REPETITIVE LOSS AREA ANALYSIS #4

Metairie Cluster Area • Jefferson Parish, Louisiana

December 1, 2006

University of New Orleans
Center for Hazards Assessment, Response and Technology

http://floodhelp.uno.edu Supported by FEMA Region VI
Acknowledgements:

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Repetitive Loss Area Analysis

Jefferson Parish – Metairie Cluster

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Repetitive Loss Area Analysis
List of Abbreviations / Acronyms

FEMA – Federal Emergency Management Agency

CHART – Center for Hazards Assessment, Response and Technology at the University Of New Orleans

NFIP – National Flood Insurance Program

GIS – Geographic Information Systems

FIRM – Flood Insurance Rate Map

DFIRM – Digital Flood Insurance Rate Map

SFHA – Special Flood Hazard Area: The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A. In coastal situations, Zone V. The SFHA may or may not encompass all of a community’s flood problems.

BFE – Base Flood Elevation: The elevation of the crest of the base or 100-year flood.

ABFE – Advisory Base Flood Elevation: One foot above the current base flood elevation or at least three feet above the highest adjacent grade. This advisory was issued by FEMA for rebuilding homeowners to use as a guide until the new FIRM is released.

SELA – Southeast Louisiana Urban Flood Control Project

ICC – Increased Cost of Compliance (see 24)

LRA – Louisiana Recovery Authority

HMGP – Hazard Mitigation Grant Program

RL – Repetitive Loss Property
Repetitive Loss Area Analysis

Jefferson Parish – Metairie Cluster

Background

Repetitive losses: The National Flood Insurance Program (NFIP) is continually faced with the task of paying claims while trying to keep the price of flood insurance at an affordable level. It has a particular problem with repetitive loss properties, which are estimated to cost $200 million per year in flood insurance claim payments. Repetitive loss properties represent only 1 percent of all flood insurance policies, yet historically they account for nearly one-third of the claim payments (over $4.5 billion to date). Mitigation of these repetitive loss properties will reduce the overall costs to the NFIP as well as to individual homeowners.

The University of New Orleans’ Center for Hazards Assessment, Response and Technology (UNO – CHART) received a special grant from FEMA to collect data and analyze the repetitive loss areas in Louisiana. Using geographic information system (GIS) and flood insurance claims data, repetitive loss areas and properties are being prioritized for attention. In selected parishes, UNO-CHART is examining flood control projects in mitigating flooding.

UNO-CHART conducted a sample “area analysis” in the Metairie Cluster area. An area analysis follows new FEMA guidelines to determine the suitability of mitigation measures such as the buildings for acquisition, elevation, or other retrofitting flood protection measure. This report summarizes the area analysis conducted for the Metairie Cluster repetitive loss area.

The Area: The Metairie Cluster area was selected for analysis because it is representative of the parish in terms of the types of structures and flooding problems as well as having a high concentration of repetitive flood insurance claims. Of the 59 homes in the designated area, 16 (27%) are repetitive loss properties and 5 of the 16 (31%) are severe repetitive loss properties (see terminology above). The Metairie Cluster repetitive loss area is located in Jefferson Parish near Lake Pontchartrain.

This analysis looked at homes consisting of a four-block area immediately east of East Jefferson Hospital bounded by the Suburban Canal on the West, West Esplanade Avenue on the North, Lake Villa Drive on the East, and Ithaca Street on the South. Its location is shown on the map on the following page. The area includes Fairfield Street, Glendale Street, and Hastings Street.

<table>
<thead>
<tr>
<th>Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area Analysis:</strong> An approach to identify repetitive loss areas, evaluate mitigation approaches, and determine the most appropriate alternatives to reduce future repetitive losses.</td>
</tr>
<tr>
<td><strong>Hazard Mitigation:</strong> Defined by FEMA as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.</td>
</tr>
<tr>
<td><strong>Repetitive loss:</strong> An NFIP-insured property where two or more claim payments of more than $1,000 have been paid within a 10-year period since 1978. To focus resources on those properties that represent the best opportunities for mitigation, a subcategory has been defined: the Severe Repetitive loss Properties.</td>
</tr>
<tr>
<td><strong>Severe Repetitive Loss Properties:</strong> As defined by the Flood Insurance Reform Act of 2004, 1-4 family residences that have had four or more claims of more than $5,000 or at least two claims that cumulatively exceed the reported building’s value. The Act creates new funding mechanisms to help mitigate flood damage for these properties.</td>
</tr>
</tbody>
</table>
This report will describe the flooding issues the Metairie Cluster residents have faced since 1978, the drainage improvements the Parish has developed and implemented, and how those improvements have affected the area.

**Metairie Cluster Repetitive Loss Area Map**
**Process:** This area analysis follows a FEMA-prescribed five step process:

*Step 1.* Advise all the property owners in the repetitive loss areas that the analysis will be conducted.

*Step 2.* Collect data on each building and determine the cause(s) of the repetitive damage.

*Step 3.* Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible.

*Step 4.* Contact agencies or organizations that may have plans that could affect the cause or impacts of the flooding.

*Step 5.* Document the findings, including a map showing all parcels in the area.

**Neighborhood Notification**

The first step in the area analysis process was to advise the neighborhood about the project. On July 17, 2006, the Jefferson Parish Department of Emergency Management sent a notice to the homeowners introducing them to the project. The letter included a data sheet. Copies of the notice and data sheet appear on pages 30 and 31. The back side of the data sheet included UNO-CHART’s address and a stamp. After completing the form, the respondent could fold the form up and return it by mail.

Of the 59 properties to which letters were sent, 18 residents responded while 12 were sent back as undeliverable. This may be due to the large amount of homes that were for sale. When surveying the homes in the area, the UNO-CHART team noticed 7 houses with “for sale” signs. Assuming that the remaining 47 properties received the notice and data sheet, 18 responses account for a 38% return rate. This return rate is considered good for this type of survey, indicating a high degree of interest in flooding and flood protection in the neighborhood. The results are summarized in the table on the page 9.

**Data Collection**

The second step in the analysis process was to collect relevant data on the problem, i.e., the properties exposed to flooding and the cause(s) of the repetitive damage. Four sources of information were used for this: flood studies, flood insurance data, property owners, and on-site surveying.

**Flood Studies**

The UNO-CHART team reviewed the drainage system, contacted the Parish, FEMA, and the US Army Corps of Engineers, and collected the following reports:

- The Flood Insurance Rate Map (FIRM) for Jefferson Parish, March 23, 1995

- The FEMA Flood Insurance Study (FIS) for Jefferson Parish

- US Army Corps of Engineers SELA studies

- *Hazard Mitigation Plan*, Jefferson Parish, 2005
**The drainage system:** Because most of Jefferson Parish has a low, flat topography with ground elevations ranging from slightly above to five feet below sea level with land susceptible to subsidence, it cannot rely on gravity drainage alone. The water must be pumped out to the nearby canals (floodhelp.uno.edu).

Rainwater that collects in the streets flows to storm sewer inlets that convey the water to the canals. Street flooding occurs when the drainage system is not able to collect and convey the runoff from heavy rainfall fast enough. The system was designed when the subdivision was constructed in the 1960s. At that time, the standard for storm sewers and drainage conveyance was smaller than what would be accepted today. Currently, the Jefferson Parish subdivision regulations require residential developments of five acres or more to account for storing and conveying the 10- and 100-year storms (Section 14-14 of the Parish Code of Ordinances).

The canals require pumps to convey the water to the lake outside the levees. Drainage of the area is therefore dependent on the capacity of the pumping stations and a continuous source of electricity to run the pumps. When the canals cannot drain, the storm sewers cannot drain, and water backs up in the streets. If the rain continues, water will back up onto the lots and into the lowest lying houses.

The East Jefferson drainage system consists of a network of major north-south canals connected by lateral east-west canals. Five pumping stations, Bonnabel, Suburban, Elmwood, Duncan and Parish Line Stations, are located at the downstream end of major canals and pump into Lake Pontchartrain. With a combined pumping capacity of over 22,000 cubic feet per second, the pumps drain approximately 47.6 square miles of East Jefferson (Corps SELA studies).

**FIRM and FIS:** The study area is completely within the 100-year floodplain and is designated as an AE Zone on the Parish’s Flood Insurance Rate Map (FIRM). According to the Flood Insurance Study, which accompanies the FIRM, the base flood elevation (BFE), also known as the 100-year flood level, is 3.7 below sea level. The source of flooding is “ponding area 24,” one of several areas where ponding occurs because the drainage system cannot handle very heavy rains. Ponding area 24 covers most of the Parish north of Interstate-10.

The regulatory floodplain used by FEMA for the floodplain management and insurance aspects of the National Flood Insurance Program is based on the elevation of the 100-year flood. It may be easily misconstrued that the 100-year flood happens only once in 100 years. In actuality, the 100-year flood has a 1% chance of occurring in any given year while the 10-year flood has any 10% chance of occurring in a given year. The table on the following page gives a better understanding of this.
The chances of flooding a building located in one of these higher risk flood areas has over different periods of time.

<table>
<thead>
<tr>
<th>Period of Time</th>
<th>10 Year Flood</th>
<th>25 Year Flood</th>
<th>50 Year Flood</th>
<th>100 Year Flood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>10%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>10 years</td>
<td>65%</td>
<td>34%</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>20 years</td>
<td>88%</td>
<td>56%</td>
<td>33%</td>
<td>18%</td>
</tr>
<tr>
<td>30 years</td>
<td>96%</td>
<td>71%</td>
<td>45%</td>
<td>26%</td>
</tr>
<tr>
<td>50 years</td>
<td>99%</td>
<td>87%</td>
<td>64%</td>
<td>39%</td>
</tr>
</tbody>
</table>

For example, during the life of a 30 year mortgage, a house that is lower than the 10 year flood level has a 96% chance of being flooded.

The SELA Project: The Southeast Louisiana Urban Flood Control Project (SELA) was authorized by Congress in 1996 and undertaken by the Corps of Engineers. It is designed to reduce flooding due to rainfall within the levee protected areas of Orleans, Jefferson, and St. Tammany Parishes through pumping station and channel improvements. These improvements support each parish’s master drainage plan and typically provide flood protection against the 10-year flood. It also has a goal to reduce damage from flood events more severe than the 10-year flood.

SELA’s hydraulic analysis divides Jefferson Parish into 286 blocks and provides the 1, 2, 5, 10, 25, 100, 200, and 500-year flood elevations for each block. The Metairie Cluster falls within block 96. The analysis was performed assuming all of the SELA projects were completed and working at full capacity and that the local drainage systems could carry all runoff to the improved channels and pump stations. Then, SELA flood elevations were compared with the lowest floor elevations of the properties to determine how much protection SELA has provided.

The 100-year flood elevation for SELA block 96 is 5.20 feet below sea level. The table below compares the post-SELA elevations with the current elevations from the FIS (Flood Insurance Study). It can be seen that when completed, the SELA projects will lower the 10-year flood level by 2.1 feet and the 100-year flood by 1.5 feet. It should be noted that this comparison is based on the 1995 FEMA study. A new, post-Katrina study is underway which may produce different flood elevations.
The studies confirmed that the repetitive flooding in the Metairie Cluster area has been caused by heavy rains from tropical storms, hurricanes, and local storms, not overbank flooding or levee failure. The area was not affected by the levee failures that flooded the City of New Orleans and parts of Jefferson Parish during and following Hurricane Katrina. Instead, due to the safety concerns of the pump operators, the pumps were turned off and the pumping stations were evacuated during Hurricane Katrina. As a result, the area flooded in large part because the canals could not drain.

**The Hazard Mitigation Plan, 2005:** The Jefferson Parish Hazard Mitigation Plan includes one chapter on floods. The chapter includes a table of federally declared disasters in Jefferson Parish.

<table>
<thead>
<tr>
<th>Federal Disaster Declarations in Jefferson Parish</th>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane Betsy</td>
<td>09/10/65</td>
<td>Approximately 70 deaths</td>
</tr>
<tr>
<td>Severe Storm, Flood</td>
<td>04/27/73</td>
<td></td>
</tr>
<tr>
<td>Hurricane Carmen</td>
<td>09/23/74</td>
<td></td>
</tr>
<tr>
<td>Severe Storm, Flood</td>
<td>05/09/78</td>
<td></td>
</tr>
<tr>
<td>Severe Storm, Flood</td>
<td>04/09/80</td>
<td>Overworked drainage pumps; most of them shut down during a two-day storm</td>
</tr>
<tr>
<td>Severe Storm, Flood</td>
<td>04/20/83</td>
<td></td>
</tr>
<tr>
<td>Hurricane Juan</td>
<td>11/01/85</td>
<td></td>
</tr>
<tr>
<td>Hurricane, Rain/Storm, Flood</td>
<td>11/19/89</td>
<td></td>
</tr>
<tr>
<td>Hurricane Andrew</td>
<td>08/25/92</td>
<td></td>
</tr>
<tr>
<td>Rain/Storm, Flood</td>
<td>05/08/95</td>
<td></td>
</tr>
<tr>
<td>Hurricane Georges</td>
<td>09/30/98</td>
<td>Caused one of the largest evacuations in Louisiana history; over 3,000 people sheltered in Jefferson Parish</td>
</tr>
<tr>
<td>Tropical Storm Allison, Flood</td>
<td>06/05/01</td>
<td></td>
</tr>
<tr>
<td>Tropical Storm Isidore</td>
<td>09/26/02</td>
<td></td>
</tr>
<tr>
<td>Hurricane Lili</td>
<td>10/03/02</td>
<td>Pumping stations were assisted by back-up generators to keep water out of streets</td>
</tr>
<tr>
<td>Hurricane Ivan</td>
<td>09/13/04</td>
<td></td>
</tr>
</tbody>
</table>

**Flood Insurance Data**

The Metairie Cluster is in flood zone AE, a “Special Flood Hazard Area.” Federal agencies and mortgage lenders require flood insurance as a condition of financial aid or loans in Special Flood Hazard Areas. However, many people buy flood insurance voluntarily because of their experiences with or knowledge about the flood hazard. UNO-CHART obtained claims data for the 16 repetitive loss properties as classified by FEMA and analyzed them for this report.

**Privacy Act:** The Privacy Act of 1974 (5 U.S.C. 522a) restricts the release of certain types of data to the public. Flood insurance policy and claims data are included in the list of restricted information. FEMA can only release such data to state and local governments, and only if the
data are used for floodplain management, mitigation, or research purposes. Therefore, this report does not identify the repetitive loss properties or include claims data for any individual property.

Claims data: Summary data on the repetitive loss properties are displayed below. Before Katrina, 2 properties had been paid claims seven times, but the average number of claims was 3.8.

<table>
<thead>
<tr>
<th>Repetitive Loss Claims Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>1978-1995</td>
</tr>
<tr>
<td>Katrina</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

In total, the homeowners for the 16 repetitive loss properties have received $1,844,838.84 in flood insurance payments since 1978. The average claim payment before Hurricane Katrina was $12,000. Hurricane Katrina’s deeper floodwaters caused much more extensive damage resulting in average claim payments of $111,000. Not a single property had been paid more than $50,000 (building and contents) from 1978 to 1995. When Katrina hit ten years later, all ten claims made were higher than $50,000 (building and contents) with the highest reaching $187,000.

It is likely that the data in this section understate the flooding problem for five reasons.

- Additional, non-repetitive, flood insurance claims data were not available.
- NFIP records do not include claims data from before 1978, so there could have been additional losses not shown here.
- Policy holders may not have submitted claims for smaller floods for fear of it affecting their coverage or their premium rates.
- Only data for insured properties were reviewed. There could be other properties that have been repetitively flooded, but did not have insurance at the time or did not submit claims.
- The losses only account for items covered by the insurance policy. Things not covered include living expenses during evacuation, swimming pools, and automobiles.

<table>
<thead>
<tr>
<th>Claims History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>5/3/1978</td>
</tr>
<tr>
<td>4/13/1980</td>
</tr>
<tr>
<td>4/6/1983</td>
</tr>
<tr>
<td>4/22/1983</td>
</tr>
<tr>
<td>12/27-28/1983</td>
</tr>
<tr>
<td>11/7-8/1989</td>
</tr>
<tr>
<td>5/8-9/1995</td>
</tr>
<tr>
<td>8/29/2005</td>
</tr>
</tbody>
</table>

A review of the flood claims history shows that building loss claims were higher than the contents loss claims in every instance except four. These four exceptions were paid in 1978, 1980, and 1983. The deeper the floodwaters, the more likely there would be damaged contents.


The most claims were paid before 1990 and no claims were made since 1995 until Hurricane Katrina. Repetitive flooding appears to have reduced over the last 10 years even though the Parish received 5 Federal disaster
declarations during that time. It is suspected that the major reason for this is the drainage improvements that the Parish has been implementing through the SELA Projects which are discussed in the drainage improvements section.

**Property Owners**

Eighteen of the fifty-nine property owners returned completed copies of the data sheet shown on page 31. The information received was recorded in a master database. The results are summarized on the following page.

The following general conclusions can be made based on the data sheets and the comments submitted by respondents.

**Experiences:**

- 3 residents who moved into their homes before 1995 say they’ve never flooded
- 15 of the 18 (83%) respondents did report flooding; 9 of that 15 (60%) have only flooded because of Hurricane Katrina
- Pre-Katrina, flood water did not get higher than 3 inches; for Katrina the water rose as high as 42 inches (3.5 feet)
- Pre-Katrina, flooding was reported to last a couple of hours; for Katrina the water reportedly remained in the house for 12 to 48 hours

**Causes:**

- Homeowners believe drainage system failures, including overbank flooding from canals, high water in Lake Pontchartrain, and the evacuation of pump operators, are the major causes of flooding for Katrina. The Metairie Cluster area did not flood as a result of the levee breakage that occurred near the 17th Street Canal.

**Concerns:**

- Residents want to see improvements to the drainage system, especially to the canals and pumping stations. They want the pumping stations to be continuously operated during storms and power outages.
- Some property owners have implemented their own flood protection measures such as regrading their yards, installing drains, and sandbagging.
- Only one resident reported these measures worked for events prior to Katrina.
- Residents are interested in learning more about how they can protect their homes from flood damage.

Two residents who are not interested in flood protection agree that the flooding could have been controlled and there is no point in pursuing flood protection measures. This is illustrated by the comments, “Have been in house since 1960 and house had never flooded. I feel this time was due to human error and judgment,” and “Don’t feel this is necessary. House only flooded because pumps were off.”
<table>
<thead>
<tr>
<th>Question</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In what year did you move into the home at this address?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1960s- 4</td>
</tr>
<tr>
<td></td>
<td>1970s- 0</td>
</tr>
<tr>
<td></td>
<td>1980s- 4</td>
</tr>
<tr>
<td></td>
<td>1990s- 5</td>
</tr>
<tr>
<td></td>
<td>2000s- 4</td>
</tr>
<tr>
<td></td>
<td>not provided- 1</td>
</tr>
<tr>
<td>2. What type of foundation does your house have?</td>
<td>Slab- 18</td>
</tr>
<tr>
<td>3. Has the property ever been flooded or had a water problem?</td>
<td>Yes- 14</td>
</tr>
<tr>
<td></td>
<td>No- 4</td>
</tr>
<tr>
<td>4. In what year(s) did it flood?</td>
<td>1973- 1</td>
</tr>
<tr>
<td></td>
<td>1983- 1</td>
</tr>
<tr>
<td></td>
<td>1995- 7</td>
</tr>
<tr>
<td></td>
<td>2005- 15</td>
</tr>
<tr>
<td>5. What was the deepest that the water got?</td>
<td></td>
</tr>
<tr>
<td>1995:</td>
<td>Over first floor:</td>
</tr>
<tr>
<td></td>
<td>3 inches- 2</td>
</tr>
<tr>
<td></td>
<td>2 inches- 1</td>
</tr>
<tr>
<td></td>
<td>In yard only:</td>
</tr>
<tr>
<td></td>
<td>up to garage- 1</td>
</tr>
<tr>
<td></td>
<td>Water kept out by</td>
</tr>
<tr>
<td></td>
<td>sandbagging- 1</td>
</tr>
<tr>
<td>2005:</td>
<td>Over first floor:</td>
</tr>
<tr>
<td></td>
<td>1-2 feet- 5</td>
</tr>
<tr>
<td></td>
<td>2-3 feet- 4</td>
</tr>
<tr>
<td></td>
<td>6 inches-1 foot- 3</td>
</tr>
<tr>
<td></td>
<td>3-4 feet- 1</td>
</tr>
<tr>
<td></td>
<td>&lt;6 inches- 0</td>
</tr>
<tr>
<td></td>
<td>In yard only:</td>
</tr>
<tr>
<td></td>
<td>6 inches-1</td>
</tr>
<tr>
<td></td>
<td>Up to top of slab- 1</td>
</tr>
<tr>
<td>6. What was the longest time that the water stayed up in the house?</td>
<td></td>
</tr>
<tr>
<td>1995:</td>
<td>couple of hours- 1</td>
</tr>
<tr>
<td>2005:</td>
<td>unknown-6</td>
</tr>
<tr>
<td></td>
<td>2 days-5</td>
</tr>
<tr>
<td></td>
<td>1 day- 2</td>
</tr>
<tr>
<td></td>
<td>12 hours- 1</td>
</tr>
<tr>
<td></td>
<td>1-2 days- 1</td>
</tr>
<tr>
<td>7. What do you feel was the cause of your flooding?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evacuation of pump operators- 10</td>
</tr>
<tr>
<td></td>
<td>Failure or power outage at pump station- 9</td>
</tr>
<tr>
<td></td>
<td>High water in Lake Pontchartrain- 7</td>
</tr>
<tr>
<td></td>
<td>Overbank flooding- 4</td>
</tr>
<tr>
<td></td>
<td>Undersized pump station- 2</td>
</tr>
<tr>
<td></td>
<td>Drainage from neighbors- 2</td>
</tr>
<tr>
<td></td>
<td>Storm sewer backup-1</td>
</tr>
<tr>
<td></td>
<td>Clogged ditch- 1</td>
</tr>
<tr>
<td>8. Have you taken any flood protection measures on your property?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did nothing- 12</td>
</tr>
<tr>
<td></td>
<td>Regraded yard- 4</td>
</tr>
<tr>
<td></td>
<td>Install drains/trenches- 2</td>
</tr>
<tr>
<td></td>
<td>Moved things higher- 1</td>
</tr>
<tr>
<td></td>
<td>Sandbagged- 1</td>
</tr>
<tr>
<td></td>
<td>Elevated- 1</td>
</tr>
<tr>
<td>9. Did any of the measures in #8 work?</td>
<td>Yes, but only prior to Katrina- 1</td>
</tr>
<tr>
<td>10. Do you have FEMA Flood Insurance?</td>
<td>Yes- 18</td>
</tr>
<tr>
<td></td>
<td>No- 0</td>
</tr>
<tr>
<td>11. Are you interested in pursuing measures to protect from flooding?</td>
<td>Yes- 16</td>
</tr>
<tr>
<td></td>
<td>No- 2</td>
</tr>
</tbody>
</table>
On-site surveying
During the week July 24-28, 2006, a survey crew from UNO-CHART visited every property in the subdivision. The following information was recorded for each property:

- Whether or not the property was occupied
- Single family or multi-family home
- Type of foundation
- Condition of foundation
- Type of structure
- Condition of structure
- Number of stories
- Estimation of the height of the first floor above grade
- Estimation of the height of the adjacent grade above street
- Presence of appurtenant structures such as garages or sheds
- A photograph of each house

Here is a summary of the data collected by the surveying:

- 52 properties appear to be occupied; 6 appear to be vacant; and occupancy for 1 is undeterminable (properties with trailers on the lot were assumed occupied)
- 58 properties appear to be single family homes and 1 appears to be a multi-family home
- All 59 properties are on slab foundations
- All 59 foundations appear to be in good condition
- 55 properties have masonry walls; 1 has wood walls; 2 are combination masonry/wood frame structures; 1 is a combination masonry/stucco frame structure
- 58 structures are in good condition and 1 is in fair condition
- 49 properties have 1 story; 5 have 1.5 stories; and 5 have 2 stories
- Estimation of the height of first floor above grade

<table>
<thead>
<tr>
<th>0-1 feet above grade</th>
<th>46 properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>11</td>
</tr>
<tr>
<td>2-3</td>
<td>1</td>
</tr>
<tr>
<td>3-4</td>
<td>0</td>
</tr>
<tr>
<td>4-5</td>
<td>1</td>
</tr>
</tbody>
</table>

- Estimation of the height of the adjacent grade above street

<table>
<thead>
<tr>
<th>0-1 feet grade above the street</th>
<th>29 properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>19</td>
</tr>
<tr>
<td>2-3</td>
<td>9</td>
</tr>
<tr>
<td>3-4</td>
<td>2</td>
</tr>
</tbody>
</table>
The UNO-CHART team shot first floor elevations of each home in the Metairie Cluster to determine how many structures are at or below the 10- and 100- year flood levels. The summary table of these findings is below.

<table>
<thead>
<tr>
<th>Summary of First Floor Elevations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet in relation to Sea Level</td>
</tr>
<tr>
<td>-2.01 to –3</td>
</tr>
<tr>
<td>-3.01 to –4</td>
</tr>
<tr>
<td>-4.01 to –5</td>
</tr>
<tr>
<td>-5.01 to –6</td>
</tr>
<tr>
<td>Demolished</td>
</tr>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

The first floor elevations ranged from 2.94 to 5.46 feet below sea level. Thirteen structures are above -3.7, the current Flood Insurance Study Base Flood Elevation. All of the structures are above the 10-year post-SELA flood level. There are 53 structures above the 100-year post-SELA flood level of 5.20 feet below sea level.

Problem Statement

Based on the data collected from the four sources of information (flood studies, flood insurance data, the property owners, and on-site surveying), the following bullets summarize the repetitive loss problems in the Metairie Cluster:

- The Metairie Cluster area is subject to flooding caused by a drainage system that historically could not handle heavy rains. Up to 1995, flooding resulted in 60 flood insurance claims for 16 repetitive loss properties at a cost of $538,612.08. The duration of the flooding was short. Only one resident reported water remaining in his/her home for a few hours.
- During the 10 years between 1995 and Hurricane Katrina, there were no flood insurance claims payments. This information indicates that the SELA projects and other Parish drainage improvements have helped to reduce the smaller, more frequent flooding that produces repetitive flood insurance claims.
- Flooding during Hurricane Katrina appears to be caused more by the closing of the pump stations than an inadequate drainage system. Katrina claims totaled $1,110,261.16 for the 16 repetitive loss properties.
- All of the affected homes are on slab foundations, so the first floors are relatively low and easily subject to getting wet from street or yard flooding.
- Based on the elevations, all of the buildings are above the 10-year post-SELA flood level while 54 buildings are above the 100-year post-SELA flood level.

Alternative Mitigation Measures

Knowing the drainage system, the flooding problem, and the types and condition of the buildings in the area leads to the third step in the area analysis procedure - a review of alternative approaches to protect properties from future flood damage. Property owners
should look at these alternatives but understand they are not all guaranteed to provide 100% flood protection. Eight approaches were analyzed:

- Acquisition of properties in the hazardous area
- Elevating the houses above the 100-year flood level
- “Reconstruction,” i.e., replacing a damaged house with a new one protected from flooding
- Constructing small levees or floodwalls around one or more houses
- Dry floodproofing
- Purchasing flood insurance coverage on the building
- Drainage improvements
- Yard drainage improvements

Each approach has its pros and cons. The first six are considered “nonstructural” approaches. “Nonstructural” approaches to mitigation involve modifying the building or lot so that floodwaters will not cause damage. They are implemented by the property owner and can be done on an individual property basis.

While this section proposes different alternative mitigation approaches, there are instances when a property owner’s freedom of choice is limited. Chapter 14 of Jefferson Parish’s Code of Ordinances prescribes minimum requirements for land use and control measures for floodprone areas of the parish. Section 14-3 defines *substantial improvement* as “any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds fifty (50) percent of the market value of the structure before the ’start of construction’ of the improvement. This term includes structures which have incurred ’repetitive loss’ or ’substantial damage,’ regardless of the actual repair work performed.”

The section also defines “repetitive loss” as “flood-related damages sustained by a structure on two (2) separate occasions during a ten-year period for which the cost of repairs at the time of each such flood event, on the average, equals or exceeds twenty-five (25) percent of the market value of the structure before the damages occurred.”

Section 14-8 requires that new construction and substantial improvement of any residential structure must have the lowest floor elevated to or above the base flood elevation. Therefore, elevation as a mitigation measure is required by law for those buildings that were substantially damaged by Hurricane Katrina or considered repetitive losses from flooding.

After Hurricane Katrina struck, Parish and FEMA crews evaluated flooded buildings using FEMA software known as the Residential Substantial Damage Estimator. This work found three homes in the Metairie cluster that looked to be over 50% damaged. One has been demolished, and the other two are for sale.

The last flood that resulted in flood insurance claims occurred in May 1995 more than 10 years before Katrina. It is unlikely that any buildings that were not 50% damaged meet
the repetitive loss definition of two floods in 10 years that resulted in an average of 25% damage each time. Therefore, only the three homes mentioned above would be affected by the requirement to elevate or rebuild substantially damaged structures.

**Acquisition**

This measure involves buying one or more properties and clearing the site. If there is no building subject to flooding, there is no flood damage. Acquisitions are usually recommended where the flood hazard is so great or so frequent that it is not safe to leave the structure on site. SELA concluded acquiring and clearing whole areas of the Parish was not economically feasible.

An alternative to buying and clearing the whole subdivision is buying out individual, “worst case,” structures with FEMA funds. This approach would involve purchasing and clearing the lowest or the most severe repetitive loss homes. If FEMA funds are to be used, three requirements will apply:

1. The applicant for FEMA must demonstrate that the benefits exceed the costs, using FEMA’s benefit/cost software.
2. The owner must be a willing seller.
3. The parcel must be deeded to a public agency that agrees to maintain the lot and keep it forever as open space.

**Problems:** In addition to the high cost and the difficulty in obtaining a favorable benefit/cost ratio in shallow flooding areas, acquisitions disrupt communities and neighborhoods. Some of the problems include:

- The FEMA share is 75% of the market value of the property before it was flooded. The property owner makes up the difference. In effect, the owner only receives 75% of the value of the property.
- Not everyone wants to sell their home, so a checkerboard pattern of vacant and occupied lots often remains after a buyout project, leaving “holes” in the neighborhood.
- The community must still pay for maintaining the streets, water lines and other infrastructure to serve those who remain.
- The vacant lots must be maintained by the new owner agency, even though taxes are not paid on them. There currently are no public agencies in Jefferson Parish interested in converting improved property into vacant lands and being responsible for maintaining the various empty lots.

Because of these problems, Jefferson Parish has not supported the use of mitigation funds for acquiring and clearing properties for the last five years. There are other, less disruptive, approaches to mitigate repetitive, shallow, flooding.
Elevation

Raising the structure above the flood level is generally viewed as the best flood protection measure, short of removing the building from the floodplain. All damageable portions of the building and its contents are high and dry during a flood, which flows under the floor instead of into the house.

Cost: Most of the cost to elevate a building is in the setting up and foundation construction. The cost to elevate six feet is little more than the cost to go up two feet. Elevation is usually cost-effective for wood frame buildings on crawlspace because it is easiest to get lifting equipment under the floor and disruption to the habitable part of the house is minimal. However, all of the houses in this cluster are on slab, which are more expensive to elevate.

For planning purposes, Jefferson Parish uses $75 per square foot to estimate the cost of elevating a house on a slab foundation. Therefore, a house with a 1,000 square feet first floor would cost $75,000 to elevate above flood levels. The actual cost of elevating a particular building depends on factors such as its condition, whether it is masonry or brick faced, and if additions have been added on over time.

While the cost of elevating a home on a slab can be high, there are funding programs that can help. The usual arrangement is for a FEMA grant to pay 75% of the cost while the owner pays the other 25%. In the case of elevation, this could be as high as $25,000 or more. In some cases, assistance can be provided by Increased Cost of Compliance Funds, which is discussed on page 25.

Feasibility: Federal funding support for an elevation project requires a study that shows that the benefits of the project exceed the cost. The applicant for funds must show that the ratio of the benefits over the costs is greater than 1.0. While the SELA elevation and buyout evaluations are not available for the Metairie Cluster area (block 96), in all but one of the other areas, the ratio was below 1.0. For most of the areas near this cluster, the ratio was under 0.3.

Elevating a masonry home or a slab can cost up to $100,000, which means that benefit/cost ratios may be low. Looking at each property individually could result in funding for the worst case properties, i.e., those that are lowest, subject to the most frequent flooding, and in good enough condition to elevate.

One option is to elevate the homes that are below the post-SELA 100-year flood elevation to above the 100-year flood elevation. This would include 6 properties in the Metairie Cluster, all of which have slab foundations.

Understanding Elevations: In several places, this report refers to elevation above or below sea level. “Sea level” is a national base for measuring how high things are. Things get confusing in the Metairie Cluster area because inside the levees, the ground has subsided over time to a level below sea level.
Floodplain construction regulations are designed to protect new and substantially improved buildings from the base, or 100-year flood. They do this by requiring the lowest floor to be above the base flood elevation. The base flood elevation is abbreviated as “BFE” and is measured in feet above or below sea level, depending on the location.

In the example below, the first floor elevation is 2.94 feet below sea level.

Things are complicated by the fact that there are now two ways to measure sea level. The old way is called the National Geodetic Vertical Datum of 1929, or NGVD 29. More and more surveyors are using the new North American Vertical Datum of 1988, or NAVD. The base flood elevation of 3.7 feet below sea level is based on NGVD, but a surveyor may shoot a house’s elevation today using NAVD.

In the Metairie Cluster area, add 0.3 feet to NAVD to get the equivalent in NGVD. Therefore, if a house is surveyed at 3.8 feet below sea level NAVD, it is actually at 3.5 feet below sea level NGVD, above the base flood elevation.

**Reconstruction**

Because many communities share Jefferson Parish’s concerns with buyouts, FEMA has recently experimented with a different approach. Formerly called “demo/rebuild,” “Pilot Reconstruction Grants” can be used to demolish a flood prone house and replace it on site with a hazard resistant one that meets all current wind and flood code requirements.

Certain rules must be followed if the owner wants to qualify for Federal funds for a reconstruction project:
• Pursuing this option is only possible after a structural engineer concludes that it is not feasible to elevate the existing building.
• Funds are only available to people who owned the property before Hurricane Katrina.
• The new building must be elevated to one foot above the current base flood elevation or at least three feet above the highest existing adjacent grade, whichever is higher, in accordance with the advisory base flood elevation. Highest adjacent grade can be measured from either natural grade (where ground touches the bottom of slab) or from the centerline of the street.
• The new building must not exceed more than 10% of the old building’s square footage.
• The new building must meet all flood and wind protection codes.
• There must be a deed restriction that states the owner will buy and keep a flood insurance policy.
• It must be demonstrated that the benefits exceed the costs.
• The maximum Federal grant is 75% of the cost up to $150,000. FEMA is developing a detailed list of eligible costs to ensure that disaster funds are not used to upgrade homes.

Floodwalls

Small floodwalls could be constructed around one or more properties. Such barriers are not recommended for flood depths greater than 3 feet. Levees and berms are not appropriate for an urban neighborhood such as the Metairie Cluster, as there is not enough room to construct an earthen barrier. An earthen barrier needs 6 feet of ground space for each foot in height. Small floodwalls are more appropriate for an urban setting, but in most cases, there is not enough room on the lots for walls around a house due to limited space between the homes as observed in the Metairie Cluster.

These pictures illustrate the limited space between homes in the Metairie Cluster. There is not enough room for floodwalls to be constructed around each house.
Floodwalls require:

- A method to close openings, such as the garage door. Generally, this requires “human intervention,” meaning someone needs to be available and have enough time to take action.
- Relatively impervious soils to minimize seepage under the floodwall.
- A system to prevent sanitary sewer backup from flowing into the building.
- A system of drain tile (perforated pipes) that collects water that falls or seeps into the protected area and sends it to a collecting basin or “sump.”
- A sump pump to send the collected water outside the barrier.
- Power to operate the sump pump around the clock during a storm.

Cost: The cost of a local floodwall depends on the depth of flooding and the amount of engineering put into the design. Where flooding is only inches deep, almost any barrier of concrete or earth will work.

The longer the water stays up, the more likely it will seep through or under the wall, so the design must account for seepage and for rain water that falls inside the floodwall. Drain tile to collect this water and a sump pump to discharge it are necessary. Because power is likely to be lost during a storm, a generator is needed for a continuous supply of electricity.

The most conservative cost estimate for this report is based on a two foot high engineered cantilevered concrete floodwall. A cantilevered wall has a footing to provide stability and keep the water pressure from pushing it over.
The budget shown below is for a 40’ x 40’ home with a wall one foot outside the building wall. Labor accounts for about half the price in the cost estimate.

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two foot high reinforced concrete cantilever wall, 168 feet</td>
<td>$33,600</td>
</tr>
<tr>
<td>Internal drainage and sump pump system</td>
<td>5,000</td>
</tr>
<tr>
<td>Sewer backup valve</td>
<td>4,500</td>
</tr>
<tr>
<td>Generator for power outages</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$44,000</strong></td>
</tr>
</tbody>
</table>

It should be noted that smaller, non-engineered walls such as the one in the West Bank illustrated above have been built by their owners for less than $10,000.

**Feasibility:** Floodwalls are appropriate where flood depths are shallow and of relatively short duration. According to the information collected from Metairie Cluster residents, most had no more than three inches of water in their homes and the water stayed up for only a couple of hours for all events prior to Hurricane Katrina. These conditions are ideal for small floodwalls.

Because neither FEMA nor the Corps of Engineers fund individual floodwalls for residential properties, no formal benefit/cost analysis is required. However, each property owner can determine how much of their own labor they want to contribute and whether the cost of a wall is worth the protection from flooding that it provides.

**Dry floodproofing**

This measure keeps floodwaters out of a building. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags. Because it employs the building itself as part of the barrier to the passage of floodwaters, dry floodproofing is generally only recommended for buildings with slab foundations. Even if the building is in sound condition, tests by the Corps of Engineers have shown that dry floodproofing should not be used for depths greater than 3 feet over the floor – water pressure on the structure can collapse the walls and/or buckle the floor. There is usually no regulatory requirement to protect buildings up to the base flood elevation because the projects are less than substantial improvements.
A floodproofing project has three components:

- Make the walls watertight. This is easiest to do for masonry or brick faced walls, which can be covered with a sealant. Wood, vinyl, or metal siding needs plastic sheeting to make them watertight. The most effective approach is to apply a sealant and plastic sheeting and then cover the job with brick facing to protect the waterproofing from punctures.
- Provide closures for the openings, including doors, windows, dryer vents and weepholes.
- Account for sewer backup and other sources of water entering the building. For shallow flood levels, this can be done with a floor drain plug; although a valve system is more secure.
This dry floodproofed commercial building in Mandeville had the walls waterproofed and removable shields placed in the windows. While the measure worked for shallow flooding, the building was damaged by storm surge during Hurricane Katrina.

Not all of the building needs to be floodproofed. It is difficult to floodproof a garage door, for example, so many owners let the water in and waterproof the walls between the garage and the rest of the house. Appliances, electrical outlets, and other damage-prone materials can be elevated above the expected flood levels.

Floodproofing has the following shortcomings as a flood protection measure:

- It usually requires human intervention, i.e., someone must be home to close the openings.
- Its success depends on the building’s condition. It is very difficult to tell if there are cracks in the slab under the floor covering.
- Periodic maintenance is required to check for cracks in the walls and to ensure that the waterproofing compounds do not decompose.
- The NFIP insurance rate tables do not recognize dry floodproofing for residences.

Cost: The cost for a floodproofing project can vary according to the building’s construction and condition. It can range from $5,000 to $20,000, depending on how secure the owner wants to be. Owners can do some of the work by themselves, although an experienced contractor provides greater security.

Feasibility: As with floodwalls, floodproofing is appropriate where flood depths are shallow and are of relatively short duration. It can be an effective measure for the type of structures and flood conditions found in the Metairie Cluster. This could be a possibility for almost every home in the area as all are on slab foundations and most are brick structures that are subject to shallow flooding. It can also be more attractive than a floodwall around a house.

Because neither FEMA nor the Corps of Engineers fund floodproofing projects for residential properties, there is no requirement for a formal benefit/cost analysis. However, each property owner can determine how much of their own labor they want to
contribute and whether the cost and appearance of a project is worth the protection from flooding that it provides.

**Flood Insurance**

Although not a mitigation measure that reduces property damage from a flood, a National Flood Insurance Program policy has the following advantages:

- A flood insurance policy covers surface flooding from the overflow of inland or tidal waters or from stormwater runoff.
- It is an excellent “backup” for a floodwall or elevation project where the flood is higher than the protection level.
- The repetitive, shallow, flooding is unlikely to reach conditions severe enough for a disaster declaration. Therefore, flood insurance may be the only source of assistance to help owners of damaged property pay for cleanup and repairs.
- There is usually a 30-day waiting period before the flood insurance policy goes into effect. Once in effect there is no need for human intervention.
- Coverage is available for the contents of a home as well as for the structure.
- Renters can buy contents coverage, even if the building owner does not buy coverage for the structure itself.

**Cost:** The table to the right shows the rates for a policy with $150,000 coverage on the building. Homes constructed in Jefferson Parish before January 1, 1975 are “pre-FIRM” buildings and are eligible for the “subsidized” flood insurance premium rates.

The table shows that a post-FIRM building, such as one built or substantially improved in 1988, is subject to actuarial rates.

If a pre-FIRM house was elevated, it would be able to take advantage of the much lower post-FIRM rates. It should be noted that the rates are based on the elevation of the lowest floor.

**Drainage Improvements**

Stormwater runoff flows to the lowest areas, which in the Metairie Cluster neighborhood are the streets. The water drains into storm sewers through inlets in the streets, which carry the water to the canals. The water will back up in the streets:

- If there are not enough storm sewer inlets,
- If the storm sewers or the inlets are clogged with debris or trash,

<table>
<thead>
<tr>
<th>Example NFIP Flood Insurance Premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy/Building Exposure</strong></td>
</tr>
<tr>
<td>Pre-FIRM (“subsidized”) rate</td>
</tr>
<tr>
<td>Post-FIRM (actuarial) rates</td>
</tr>
<tr>
<td>2 feet above BFE</td>
</tr>
<tr>
<td>1 foot above BFE</td>
</tr>
<tr>
<td>At BFE</td>
</tr>
<tr>
<td>1 foot below BFE</td>
</tr>
</tbody>
</table>

Annual premium is for $150,000 in building coverage and $60,000 in contents coverage for a one-story house with no basement and a $500 deductible.

October 1, 2006, Flood Insurance Agent’s Manual
If the sewers are overloaded by very heavy rains,
Or if the canals are full and the water has nowhere else to go,
If the pump stations stopped running.

If the water in the streets backs up far enough, it will reach the walls of the homes. The drainage system can be improved by addressing one or more of these five problems. The Parish, with support from the US Army Corps of Engineers, has worked on all five of them.

**SELA:** The Southeast Louisiana Urban Flood Control Project (SELA) was authorized by Congress after the May 1995 flood in Orleans, Jefferson, and St. Tammany Parishes. It is specifically charged with dealing with rainfall flooding, such as the type of flooding faced in the Metairie Cluster.

Since the first stage of SELA canal and pumping improvements were completed in 2000, flooding caused by rainwater has been reduced. A map of the SELA projects for the East Bank is shown on the following page. Item #4 on the map illustrates the location of the drainage improvements made along the Suburban Canal. Item #5 is the location of pump station #2. Both are completed as of 2005, and both directly affect the Metairie Cluster area.
The hydraulic analysis performed in the Parish by the Corps of Engineers shows that the projects will lower the expected 1995 FIS 100-year flood level from –3.7 to the post-SELA 100-year flood elevation of –5.20 in the Metairie Cluster area. Pre-SELA, 48 of the 59 properties were below the 100-year flood level and were more subject to repetitive flooding. With post-SELA elevations, only 6 of the 59 properties in the Metairie Cluster are below the 100-year flood level. It can be concluded that the SELA projects have improved the drainage problems for the Metairie Cluster.

**Drainage Maintenance:** Even if the drainage system were large enough to collect and convey storm flows, it will not perform to its capacity if trash and debris are allowed to clog storm sewer inlets, the sewer lines, or the canals. The Parish has a drainage maintenance program that has been held up as a national example in a FEMA Community Rating System publication.
The Parish’s program can identify and remove obstructions in the sewers and canals. However, it would be more effective if it were supported by more frequent inspections by residents. An “adopt an inlet” type of program can make an inspector of every resident adjacent to a storm sewer inlet. If they find leaves, grass clippings, trash or similar debris, they can remove the problem to ensure that the inlet will work during the next storm. If they find bigger problems, such as broken pipes, they can report them to the Parish’s Department of Drainage.

**Pump Stations:** Providing safe houses for pump operators will allow the pumps to remain operational far longer prior to the onset of the storm event; and, resume operation immediately following the storm. An engineer from the Jefferson Parish Office of Capitol Projects confirmed the construction of safe houses at the east bank pumping stations were completed in September and are now operational.

**Yard Drainage Improvements**

Two residents reported that during a storm they get flooded from the back yard or the neighbor’s yard, not from the street. Water flows to, or collects next to, the house’s walls and does not drain to the street quickly enough. The result is very shallow water, usually less than 1 or 2 inches, sometimes only in one or two rooms. Improvements to yard drainage can remedy this problem. Inlets and underground pipes can be installed. Several property owners from a community on the West Bank have constructed such projects on their own as illustrated below.

This project was constructed after yard flooding got into this West Bank house in May 1996. The owner ran perforated plastic drainage pipe around his patio in the back yard. Inlets collect water in the yard and from the downsputs. The drain pipes run to a solid plastic pipe that goes around the house and collects water from a similar pipe installed by the neighbor.

Water is then carried by the common pipe to the street. The owner reports that since it was built, the project has kept his yard and patio drier and has kept back yard runoff from flooding the house. It is not designed to protect from street flooding (the house received two inches of water from the street in the May 1978 storm).
Funding

Corps of Engineers: The US Army Corps of Engineers funds flood control projects that are shown to have a favorable benefit/cost ratio and where a local sponsor agrees to participate. The SELA projects described on page 5 are funded by the Corps, pending annual Congressional appropriations. The Parish is the local sponsor and has agreed to contribute its share.

Corps funds are not used on an individual property basis. The SELA studies concluded that large scale buyout or elevation projects do not have the needed benefit/cost ratio.

FEMA Programs: Most of the FEMA programs provide 75% of the cost of a project. The owner is expected to fund the other 25%. Each program has different Congressional authorization and slightly different rules. For example, some are not allowed to fund reconstruction projects.

The most active program currently is the Hazard Mitigation Grant Program. Jefferson Parish has focused on mitigating severe repetitive loss properties and is offering two mitigation measures: elevation and reconstruction. The Jefferson Parish Office of Emergency Management is currently collecting the applications from interested property owners.

Flood Insurance: There is a special funding provision in the NFIP for insured buildings that have been substantially damaged by a flood, “Increased Cost of Compliance.” ICC coverage pays for the cost to comply with floodplain management regulations after a flood if the building has been declared substantially damaged. ICC will pay up to $30,000 to help cover elevation, relocation, demolition, and (for nonresidential buildings) floodproofing. It can also be used to help pay the 25% owner’s share of a FEMA funded mitigation project.

The building’s flood insurance policy must have been in effect during the flood. This payment is in addition to the damage claim payment that would be made under the regular policy coverage, as long as the total claim does not exceed $250,000. Claims must be accompanied by a substantial or repetitive damage determination made by the local floodplain administrator. For more information, contact the Office of Emergency Management (see box).

Louisiana Recovery Authority: LRA grants of up to $30,000 can be used to help elevate a house, even if it was not substantially damaged. A separate program provides up to $7,500 for “individual mitigation measures,” including installing a backflow valve and elevating utilities such as an air conditioning unit, washer, dryer, water heater, furnace, or electrical panel.

Jefferson Parish Contact Information

Tom Rodrigue, CFM
Floodplain Manager
Office of Emergency Management
187 Ames Blvd.
Marrero, LA 70072
(504) 349-5360
torodrigue@jeffparish.net
In order to be eligible for LRA money, a homeowner must have owned and occupied the home as a primary residence prior to August 29, 2005 if affected by Hurricane Katrina, or September 24, 2005 if affected by Hurricane Rita. The homeowner must have registered with FEMA and have had FEMA categorize the home as ‘destroyed’, having suffered ‘major’, or ‘severe’ damage. The home must be a single or double unit structure.

Homeowners who were required to carry flood or hazard insurance but chose not to are eligible; however, they will incur a 30% penalty. To apply for these funds, individuals first have to register with the Louisiana Recovery Authority, and then fill out an application. More information on applications can be found at www.Road2LA.org or by calling 1-888-ROAD-2LA (1-888-762-3252).

**Parish Funds:** Jefferson Parish has funds for drainage improvements and has expended millions on such projects throughout the Parish. The Parish does not have a budget for nonstructural projects. To date, including Hurricanes Katrina and Rita, all FEMA funded elevation projects have been funded 75% by FEMA and 25% by the property owner.

**Rebates:** A rebate is a cost shared grant, usually given to a property owner *after* a project has been completed. It has the advantages of a low public cost share and simplicity. Many communities favor it because the owner handles all the design details, contracting, and payments before the community makes a full commitment.

Community cost shares for mitigation project rebates have been as low as 20% and as high as 50%. Rebates leverage public funds. For example, for every public dollar spent in a program with a 25% rebate, the property owner pays three dollars toward the flood protection project.

The administrative simplicity is due to the typical operation: the owner ensures in advance that the project meets all of the program’s criteria, gets the project approved by the community, has the project constructed, and then goes to the community for the rebate after the completed project passes inspection.

Rebates have been most successful where the cost of the project is relatively small, e.g., under $5,000 such as a small floodwall or yard drainage improvement. The owner can afford to finance the bulk of the cost and the rebate acts more as an incentive than as needed financial support.

There is currently no rebate program in Jefferson Parish.

**Coordination**

There are several different agencies and organizations that can participate in a flood mitigation project for the area. The following were contacted by the UNO-CHART team:
• The staff of the Jefferson Parish Department of Emergency Management was contacted to discuss the project and their mitigation experiences.
• Jefferson Parish Drainage Department
• Jefferson Parish Department of Capital Improvements
• The US Army Corps of Engineers, New Orleans District, was contacted to discern the status of SELA projects in the area
• FEMA was contacted about its latest grant program rules.

Findings

In sum, properties in the Metairie cluster area are subject to two types of flooding: shallow repetitive drainage problems and deeper flooding from pump station or levee failure or overtopping. There are different approaches that can mitigate damage from these kinds of flooding.

Due to the drainage improvements by the parish and SELA, claims and reports of flooding have been greatly reduced since 1995. There are three hazards that remain: local drainage problems, the possibility of pump station failures, and overtopping of the levees. The drainage improvement projects will not prevent the deeper flooding from pump station or levee failure, nor can they be expected to be foolproof- the storm sewers may become clogged or the pumps may fail to operate.

The report reviews several different nonstructural mitigation alternatives. Each has advantages and disadvantages which are listed in the table on the following page. Elevation of the structure or reconstruction are the only options if the building is substantially damaged. Barriers and dry floodproofing can be effective against shallow flooding, but the lots in this area are too small for the former.
### Summary of the Alternative Mitigation Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>100% flood protection</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share&lt;br&gt;Need interested public agency to take over the land</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td>More secure flood protection&lt;br&gt;Flood insurance rate reduction</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction</td>
<td>New home is hazard resistant&lt;br&gt;Flood insurance rate reduction</td>
<td>High cost&lt;br&gt;Need source of non-FEMA cost share</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floodwalls</td>
<td>Effective for shallow flooding</td>
<td>No room between buildings&lt;br&gt;Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry floodproofing</td>
<td>Low cost&lt;br&gt;Effective for shallow flooding on slab foundations</td>
<td>Exposes homes to wall/floor damage&lt;br&gt;Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood insurance</td>
<td>Always in effect&lt;br&gt;Works for all flood levels&lt;br&gt;Under ICC, can be a source of funds for buyout or elevation</td>
<td>Does not prevent flood damage (but does provide funds for repairs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage Improvements</td>
<td>Protects yards and streets as well as buildings&lt;br&gt;Recent projects appear to have had a positive impact</td>
<td>High cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard Improvements</td>
<td>Low cost</td>
<td>Does not protect from street flooding</td>
</tr>
</tbody>
</table>

### Recommendations

1. Property owners should review the alternative mitigation measures discussed in this analysis and implement those that are most appropriate for their situations.

2. For local drainage problems, dry floodproofing and yard improvements are the prime protection measures recommended for shallow yard and street drainage problems.
3. Because no mitigation measure is guaranteed and there is always a threat of pump station failure or levee overtopping, property owners should obtain and keep a flood insurance policy on their homes.

4. Property owners required or interested in elevating or reconstruction should apply for the Louisiana Recovery Authority (LRA) for additional funding for mitigation projects.

5. The Parish should establish an office to provide technical assistance to property owners interested in pursuing a flood protection project on their own.

6. The Parish should explore with FEMA the possibility of establishing a rebate program. While not eligible under current FEMA policies, a rebate of 25% that encourages inexpensive measures such as yard drainage improvements and floodproofing may be more cost effective than the traditional FEMA funded approaches of acquisitions and elevation. As the number one repetitive loss community in the country, Jefferson Parish should explore alternative financing methods to support alternative flood mitigation projects. FEMA funding programs should be flexible enough to assist the Parish to do this.

References

- *CRS Coordinator’s Manual*, FEMA, 2006
- Floodhelp.uno.edu
- *Jefferson Parish Natural Hazards Mitigation Plan*, 2005
- *Protecting Building Utilities From Flood Damage*, FEMA-348, 2000
Appendix A
Letter to the Residents

JEFFERSON PARISH
LOUISIANA
DEPARTMENT OF EMERGENCY MANAGEMENT

July 17, 2006

Jefferson Parish Resident

Re: Jefferson Parish Repetitive Flooding Project

Dear Jefferson Parish Resident:

The Jefferson Parish Department of Emergency Management is reviewing ways to reduce some of our repetitive flooding problems. Your property address is located in an area that has tentatively been designated as a target “Repetitive” flood area.

As part of this project, a team from the University of New Orleans’ Center for Hazards Assessment, Response and technology (CHART) is preparing an “area analysis for the target area. Information specific to your property needs to be collected in order to determine what can be done to protect homes in the area from future flooding. UNO/CHART staff will be in the area in the near future, collecting general information from the street, such as the type of foundation and walls for each home. They will not need to go into your home, but they may need to walk around it and go to the front door to survey the elevation of the first floor.

This work would be greatly improved with additional data that you might be able to provide. Attached is a data sheet that we hope you will complete and return by July 31, 2006. After you fill the form out, please fold it up, tape it, and mail to the address on the flip side. A stamp has been provided for your use. After the analysis is completed, some preliminary recommendations will be developed. Later in the summer, we will invite you to a meeting with us and the UNO/CHART team to review the findings.

If you have any questions about this project, please contact Alessandra Jerollemen, UNO/CHART, at (504) 914-6648 or the Jefferson Parish Department of Emergency Management at (504) 349-5360. Thank you for your assistance in helping us to complete this project.

Sincerely,

Deano Bonano
Deputy CAA for Emergency Operations

Attachment
Appendix B
Jefferson Parish Repetitive Flooding Analysis
Flood Protection Data Sheet

Name: ____________________________________________________

Property address: <<address>> <<street>>, Metairie 70002

1. In what year did you move into the home at this address? ____________

2. What type of foundation does your house have? □ Slab □ Crawlspace □ Raised basement

3. Has the property ever been flooded or had a water problem? □ Yes □ No (if “no,” please complete items 8 – 11)

4. In what year(s) did it flood? ____________________________________________

5. What was the deepest that the water got?
   □ Over first floor: ___________ deep
   □ In yard only: ___________ deep
   □ Water kept out of house or building by sandbagging or other protective measure

6. What was the longest time that the water stayed up in the house? ___ hours or ___ days

7. What do you feel was the cause of your flooding? Check all that affect your building.
   □ Overbank flooding from nearby canal
   □ Clogged/undersized drainage ditch or canal
   □ Undersized pump station
   □ Failure or power outage at pump station
   □ Drainage from nearby properties
   □ Storm sewer backup
   □ Sanitary sewer backup
   □ High water in Lake Pontchartrain
   □ Standing water next to house
   □ Other: __________________________

8. Have you taken any flood protection measures on your property?
   □ Moved utilities/contents to a higher level
   □ Regraded yard to keep water away from building
   □ Installed drains or pipes to improved drainage
   □ Sandbagged when water threatened
   □ Elevated all or parts of the building
   □ Waterproofed the outside walls
   □ Built a wall to keep water away
   □ Other: __________________________

9. Did any of the measures checked in item 8 work? If so, which ones? If not, do you know why they didn’t work?

10. Do you have Flood Insurance? □ Yes □ No

11. Are you interested in pursuing measures to protect the property from flooding?
   □ Yes □ No   If yes, please include your full mailing address.

   ~ Please return this data sheet by July 3
# Appendix C
## Mitigation Funding

<table>
<thead>
<tr>
<th>Who is the money for</th>
<th>Hazard Mitigation Grant Program (HMGP)</th>
<th>Flood mitigation Assistance (FMA)</th>
<th>Pre-Disaster Mitigation (PDM)</th>
<th>Repetitive Flood Claims (RFC)</th>
<th>Severe Repetitive Loss (SRL)</th>
<th>Louisiana Recovery Authority (LRA)</th>
<th>Increased Cost of Compliance (ICC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners of severe repetitive loss properties currently insured under the NFIP</td>
<td>NFIP policy holders</td>
<td>NFIP policy holders</td>
<td>NFIP policy holders with at least one flood claim</td>
<td>Owners of severe repetitive loss properties currently insured by the NFIP</td>
<td>All Louisiana homeowners affected by hurricanes Katrina or Rita</td>
<td>All NFIP policy holders with the ICC rider</td>
<td></td>
</tr>
<tr>
<td>Type of projects</td>
<td>(1) voluntary acquisition (2) relocation of the structure (3) elevation (4) reconstruction (5) Constructing certain types of non residential structures</td>
<td>(1) voluntary acquisition* (2) demolition* (3) relocation of structure* (4) elevation and (5) dry flood proofing non residential structures</td>
<td>(1) voluntary acquisition* (2) relocation of structure* (3) structural and non structural retrofitting</td>
<td>(1) voluntary acquisition* (2) demolition* (3) relocation of the structure* (4) elevation and (5) floodproofing</td>
<td>(1) voluntary acquisition (2) demolition* (3) relocation of the structure* (4) elevation (5) floodproofing (6) minor physical localized flood control projects (7) reconstruction</td>
<td>Individual mitigation Measures: (1) window protection (2) Hurricane straps and clips (3) bolt walls to foundation (4) install backflow valve (5) elevate utilities Elevation funding (1) elevation (2) raised basement conversion</td>
<td>Projects that will bring a substantially damaged home into current code compliance</td>
</tr>
<tr>
<td>Maximum amount available per household</td>
<td>For elevation: no maximum; for reconstruction: $150,000 (Post-Katrina only)</td>
<td>Contact the State</td>
<td>Contact the State</td>
<td>Contact the State</td>
<td>Contact the State</td>
<td>$7500 for individual mitigation measures; $30,000 for elevation projects</td>
<td>$30,000</td>
</tr>
<tr>
<td>how much the homeowner has to pay</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>0%</td>
<td>25%</td>
<td>depends on the project**</td>
<td>0%</td>
</tr>
<tr>
<td>How does the homeowner apply</td>
<td>Contact the City/Parish</td>
<td>Contact the City/Parish</td>
<td>Contact the City/Parish</td>
<td>Contact the City/Parish</td>
<td>Contact the City/Parish</td>
<td>Contact LRA</td>
<td>Contact Flood Insurance underwriter</td>
</tr>
</tbody>
</table>

* The lot must be deed restricted as open space

** If the project costs more than the allotted amount, then the homeowner must pay the remainder of the total project cost.