environment
- Established collaborations between Schools of Arts and Sciences, Engineering, Medicine, Public Health, Pharmacy, Architecture and Law in a major research university and an historically black university

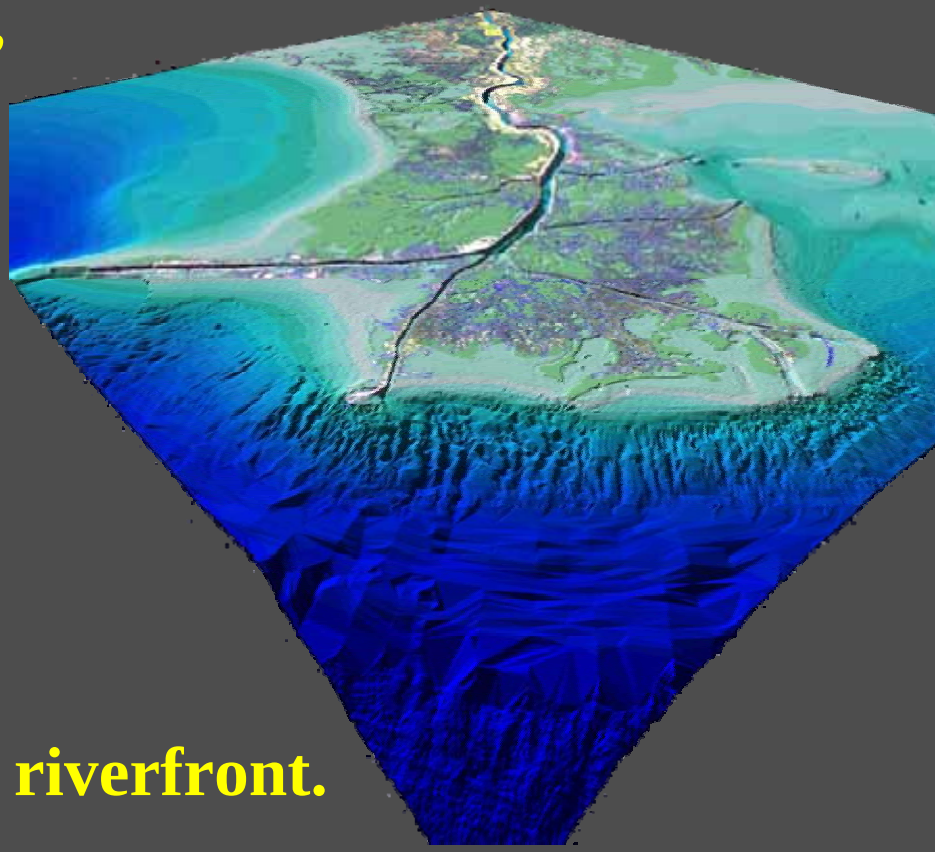
Concept for an Academic/Public/Private Center for Mississippi River Studies and Knowledge Develops in 1998



RIVER SPHERE

Tulane University

RiverSphere is a Tulane University place for art, science, and technology,



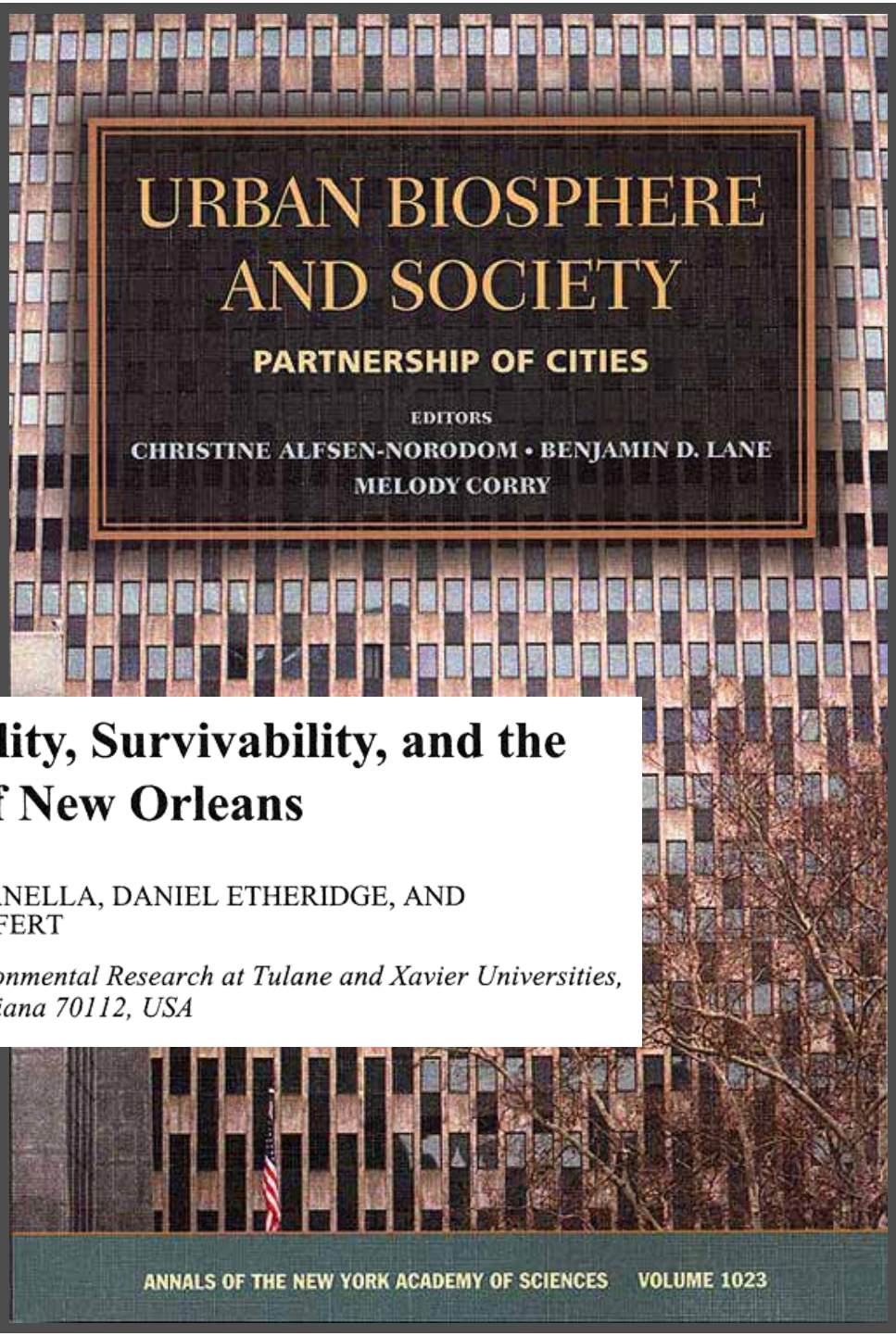
***about* rivers,**

***for* river communities,**

***on* the New Orleans Mississippi riverfront.**

RIVER SPHERE

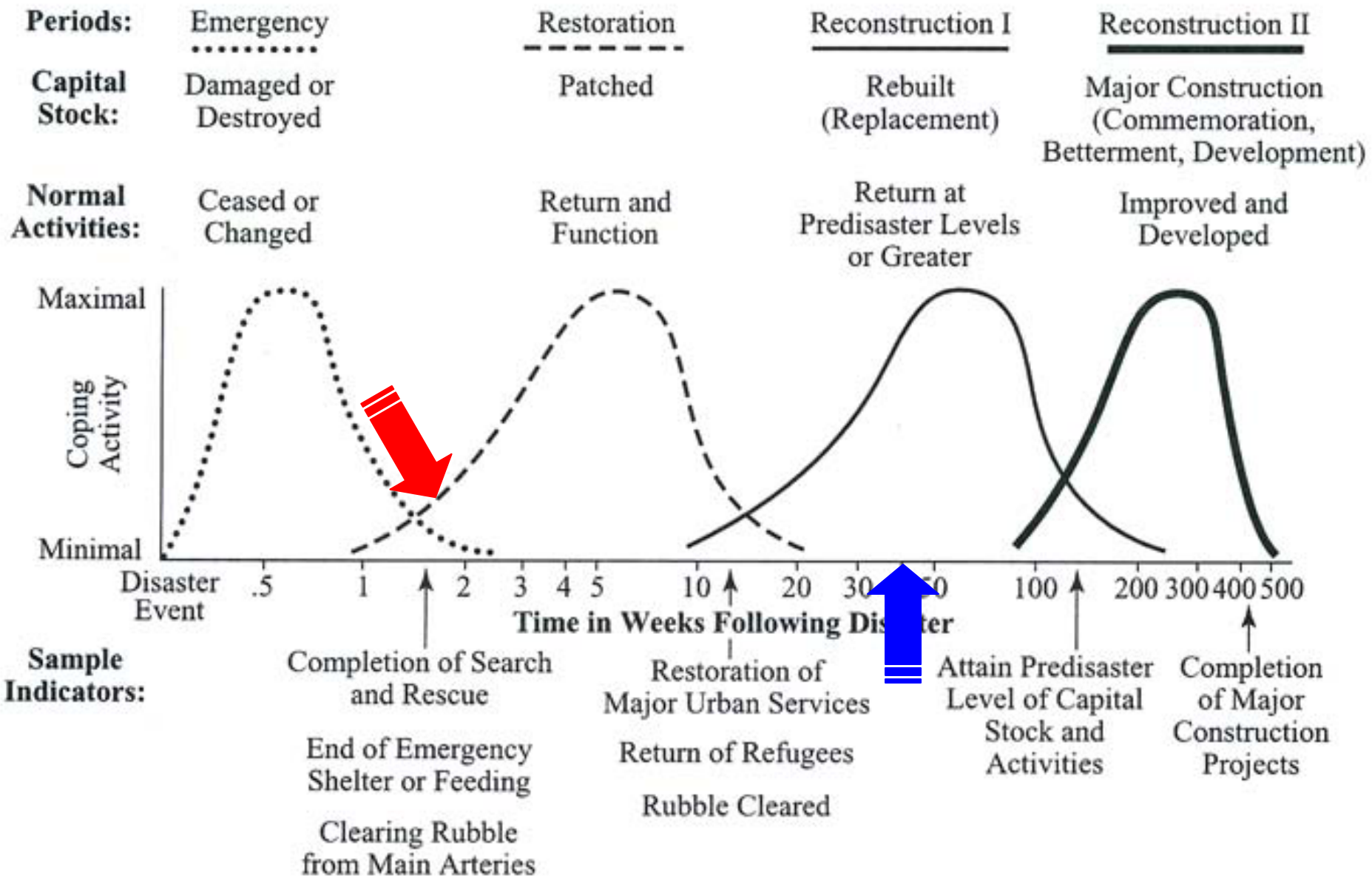
Tulane University



Sustainability, Survivability, and the Paradox of New Orleans

RICHARD CAMPANELLA, DANIEL ETHERIDGE, AND DOUGLAS J. MEFFERT

Center for Bioenvironmental Research at Tulane and Xavier Universities, New Orleans, Louisiana 70112, USA



A Model of Disaster Recovery Activity

(from Vale and Campanella 2005, redrawn from *Reconstruction Following Disaster*)

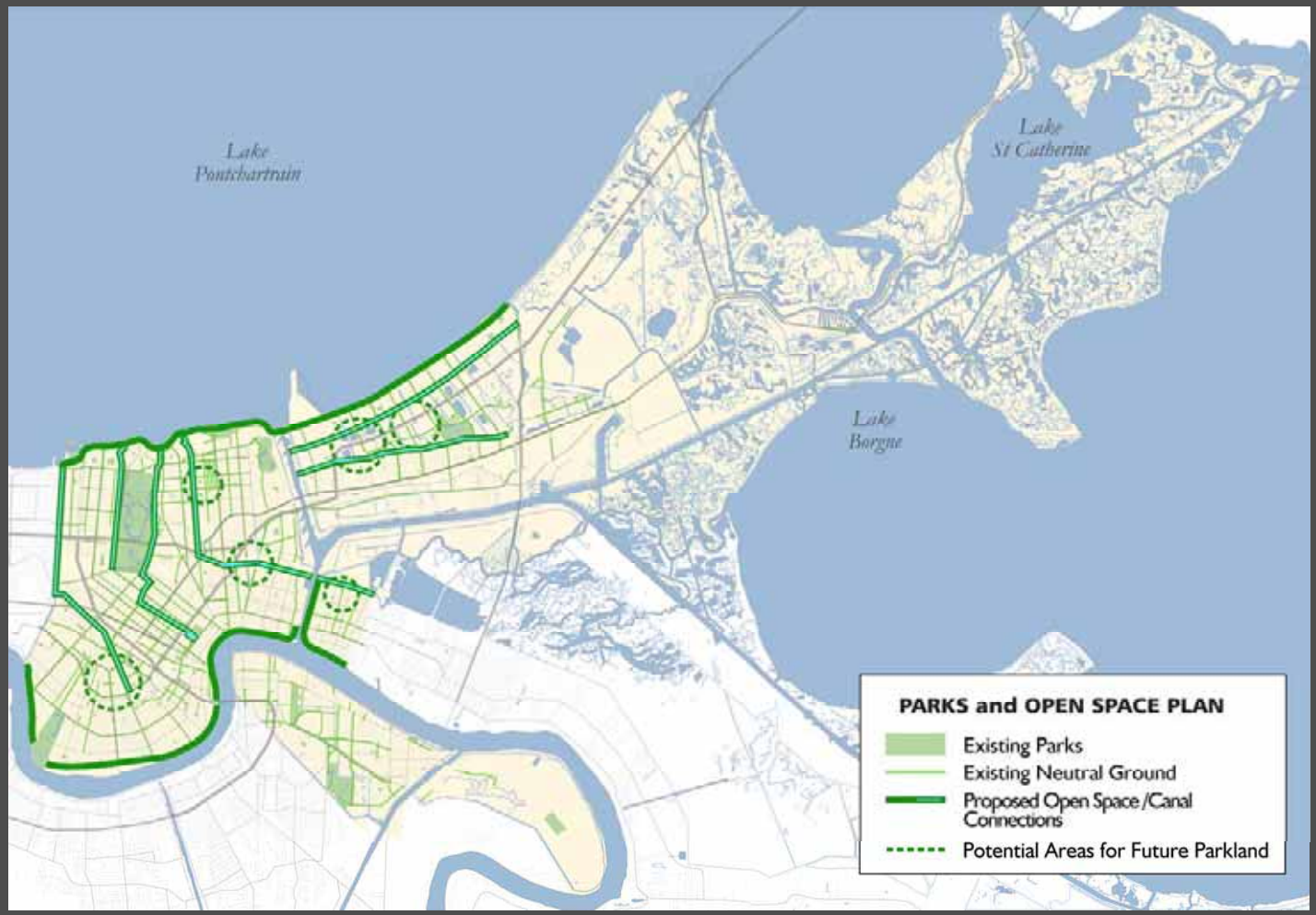
Not just a dot on a map or a line in a database—but a home with a family.

Photo credit: Associated Press

Urban Land Institute Vision - a smaller footprint?

BNOB Parks & Open Space Plan

"*Greenspace" - the new "four-letter word"*



THE START OF KERRN*

- Network conceived and proposed to NSF in September
- Research and program team started to populate New Orleans in mid October
- Started to rehab labs and core facilities in mid November. KERRN funded early November
- *Katrina Environmental Research and Restoration Network (***kerrn.org**)

Katrina Environmental Research and Restoration Network (***kerrn.org***)

- Centralized information source for research plans, outcomes and ideas
  - Virtual brainstorming
- Network of skills and interests
  - Matching research needs and skills
- Nucleating center or coordination node
  - Investigators from regional to international
- Facilitate communication between investigators
  - Web based
  - Face to face meetings

KERRN MEMBER INTERESTS

- Human and Social Systems (51)
- Geoscience and Coastal Systems (29)
- Built Systems and Engineering (29)
- Interdisciplinary/Humanities (9)
- Biological and Ecological Systems (31)
- Human and Public Health (22)

Bring New Orleans Back Commission
Urban Planning Vision

New Orleans will be a sustainable, environmentally safe, socially equitable community with a vibrant economy.

Its neighborhoods will be planned with its citizens and connect to jobs and the region. Each will preserve and celebrate its heritage of culture, landscape, and architecture.

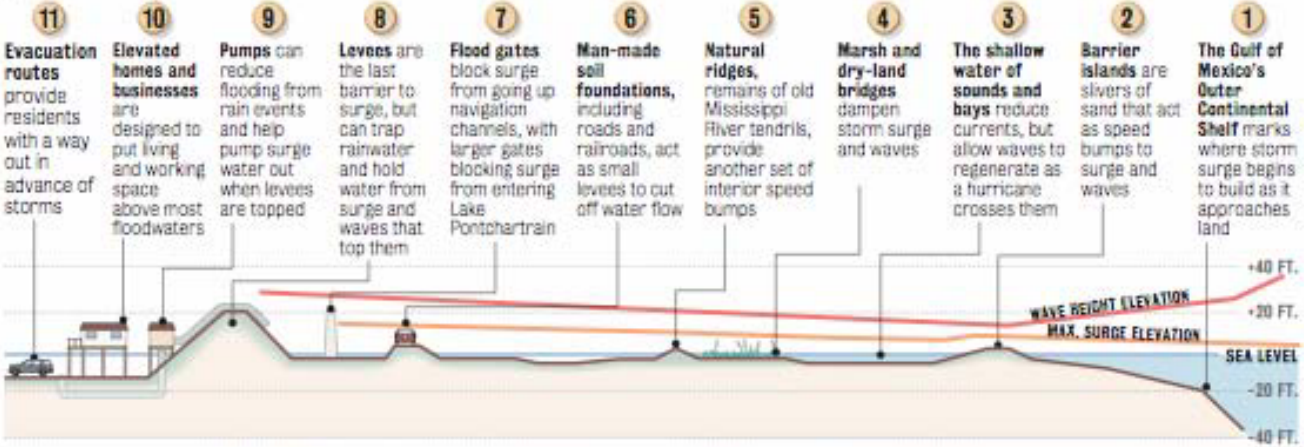
Photos by Peter Coles

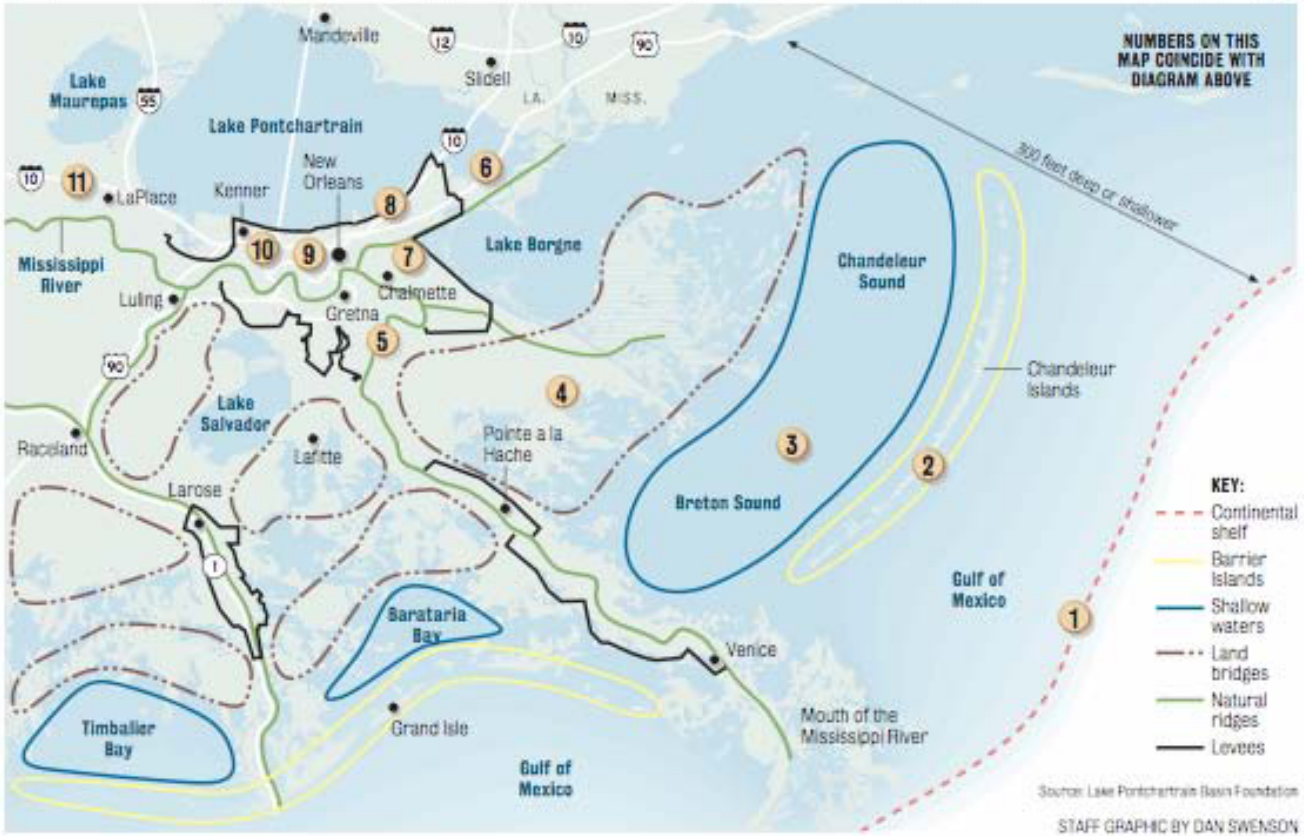
BNOBC Sustainability Subcommittee Sustainability Issues

- Levees and Coastal Wetlands
- Smart Growth/Urban Ecology
- Sustainable Architecture/Energy Efficiency
- Debris Removal and Waste Management
- Environmental Health

MULTIPLE LINES OF DEFENSE

Independent engineers and scientists are proposing multiple lines of defense as a strategy for integrating coastal restoration and hurricane protection using natural and man-made barriers





For Complete Report: kerrn.org

One way to re-think neighborhoods in low-lying areas

3 dump sites in Orleans Parish illustrate the magnitude of Katrina's destruction

MOUNTAINS OF DEBRIS

STAFF PHOTO BY JENNIFER ZDON

This mountainous dump at West End in New Orleans is one of three sites where 167,000 cubic yards of storm debris has been collected so far in Orleans Parish. Since the cleanup effort began Sept. 26, more than 1,500 trucks have been registered to do the work, along with 977 pieces of heavy equipment.

- 25 million cubic yards of "green waste"
- 280,000 tons of steel so far (1.5 NYC World Trade Centers Towers)
- > 100 million cubic yards of construction/demolition waste (22 Superdomes)

Coastal Restoration

Deconstruction

Composting

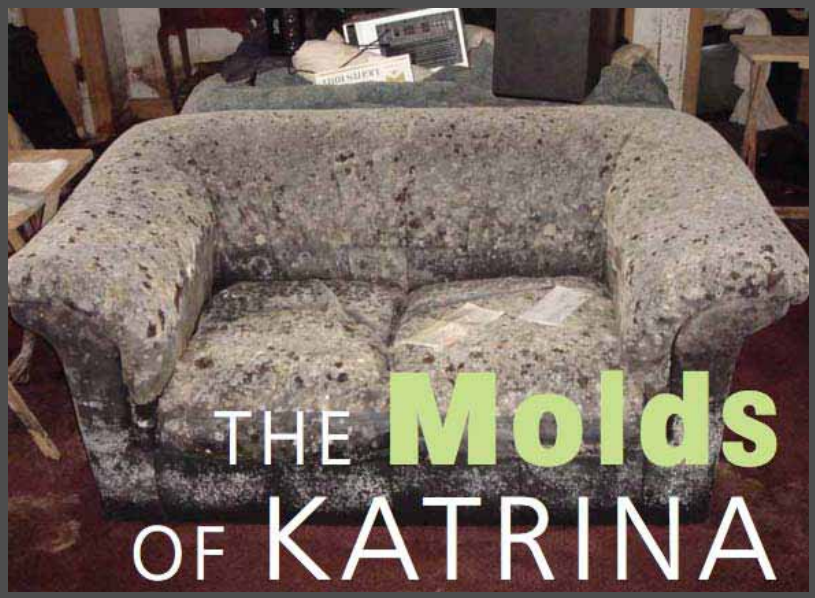
MOLDS ARE PREVALENT IN NEW ORLEANS

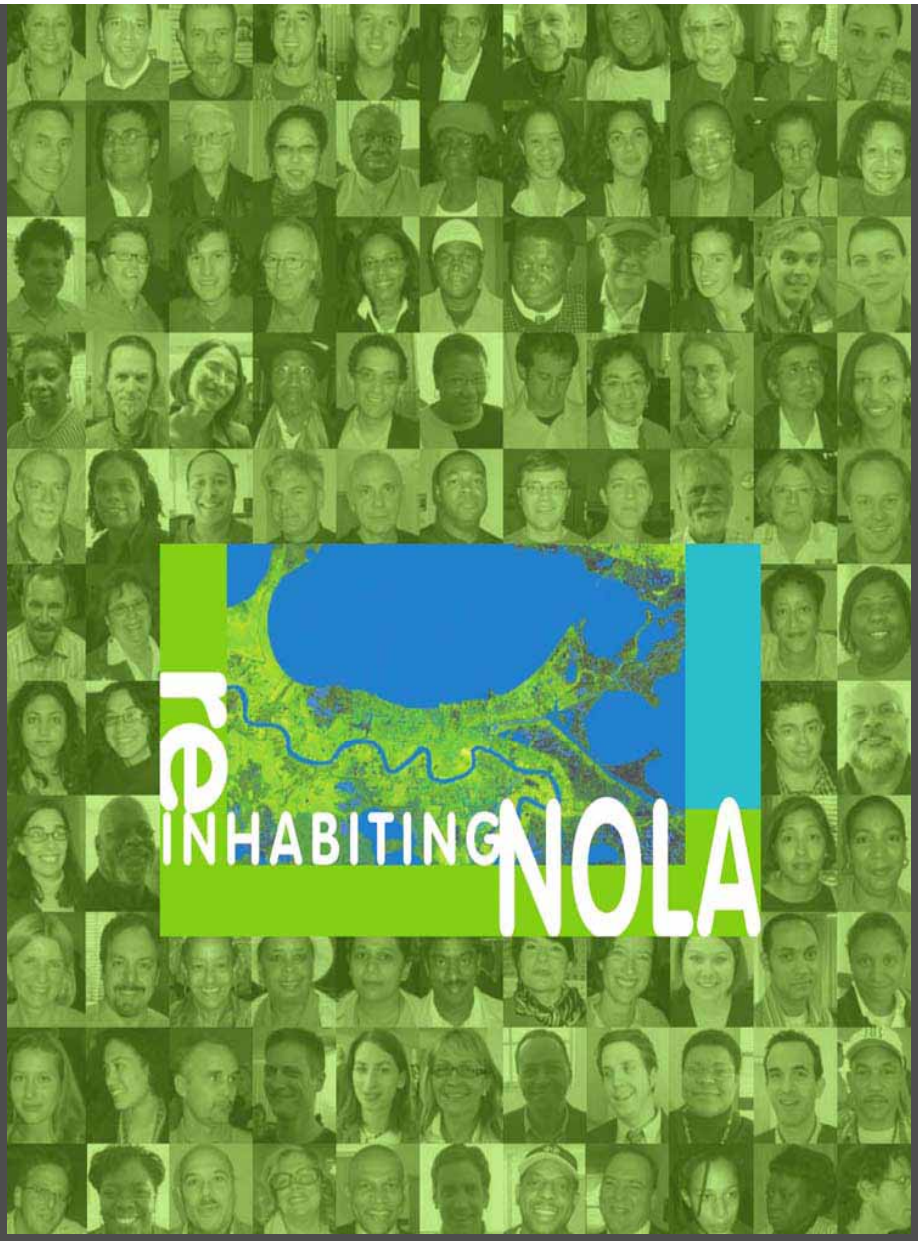
MOLDS FOUND POST KATRINA

Aspergillus, Penicillium, Wallemia, Cladosporium,
Alternaria, Aspergillus, Fusarium, Trichoderma

(Trichoderma, a common soil organism was most common.
Stachybotrys, the "sick building" mold was not found)

Analysis of her own home by Tulane mycologist, Dr. Joan Bennett in ANYAS, Jan-Feb 06





What residents care about:

1. Natural Systems
2. Buildings &Infrastructure
3. Public Health
4. Social & Political

A Tulane Community Workshop Held in New Orleans, November 2005

New Orleans and Surrounding Area as a Model Ecosystem

- Like it or not, we are a natural laboratory
- Scientists, engineers, architects and urban planners from around the world are coming to study the region
- New Orleans region is an excellent focus for world wide faculty and student involvement and education in all aspects of science and society…and we need your help.

What are the big science challenges

- Application of science to rebuilding and re-inhabiting a city (the science of rebuilding)
- Exploring and understanding the interface of the built and natural environments
- Principles for creating resilient, adaptable, reorganized and (therefore) sustainable urban ecosystems

TO CREATE AN URBAN ECOSYSTEM

- Collaboration between natural sciences and engineering;
- But then the big step to social, behavioral sciences and economics;
- And finally the huge step to the arts and humanities.
- All needed to inform policy.
- We can be a test case for the future of other port/delta cities worldwide.

Social Networks Create Resilient Urban Ecosystems - not vice versa