Repetitive Loss Area Analysis #11

City of New Orleans, Louisiana
Pines Village Area

August 17, 2010
University of New Orleans
Center for Hazards Assessment, Response and Technology

www.floodhelp.uno.edu

SUPPORTED BY FEMA
## Table of Contents

Background .................................................................................................................................................. 5
Preliminary Step: Select the Area .................................................................................................................. 9
Step 1: Neighborhood Notification ............................................................................................................ 9
Step 2: Data Collection ................................................................................................................................ 9
  1. Community Plans/Studies ...................................................................................................................... 10
  2. Flood Insurance Data .......................................................................................................................... 11
  3. Drainage Information ............................................................................................................................ 14
  4. Flooding Experiences of Property Owners ........................................................................................... 18
  5. On-Site Data Collection ...................................................................................................................... 18
Problem Statement ..................................................................................................................................... 19
Step 3: Mitigation Measures ...................................................................................................................... 19
  I. Drainage Improvements ....................................................................................................................... 20
  II. Acquisition .......................................................................................................................................... 20
  III. Elevation ............................................................................................................................................ 21
  IV. Mitigation Reconstruction .................................................................................................................. 22
  V. Barriers to Floodwaters ...................................................................................................................... 23
  VI. Dry Floodproofing ............................................................................................................................. 25
  VII. Flood Insurance ................................................................................................................................ 28
  VIII. Funding for Mitigation Projects ...................................................................................................... 29
Step 4: Coordination .................................................................................................................................. 31
Step 5: Findings .......................................................................................................................................... 32
  I. Findings ................................................................................................................................................ 32
  II. Mitigation Actions Available to the Area .............................................................................................. 33
List of Figures

Figure 1: Pines Village Neighborhood .................................................................6
Figure 2: Pines Village Study Area .................................................................7
Figure 3: Pines Village FIRM .................................................................12
Figure 4: Existing Conditions .................................................................15
Figure 5: Pines Village drainage features .................................................................16
Figure 6: A typical Pines Village house .................................................................18
Figure 7: A cleared lot in the study area .................................................................21
Figure 8: A slab home that has been elevated .................................................................21
Figure 9: An example of a floodwall around a home .................................................................23
Figure 10: An example of a floodwall with a sump pump .................................................................23
Figure 11: Soils map for the study area .................................................................24
Figure 12: An example of a dry floodproofed house .................................................................26
Figure 13: An example of dry floodproofing .................................................................27
Figure 14: An example of a closing for a door on a dry floodproofed house .................................................................27
Figure 15: A business that has dry floodproofed their windows .................................................................27
Figure 16: An example of a home that has dry floodproofed the windows .................................................................27

List of Tables

Table 1: Claims data for the study area .................................................................14
Table 2: Dwyer Road Canal flood stage impacts .................................................................17
Table 3: Floodwall cost estimate .................................................................25
Table 4: Example NFIP Flood Insurance Premiums .................................................................28
Table 5: Summary of the Alternative Mitigation Measures .................................................................33
Terminology

**100-year Flood:** it is the flood elevation that has a one percent (1%) chance of being equaled or exceeded each year

**Area Analysis:** An approach to identify repeatedly flooded areas, evaluate mitigation approaches, and determine the most appropriate alternatives to reduce future repeated flood losses.

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

**UNO-CHART:** Center for Hazards Assessment, Response and Technology at the University of New Orleans

**FEMA:** Federal Emergency Management Agency

**FIRM:** Flood Insurance Rate Map

**Floodway:** The channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights.

**Freeboard:** A factor of safety usually expressed in feet above the Base Flood Elevation (BFE) for purposes of floodplain management.

**GIS:** Geographic Information Systems

**Hazard Mitigation:** Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.

**ICC:** Increased Cost of Compliance, a $30,000 rider on flood insurance policies for policy holders located in the special flood hazard area that can be used to bring the structure into compliance in the event that it is substantially damaged by a flood.

**NFIP:** National Flood Insurance Program

**Repetitive Flood Loss (RL):** 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.

**Severe Repetitive Flood Loss Properties (SRL):** 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 two claims that cumulatively exceed the reported building’s value. Under either qualification criteria, two of the claims must be in any rolling 10-yr period and be at least 10 days apart. The Act creates new funding mechanisms to help mitigate flood damage for these properties.

**Substantial Improvement:** The repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure either, (1) before the improvement or repair is started, or (2) if the structure has been damaged and is being restored, before the damage occurred.
Acknowledgements:

The compilation of this report was managed by Iman Adeinat, a CHART Graduate Research Assistant and Doctoral Student in Engineering Management; and Erin Patton, CFM, a CHART Research Associate. Contributing to this report were Norma Jean Mattei, Ph.D., PE, a UNO Engineering Professor; Brad Case, CFM, City of New Orleans’ Office of Homeland Security and Emergency Preparedness and Madaline Trepagnier, president of the Pines Village Homeowner Association.

For more information on this report please contact:

**Erin K Patton, CFM**
Research Associate, UNO-CHART
504-280-1404
ekpatton@uno.edu
Flooding is a problem far too familiar to many neighborhoods across the United States. Enduring the consequences of flooding over and over again can be quite frustrating. When the water rises, life is disrupted, belongings are ruined, and hard-earned money is spent.

This report has been created in collaboration with officials from the City/Parish of New Orleans, and the owners of homes in the repeatedly flooded Pines Village area who have continually suffered the personal losses and stresses associated with living in a flood-prone house. The goal is to help homeowners reduce their flood risk by providing a broader understanding of the flooding problems in their neighborhood, and the potential solutions to the continual suffering that results from repetitive flooding. The availability of possible funding sources for certain mitigation options is also discussed.

Here, flooding issues and potential mitigation measures are discussed for homes located along both sides of Pines Blvd. in New Orleans, LA. Not all mitigation measures are appropriate for all homes. However, because the homes in this study are quite homogeneous the mitigation recommendations in this report are applicable to homes in other neighborhoods throughout Pines Village area with similar flooding experiences.

It is understood that there are many stresses associated with repetitive flooding including worry about how high the water may rise, the loss of personal belongings, the possibility of mold, and whether or not neighbors will return after the next event. Adding to this worry is the uncertainty related to the potential solutions. Should I elevate and if so, how high? How much will a mitigation project cost? What will my neighborhood look like if I am the only one to mitigate, or the only one not to mitigate? Is there a solution that might work for the entire neighborhood? These questions are common, and this report attempts to answer them according to the specific situation faced by homeowners in the Pines Village area. Informed homeowners can become even stronger advocates for policy change at the neighborhood, city/parish, state and even federal levels. Overall, it is hoped that by gaining a better understanding of the flooding issues, neighborhoods can become safer and homeowners better able to confront the hazard of flooding.

Background

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 flood loss properties, which are estimated to cost $200 million per year in flood insurance claim payments. Repetitive flood loss properties represent only 1.4% of all flood insurance policies, yet historically they have accounted for nearly one-third of the claim payments (over $9 billion to date). Mitigating these repeatedly flooded properties will reduce the
overall costs to the NFIP, the communities in which they are located, and the individual homeowners. Ultimately, mitigating repeatedly flooded properties benefits everyone.

The University of New Orleans’ Center for Hazards Assessment, Response and Technology (UNO-CHART) receives funding from FEMA to collate data and analyze the repetitive flood loss areas in Louisiana and Texas in conjunction with local governments, elected officials, residents, and neighborhood associations. Using a geographic information system (GIS) and geo-coded flood insurance claims data, repeatedly flooded areas and properties are being prioritized for attention and analysis. In selected locations where repetitive flooding is a problem, UNO-CHART works with local officials and residents to conduct in-depth analyses of the causes and possible solutions to the flooding problem. These efforts are called “Area Analyses.”

UNO-CHART has conducted such an “area analysis” case study in the Pines Village neighborhood of the City of New Orleans, LA (see Figures 1 and 2 for maps of the area).

The Area: The Pines Village area is an urban neighborhood, developed in the 1970s and 80s. It is located in eastern New Orleans, east of the Industrial Canal and is bordered roughly by Dorothea St, Foch Rd., S. Laverne St. and Dorian St. The analysis area and surrounding neighborhood are illustrated in Figures 1 and 2.
This area was chosen for analysis for several reasons. First, there are many repetitive loss (RL)\(^1\) properties in the neighborhood. The high number of repetitive loss properties indicates that this area has been subject to repeated and heavy flooding for many years. Second, local and elected officials agreed that this area has a flooding problem that needs attention. Third, the residents of the neighborhood are active members of their community and were willing to participate in this study.

The Pines Village analysis area consists of 116 lots with 105 existing structures and is 100% residential. One hundred of the houses (95%) are built on a concrete slab, while the remaining 16 are built on piers/piles or a chain wall. All but four houses (96%) are single story homes. There are 29 properties that appear on FEMA’s Repetitive Loss (RL) list in the study area (25% of the total number of lots). Nineteen of these (16%) are on FEMA’s Severe Repetitive Loss (SRL)

\(^1\) Repetitive Flood Loss (RL): 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.
The high number of repetitive loss properties in this area indicates a flooding problem. The study area has flooded several times since 1978, which is when FEMA started to track flood claims across the country. Most of the flood events were due to heavy rain storms; however, the heavy rains of May 1995\(^3\) and Hurricanes Katrina and Rita in 2005 also caused extensive flooding in the area.

**Process:** Generally, an area analysis follows a FEMA-prescribed five step process. However, the UNO-CHART Team has enhanced the five-step process by adding two additional steps: a preliminary comprehensive area selection step and an ongoing collaborative relationship with the neighborhood after the report is presented to the stakeholders. During the area selection process information, about the area is reviewed including the repetitive flood loss claims data as well as other relevant information about the neighborhood such as the flooding history, and the interest of the residents in learning more about flood mitigation. This is done through a collaborative effort with FEMA, local officials and residents.

Once a neighborhood is selected, a smaller subset of properties within the neighborhood is selected as the analysis area based on the previously stated criteria, although the goal is to engage the entire neighborhood. Once the report and meetings are complete, the ongoing collaborative relationship is offered to the selected community. UNO-CHART will continually be available to provide homeowners with information concerning mitigation measures, policy issues, or other flooding related matters as requested; and, if funding allows, a ‘follow-up’ with the community will be conducted after a period of time has passed.

**Summary of Steps:**

*Selecting the Area:* Potential analysis areas are discussed and reviewed in collaboration with local officials and residents using criteria that would suggest the need for risk reduction and the prospect for the effort being effective.

**Step 1:** Advise all the property owners in the repeatedly flooded area that the analysis will be conducted.

**Step 2:** Collect data on the analysis area and each building in the identified study area within the neighborhood to determine the cause(s) of the repetitive damage.

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

---

2 Severe Repetitive Flood Loss Properties (SRL): 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 two claims that cumulatively exceed the reported building’s value. The Act creates new funding mechanisms to help mitigate flood damage for these properties.

3 Disaster Declaration 1049 was declared on May 10, 1995 for Severe Storms and Flooding. More information can be found on FEMA at: [http://www.fema.gov/news/event.fema?id=2250](http://www.fema.gov/news/event.fema?id=2250)
**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 information gathered from agencies and organizations, and relevant maps of the analysis area.

**Ongoing Collaboration with the Neighborhood:** UNO-CHART offers an ongoing relationship with the community to provide information about flooding issues as needed, and possibly a “follow-up” visit to be conducted after a period of time has passed. The reasoning for the follow up is to encourage and support efforts to reduce flooding risk that might be initiated as a result of the initial area analysis effort.

**Preliminary Step: Select the Area**

In November 2009, after a careful review of the locations of repetitive flood loss properties throughout the State of Louisiana, a team from UNO-CHART visited the City of New Orleans and met with several local officials. These local officials demonstrated their concern for the flooding problem in the Pines Village neighborhood. UNO-CHART also met with Madaline Trepagnier, the President of the Pines Village Homeowner’s Association in January 2010. With her assistance, a final study area was decided upon, and a better understanding of the flooding issues in the area was gained. It was determined at that time that because of the local commitment to floodplain management and the number of repetitive flood loss properties, the Pines Village neighborhood would be a good site for an area analysis.

**Step 1: Neighborhood Notification**

The first step of the FEMA five-step process is to advise the neighborhood about the project. On March 19, 2010, the City of New Orleans Office of Homeland Security and Emergency Preparedness sent a notice to the homeowners introducing them to the project, and informing them that researchers from UNO-CHART would be collecting data about their neighborhood. The letter included a data sheet to be completed by the homeowners. Copies of the letter and data sheet appear in Appendices C and D of this report.

**Step 2: Data Collection**

The second step in the process was the collection of relevant data on the problem (i.e., the properties exposed to flooding and cause(s) of the repetitive damage). The data were collected through coordinating with several agencies and departments. (For a list of these stakeholders, see Step 4 of this report.) There were five primary sources of data and information:

1. Community Plans/Studies
2. Flood insurance data
3. Drainage information
4. Flooding experiences of property owners
5. On-site data collection

1. Community Plans/Studies

The UNO-CHART Team has collected and reviewed the following reports:
A. Orleans Parish Hazard Mitigation Plan, December 2005
B. Unified New Orleans Plan, January 2007
C. City of New Orleans Code of Ordinances, July 2008

A. Orleans Parish Hazard Mitigation Plan: The Orleans Parish Hazard Mitigation Plan covers flooding in Section 3 (Risk Assessment) under the ‘Floods’ and ‘Levee Failure’ Categories. Section 5 (Mitigation Actions and Plan) identifies several activities focused on flood prevention. The Plan, while not mentioning Pines Village specifically, notes that 69% of New Orleans’ structures fall within the 100-year floodplain, and offers a brief explanation of New Orleans flooding problem: New Orleans is flat and low, and ranks second in the nation for repeated flooding.

The plan lists four broad mitigation goals that are intended to assist communities in developing community-level goals over time.

1. Identifying and pursuing preventative measures,
2. Enhancing public awareness and understanding of preparedness,
3. Ensuring first responders and their facilities remain operational, and
4. The promotion of regional cooperation between parishes with regard to mitigation measures.

B. Unified New Orleans Plan (UNOP): There are two UNOP plans that are relevant to Pines Village residents: the City-wide Plan and the Planning District 9 Plan.

The City-wide version of the UNOP is less detailed as it covers a much larger area than the District 9 Plan. The concern about flooding in Pines Village is mentioned once in the text of the UNOP city-wide plan, in section 2.4.1.52 titled Current and Future Risk of Flooding. The Plan lists the planned improvements for the whole drainage basin in which Pines Village is located

- 2006. All storm damaged levees repaired (completed).
- 2007. Levees will be raised to authorized height by September 2007.
- 2010. Levee heights expected to be increased by 2 to 8 feet to meet 100-year flood requirements by 2010.

---

4 The Orleans Parish Hazard Mitigation Plan is currently being updated. For more information on the updates and the plan itself, please visit: http://www.neworleansmitigation.com/
• 2010+. The US Army Corps of Engineers is to develop alternative scenarios for protecting the City of New Orleans and all of coastal Louisiana from storms greater than the 100-year storm and present them to Congress by December 2007. These projects, currently undefined, will likely be components of the Louisiana Coastal Restoration Program and may take decades to implement.

The District 9 Plan includes more detailed information about the Pines Village neighborhood. This Plan offers insight into how residents would like to see their neighborhood recover following Hurricane Katrina. Flood protection initiatives desired by residents include:

• Conduct Detailed Flood Mitigation Study
• Conduct Secondary Internal Levee Flood Protection Study
• Improve existing pumping capacity to a minimum of Category 3 status – raise and rehabilitate pumping stations; construct new pump station at Dwyer Road

Infrastructure and public works initiatives desired by residents include:

• Construct drainage improvements in impacted areas such as Morrison and Dwyer Roads – cover canals to provide more amenity value; add sidewalks and bike paths
• Repair drainage structures, piping and catch basins as needed; clean canals as needed
• Implement sewer, water, gas, electric, data & telephone restoration as needed in District – underground utilities

Addressing flooding at a regional scale was proposed as the most critical component to any recovery scenario, and is also recognized by the UNOP City-wide Plan.

C. City of New Orleans Flood Damage Prevention Ordinance: The City of New Orleans’ Flood Damage Prevention Ordinance prescribes minimum elevation requirements for all areas of the city. The ordinances state that for new construction or substantially improved structures, the lowest floor shall meet the higher of either the advisory base flood elevations (ABFE) or the existing base flood elevation (BFE).

Substantially improved structures are those which have undergone repair or renovations that meet or exceed fifty percent (50%) of the total market value of the structure. Therefore, elevation as a mitigation measure is required by law for those buildings that were substantially damaged by Hurricanes Katrina or Rita or any other cause. Advisory base flood elevations and base flood elevations are discussed in more detail in the next section of this report.

2. Flood Insurance Data

A. 1984 Flood Insurance Rate Map (FIRM): A Flood Insurance Rate Map (FIRM), published by FEMA, shows potential flood risk according to zones of severity and is used in setting flood insurance rates. The Pines Village analysis area falls within “A”, flood zones with a Base Flood Elevation (BFE) of -4 feet below sea level. Houses located in the A flood zone are in the Special Flood hazard Area (SFHA) and have a high risk of flooding.

5 City of New Orleans Code of Ordinance can be found online at: www.municode.com
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 a 10% chance of occurring in a given year. The A flood zone depicts the 100-year floodplain on the FIRM.

B. Digital Flood Insurance Rate Map (DFIRM): As part of the FEMA Map Modernization Plan, the Army Corps has been charged with updating and developed Digital Flood Insurance Rate Map (DFIRM). The FIRM for Orleans Parish have not been updated since 1984.

In February 2009, FEMA released a Preliminary DFIRM for Orleans Parish. The Preliminary DFIRM information for the Pines Village area places the area in an AE zone. The “E” associated with “AE” means that there is an elevation to which the lowest floor of livable space must be elevated to. The City Council was presented with four options in 2009: (1) use existing maps; (2) continue with the Advisory Base Flood Elevations (ABFEs) recently adopted after

Figure 3: 1984 FIRM Panel for the study area
Hurricanes Katrina and Rita; (3) adopt the Preliminary DFIRM data for regulating new construction; or (4) adopt new DFIRM through the normal adoption process. The decision not to adopt the DFIRM was due to the fact that these maps would be out of date once the levee repair and upgrading is completed in 2011-2012. Hence, the 1984 maps are still in effect at this time.

On August 25, 2006, the City of New Orleans adopted Advisory Base Flood Elevations (ABFE) that FEMA strongly recommended after the flooding associated with Hurricane Katrina. According to the effective FIRM the existing BFE in Pines Village is -4.0 feet; meaning that it is 4 feet below sea level, as most of New Orleans has an elevation under sea level. The ABFE is the higher elevation of either:

1) 3 feet above the ground, or
2) The existing BFE as shown on the FIRM

**B. Claims Data:** 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. Rather, it discusses them only in summary form.

The UNO-CHART Team obtained claims data from FEMA Region VI for all repetitive flood loss properties in the Pines Village study area. Of the 116 properties included in the study area, 29 (25%) are repetitive flood loss properties. In total, the homeowners of these repetitive flood loss properties have received $4,232,023 in flood insurance payments since 1978. The average claim payment is $25,190.61. Of the repetitive flood loss properties located in the study area, 19 (16%) are on FEMA’s severe repetitive loss list. Summary data on the repetitive flood loss properties in the study area are given in Table 1.

Table 1 also shows the rainfall amount in (inches/24 hours) for the St. Charles Pumping Station (Pump Station No. 16) since 1987 until the end of 2004. This Pump Station is located a few miles to the north east of the study area. It appears that there is a relationship between the high rainfall amount and the number of flood insurance claims for repetitive loss properties. The highest rainfall amount was during the May 1995 flood: Pump Station No. 6 had 11.57 inches resulting in the highest RL claims total for one event, $488,469.

It is important to understand that repetitive flood insurance claims figures often understate the flooding problem for various reasons:

---

7 Electronic communication with the City of New Orleans Office of Homeland Security and Emergency Preparedness, 04/05/2010
1. NFIP records do not include claims data from before 1978, so there could have been additional losses not included.
2. Policy holders may not have submitted claims for smaller floods for fear of it affecting their coverage or their premium rates.
3. Only data for the 29 repetitive flood loss properties were reviewed. There could be other properties that have been repetitively flooded, but did not submit claims.
4. The losses only account for items covered by the insurance policy. Things not covered include living expenses during evacuation, swimming pools, and automobiles.

### Table 1: Event and claims data for the repetitive flood loss properties in the study area

<table>
<thead>
<tr>
<th>Date of Claims filed</th>
<th>Number of Claims</th>
<th>Claims Dollars Paid</th>
<th>P.S. 16 (Inches/24 Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/3/1978</td>
<td>8</td>
<td>$55,544</td>
<td>7.04</td>
</tr>
<tr>
<td>3/29/1980</td>
<td>1</td>
<td>$3,994</td>
<td>4.00</td>
</tr>
<tr>
<td>4/13/1980</td>
<td>14</td>
<td>$126,985</td>
<td>6.40</td>
</tr>
<tr>
<td>4/6/1983</td>
<td>20</td>
<td>$283,213</td>
<td>10.64</td>
</tr>
<tr>
<td>12/28/1983</td>
<td>1</td>
<td>$2,806</td>
<td>4.43</td>
</tr>
<tr>
<td>4/1/1988</td>
<td>9</td>
<td>$35,761</td>
<td>7.10</td>
</tr>
<tr>
<td>5/13/1990</td>
<td>16</td>
<td>$190,996</td>
<td>5.10</td>
</tr>
<tr>
<td>4/11/1995</td>
<td>2</td>
<td>$11,153</td>
<td>4.16</td>
</tr>
<tr>
<td>5/8/1995</td>
<td>21</td>
<td>$488,469</td>
<td>11.57</td>
</tr>
<tr>
<td>1/5/1998</td>
<td>1</td>
<td>$22,671</td>
<td>3.17</td>
</tr>
<tr>
<td>8/21/1998</td>
<td>7</td>
<td>$61,279</td>
<td>4.75</td>
</tr>
<tr>
<td>6/5-11/2001</td>
<td>14</td>
<td>$112,164</td>
<td>3.51</td>
</tr>
<tr>
<td>9/25/2002</td>
<td>18</td>
<td>$348,293</td>
<td>10.83</td>
</tr>
<tr>
<td>10/3/2002</td>
<td>3</td>
<td>$26,059</td>
<td>NA</td>
</tr>
<tr>
<td>6/30/2003</td>
<td>3</td>
<td>$18,224</td>
<td>6.42</td>
</tr>
<tr>
<td>4/25/2004</td>
<td>3</td>
<td>$40,247</td>
<td>5.59</td>
</tr>
<tr>
<td><strong>Claims total prior to Hurricane Katrina</strong></td>
<td></td>
<td><strong>$1,827,858</strong></td>
<td></td>
</tr>
<tr>
<td>8/28/2005</td>
<td>25</td>
<td>$2,373,517</td>
<td>NA</td>
</tr>
<tr>
<td>10/22/2007</td>
<td>1</td>
<td>$1,276</td>
<td>NA</td>
</tr>
<tr>
<td>3/26/2009</td>
<td>1</td>
<td>$29,372</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Total Claims:</strong></td>
<td><strong>$4,232,023</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Drainage Information

A. Flooding Problem: Orleans Parish has always been vulnerable to flooding during any season of the year. The principal sources of flooding are rainfall ponding, storm surge, and hurricane or tropical caused rain events. Significant flooding has occurred in 1978, 1980, 1995 and 2005, with the hurricanes of 1965, Hurricane Betsy, and 2005 Hurricanes Katrina and Rita, resulting in major damage throughout the parish.

In May 1995, rain induced flooding highlighted the weaknesses in the existing pumping system, and several areas were severely flooded. After the May flooding in 1995, additional measures were taken to repair New Orleans' hurricane defense system, as well as upgrade and restore pumping capacity.

Hurricane Katrina was the costliest and deadliest storm to hit Orleans Parish. At its strongest, Hurricane Katrina reached Category 5 strength, and had been reduced to a Category 3 scale when it made landfall in Louisiana. The storm surge produced by the hurricane’s right-front quadrant, which contained the strongest winds at times exceeded 28 feet, and resulted in the catastrophic
failure of the flood protection system in New Orleans. Over 80% of the Greater New Orleans area was submerged.

Much of New Orleans East is part of a natural “bowl” that is consistent with other areas adjacent to the lakefront including Gentilly and Lakeview. Given the extent of “high-risk” areas in New Orleans East based on these conditions and geography, mitigation and protection from future events is essential. Figure 4 shows a section along Read Blvd that includes the Pines Village area analysis, illustrating the areas that are below sea level.

In sum, there are two potential sources of flooding in the Pines Village analysis area:

1) The most severe flooding threat to the area, as well as the rest of the city, is levee failure
2) Heavy rainfall that overwhelms the drainage system, and in the case of severe weather the drainage system may not be able to drain fast enough resulting in flooding.

A. Exiting Conditions: Pines Village drainage subbasin is located in New Orleans East and is bounded by the New Orleans Lakefront Levee on the north, Old Gentilly Road on the south, Crowder Blvd on the east and the hurricane protection levee along the Inner Harbor Navigation Canal on the west. The drainage area of this subbasin is about 2,900 acres. The drainage system for this subbasin consists of a grid of canals and large concrete box culverts that generally convey drainage from the east-west ridge running along Gentilly Road toward Lake Pontchartrain. Pumped drainage from this subbasin is provided by two pumping stations: St. Charles Pumping Station (Pump Station No. 16), which has a capacity of 1,000 cfs\(^9\) and pumps into Lake Ponchartrain; and the Dwyer Road Pumping Station, which has a capacity of 120 cfs and pumps into the Inner Harbor Navigation Canal.

\(^9\) Cubic feet per second
B. Flood Control Projects:

The Southeast Louisiana Project (SELA) was authorized by the U.S. Congress in Fiscal Year 1996 to provide for engineering, design, and construction of projects for flood control and drainage in Jefferson, Orleans, and St. Tammany Parishes. This was a Federal legislative response to repetitive flood losses in the region, particularly due to the heavy rainfalls which occurred during May 8-10, 1995. In Orleans Parish, the Sewerage and Water Board of New Orleans (SWBNO) is the local partner for the SELA project.

The Dwyer Road Canal Project: The Dwyer Road Pumping Station Improvements were designed to improve drainage capacity tenfold to approximately one half million gallons per minute; or 1,114 cfs. The overall scope consisted of several parts and individual contracts under the SELA program including the pumping station, intake structure, and the discharge tubes and canal. The combined cost of all phase one projects is $160 million, with the Federal government contributing $120 million and the Sewerage and Water Board funding $40 million. This

Figure 5: Pines Village Drainage Features
represents 75% federal funds and 25% Sewerage and Water Board funds. The project phases include:

1) The Dwyer Road Drainage Pump Station (DPS) project consists of building a new pump station with a capacity of 1,050 cubic feet per second at the intersections of Dwyer Road and Jourdan Road. The new pump station includes a new building to house three pumps and all necessary mechanical and electrical components. Hurricane Katrina disrupted the project’s progress, but construction has resumed. The current construction cost is $19.3 million. Currently it is still under construction with 93% completed. It is expected to be complete by summer 2010.

2) The Dwyer Road Intake Canal project consists of constructing an underground concrete canal ranging in size from 10’ wide by 10’ high to 14’ wide by 11’ high from Lafon Street to the intake of the Dwyer Road Drainage Pump Station, approximately 6800 feet in length. The project started in November 2008, but due to a lack of federal funding for the SELA program, this project experienced delays. However, the Notice to Proceed has been issued by the Corps and construction has begun. The current construction cost is $58.8 million and the project is still under construction with 34% completed, it is expected to be completed by August 2012.

3) The Dwyer Road Pump Station DPS Outfall Canal project consists of constructing a 22’ wide by 10’ high underground concrete canal from the discharge side of the Dwyer DPS to the Inner Harbor Navigation Channel.

Progress to Date: The first phase of the project started in September 20, 2000. The construction of Dwyer Road Pump Station DPS Outfall Canal was completed by mid 2004. The construction of the Dwyer Road Drainage Pump Station and the Dwyer Road Intake Canal are still in progress and are expected to finish summer 2010 and August 2012 respectively.

The project will impact the Area that lies just east of Downman Road between Dwyer and Morrison Roads where the Pines Village area analysis is located. The implementation of the Dwyer Road Canal project would provide flood damage reduction in this area and would essentially eliminate damages for events less severe than the 10-year flood. Table 2 shows the exiting flood stage for the drainage subbasin where Pines Village is located and the estimated flood reduction with the completion of the project.

<table>
<thead>
<tr>
<th></th>
<th>Existing flood stage (ft)</th>
<th>Estimated flood stage with project completion (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 year (ft)</td>
<td>-6.0</td>
<td>-6.5</td>
</tr>
<tr>
<td>50 year (ft)</td>
<td>-5.3</td>
<td>-5.8</td>
</tr>
<tr>
<td>100 year (ft)</td>
<td>-4.0</td>
<td>-4.5</td>
</tr>
</tbody>
</table>
4. Flooding Experiences of Property Owners

As mentioned in Step 1, the letter mailed to residents of the area analysis included a data sheet. Copies of the letter and data sheet appear in Appendices C and D of this report. This data sheet offered residents the opportunity to provide the UNO-CHART Team with details about their flooding experiences and to voice their concerns regarding flooding-related issues. Of the 116 properties to which letters were sent, 58 were returned to UNO-CHART as vacant or undeliverable. Of the remaining 58 deliverable data sheets, 14 residents responded, achieving a response rate of approximately 24%, which is considered good for a study of this nature.

The homeowners who returned data sheets to UNO-CHART have offered some insight into the flooding problem. Most of the respondents have moved to the neighborhood since mid 1990’s, and most reported having either flooded or having a water problem. The most common years for flooding were 1995, 2005 and 2007. Most respondents reported high depth of flood waters and long durations of flooding; having more than 8 to 10 feet of water inside their home for more than one day. While few respondents reported using a flood protection measure to protect their property, most of the respondents were interested in learning about mitigation. The detailed results are in Appendix A.

The following general conclusions can be drawn from the resident’s comments:

- Residents reported that the streets are uneven and that it causes some homes to have water in their yard which eventually starts to flood nearby houses.
- Residents agreed that they need a better street drainage and improved streets.

5. On-Site Data Collection

A. Windshield Data: On March 31, 2010, a team from UNO-CHART visited the Pines Village analysis area and collected information on each property in the study area. The purpose of collecting the data is to gain an understanding of all of the factors that contribute to the flooding problem.

Most structures in the study area are built on a concrete slab, are in good condition, and are, at most, at grade level. However, the height of the houses above the street varies. Most structures are single story brick buildings. Detailed information that the UNO-CHART Team members collected on a site visit is found in Appendix B. Figure 6 provides a photo of a typical house found in the study area.
Problem Statement

Based on the data collected from the five sources of information (flood insurance data, drainage information, the property owners, local ordinances, and on-site surveying), the following bullets summarize the repetitive flooding problems in the Pines Village study area:

- All structures in the study area fall within an A flood zone, which indicates a high risk of flooding.
- Flooding is caused by two problems:
  - Levee failure
  - Street elevation issues that block the flow of water into the drainage system during heavy rain events.
- A major project to reduce flooding in the area, the Dwyer Road Canal project, is under construction and expected to be completed in August 2012.
- The streets are higher than the study area homes.
- The street drainage needs to be upgraded.
- The maximum flood depth and duration reported is 12 feet of water and two weeks of flooding.
- There are 29 repetitive flood loss properties in the study, 19 (16%) of which are severe repetitive flood loss properties. These 29 properties have made 168 flood insurance claims for a total of $4,232,023.
- The average RL flood claim is $25,190.61.

Step 3: Mitigation Measures

Reviewing 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 mitigation 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. Six approaches were analyzed:

I. Drainage improvements
II. Acquisition of properties in the hazardous area
III. Elevating the houses above the 100-year flood level
IV. Constructing small levees or floodwalls around one or more houses
V. Dry floodproofing
VI. Purchasing flood insurance coverage on the building

Each approach has its pros and cons. Things such as drainage improvements and acquisition can be implemented by the City or Parish. The other measures can be implemented by the property owners, but City or Parish funding can help, especially with acquisition and elevation.
I. Drainage Improvements

As noted earlier in this report, repeated flooding in the Pines Village analysis area is caused by two related problems:

1) Levee failure
2) Heavy rainfall that overwhelms the drainage system, and in the case of severe weather, the drainage system may not be able to drain fast enough resulting in flooding.

Heavy rain falls can occur any season of the year. The Dwyer Road Canal project will help in reducing flooding in this area given the increased capacity of the Dwyer Pump Station and enlarged canals along Dwyer Road. Once the projected is completed, the Dwyer Pump Station will be able to move water more quickly out of the newly enlarged canals, but this does not address the issue of street drainage in the area. Flooding that is a result from poor neighborhood drainage can be addressed by improved underground drains and street leveling in the Pines Village area. At this time there is no timetable for such a plan for the analysis area.

In addition, residents can maintain the drains, remove debris when possible, and report to City authorities obstacles to the flow in these drains. Residents can go to the City of New Orleans’ website and fill out an online service request form and report any issues with drains in their area. The website is www.cityofno.com. Residents can also call the department of public works’ maintenance division at 504.658.8150.

II. 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 the site.

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 repeatedly flooded 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.

Department of Public Works – Maintenance Division
838 South Genois Street
New Orleans, LA 70119
(504) 658-8150
Problems:
1. High cost and difficulty to obtain a favorable benefit-cost ratio, which demonstrates the cost-effectiveness of a proposed project, in shallow flooding areas.
2. 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.
3. There is no reduction in expenses to maintain the neighborhood’s infrastructure, although the tax base is reduced.
4. The vacant lots must be maintained by the new owner agency, and additional expense is added to the community. If the lot is only minimally maintained, its presence may reduce the property values of the remaining houses.

Despite these problems, the City of New Orleans does support the use of certain mitigation funds for acquiring and clearing repeatedly flooded properties.

In fact, the New Orleans Redevelopment Authority (NORA) is planning to build 38 new homes in the Pines Village neighborhood of which 5 homes are located within the boundaries of the study area.

These properties come from state’s Road Home program. Figure 7 shows a cleared lot in Pines Village analysis area that is being prepared for a future NORA home.

III. 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. Houses can be elevated on fill, posts/piles, or on a crawlspace.

A house elevated on fill requires adding a specific type of dirt, called structural fill, to a lot and building the house on top of the added dirt. Also, according to the Unified
Development Code, fill can only be used if the use of such fill is mitigated by excavation and an engineering report states that the runoff created by the fill will not flood neighboring properties.

A house elevated on posts/piles is either built or raised on a foundation of piers that are driven into the earth and rise high enough above the ground to elevate the house above the flood level. A house elevated on a crawlspace is built or raised on a wall-like foundation that elevates the house above the flood level. If a crawlspace is used, it is important to include vents that are appropriately sized: one square inch for each square foot of the building’s footprint.

**Cost:** Most of the cost to elevate a building is in the preparation and foundation construction. The cost to elevate six feet is little more than the cost to elevate two feet. Elevation is usually cost-effective for wood frame buildings on crawlspaces because it is easiest to get lifting equipment under the floor and disruption to the habitable part of the house is minimal.

Elevating a slab house is much more costly and disruptive, but it can be done. An example of an elevated house in the Pines Village area analysis is shown in Figure 9. Most of the houses in the Pines Village study area are on a slab. The actual cost of elevating a particular building depends on factors such as its condition, whether it is masonry or brick faced, the soil conditions, and if additions to the house have been made over time.

While the cost of elevating a home on a slab can be high, there are funding programs that can help. A common arrangement is for a FEMA grant to pay 75% of the cost while the remaining 25% is paid by a non-federal source such as the City/Parish or the homeowner. However, under a new FEMA program (the SRL program) the non-Federal portion is only 10% of the total project cost. In some cases, assistance can be provided by Increased Cost of Compliance funds (ICC), which is discussed on pages 31-32, or state funds.

**Feasibility:** Federal funding support for an elevation project requires a study that shows that the benefits of the project exceed the cost.

Elevating a masonry home or a slab can be very expensive, over $100,000. 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 such as SRL properties, and if they are structurally sound enough to elevate.

**IV. Mitigation Reconstruction**

If a building is deemed unable to withstand the elevation process, demolishing the structure and replacing it with a new, safer structure is an option for the homeowner. The new structure will meet or exceed all flood and wind protection codes. This was formally known as “demo/rebuild” and now called mitigation reconstruction. This option is available to homeowners under the Severe Repetitive Loss (SRL) grant program.

Certain rules must be followed to qualify for federal funds for mitigation reconstruction:
• Pursuing this option is only possible after a structural engineer concludes that it is not feasible to elevate the existing building due to a cracked slab, structural problems, or poor condition of the structure.
• The new building must be elevated to the current Base Flood Elevation (BFE).
• The new building can only be 10% larger than the existing structure.
• 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 permanently.
• It must be demonstrated that the benefits of the project (saved money from fewer flood insurance claims to pay) exceed the costs to demolish and rebuild the house.
• The maximum federal grant is 75% of the cost up to $150,000.

V. Barriers to Floodwaters

Small floodwalls, levees, or berms could be constructed around one or more properties. Such barriers are not recommended for flood depths greater than three feet. Floodwalls are appropriate for homes in Pines Village area analysis with flood depths less than 3 feet. If a floodwall is built around a house, it is important to include a sump pump with a backup generator so that rainwater can be pumped to the outside of the protected space. An engineer should be consulted before beginning a floodwall project, and residents should contact the City of New Orleans Department of Safety and Permits to inquire about a permit. Figures 9 and 10 show an example of a floodwall and sump pump.

Figure 9: This home is surrounded by a floodwall, but the garage door must be sandbagged when the area floods. The wall doubles as a planter box to reduce the visual impact of a flood protection structure.

Figure 10: Rain water and seepage under this floodwall collect in the basin, or sump, and is pumped over the wall by a sump pump.
Soil permeability is a flooding concern. Permeable soil will allow floodwaters to seep under the barrier. This is a particular problem when floodwaters stay up for a long time. As seen on the soils map in Figure 11, there are two types of soil found in Pines Village: fresh organic and mineral deltaic deposits, and sandy and loamy alluvial. The map illustrates the location of the soil types. Neither of the soil types found in Pines Village is ideal for preventing long duration flooding with the construction of small floodwalls. If floodwaters stay for an extended period of time permeable soil will allow water to seep under the floodwall and into the protected area. If a homeowner is interested in constructing a small floodwall, it is advised to consider historical flood durations and to have the soil on site tested to determine the permeability.

Homeowners who are interested in constructing a barrier to protect their house should consider the following requirements:

- A method to close openings, such as the driveway in the photo in Figure 10. 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.

**Figure 11: Soils map for the study area**
Cost: The cost of a local barrier depends on the depth of flooding and the amount of engineering put into the design. Where flooding is only inches deep and of short duration, almost any barrier of concrete or earth will work.

The most conservative cost estimate for a floodwall 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 in Table 3 is for a 40’x 40’ home with a flood wall one foot outside the building wall. Labor accounts for about half the price in the cost estimate.

<table>
<thead>
<tr>
<th>Table 3: Floodwall Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Foot high reinforced concrete cantilever wall, 168 feet @ $200/foot</td>
</tr>
<tr>
<td>Internal drainage and sump pump system</td>
</tr>
<tr>
<td>Sewer backup valve</td>
</tr>
<tr>
<td>Generator for power outages</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

It should be noted that smaller, non-engineered walls such as the ones depicted in Figures 10 and 11 on page 24 have been built by homeowners for less than $10,000.

FEMA does not fund individual floodwalls for residential properties; therefore, the homeowner must pay 100% of the cost for a floodwall. 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.

VI. Dry Floodproofing

This measure keeps floodwaters out of a building by steps taken to protect the building directly. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags.

A floodproofing project as seen in Figure 12 has three components:

- Make the walls watertight. This is easiest to do for masonry or brick faced walls such as those found in the study area. The brick walls can be covered with a waterproof sealant and bricked over with a thin brick veneer to camouflage the 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, a second facing to protect the waterproofing from punctures.
- Provide closures for the openings; including doors, windows, dryer vents and weepholes; such as removable shields or sandbags.
- 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.

Dry floodproofing employs the building itself as part of the barrier to the passage of floodwaters, and therefore this technique is only recommended for buildings with non-cracked slab foundations because the solid slab foundation prevents floodwaters from entering a building from below. Also, 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, because water pressure on the structure can collapse the walls and/or buckle the floor. Dry floodproofing is a mitigation technique that is appropriate for the Pines Village neighborhood where the flood depths do not exceed 3 feet. Not all parts of the building need to be floodproofed. It is difficult to floodproof a garage door, for example, so many owners let the garage flood and floodproof the walls between the garage and the rest of the house. Appliances, electrical outlets, and other damage-prone materials located in the garage should be elevated above the expected flood levels. Examples of floodproofed houses can be seen in Figures 13 through 16 on the next page.

Dry 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, which may not be readily evident. 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.
- There are no government financial assistance programs available for dry floodproofing, therefore the entire cost of the project must be paid by the homeowner.
- The NFIP will not offer a lower insurance rate for dry floodproofed 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. Each property owner can determine how much of their own labor they can contribute and whether the cost and appearance of a project is worth the protection from flooding that it may provide.
**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 many of the structures and flood conditions found in Pines Village. It can also be more attractive than a floodwall around a house.
VII. Flood Insurance

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

- 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.
- A flood insurance policy covers surface flooding from the overflow of inland or tidal waters or from storm water runoff.
- 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:** Flood insurance rates are based on several factors including what flood zone the building falls in and the age of the structure. An ‘X’ zone is the 500-year floodplain and an ‘A’ or ‘AE’ flood zone is the 100-year floodplain. Generally, homes in the X zone have lower flood insurance rates than those in the AE zone, because the X zone indicates a lower risk from flooding. All homes in the study area are in an AE zone. New Orleans homes constructed before December 31, 1974 are “pre-FIRM” buildings, which means that they were built before the date of the first FIRM for the community, and are thus eligible for the “subsidized” flood insurance premium rates. A building that is located in the ‘AE’ flood zone and constructed or substantially improved after the date of the most current FIRM, such as one built or substantially improved in 2008, is supposed to have been built above the flood level and is therefore subject to rates based on the actual risk rather than a subsidized rate. Rates on pre-FIRM buildings are subsidized because the flood risk was unknown at the time of construction.

Table 4 shows the rates for a policy with $150,000 coverage on the building. For example, a house built in 1975 that meets the BFE with a $150,000 building/$60,000 contents policy will cost the homeowner approximately $1,652 annually to insure. If a pre-FIRM house in the AE zone is elevated to 1 foot above the BFE, the owner will be able to take advantage of the much lower post-FIRM rates, approximately $640 annually.

![Table 4: Example NFIP Flood Insurance Premiums](image)

---

Pines Village Area Analysis  Page 28  10/13/2010
**Community Rating System (CRS):** The Community Rating System is a “voluntary incentive program that recognizes and encourages community floodplain activities that exceed the minimum National Flood Insurance Program (NFIP) requirements” (see http://www.fema.gov/business/nfip/crs.shtml). Participating communities are rewarded with reduced insurance premiums. The City of New Orleans participates in the CRS and is currently rated as a Class 8, which means that properties in the Special Flood Hazard Areas receive a 10% reduction in their insurance premiums. These reductions are not reflected in the example premiums in the table. If the City pursues additional floodplain management activities that exceed the requirements of the NFIP, such as adopting stricter local development regulations, all New Orleans homeowners could be eligible for even further decreased flood insurance rates.

See Table 5 on page x for a summary of the mitigation measures presented in this report.

**VIII. Funding for Mitigation Projects**

There are several possible sources of funding for mitigation projects:

**A. FEMA programs:** Most FEMA programs provide 75% of the cost of a project. The remaining 25% is expected to be paid by a non-federal source such as the local or county government, and in some cases the homeowner. Each program has different Congressional authorization and slightly different rules. In Pines Village area, there are six properties that received Hazard Mitigation Grant Program (HMGP) and/or Severe Repetitive Loss program (SRL) through FEMA. The City of New Orleans’ Office of Recovery and Development Administration manages the applications process for the City.

1. **The Hazard Mitigation Grant Program (HMGP)**$^{10}$: The HMGP provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Projects must provide a long-term solution to a problem (e.g., elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood). Examples of eligible projects include acquisition and elevation, as well as local drainage projects.

2. **The Severe Repetitive Loss Program (SRL)**$^{11}$: The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, to reduce or eliminate claims under the NFIP for those properties on the severe repetitive flood loss list. Eligible flood mitigation projects include

   - Acquisition and demolition or relocation of structures that are listed on FEMA’s severe repetitive loss list and conversion of the property to open space
   - Elevation of existing SRL structures to at least the Base Flood Elevation (BFE) or an Advisory Base Flood Elevation (ABFE) or higher.

$^{10}$ For more information please visit http://www.fema.gov/government/grant/hmgp/index.shtm
$^{11}$ For more information please visit http://www.fema.gov/government/grant/srl/index.shtm
• For the SRL program only, mitigation reconstruction is permitted only when traditional elevation cannot be implemented

Under the SRL program only, the Federal share of a project’s cost is up to 90%; the remaining 10% is to be paid by a non-Federal source, such as the homeowner.

3. The Flood Mitigation Assistance Program (FMA): FMA funds assist States and communities in implementing measures that reduce or eliminate the long-term risk of flood damage to structures insured under the NFIP. There are 3 grant types that are available under FMA:

• **Planning Grants** to prepare Flood Mitigation Plans. Only NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project grants

• **Project Grants** to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties; these include structures with 2 or more losses each with a claim of at least $1,000 within any ten-year period since 1978.

• **Management Cost Grants** for the State to help administer the FMA program and activities. Up to ten percent (10%) of Project grants may be awarded to States for Management Cost Grants.

4. Pre-Disaster Mitigation Program (PDM): The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. There are several requirements that must be met in order to receive PDM funding, for more information please visit [http://www.fema.gov/government/grant/pdm/index.shtm](http://www.fema.gov/government/grant/pdm/index.shtm).

B. Flood Insurance: There is a special funding provision in the NFIP for insured buildings that are located in the Special Flood Hazard Area (SFHA) and have been substantially damaged by a flood, “Increased Cost of Compliance” (ICC). 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 floodproofing for nonresidential buildings.

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 damage determination made by the local floodplain administrator. Coverage under the ICC does have limitations:

• It covers only damage caused by a flood;
• The building’s flood insurance policy must have been in effect during the flood;
• ICC payments are limited to $30,000 per structure;

---

12 For more information please visit: [http://www.fema.gov/government/grant/fma/index.shtm](http://www.fema.gov/government/grant/fma/index.shtm)
● The structure must have a substantial damage determination – in which case flood damage equals or exceeds 50% of the home’s market value, or a repetitive damage determination – which means that the house was at least 25% damaged by flooding twice. The local floodplain administrator makes these determinations, and
● The structure must be located in an SFHA.

All homes in the Pines Village study area are located in the A zone and therefore are eligible for the ICC funding, as long as a flood insurance policy is maintained.

**Severe Repetitive Loss ICC Pilot Program:** While the conventional ICC market is buildings that are located in the Special Flood Hazard Areas (SFHA), there is a new pilot program that is aiming to target buildings *not* in the SFHA. Focusing specifically on Severe Repetitive Loss (SRL) buildings, this pilot program will offer ICC benefits to those SRL properties that are located in B, C, or X flood zones – all of which are now considered “X zones” under the new maps – and will include those SRL buildings that have grandfathered X zone rates. Under this new pilot program, the ICC benefits could be used to cover the homeowner’s 10% match in a SRL grant. This could be helpful to the 19 SRL properties in the Pines Village study area.

**C. Rebates:** A rebate is a grant in which the costs are shared by the homeowner and another source, such as the local government, usually given to a property owner after a project has been completed. Many communities favor it because the owner handles all the design details, contracting, and payment before the community makes a final commitment. The owner ensures that the project meets all of the program’s criteria, has the project constructed, and then goes to the community for the rebate after the completed project passes inspection.

Rebates are more successful where the cost of the project is relatively small, e.g., under $5,000, because the owner is more likely to be able to afford to finance the bulk of the cost; the rebate acts more as an incentive, rather than as needed financial support.

More information on rebates can be found in the Corps of Engineers’ report Local Flood Proofing Programs found at [http://www.nwo.usace.army.mil/nfpc/NFPC_Publications.htm](http://www.nwo.usace.army.mil/nfpc/NFPC_Publications.htm)

**Step 4: Coordination**

The following agencies and organizations were contacted by the UNO-CHART team:

● City of New Orleans Office of Homeland Security and Emergency Preparedness
● FEMA Mitigation Region VI – Mitigation
● US Army Corps of Engineers
● Sewerage and Water Board (S&WB) of New Orleans
● Pines Village Homeowner’s Association
● Pines Village neighborhood residents
Step 5: Findings

I. Findings

UNO-CHART’s findings for the Pines Village Repetitive Flood Loss Area Analysis can be broken into two categories:

A. Drainage Issues: Properties in the Pines Village study area are subject to flooding due to levee failure, heavy rains and drainage problems. The first problem is due to heavy rains. When the Dwyer Road Canal project is complete, the capacity of the pumping station to remove water from the canals will be increased although there are still issues with the street heights and conditions. The second drainage problem in the Pines Village area is that the street drainage system is not designed to handle heavy rainfall. At this time there is no time plan to improve the street drainage in Pines Village.

B. Mitigation Measures: Several mitigation techniques would be helpful to residents. Drainage improvements would cause little disruption of the neighborhood, and would protect streets and yards as well as houses. However, the success of such improvements is determined by debris-free ditches. There is no timeline for upgrading the street drainage system to the 10-year event standard. Acquisition may also be a solution and offers 100% flood protection.

The HMGP and SRL programs are used to purchase repeatedly flooded properties. Elevating the house above the flood hazard also offers secure flood protection and can also be funded by the HMGP and the SRL programs. Small personal floodwalls are effective for shallow flooding, however, the soil types in the study area would require significant foundation work for a fully functioning floodwall; and if floodwaters stay up for a long period of time, the floodwall could be subject to seepage.

Neither small floodwalls nor dry floodproofing will protect a Pines Village home from the Hurricane Katrina-type of flooding, but they will protect a home from persistent rain fall flooding. Flood insurance is always in effect and works for all flood levels. It will not prevent flood damage, but it will provide funds for repairs. The City of New Orleans could explore alternative financing methods to support alternative flood mitigation projects, such as the possibility of establishing a rebate program.
II. Mitigation Actions Available to the Area

These recommendations are categorized first for the City of New Orleans, and second for the Pines Village homeowners.

A. For the City of New Orleans:

- Explore alternative financing methods to support flood mitigation projects, such as the possibility of establishing a rebate program.
- Provide assistance with on-site mitigation projects through
  - Soils testing for homeowners who want to consider building a floodwall.
  - Encouraging property owners who are eligible for HMGP and SRL funding to pursue a mitigation measure.
- Upgrade the street drainage to 10-year event, in order to improve the drainage in the study area.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage Improvements</td>
<td>Little disruption of neighborhood Protects yards</td>
<td>Dependent on free flowing channels</td>
</tr>
<tr>
<td>Acquisition</td>
<td>100% flood protection</td>
<td>High cost Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Elevation</td>
<td>More secure flood protection Flood insurance rate reduction</td>
<td>High cost Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>More secure flood protection Flood insurance rate reduction</td>
<td>High cost Need source of non-FEMA cost share</td>
</tr>
<tr>
<td>Floodwalls</td>
<td>Effective for shallow flooding</td>
<td>Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td>Dry Floodproofing</td>
<td>Low cost Effective for shallow flooding on slab foundations</td>
<td>Exposes homes to wall/floor damage Subject to seepage if water stays up for a long time</td>
</tr>
<tr>
<td>Flood Insurance</td>
<td>Always in effect Works for all flood levels Under ICC, can be a source of funds for elevation or mitigation reconstruction</td>
<td>Does not prevent flood damage (but does provide funds for repairs)</td>
</tr>
</tbody>
</table>
• Partner with the neighborhood, perhaps using it as a test area, for locally initiated mitigation options such as a rebate program.

B. For the Pines Village area homeowners:

• Contact the City of New Orleans Office of Homeland Security and Emergency Preparedness for more information about possible funding opportunities.
• Institute a drain maintenance program, or “adopt an inlet” that encourages homeowners to frequently clear their drains of debris to ensure open flow for rain waters.
• Review the alternative mitigation measures discussed in this analysis and implement those that are most appropriate for their situations.
• Purchase and maintain a flood insurance policy on the home and contents.
• Stay vigilant about new flood threats, such as development issues, and commit the neighborhood energy to studying and mitigating such threats.
References

City of New Orleans Code of Ordinances

FEMA Region VI Repetitive flood loss data

Flood Insurance Rate Map


Orleans Parish Hazard Mitigation Plan

Pines Village area residents

Protecting Building Utilities from Flood Damage, FEMA-348, 2000

Reducing Damage from Localized Flooding – A Guide for Communities. FEMA-511, 2005

Sewerage and Water Board of New Orleans

SWBNO SELA website (July 2008)

Unified New Orleans Plan - City Wide Plan and Planning District 9 Plan

The U.S Army Corps of Engineers www.mvn.usace.army.mil
This page intentionally left blank
## Appendix A: Data Sheet Results

<table>
<thead>
<tr>
<th>Total Respondents</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In what year did you move to the home at this address</strong></td>
<td></td>
</tr>
<tr>
<td>14%</td>
<td>1970s</td>
</tr>
<tr>
<td>7%</td>
<td>1980s</td>
</tr>
<tr>
<td>29%</td>
<td>1990s</td>
</tr>
<tr>
<td>43%</td>
<td>2000s</td>
</tr>
<tr>
<td><strong>What type of foundation does your house have</strong></td>
<td></td>
</tr>
<tr>
<td>93%</td>
<td>Slab</td>
</tr>
<tr>
<td>7%</td>
<td>Crawlspace</td>
</tr>
<tr>
<td><strong>Has the property ever been flooded or have a water problem</strong></td>
<td></td>
</tr>
<tr>
<td>93%</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>In what years did it flood (multiple answers were allowed)</strong></td>
<td></td>
</tr>
<tr>
<td>14%</td>
<td>1995</td>
</tr>
<tr>
<td>79%</td>
<td>2005</td>
</tr>
<tr>
<td>7%</td>
<td>2009</td>
</tr>
<tr>
<td><strong>What was the deepest the water ever got</strong></td>
<td></td>
</tr>
<tr>
<td>7%</td>
<td>4 ft yard only</td>
</tr>
<tr>
<td>64%</td>
<td>8 ft over first floor</td>
</tr>
<tr>
<td>29%</td>
<td>&gt;8 ft over first floor</td>
</tr>
<tr>
<td><strong>What was the longest time that the water stayed in the house</strong></td>
<td></td>
</tr>
<tr>
<td>14%</td>
<td>3-4 hours</td>
</tr>
<tr>
<td>7%</td>
<td>1 day</td>
</tr>
<tr>
<td>14%</td>
<td>&gt; 2 days</td>
</tr>
<tr>
<td><strong>What do you feel was the cause of your flooding (multiple answers were allowed)</strong></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td>Overbank flooding from nearby ditch</td>
</tr>
<tr>
<td>64%</td>
<td>Storm surge from nearby waterways</td>
</tr>
<tr>
<td>43%</td>
<td>Clogged/undersized drainage ditch</td>
</tr>
<tr>
<td>36%</td>
<td>Drainage from nearby properties</td>
</tr>
<tr>
<td>36%</td>
<td>Storm sewer backup</td>
</tr>
<tr>
<td>14%</td>
<td>Sanitary sewer backup</td>
</tr>
<tr>
<td>21%</td>
<td>Standing water next to house</td>
</tr>
<tr>
<td><strong>Have you taken any flood protection measures on your property (multiple answers were allowed)</strong></td>
<td></td>
</tr>
<tr>
<td>29%</td>
<td>Moved Utilities</td>
</tr>
<tr>
<td>21%</td>
<td>Regraded yard</td>
</tr>
<tr>
<td>7%</td>
<td>Elevated all or parts of the building</td>
</tr>
<tr>
<td>21%</td>
<td>Other: planning to elevate</td>
</tr>
<tr>
<td><strong>Do you have flood insurance</strong></td>
<td>86%</td>
</tr>
<tr>
<td><strong>Are you interested in learning more about mitigation</strong></td>
<td>93%</td>
</tr>
</tbody>
</table>

*Not all respondents answered every question; therefore the percentages do not total 100%*
## Appendix B: Windshield Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Structures</strong></td>
<td>105</td>
</tr>
<tr>
<td><strong>Occupied</strong></td>
<td>62</td>
</tr>
<tr>
<td><strong>Foundation type</strong></td>
<td></td>
</tr>
<tr>
<td>95%</td>
<td>Slab</td>
</tr>
<tr>
<td>2%</td>
<td>Piles</td>
</tr>
<tr>
<td>3%</td>
<td>Crawlspace</td>
</tr>
<tr>
<td><strong>Foundation Condition</strong></td>
<td></td>
</tr>
<tr>
<td>98%</td>
<td>Good</td>
</tr>
<tr>
<td>2%</td>
<td>Fair</td>
</tr>
<tr>
<td><strong>Structure Type</strong></td>
<td></td>
</tr>
<tr>
<td>92%</td>
<td>Masonry</td>
</tr>
<tr>
<td>8%</td>
<td>Wood Frame</td>
</tr>
<tr>
<td><strong>Structure Condition</strong></td>
<td></td>
</tr>
<tr>
<td>98%</td>
<td>Good</td>
</tr>
<tr>
<td>2%</td>
<td>Fair</td>
</tr>
<tr>
<td><strong>Number of Stories</strong></td>
<td></td>
</tr>
<tr>
<td>96%</td>
<td>1 Story Home</td>
</tr>
<tr>
<td>2%</td>
<td>1 ½ story Home</td>
</tr>
<tr>
<td>2%</td>
<td>2 Story Home</td>
</tr>
<tr>
<td><strong>Height Above Grade</strong></td>
<td></td>
</tr>
<tr>
<td>96%</td>
<td>0-1 Feet</td>
</tr>
<tr>
<td>1%</td>
<td>1-2 Feet</td>
</tr>
<tr>
<td>1%</td>
<td>2-3 Feet</td>
</tr>
<tr>
<td>2%</td>
<td>3-4 Feet</td>
</tr>
<tr>
<td><strong>Fill Above Street</strong></td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td>0-1 Feet</td>
</tr>
<tr>
<td><strong>EC Diagram</strong></td>
<td></td>
</tr>
<tr>
<td>32%</td>
<td>1A</td>
</tr>
<tr>
<td>61%</td>
<td>1B</td>
</tr>
<tr>
<td>1%</td>
<td>3</td>
</tr>
<tr>
<td>1%</td>
<td>5</td>
</tr>
<tr>
<td>1%</td>
<td>6</td>
</tr>
<tr>
<td>2%</td>
<td>8</td>
</tr>
</tbody>
</table>
March 19, 2010

RE: Pines Village Repetitive Flooding Project

Dear Pines Village Resident:

The New Orleans Office of Homeland Security and Emergency Preparedness is reviewing ways to reduce some of our repetitive flooding problems. One opportunity we have identified is to partner with The University of New Orleans’ Center for Hazards Assessment, Response and Technology (UNO-CHART) to conduct a flood risk assessment in Pines Village. CHART has already been visiting with neighborhood leaders about this possibility. As part of this project, a team from UNO-CHART is preparing a “local area analysis” for this study area. The approach which they take includes collecting some data specific to your property. UNO-CHART staff will be in your area during the day between March 30 and April 1st collecting general information from the street, such as the type of foundation and approximate height of the house above the street. They will also photograph each property in the study area.

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 April 2nd, 2010. After you fill the form out, please fold it, tape it, and mail it to the address on the flip side. A stamp has been provided.

After the analysis is completed, some preliminary recommendations will be developed. You will be invited to a meeting with us and the UNO/CHART team to review the findings. The meeting time and location will be advertised once the analysis is near completion.

If you have any questions about this project, please feel free to call Bradford Case, of the Homeland Security and Emergency Preparedness at (504) 658-8740; or Iman Adeinat at UNO/CHART, at (504) 481-0667.

Thank you for your assistance in helping us to complete this project.

Sincerely,

Bradford W. Case, CFM
Hazard Mitigation Specialist, NOOHSEP

LtCol. Jerry W. Sneed
Director, NOOHSEP

Attachment
Appendix D

Pines Village Repetitive Flooding Analysis
Flood Protection Data Sheet

Name: ______________________________

Property address: ____________________________, New Orleans, LA

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

2. What type of foundation does your house have? □ Slab □ Crawlspase (please answer #3) □ Posts/piles (please answer #3)

3. If your house has a crawlspase or post/piles foundation, please indicate how high from grade your lowest floor of living space is. ______________________

4. Has the property ever been flooded or had a water problem? □ Yes □ No (if “no,” please skip to question 8)

5. In what year(s) did it flood? ________________________________________________

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

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

8. What do you feel was the cause of your flooding? Check all that affect your building.
   □ Drainage from nearby properties □ Storm sewer backup
   □ Storm surge from nearby waterways □ Sanitary sewer backup
   □ Clogged/undersized drainage canal □ Standing water next to house
   □ Overbank flooding from nearby canal □ Other: ____________________________

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

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

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

12. Are you interested in pursuing measures to protect the property from flooding? □ Yes □ No If yes, please refer to our website (www.floodhelp.uno.edu) for useful information