

**FEMA Should Disallow  
\$2.04 Billion Approved for  
New Orleans  
Infrastructure Repairs**





# DHS OIG HIGHLIGHTS

## *FEMA Should Disallow \$2.04 Billion Approved for New Orleans Infrastructure Repairs*

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July 24, 2017

### Why We Did This Audit

The Federal Emergency Management Agency (FEMA) awarded the City of New Orleans (City) and the Sewer & Water Board of New Orleans (S&W Board) \$785 million to repair damages to infrastructure. FEMA approved an additional \$1.25 billion to the City and the S&W Board to complete infrastructure repairs.

### What We Recommend

FEMA should disallow \$2.04 billion—the initial award of \$785 million, plus the additional \$1.25 billion award.

#### **For Further Information:**

Contact our Office of Public Affairs at (202) 254-4100, or email us at [DHS-OIG.OfficePublicAffairs@oig.dhs.gov](mailto:DHS-OIG.OfficePublicAffairs@oig.dhs.gov)

### What We Found

FEMA should not have awarded the City and S&W Board the initial \$785 million, or the additional \$1.25 billion to complete the repairs to damaged infrastructure, because the damages were not eligible for Federal disaster assistance funding. Even though FEMA attributed the damages to the water distribution system directly to Hurricanes Katrina and Rita in 2005, we concluded that FEMA did not have sufficient documentation to support its decision. In fact, evidence shows that the infrastructure was old and in poor condition even before the hurricanes.

Eligibility for FEMA funding requires that damages be the direct result of the declared disaster, and it is the applicant's responsibility to show that the damages are disaster-related.

### FEMA's Response

FEMA disagreed with our conclusions and did not concur with our recommendations.



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Department of Homeland Security

Washington, DC 20528 / [www.oig.dhs.gov](http://www.oig.dhs.gov)

July 24, 2017

MEMORANDUM FOR: Tony Robinson  
Regional Administrator – Region VI  
Federal Emergency Management Agency



FROM: John E. McCoy II  
Acting Assistant Inspector General  
Office of Emergency Management Oversight

SUBJECT: *FEMA Should Disallow \$2.04 Billion Approved for New Orleans Infrastructure Repairs*  
Audit Report Number OIG-17-97-D

We audited the eligibility of Federal Emergency Management Agency (FEMA) funds awarded to the City of New Orleans (City) and the Sewerage and Water Board of New Orleans (S&W Board) under Hurricanes Katrina and Rita, which occurred in August and September 2005, respectively.<sup>1</sup> The awards provided 100 percent FEMA funding for eligible infrastructure repairs. The objective of this audit was to determine whether the additional work to complete infrastructure repairs estimated at \$1.25 billion is eligible under applicable Federal statutes and regulations and the Public Assistance Program.

### Background

On August 29, 2005, and September 24, 2005, the President declared major disasters in Louisiana for damages from Hurricanes Katrina and Rita, respectively. The hurricanes caused levees to breach, flooding portions of the City and surrounding parishes. In 2006, FEMA began approving projects and cost estimates for the S&W Board to repair sewer and water systems and the City to repair the streets associated with the water system repairs, collectively known as infrastructure repairs. As of December 2015, FEMA had approved \$784.9 million in infrastructure related projects. Table 1 shows the approved funding and expenditures as of January 2016.

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<sup>1</sup> A letter entitled “*Charging of Costs Between Hurricanes Katrina and Rita*,” September 29, 2005, “Permanent Work,” states, “If the Parish was declared for both Katrina and Rita, and the claimed damages can be attributed to a specific event, projects should be submitted under that disaster declaration. If the damages cannot be attributed to a specific event, such as a single facility being damaged by both storms without inspection between the storms, projects will be submitted under the Katrina declaration.” Therefore, FEMA submitted projects for both entities involved in this audit under Katrina.



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**Table 1: Approved Funding and Expenditures for New Orleans Infrastructure Projects**

| <b>Applicant</b>                        | <b>Approved Funding<br/>(in millions)</b> | <b>Expenditures<br/>as of January 2016<br/>(in millions)</b> |
|---|---|--|
| City of New Orleans                     | \$409.2                                   | \$42.0   |
| Sewer and Water Board<br>of New Orleans | \$375.7                                   | \$51.3   |
| <b>Totals</b>                           | <b>\$784.9</b>                            | <b>\$93.3</b>  |

Source: City of New Orleans and the Sewer & Water Board of New Orleans

In 2013, 8 years after the disaster, FEMA, the State of Louisiana Governor’s Office of Homeland Security and Emergency Preparedness, the City, and the S&W Board began meeting to negotiate a project to complete the City’s infrastructure repairs. In March 2015, the City and the S&W Board, in a “Joint Infrastructure Recovery Request” (Recovery Request), proposed to FEMA an additional \$2.03 billion. In December 2015, FEMA concluded that an additional \$1.25 billion was eligible, and in July 2016, approved two fixed-cost estimate alternative procedures projects to complete the infrastructure repairs. Table 2 illustrates these funding obligations and proposals.

**Table 2: Total Obligated and Proposed Funding (in millions)**

| <b>Applicant</b> | <b>Prior Funding</b> | <b>Proposed Additional Funding (New Orleans and S&amp;W Board Request)</b> | <b>Additional FEMA-Approved Funding</b> | <b>Prior Funding Plus Additional FEMA-Approved Funding</b> |
|------------------|----------------------|--|---|--|
| City             | \$ 409               | \$ 1,810   | \$ 1,121                                | \$ 1,530   |
| S&W Board        | 376                  | 219  | 129                                     | 505  |
| <b>Total</b>     | <b>\$785</b>         | <b>\$2,029</b>   | <b>\$1,250</b>                          | <b>\$2,035</b>   |

Source: FEMA

Following the disasters, the pressure in the water system dropped and the amount of water leaking from the system increased<sup>2</sup>. FEMA committed to restore the water distribution system back to pre-Katrina levels, and one of the

<sup>2</sup> These changes were included in a 2008 study conducted by the National Infrastructure Support Technical Assistance Consultants (NISTAC), an engineering firm that was retained by FEMA to conduct studies of the S&W Board water distribution system.



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immediate actions was to address the known leaks in the system. Between 2007 and 2009, the S&W Board was able to restore the pressure in the water system to near pre-Katrina levels. Nevertheless, the amount of water leaking from the system continued to be above the pre-Katrina level. As a result, the City, S&W Board, and FEMA began to discuss an alternative approach that would require more aggressive repair and replacement activities. These discussions led to the Recovery Request.

During our audit, we met with FEMA officials several times between January 12, 2016 and May 24, 2016 to discuss the issues surrounding the additional \$1.25 billion proposed for completing the infrastructure repairs and expressed our concerns that the majority of infrastructure damages may have preceded Hurricanes Katrina and Rita. However, on July 20, 2016, FEMA officials awarded an additional \$1.25 billion to the City and the S&W Board to complete repairs to the infrastructure.

### Results of Audit

Although FEMA attributed the damages to the water distribution system directly to the disasters, we concluded that FEMA did not have sufficient evidence to support its decision. The demonstration of direct cause is necessary for work to be considered eligible for Federal disaster assistance funding, as required by the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act) and FEMA's own policies. As a result, FEMA should not have awarded the initial \$785 million, or the additional \$1.25 billion to complete the repairs.

In most cases, it is the applicant's responsibility to provide evidence showing direct cause and it is FEMA's responsibility to determine eligibility. However, this did not occur because FEMA was working directly with the sub-grantees to repair leaks and return the water distribution system to its pre-Katrina functionality. While some damages, such as water lines disrupted by uprooted trees, can be directly attributable to the disaster, these types of damages have already been repaired, and paid for by FEMA, as a result of the efforts of the S&W Board to address water losses by repairing leaks in the water system. Nevertheless, the broad scope of work covered by the FEMA award, which we question, functionally replaces the infrastructure of an aging and poorly maintained system of sewer, water, and roads. This massive investment – representing almost \$5,200 for every man, woman, and child in New Orleans – while perhaps sorely needed, is not eligible for a FEMA disaster grant because there is no evidence that the damage was caused as a direct result of the storms.



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### **Criteria for Work To Be Eligible for Federal Disaster Assistance Funding**

The *Stafford Act* provides the statutory authority for Federal disaster response activities and for FEMA's disaster assistance programs for a community's recovery. FEMA's emergency and disaster assistance programs are implemented at 44 Code of Federal Regulations (CFR) Part 206.

Section 406 of the *Stafford Act* authorizes the President to "make contributions ... to a State or local government for the repair, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster... ."

The general eligibility of a scope of work is addressed in 44 CFR § 206.223 (a) (1): "an item of work must: ... [b]e required as the result of the emergency or major disaster event...."

FEMA guidance further develops the criteria for eligibility of a scope of work. FEMA 322 Public Assistance Guide (PA Guide) states that "work must be required as a direct result of the declared disaster ... Damage that results from a cause other than the designated event, or from pre-disaster damage is not eligible." Furthermore, the PA Guide states that "where damage can be attributed to the disaster instead of lack of maintenance, repairs are eligible. It is the applicant's responsibility to show that the damage is disaster related."

### **Poor Condition of Infrastructure Before the Disasters**

#### Water, Wastewater and Drainage Systems

New Orleans' water, wastewater and drainage systems were very old and in poor condition prior to Hurricanes Katrina and Rita. In 2003, 30 percent of the water mains were close to 100 years old, about one third were between 40 and 100 years old, and only a third were newer than 40 years. After the hurricanes passed through New Orleans, the S&W Board retained an engineering firm to prepare a report identifying the capital needs of the S&W Board assets over the near, medium and long terms. The report, titled *Report on Current and Future Capital Needs 2006* (December 2006)((2006 Capital Needs report), identified the water, wastewater and drainage systems, along with power generators, as the primary assets of the S&W Board. The report recognized that "these systems...represent billions of dollars of infrastructure, some of it over a century old."



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As we discuss below, the water system was leaking badly prior to Katrina, with “unaccounted for water,” a rough barometer of the health of the system, at 3 ½ times the national average. This is further evidence of an aged system on the cusp of failure.

The 2006 Capital Needs report contemplated that the bulk of the funds needed to rebuild the sewer and water system would have to come from a source other than FEMA, estimating that FEMA-eligible repairs would total only approximately \$272 million, which the report estimated to be 90 percent of all the hurricane damage costs that are identified as potential FEMA projects.

We requested maintenance records and other documentation that might provide evidence of pre-disaster conditions, but most of the documentation provided was related to a 1998 lawsuit with the Environment Protection Agency for recurring violations of discharging pollutants into the Mississippi River, and did not satisfy our request. Upon further follow-up by the Office of Inspector General (OIG) for information, the S&W Board claimed that its records were destroyed during Hurricane Katrina. FEMA staff claimed that S&W Board gave them access to an electronic work order system, and they conducted an extensive review of work orders from 2003 and 2004. However, FEMA did not document the review, prepare any documentation to support their analysis and conclusions, or prepare a report. Nor could they tell us the backlog of work orders. As a result, we are unable to review the work to determine the accuracy or completeness of the information or determine what steps were taken to verify the reliability of the data. Furthermore, there is no documentation available to establish the pre-disaster condition of the water distribution systems. We are additionally troubled by the S&W Board’s representations that the records were destroyed in the storm, which is contradicted by FEMA personnel recounting their access to an electronic work order system.

The lack of auditable records is significant. According to the PA Guide, damages that are the result of deferred maintenance are not eligible, and the PA Guide further advises FEMA staff to review pre-disaster maintenance records to determine whether the asset in question was properly maintained.

In fact, FEMA has denied claims based on the lack of maintenance records. Following Hurricane Irene in 2011, the Village of Waterford, New York, concluded that several streets were inundated with flood waters for several days, causing damage that should be eligible for FEMA funding. In assessing the claim, FEMA repeatedly requested street maintenance records, which the village never



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produced. FEMA concluded that the lack of records, in conjunction with interviews of local residents, indicated a lack of pre-disaster maintenance. As a result, FEMA denied the village's appeal for eligibility of the street damage because of the lack of pre-disaster maintenance records and the fact that the village could not provide evidence that the storm caused the damage. FEMA ruled that damage caused by deferred maintenance is not eligible for funding because it did not meet the criterion of being disaster-related. This ruling was upheld on appeal.

### **Pre-disaster Annual Reports Show S&W Board Recognition of an Aging System**

The S&W Board, in the years before the storm, recognized that the aging sewer and water systems would require a significant infusion of capital. In the transmittal letter to the Comprehensive Annual Financial Report (CAFR) for the year ended December 31, 2004, the Executive Director and the Utility Financial Administrator reported to the president and members of the S&W Board that the S&W board had developed a water system model that predicted "capital improvements needed over the next 40 years at 3.4 billion dollars." This amount compares closely with details in the 2006 Capital Needs report, which identifies a Distribution System Rehabilitation Program, valued at \$3.2 billion over 25 years. Clearly, the S&W Board identified the need to address its aging assets even before the disasters.

A review of the Management's Discussion and Analysis section of the CAFRs show that the S&W Board had established a 5-year capital improvement program before the disasters in 2005 (see table 3). We noted this program budget beginning with the 2002 CAFR, which is the first CAFR available on the S&W Board website.

The S&W Board reported a 5-year capital improvement program budget of \$1.9 billion in the 2004 and 2005 CAFRs. This amount corresponds very closely with the \$1.89 billion identified as needed in the near term in the 2006 Capital Needs report.



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**Table 3: S&W Board 5-year Capital Improvement Program Budgets**

| <b>CAFR</b> | <b>Total</b>     | <b>Water</b>     | <b>Sewer</b> | <b>Drainage</b> |
|-------------|------------------|------------------|--------------|-----------------|
|             | (\$ in Billions) | (\$ in Millions) |              |                 |
| 2002        | \$1.2            | \$274.9          | \$406.2      | \$515.7         |
| 2003        | 1.6              | 484.6            | 528.8        | 586.6           |
| 2004        | 1.9 <sup>3</sup> | 510.6            | 851.1        | 614.9           |
| 2005        | 1.9              | 426.0            | 738.1        | 736.7           |
| 2006        | 2.0              | 404.0            | 825.2        | 802.3           |

Source: Comprehensive Annual Financial Reports posted on the S&W Board website

In the years before the storm, the S&W Board recognized that its systems required major repairs or replacement. New Orleans’ systems were reaching a failure point as a result of age and would have to be replaced.

**FEMA’s Position – Katrina Was the Cause of Damages**

FEMA concluded that the damages to the water distribution system were directly caused by the disaster and that the repairs are eligible for Federal disaster assistance. FEMA attributed the damages to the water distribution system to a phenomenon known as “water hammer” and pointed to key metrics that showed the water distribution system was more efficient before the disasters than after the disasters.

**Water Hammer Effect**

Water hammer occurs when there is a sudden change in water direction or velocity. When this happens, shock waves, or pressure fluctuations, are created and travel back and forward through the system. These fluctuations can be severe enough to damage pipes, fittings, valves, and water mains.

The pumps at the water treatment facility stopped pumping water into the system when the power to the City of New Orleans went out, and the S&W Board’s backup power supplies were inoperable as a result of the disaster. FEMA staff explained that the power failure dramatically reduced the pressure into the water distribution system and caused water hammer. Yet, FEMA did not conduct a

<sup>3</sup> The amounts for 2004 that are allocated to the major individual components of the capital improvement program, when added together, exceed the totals reported.



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study to establish where the water hammer occurred or identify the specific damage caused by water hammer.

Furthermore, during our review, FEMA's own subject matter expert for sewerage and water systems told the audit team there was no logical way to know exactly what storm caused what leaks in the system. A similar opinion was documented in a report prepared for the S&W Board in 2006: "To date, the S&WB [S&W Board] has not identified a single major source of the leakage ... [and] it is difficult to determine the location of specific leaks caused by Hurricane Katrina."

### **Key Metric of the Water Distribution System – Water Pressure in the System**

Prior to Hurricane Katrina, water was pumped into the water distribution system at a pressure of between 68 and 69 pounds per square inch (psi). The engineering firm that FEMA retained to conduct studies of the S&W Board water distribution system, National Infrastructure Support Technical Assistance Consultants (NISTAC) reported in a March 2010 study that the "pressures were as high as 72 psi in January 2005 but they were in the 68 to 69 psi range in August 2005 before Katrina."

NISTAC reported that the pressure entering the distribution system at the water treatment plant ranged from 60 to 65 psi for the first few years following Katrina. It was not until 2011 that the pressure reached a level similar to pre-disaster levels.

NISTAC evaluated the water consumption, plant discharge volume and plant discharge pressure for the period from April 1, 2011 through October 31, 2011. The findings indicate that the Sewerage and Water Board of New Orleans (S&WBNO) has restored water pressure leaving the plant to its pre-disaster levels, averaging slightly more than 70 pounds per square inch (PSI) over the study period and, achieving levels similar to those found pre-disaster. Water production from the plant varied from month to month, as did consumption. This yielded a variation in UFW ranging from 93 to 101 million gallons per day (MGD), with an average of 98 MGD. The daily average production.

*Source: 2011 NISTAC study*

In 2007, the S&W Board established a program that focused on identifying and repairing leaks. As a result, the repairs through this program, as well as other FEMA-funded projects, helped return the system pressure to the pre-disaster levels.



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### **Another Key Metric - Unaccounted For Water**

Unaccounted For Water (UFW) is the difference between the amount of water pumped into the system and the amount of water that is consumed or used. The consumed water is typically measured by water meters. Generally, the difference is the result of public use, such as water fountains, schools, water used to fight fires, and waste or leaks.

Before Hurricane Katrina, UFW averaged about 60 million gallons a day. In other words, more than 50 percent of the water that was pumped into the system was either leaking out or was used for unbilled public purposes. To give a sense of the poor condition of the New Orleans system prior to Katrina, the national average water loss in audited water systems was 16 percent. A NISTAC study released in November 2011 said that S&W Board “staff reported that line breaks ... continue to be a problem.” It concluded, however, that this was not surprising, given the age of the system.

The S&WBNO continues to make repairs to the distribution system. Their staff reported that line breaks in the system itself continue to be a problem. This is not surprising given the age of the system (almost 30 percent of the mains were close to 100-years old in 2003 and only one third was less than 40-years old according to a 2006 S&WBNO report).

The most likely cause of the increased UFW is related to the pressure increase and continued problems with line breaks within the distribution system. It is likely that the increased pressure is also causing additional line breaks in pipe segments that were borderline prior to the pressure increases. Other possible major sources for increased UFW include water used for major fires. However, NISTAC has seen no indication that such fires were significant factors.

*Source: 2011 NISTAC study*

Taking into account that the water pressure had decreased and the UFW had increased following Hurricane Katrina, FEMA reasoned that this was sufficient evidence to conclude the disaster had caused damage to the water distribution system. Aside from these system metrics, FEMA did not have any concrete evidence that proved that Hurricane Katrina directly caused specific damages.



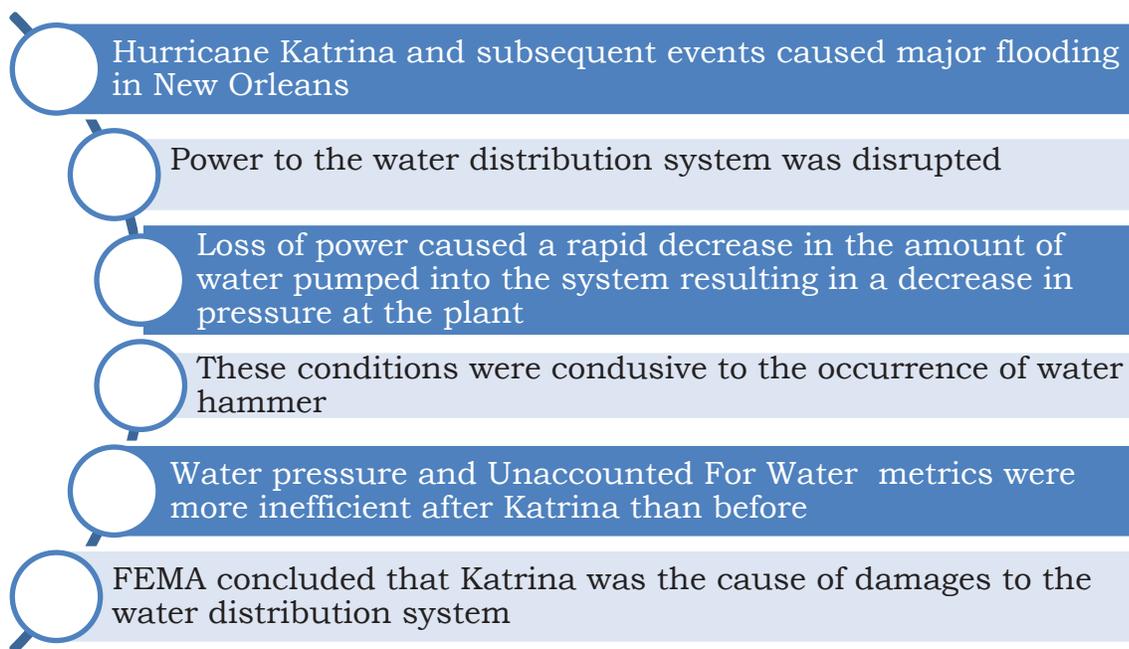
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### **FEMA Concluded that Hurricane Katrina Caused Damages to the Water Distribution System**

FEMA concluded that the damages to the water distribution system were directly caused by the disaster by relying on the scientific phenomenon of water hammer, combined with the evidence that the post-disaster system metrics were more inefficient than the pre-disaster data. As a result, FEMA further concluded that the damages are eligible for Federal disaster assistance.

#### **Figure 1. FEMA’s Assumptions of the Sequence of Events Leading to Conclude that Katrina Caused the Damages to the Water Distribution System**



Source: Prepared by DHS OIG

We believe FEMA used circular logic to conclude that Katrina directly caused damages to the water distribution system. Specifically:

- even though FEMA relies on the post-disaster water system metrics to conclude that Katrina damaged the system, it is unable to identify specific damages that are attributable to the storm; and



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- FEMA concluded that water hammer occurred because conditions in the water system were favorable to the occurrence; however, it is unable to tie specific damages in the water system to water hammer.

FEMA bases its conclusion on two undocumented conditions as cornerstones to its argument that the damages were the direct cause of Katrina. However, it did not take into account other factors such as the poor condition of the infrastructure before the disaster and prior storms that may have impacted the infrastructure. Considering the amount of taxpayer funds at stake, we believe FEMA should be particularly diligent to ensure that its decision-making is accurate and that its conclusions can be validated. Since FEMA is unable to provide evidence to support the underlying foundation of its position, subsequent conclusions are unsupported. As a result, FEMA cannot prove that the system-wide damages are eligible for disaster assistance.

### **Pre-Disaster Roads Were Old and In Need Of Repair**

#### Roads and Pavement

A private, nonprofit, independent research organization, the Bureau of Governmental Research (BGR), conducted a review of the New Orleans roadway infrastructure. The report entitled, “*Street Smarts - Maintaining and Managing New Orleans' Road Network*,” issued in October 2008, noted deficiencies in the condition of the roadways in New Orleans and identified actions that could be taken to address the declining infrastructure.

The report highlighted the results of a New Orleans street survey completed in 2004:

- 32 percent of the City’s streets needed major rehabilitation or total reconstruction, and
- Another 34 percent needed immediate maintenance.

The 2008 Street Smarts report also noted the significant lack of maintenance for the New Orleans street system. New Orleans was spending only about \$3 million per year for road maintenance when its own Department of Public Works estimated that the annual maintenance budget should be in the range of \$40 to \$45 million per year. Baton Rouge, a similar size road system, spends \$26 million per year – or about nine times that of New Orleans.



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Similarly, an engineering study by Burns Cooley Dennis (BCD), commissioned by NISTAC, FEMA's technical assistance contractors, noted that, in 2005, 62 percent of the roads in the New Orleans Road-Year-Database were older than their 20-year design life. Therefore, at the time of Hurricane Katrina, only 38 percent of the roads were within their 20-year design life. By 2015, only 21 percent of the roads in the New Orleans Road-Year-Database were within their design life.

### **City Conducts a Study of the Roads – 10 Years after the Disaster**

Additionally, the City retained an engineering and consulting firm, Stantec, to conduct a study to assess the extent of the damages to the City of New Orleans pavements caused by Hurricane Katrina. This report, issued in February 2016, expressed concerns that, because of the flooding and the heavy traffic of large, heavy vehicles associated with the recovery operations, the roads may have damages that have not yet been identified. However, the FEMA engineering firm discounted this study, finding that "data provided to date has caused more questions than provided answers." Moreover, BCD concluded that it was a "major concern" that Stantec did not know the pavement conditions pre-Katrina and only had road data from 2015, 10 years after the storms, a period which represents half of a road's design life.

BCD concluded in its Pavement Study:

"Given the high water table in the City, the lack of pavement maintenance, the number of pavements past their design life, the poor condition of the pavements, and the lack of pre-storm pavement condition data, it is BCD's opinion that the identification of undetected damage caused specifically by Hurricane Katrina cannot be determined a decade after the storm."

### **Pre-Disaster Maintenance Records Not Available**

OIG requested maintenance records and other documentation to establish the condition of the roads and pavements prior to the hurricanes, as FEMA typically requests to determine eligibility. However, as with the sewer and water maintenance records, the City claimed that its records were destroyed during Hurricane Katrina. As a result, we have no basis to form an opinion on the pre-disaster condition of the roads.



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### Conclusion

Neither the City nor the S&W Board provided evidence that the disasters were the direct cause of the infrastructure damages. Furthermore, since FEMA worked directly with the S&W Board to return the water distribution system to its pre-disaster condition, it was unable to independently evaluate or validate the documentation that demonstrated the damages were directly caused by the hurricanes. FEMA ultimately concluded that the damages were caused by the hurricanes, citing conditions favorable to the occurrence of a physics phenomenon and post-disaster system metrics as evidence, even though it was unable to identify damages directly caused by water hammer or the direct causes of the changes in the system metrics following the disasters.

The criterion for work to be eligible for Federal disaster assistance is that the damages must be a direct result of the declared event. We concluded that FEMA and the sub-grantees failed to meet the criteria required for eligibility.

Therefore, FEMA should deobligate the initial award of \$785 million and deobligate the additional \$1.25 billion awarded to the applicants to complete the pre-existing damaged infrastructure repairs not directly caused by the storms.

### Recommendations

We recommend that the Regional Administrator, FEMA Region VI:

**Recommendation #1:** Disallow as ineligible the additional \$1.25 billion (Federal share \$1.25 billion) awarded to the City and the S&W Board to complete the infrastructure repairs unless the City and S&W Board provide credible evidence that Hurricane Katrina and/or Hurricane Rita caused the damage.

**Recommendation #2:** Disallow as ineligible \$784.9 million awarded to the City and S&W Board for infrastructure repairs, unless the applicants provide credible evidence that Hurricane Katrina and/or Hurricane Rita caused the damage.



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### **Discussion with Management and Audit Follow-up**

We discussed the results of our audit with City, S&W Board, Louisiana, and FEMA officials during our audit. We also briefed FEMA officials of our findings and recommendations on May 24, 2016. In August 2016, we learned that FEMA obligated an additional \$1.25 billion for the City and S&W Board to complete infrastructure repairs, on July 20, 2016. We revised our earlier draft report accordingly and provided it to FEMA officials on August 18, 2016. FEMA Region VI officials responded on September 17, 2016. In its response, FEMA disagreed with our findings and recommendations.

On April 27, 2017, we met with FEMA officials to understand FEMA's eligibility determinations. As a result of our discussions, we revised the draft report to incorporate information shared by FEMA and provided a revised draft to FEMA on June 9, 2017. FEMA provided technical comments and we incorporated those comments into the report as necessary. We met again with FEMA officials on July 6, 2017 to address questions raised by FEMA. On July 20, 2017, FEMA provided management comments to our draft report, which is included as appendix C to this report.

#### **FEMA Response**

FEMA did not agree with our conclusions and did not concur with our recommendations.

#### **OIG Analysis and Conclusion**

Although FEMA reported that damages to the water distribution system and roads were eligible for disaster assistance, our review of the documentation provided did not indicate that the S&W Board, the City or FEMA showed that the damages were the direct result of Katrina and/or Rita. This causation is crucial in determining the eligibility of damages for disaster assistance under the *Stafford Act*. As a result, we concluded that the damages are ineligible and FEMA should: recover the initial funding provided to the S&W Board and the City for repairs to the water distribution system and related roads; and deobligate the funding awarded to the S&W Board and the City under the Joint Infrastructure Recovery Request.



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We are concerned that FEMA did not appear to consider the pre-storm condition of the water distribution system - fragile and aging - with a third of the system close to 100 years old and another third more than 40 years old. As we stated earlier in our report, before Hurricane Katrina, the UFW averaged about 60 million gallons a day. In other words, more than 50 percent of the water pumped into the system was either leaking out or was used for unbilled public purposes. To give a sense of the poor condition of the New Orleans system prior to Katrina, the national average water loss in audited water systems was 16 percent.

The poor condition of the system was further echoed by a NISTAC study released in November 2011 that reported to the S&W Board “staff reported that line breaks ... continue to be a problem.” The study concluded, that this was not surprising, given the age of the system.

Coincidentally, the pre-storm condition of the roads and pavements was in a similar state of disrepair - two-thirds of the City streets needed immediate maintenance, major rehabilitation or total reconstruction. It is not surprising that neither the S&W Board nor the City offered any documentation to establish the pre-storm condition of its assets.

Furthermore, FEMA did not provide evidence that it:

- established or considered the pre-storm conditions of the water distribution system or the roads and pavements in its eligibility determination, or
- documented the steps it took to reach its eligibility decision.

In its management response to our draft report, which is attached as appendix C, FEMA asserted that it documented in its project work sheets as well as the additional funding requests that the repairs were required as a direct result of the declared disaster. However, we determined that the project worksheets and FEMA’s Joint Infrastructure Recovery Request report dated May 3, 2006 did not support how FEMA reached its eligibility decision. FEMA asserted that it “gathered, reviewed, and considered available information to discern the pre-disaster condition of the New Orleans infrastructure to identify disaster-related damage and eligible repair work”, but failed to explain in detail what evidence it used to make its decision.



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In its response, FEMA claimed it “consulted with its professional engineering staff and other subject matter experts (SME) who specialize in engineering, utilities, pavements, soils, and construction, to independently assess and review the New Orleans infrastructure damage” but failed to document the details of how it reached its decision.

As part of our review, we reviewed and analyzed engineering reports and studies FEMA commissioned on the water and sewer systems. None of these reports directly attributed the damages to Katrina, and FEMA’s own engineering staff told us that it was not possible to attribute specific damages to Katrina. FEMA’s roads and pavement experts pointed out there were no records to establish the pre-storm condition of the roads and that two thirds of the roads and pavements were in a state of disrepair before Katrina. In our opinion, none of the facts established by FEMA’s “professional engineering staff and other subject matter experts ... who specialize in engineering, utilities, pavements, soils, and construction...” support FEMA’s position.

In its response, FEMA noted, “Regardless of its age, the New Orleans infrastructure was functioning to serve a population of 445,000 prior to Hurricane Katrina.” While the statement regarding service to the population may be true, FEMA downplays the importance of the age of the system. More importantly, FEMA ignores the efficiency of the system by neglecting to address the fact that prior to Hurricane Katrina, the water system’s unaccounted for water volume represented more than half of its contents on a daily basis and was in dire need of repair. Furthermore, prior to the storm, the S&W Board in its 5-Year Capital Improvement Plan, a part of its Consolidated Annual Financial Report recognized that its systems were reaching a failure point as a result of age and would require major repairs or replacement.

Although FEMA responded that it documented that the repairs were required as a direct result of the declared disaster, FEMA did not explain how it reached these conclusions. FEMA’s failure to adequately support its decision that ultimately requires taxpayers to fund a \$2 billion project raises questions of sufficiency of oversight, adequacy of policies and procedures, and adherence to processes.

In contrast to FEMA’s grant approval process, the Department of Homeland Security (DHS) acquisitions undergo a more stringent review and approval process. All major acquisitions exceeding \$300 million must follow a formal acquisitions review process, which culminates in a series of Acquisition Review Board reviews. Additionally, DHS’ Under Secretary for Management, who serves



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as the Chief Acquisitions Officer is responsible for ongoing decision making. This process provides a consistent method to evaluate an acquisition's progress and status at critical points in the acquisition lifecycle. By the time an acquisition completes the second phase of the Acquisition Lifecycle Framework, two Acquisition Decision Events have been conducted.

At a comparable phase in the FEMA public assistance process for the projects under examination in this audit, the documented project approvals were made by a mix of FEMA operational personnel and FEMA contractors. The final signoff of the \$2.04 billion was approved by the FEMA Region VI Administrator and a FEMA contractor approved the project worksheet. It is apparent that FEMA's oversight of the project approval process pales in comparison to DHS' Acquisition Review Board process. This is of significant concern given that the disaster relief fund averages more than \$10 billion per year, and FEMA grants comprise a large portion of those funds.

It is imperative that FEMA follows its own policies and procedures regarding eligibility and fully documents all decisions regarding eligibility determinations. Considering the significant consequences of failing to follow policies and procedures and neglecting to document on-going actions and decisions, we strongly encourage FEMA to revisit eligibility determinations for sewer and drainage damages to ensure that those decisions are supported by clear evidence to demonstrate causation so that disaster relief funds are not awarded for ineligible work.



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**Appendix A**  
**Objective, Scope, and Methodology**

We audited the eligibility of \$2.04 billion in FEMA funds awarded to the City and the S&W Board under Hurricanes Katrina (Disaster Declaration 1603) and Rita (Disaster Declaration 1607), Public Assistance Identification Numbers 071-55000-00 and 071-06A69-00. This amount includes the initial award of \$784.9 million plus the additional award of \$1.25 billion. The objective of this audit was to determine whether the additional work to complete infrastructure repairs estimated at \$1.25 billion is eligible under applicable Federal statutes and regulations and the Public Assistance Program.

To accomplish our objective, we interviewed FEMA, Louisiana, City, and S&W Board officials; and reviewed and gained an understanding of the City's and the S&W Board's cost estimates to complete infrastructure repairs. We did not assess the adequacy of the City's and the S&W Board's internal controls applicable to their grant activities because it was not necessary to accomplish our audit objective. Except as noted otherwise, our audit covered the period of August 29, 2005, to May 24, 2016.

We conducted this performance audit between January and May 2016 pursuant to the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our audit objective. To conduct this audit, we applied the statutes, regulations, and FEMA guidelines in effect at the time of the disaster.



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**Appendix B**  
**Potential Monetary Benefits**

**Table 2: Summary of Potential Monetary Benefits (\$ in billions)**

| Type of Potential Monetary Benefit | Amount         | Federal Share  |
|------------------------------------|----------------|----------------|
| Questioned Cost - Ineligible       | \$2.035        | \$2.035        |
| Questioned Cost - Unsupported      | 0.0            | 0.0            |
| Funds Put to Better Use            | 0.0            | 0.0            |
| <b>Totals</b>                      | <b>\$2.035</b> | <b>\$2.035</b> |

*Source:* OIG analysis of report findings



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**Appendix C**  
**FEMA's Response to Report**

U.S. Department of Homeland Security  
FEMA Region 6  
800 N. Loop 288  
Denton, TX 76209



**FEMA**

July 19, 2017

MEMORANDUM FOR: John E. McCoy II  
Acting Assistant Inspector General  
Office of Emergency Management Oversight

FROM:   
George A. Robinson  
Regional Administrator

SUBJECT: Management's Response to OIG Draft Report: "FEMA Should Disallow \$2.04 Billion Approved for New Orleans Infrastructure Repairs" (Project No. G-16-015)

Thank you for the opportunity to review and comment on this draft report. The Federal Emergency Management Agency (FEMA) appreciates the work of the Office of Inspector General (OIG) in planning and conducting its review and issuing this report.

FEMA agrees with OIG that the criterion for work to be eligible for Federal disaster assistance is that the damage directly resulted from the declared disaster. FEMA respectfully disagrees with OIG's conclusion that FEMA, the City of New Orleans (City), and the Sewerage and Water Board of New Orleans (S&W Board) have not provided evidence that the disasters were the direct cause of the infrastructure damage at issue in this audit. FEMA non-concurs with the following two OIG recommendations:

**Recommendation #1:** Disallow as ineligible the additional \$1.25 billion (Federal share \$1.25 billion) awarded to the City and the S&W Board to complete the infrastructure repairs unless the City and S&W Board provide credible evidence that Hurricanes Katrina and/or Rita caused the damage.

**Recommendation #2:** Disallow as ineligible \$784.9 million awarded to the City and S&W Board for infrastructure repairs, unless the applicants provide credible evidence that Hurricanes Katrina and/or Rita caused the damage.

The fundamental issue raised by OIG is causation. While FEMA acknowledges the complexity and level of challenge associated with determining which repair costs were eligible, it disagrees that causation was not established. In determining disaster related damage, FEMA documented in the infrastructure Project Worksheets (PWs) for the City and the S&W Board, as well as the \$1.25 billion in additional funding, that the repairs were required as a direct result of the declared disaster pursuant to Title 44 of the Code of Federal Regulations (C.F.R.) § 206.223(a)(1).<sup>1</sup>

<sup>1</sup> The C.F.R. in effect at the time of Hurricane Katrina and applicable to Disaster 1603-LA is dated October 1, 2004.



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To make those determinations, FEMA gathered, reviewed, and considered available information to discern the pre-disaster condition of the New Orleans infrastructure to identify disaster-related damage and eligible repair work. FEMA assessed the damage attributed to Hurricane Katrina and determined how much of the claimed damage was eligible damage not associated with pre-existing conditions or ineligible post-disaster activities. The assessments included: site visits and reviews of technical documentation based on numerous site inspections performed by roadway engineers and experts; pre- and post-Katrina aerial imagery; pre- and post-Katrina closed-circuit television inspections of sanitary sewer lines; pre- and post-Katrina water loss; repair maintenance history records; debris collection data; flood maps; and consultations with roadway design specialists. In carrying out this process, FEMA consulted with its professional engineering staff and other subject matter experts (SMEs) who specialize in engineering, utilities, pavements, soils, and construction, to independently assess and review the New Orleans infrastructure damage.

From 2005 through 2013 FEMA identified and originally scoped damage to the system representing approximately 20 percent of the total sewer and water infrastructure. FEMA determined the damage to be directly attributable to Hurricane Katrina with an estimated cost of \$784.9 million. Based on the identified damage, FEMA engaged SMEs in May 2015 to review codes and standards to determine repair methodologies and then developed an estimate of \$1.25 billion to complete the New Orleans infrastructure repairs: \$1.121 billion for the City to repair streets<sup>2</sup> and \$129 million for the S&W Board to repair sewer and water systems. These repairs are necessary to restore the eligible facilities to their pre-disaster design, function, and capacity with current applicable codes and standards as required by 44 C.F.R. § 206.201(g) and 44 C.F.R. § 206.201(h). Accordingly, the repairs approved by FEMA are eligible costs pursuant to applicable law, regulation, and policy.

FEMA notes that based upon the same review process, FEMA PWs also document ineligible scope of work. FEMA denied over \$1 billion in funding requested by the City and S&W Board. The largest FEMA denial was associated with a loss of life study that sought FEMA funding for 3-inches of asphalt overlay of flooded asphalt streets and 8 percent of flooded concrete streets for approximately \$1.498 billion. FEMA also denied nearly \$100 million requested for storm drain replacements.

Throughout the audit process, FEMA provided OIG in-depth documentation and access to its experts to explain the Agency's conclusion that Hurricane Katrina caused eligible damage to the New Orleans infrastructure. Regardless of its age, the New Orleans infrastructure was functioning to serve a population of 445,000 prior to Hurricane Katrina.<sup>3</sup> This infrastructure was damaged by Hurricane Katrina and FEMA appropriately limited the approved funding to

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<sup>2</sup> The eligible work to repair the sewer and water systems requires the S&W Board to trench and excavate City streets. Approximately 90 percent of the \$1.121 billion FEMA approved for the City was for street repairs that are a result of the eligible sewer and water repair work. The decision to approve this repair work is consistent with established codes and standards, which include design, material, and application.

<sup>3</sup> As of 2015, the population was still not at pre-Katrina levels – only 390,000 residents.



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Katrina-related disaster damage. FEMA believes accepting the OIG recommendations would result in an unjustified de-obligation of funding for eligible City infrastructure projects.

Reflective of such, FEMA notes the OIG's draft report focuses on City roads and the S&W Board water distribution system without discussing the S&W Board sewer or the City's drainage systems, both of which are also included within the project. OIG recommends the full recoupment of infrastructure and road repair funding but does not address in its draft report the aggregate scope of its recommendation, which includes funding for sanitary sewer, storm drainage and associated road work.

FEMA employed significant professional engineering and other specialized expertise to assess the damage and documentation associated with the infrastructure for the City and S&W Board. FEMA met several times with OIG to discuss reports and documentation FEMA used to determine eligibility. FEMA made its SMEs available to OIG to answer any questions regarding the technical findings that helped inform the eligibility determinations. FEMA is confident in its eligibility determination and believes it was reached as a result of due diligence by the Agency.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were provided previously under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.



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**Appendix D**  
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