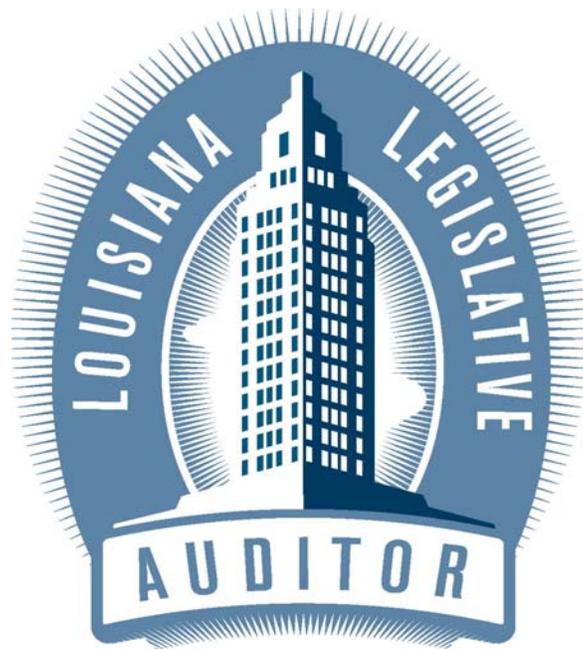


SEWERAGE AND WATER BOARD
OF NEW ORLEANS

LOUISIANA HOUSE OF REPRESENTATIVES
RESOLUTION 92 AND DRAINAGE OPERATIONS



REPORT ISSUED NOVEMBER 7, 2018

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LOUISIANA LEGISLATIVE AUDITOR
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November 7, 2018

**THE HONORABLE LATOYA CANTRELL, PRESIDENT
AND MEMBERS OF THE BOARD OF DIRECTORS
SEWERAGE AND WATER BOARD OF NEW ORLEANS**

**THE HONORABLE JOHN A. ALARIO, JR.
PRESIDENT OF THE SENATE
THE HONORABLE TAYLOR F. BARRAS,
SPEAKER OF THE HOUSE OF REPRESENTATIVES
THE HONORABLE STEPHANIE HILFERTY AND PATRICK CONNICK
LOUISIANA HOUSE OF REPRESENTATIVES**

Dear President Cantrell, President Alario, Speaker Barras, Representative Hilferty, Representative Connick, and Board Members:

This report on the Sewerage and Water Board of New Orleans (S&WB) is divided into two main sections. Section I addresses Louisiana House of Representatives Resolution 92, adopted in the 2018 Regular Legislative Session, and provides recommendations resulting from our assessment of the S&WB's contract processes and tests of related contract documentation. Section II evaluates the S&WB's overall drainage operations and provides recommendations resulting from our evaluation. Appendix A contains the S&WB's response to this report, and Appendix B contains a schedule of federal assistance through the Federal Emergency Management Agency's Public Assistance program since 2005. I hope this report will benefit you in your decision-making process.

We did not perform an audit of the S&WB's financial statements, and accordingly, we do not express an opinion on those financial statements. In addition, our assessment was limited in scope and not designed to identify all deficiencies in internal control. Accordingly, we do not express an opinion on the effectiveness of the S&WB's internal control.

We would like to express our appreciation to the management and staff of the S&WB, Jefferson Parish Council, St. Bernard Parish Government, St. Tammany Parish Government, St. John the Baptist Parish Council, Plaquemines Parish Government, Lafourche Parish Council, St. Charles Parish Council, and Terrebonne Parish Consolidated Government for their assistance during the preparation of this report.

Respectfully submitted,

Daryl G. Purpera, CPA, CFE
Legislative Auditor

DGP/aa
S&WB 2018

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EXECUTIVE SUMMARY

Background

On August 5, 2017, heavy rains in the City of New Orleans resulted in widespread flooding of streets, vehicles, homes, and businesses. Although a press release issued that day by the Sewerage and Water Board of New Orleans (S&WB) noted that the “*drainage pumping system is fully staffed and operational,*” the S&WB’s Executive Director informed the New Orleans City Council on August 8, 2017, that “*it was inaccurate to suggest that the system was operating at its maximum capabilities.*” In the following months, the SW&B experienced significant turnover of its management and continued to receive intense scrutiny and criticism of its drainage and financial operations.

Based on these concerns, the Louisiana Legislative Auditor began an assessment of the S&WB’s drainage and financial operations in September 2017. With the passage of Louisiana House of Representatives Resolution 92 (HR 92), filed by Representatives Connick and Hilferty during the 2018 Regular Legislative Session, the scope of the LLA’s work was broadened to include “an audit of the contracts of the New Orleans Sewerage and Water Board entered into by the board since January, 2013.”

This report addresses HR 92 and provides recommendations resulting from the LLA’s assessment of the S&WB’s contract processes and tests of related contract documentation. The report also addresses our evaluation of the S&WB’s overall drainage operations and provides recommendations resulting from the evaluation.

House Resolution No. 92 – Contracts

Written Policies and Procedures:

We noted that the S&WB did not have adequate written contract policies and procedures over (1) recordkeeping and reporting, (2) procurement, (3) monitoring, (4) change orders and amendments, and (5) payments. Contract recordkeeping is not centralized, nor is there centralized management review and oversight of all contracts.

Assessment of Contract Documentation:

Because the S&WB does not have a centralized contracts management system, it took more than five weeks to obtain listings of the contracts entered into since January, 2013. Although we allowed approximately seven weeks for the S&WB to provide us with 12 of these contracts and related supporting documentation, we only received copies of 11 contracts and did not receive complete supporting documentation for any of the contracts. Using partial supporting documentation, we identified control and compliance deficiencies, including possible constitutional violations relating to the donation of public funds, possible bid law violations, lack of appropriate approvals, and insufficient monitoring of conflicts of interest.

Drainage Operations

Pumps and Power Supply:

We noted that the S&WB operates its drainage pumps on a combination of 60Hz power from Entergy and 25Hz power from its own turbines, which range in age from 37 to 109 years. We observed that the eight neighboring parishes do not use pumps requiring 25Hz power or produce their own electricity and that it costs the S&WB more than double to produce 25Hz power rather than purchasing 60Hz power from Entergy.

Although both broken pumps and out-of-service 25Hz turbines played a significant role in the severity of the August 5th flood, we cannot accurately quantify their impact on flood levels within Old City or other portions of New Orleans. In addition, even if the pumps and power systems were fully functional and fully utilized, the capacity of the canals receiving the pumped water, as well as the condition (clear, clogged, partially clogged) of catch basins and drainage pipes leading to the pumping stations may have further constrained the system's maximum pumping capacity.

The S&WB uses manual operator logs, route sheets, and daily checklists, which are not imaged for transfer into the S&WB's mainframe computer for backup and retention purposes. Also, routine maintenance cannot be performed on turbines that must operate continuously, resulting in potentially more costly maintenance or failure of such equipment in the future. Repairs are generally scheduled in a dated electronic work order system and performed by staff of the Facility Maintenance department; however, major repairs, or repairs that staff cannot perform, are contracted out for bid and not recorded in the work order system.

Communication

Our assessment of the S&WB's organizational chart, financial statements, other documents, and staff interviews revealed inconsistencies in the terminology used for the various departments, which could lead to miscommunication within the organization. We noted that in March 2017 the Executive Director informed the Finance and Administration Committee that emergency repairs were needed to the 25Hz generators and notified the board about the emergency declaration; however, we did not observe any follow-up communications to the board on the status of the repairs prior to the August 2017 flood. Also, written board minutes for meetings held from April 1, 2017, through July 31, 2017, did not disclose any discussions about the status or operability of pumps.

Hurricane/Emergency Operations Plan

The S&WB maintains a broad emergency operations plan that provides a general overview of S&WB operations and the Board's approach to emergency management. However, our review of the minutes of board meetings held from April 1, 2017, to July 31, 2017 (prior to and after the start of hurricane season) did not reveal any specific discussions held with the Board regarding the status of hurricane preparations/issues and readiness of the S&WB's drainage, water, and sewer infrastructure.

Professional Qualifications/Staffing

At the time of the August 2017 flood, state law did not require any Board members or the Executive Director to have experience in the utilities industry. We also note that the 2016 *Black and Veatch* report indicates that adequate staffing continues to be an issue for most departments at the S&WB, especially those departments requiring highly-educated and skilled personnel. The report also notes that a significant portion of the S&WB's leadership will retire within the next five years, and very few potential successors have been identified to assume those leadership positions. The S&WB noted several impediments, including its lack of competitive salaries compared to the private utility industry as well as the policy that requires full-time employees to maintain an actual domicile in Orleans Parish. By comparison, of the eight parishes surveyed, none had such a domicile policy.

Financial Management

The S&WB's diminished cash reserve position will be negatively impacted by a series of \$2 million minimum annual payments required on a 10-year agreement with the Southeast Louisiana Flood Protection Authority – East, as well as \$1 million to \$11.4 million annual payments required on a 30-year financial obligation to the federal government for construction of the Southeast Louisiana Urban Flood Control Project in Orleans Parish.

The 2016 *Black & Veatch* report on S&WB operations indicated several concerns about the S&WB's financial position, cash reserves, debt capacity, and capital project funding for the period 2017-2021.

Federal Program Reimbursements/Expenditures

From 2005 through December 31, 2017, the S&WB has received Federal Emergency Management Agency (FEMA) loans and reimbursements for project expenditures totaling approximately \$557 million, of which \$67 million (12%) was for drainage projects. A detailed listing of Public Assistance project expenditures is included in Appendix B.

In November 2017, the U.S. Department of Homeland Security, Office of Inspector General, began an audit of FEMA Public Assistance grants to determine whether the S&WB accounted for and expended FEMA funds according to federal regulations and FEMA guidelines. As of the date of our report, this audit had not been completed.

Recommendations

The Board of Directors should consider the recommendations included throughout this report, as well as the recommendations made by the Interim Emergency Management and Support Team, when addressing the issues and challenges noted above.

BACKGROUND

Authorization:

Louisiana Revised Statute (R.S.) 33:4071, *et seq.* created the Sewerage and Water Board of New Orleans (S&WB) and provides that it is responsible for constructing, controlling, maintaining, and operating the public water system, public sewerage system, and the public drainage system in Orleans Parish (east bank and west bank). Also, by agreement, certain acreage in adjoining Jefferson Parish use drainage facilities of the S&WB and pay a share of the related expenses.

August 2017 Flooding and Aftermath

On June 29, 2017, approximately five weeks prior to the August 5, 2017, flood, the S&WB issued a press release informing the public about the status of its power and drainage system in response to certain events at that time. The press release stated, “*S&WB wants to reassure customers that in advance of approaching thunderstorms and with the recent Entergy outage, all water services are fully operational. Additionally, all 24 drainage pumping stations with its 120 pumps are fully staffed and operational. S&WB wants to assure our customers that our drainage pumping stations do not rely on Entergy to provide our services. The pumping stations will be powered by S&WB’s own power source and draining pumping stations will continue to operate uninterrupted throughout this outage.*”

On Saturday, August 5, 2017, heavy rains in New Orleans resulted in widespread flooding of streets, vehicles, homes, and businesses. A press release issued this same day by the S&WB stated, in part, “*Sewerage and Water Board’s drainage pumping system is fully staffed and operational. The system is able to accommodate one inch of rain the first hour and half an inch of rain each hour after that.*”

The following day, the City of New Orleans Mayor’s Office issued a press release on what it called “Saturday’s no-notice severe weather and flooding.” The press release stated, in part, “*The Sewerage and Water Board has reported that all 24 of its pumping stations were on and working throughout yesterday’s event.*” Furthermore, the press release stated, “*As much as 8 to 10 inches of rain fell in isolated areas of the city within three to four hours. Many neighborhoods of the city saw rainfall amounts equaling a 1 percent chance of occurring in any year, a so-called 100-year event. Others saw rainfall amounts equaling a 10 percent chance of occurring in any year, a so-called 10-year event.*”

According to information from S&WB staff, the area of New Orleans that experienced the heaviest rainfall was west of the Industrial Canal to the Jefferson Parish line, referred to as “Old City” by S&WB staff. A rainfall analysis regarding the August 5th flood, authored by staff of the National Weather Service’s Lower Mississippi River Forecast Center, reported that gauge observations collected after the event indicated that an area in Old City received more than 9 inches in a three- to six-hour period. The analysis also states, “*This isolated afternoon*

thunderstorm produced a maximum estimated rainfall that had only a 1-in-100 chance of occurring annually.”

Two days later on August 8, 2017, the New Orleans City Council held a special meeting for various officials, including the S&WB’s Executive Director and General Superintendent, to update the Council about the recent rain events and flooding. The Executive Director made a presentation and said that, on August 5th, 14 pumps were out of service (eight drainage pumps and six constant duty pumps), turbine #6 was on standby, and Entergy power was not disrupted that day. He also stated:

- “The volume and speed of the rain far exceeded the capacity of the system used to remove the storm water.”
- “The information I have learned over the last 24 hours indicate that some parts of our systems did not operate as they should have, which is disappointing because it conflicts with information that I was given to provide to the public. Our staff was not forthright, which is unacceptable.”
- “While not the primary cause of the flooding, we now know that some pumps were not operational during the weather event, and that there were some power generation issues that impacted our ability to fight the flood at its highest capacity.”
- “It was inaccurate to suggest that the system was operating at its maximum capabilities.”

In the following days, the S&WB experienced management turnover, including the positions of Executive Director, General Superintendent, and Deputy Director of Communication.

In the August 10, 2017, board meeting, the Board of Directors unanimously adopted a motion that authorized the use of emergency procurement procedures to secure repairs to 10 pumps; engage an independent third party to perform an evaluation of the August 5th flooding event; and provide interim management of the S&WB.

On August 22, 2017, the New Orleans Mayor and S&WB announced the formation of an Interim Emergency Management and Support team to supplement S&WB leadership by providing administrative, financial, and technical capacity through the hurricane season ending November 30, 2017.

Louisiana Legislative Auditor Involvement

Based on public concerns, the Louisiana Legislative Auditor began an assessment of the S&WB’s drainage and financial operations in September 2017. With the passage of House Resolution No. 92 (HR 92), filed by Representatives Connick and Hilferty during the 2018 Regular Legislative Session, the scope of the LLA’s work broadened to include “*an audit of the contracts of the New Orleans Sewerage and Water Board entered into by the board since January, 2013.*”

SECTION I – HOUSE RESOLUTION 92

Louisiana House of Representatives Resolution 92 (HR 92) of the 2018 Regular Legislative Session requests that the LLA conduct “an audit of the contracts of the New Orleans Sewerage and Water Board entered into by the board since January, 2013.” Accordingly, we requested and reviewed the S&WB’s written policies and procedures over contract recordkeeping, reporting, procurement, monitoring, change orders, amendments, and payments. We interviewed staff, conducted legal and best practice research, reviewed a sample of contracts, and assessed related documentation.

Overview of Contracts

The S&WB procures contracts in three primary areas: construction projects, goods and services, and professional services. In addition, some contracts are emergency contracts that are not subject to the same bidding requirements as normal contracts. Contracts over a certain dollar threshold are required to be competitively bid. Small purchase contracts are acquired through informal bidding, with quotes from at least three competitors. After awarding a contract, the S&WB assigns employees to oversee the contract, including contract monitoring, approving change orders or amendments, approving invoices, and closing out the contract.

Exhibit 1 outlines types and examples of contracts, dollar thresholds for each contract type, and the total number and dollar amount of contracts, as reported by the S&WB.

Exhibit 1					
S&WB Contract Types, Dollar Thresholds, and Total Number and Amount of Contracts					
Fiscal Years 2013 through 2017					
Contract Types	Contract Examples	Small Purchase Threshold	Sealed or Competitive Bid Threshold	Number of Contracts*	Total Amount**
Construction	<ul style="list-style-type: none"> • Replace water lines - \$6,699,595 • Repair drainage pump - \$2,947,000 	Over \$30,000 but under \$154,450	Over \$154,450	93	\$320,894,226
Goods and Services	<ul style="list-style-type: none"> • Sewer repair couplings - \$23,000 • Safety supplies - \$200,000 	Under \$30,000	Over \$30,000	238	\$77,195,498
Professional Services	<ul style="list-style-type: none"> • Legal representation - \$5,000 • Communications and Marketing - \$142,505 	Under \$15,000	Over \$15,000	206	\$110,891,825
Emergency	<ul style="list-style-type: none"> • Generator rentals - \$2,600,000 • Project management services - \$3,000,000 	None required	None required	58	\$75,043,136
<p>*Contract numbers and amounts are unaudited, self-reported information. We did not test the data set for completeness or accuracy.</p> <p>**Amount totals do not include costs associated with 67 contracts that did not have a contract amount because the terms of the contract indicated a variable amount (i.e., 12% of collections, etc.)</p> <p>Source: Prepared by legislative auditor’s staff using information from the S&WB.</p>					

Written Policies and Procedures

The S&WB did not have adequate written contract policies and procedures over (1) recordkeeping and reporting, (2) procurement, (3) monitoring, (4) change orders and amendments, and (5) payments. Contract recordkeeping is not centralized nor is there centralized management review and oversight of all contracts.

Recordkeeping and Reporting

The S&WB does not have a centralized, comprehensive master list of all contracts, nor does it have written policies and procedures addressing contract recordkeeping and management reporting. Maintaining complete and updated information on all contracts would allow S&WB management to keep the Board up to date on the status of contracts and provide needed information to make management decisions. Also, by tracking and analyzing overall contract costs, the S&WB may be able to plan/budget more effectively and proactively manage its infrastructure.

Different departments retain various aspects of contract documentation, and no one department is responsible for maintaining complete contract files or data. Because the S&WB lacks centralized management oversight of all contracts, it is limited in its ability to budget. Although not all changes to contract costs can be anticipated, identifying trends could be a tool that S&WB could use to better budget for contracts. In addition, the S&WB's 2016 audit report disclosed that the S&WB does not always close out contracts when completed. Based on interviews with S&WB management, some users keep completed projects open in order to put money aside to pay for cost overruns on other projects.

We also noted that the S&WB has created a Project Delivery Unit (PDU) to establish and implement project management best practices that encourage collaboration, standardization, and efficiency. The PDU collects data from each project, including budgets and major milestones. However, the PDU only works with FEMA-related contracts and capital projects, its roles and responsibilities are not clearly defined, and it does not serve as a central repository for all contract information.

Procurement

The S&WB's policies governing contract procurement do not appear to meet all requirements in state law. In June 2017, S&WB staff drafted internal policies that are in line with requirements of the Public Bid Law (R.S. 38:2211, *et. seq.*); however, they do not meet the requirements of R.S. 33:4084-33:4085, which first amended the S&WB statutes in 1952. These additional statutory requirements apply specifically to the S&WB and have more stringent dollar thresholds and advertising requirements. The June 2017 draft policies were still in draft form when we visited in June 2018, and had not been approved or formally implemented.

Exhibit 2 shows the different contract procurement requirements that apply to the S&WB, with the policies that may not be in compliance with the law noted in red. For all contract criteria

(first column), S&WB's procurement policies (third column) match the public bid law (second column) but not the more specific requirements contained in 33:4084-4085 (fourth column).

Exhibit 2			
Comparison of State Laws and S&WB Procurement Policies			
Construction Contracts			
Criteria	State Public Bid Law, 38:2212	S&WB Procurement Policies	S&WB Specific Bid Law, 33:4085
Contract Type	Public Works contracts exceeding \$154,450	Construction contracts exceeding \$154,450	All contract work exceeding \$10,000
Number and length of advertisement period	1 Publication per week for 3 different weeks	3 publications and advertised a minimum of 28 days on S&WB website	At least 6 publications during a 15 day period
Publication of First Advertisement	At least 25 days before opening of bids	---	---
Location of Advertisement	Local newspaper	Official Journal of Record	Official journal of the City of New Orleans
		Sbno.org*	
Awarded to	Lowest responsible and responsive bidder	Recommended Lowest most responsible and responsive bidder	Lowest responsible and qualified bidder
Purchases of Goods and Materials			
Criteria	State Public Bid Law, 38:2212.1	S&WB Procurement Policies	S&WB Specific Bid Law, 33:4084
Contract Type	Purchases of any materials or supplies exceeding \$30,000	Goods, non-professional services, and materials exceeding \$30,000	Purchases of materials or supplies exceeding \$30,000
Number and length of advertisement period	2 Publications	2 publications and advertised a minimum of 21 days on S&WB website	3 publications in a 10 day period
Publication of First Advertisement	15 days before bid opening	---	15 days before bid opening
Location of Advertisement	Local newspaper	Official Journal of Record	Official journal of the City of New Orleans
		Sbno.org*	
Awarded to	Lowest responsible bidder	Recommended lowest most responsible and responsive bidder	Lowest responsible bidder
*Website address provided by S&WB in its Procurement Policies			
Source: Prepared by legislative auditor's staff using information provided in state law and by S&WB.			

Monitoring

The S&WB has not developed policies and procedures to sufficiently monitor all contracts. While contract monitoring can vary based on the type and specifics of each contract, a sound monitoring process is important for an agency to have adequate assurance that it receives what it contracted for. A monitoring process should provide reasonable assurance that contractors comply with contract terms, meet performance expectations, and resolve problems timely. S&WB contracts include deliverables and may include a standard set of specifications. However, contracts do not define specific contract monitoring requirements, and the S&WB does not have policies detailing how staff should monitor contract specifications. For example, construction contracts may include specifications that indicate regular update meetings between the contractor and S&WB staff and inspections from S&WB staff, but the specifications do not specify when S&WB staff should conduct inspections (other than final inspections) and how to verify work performed.

User departments, such as Engineering and Legal, are responsible for monitoring their own contracts. We found evidence that some project managers are conducting monitoring activities, such as reviewing daily inspection logs; however, without standard policies and procedures, such monitoring may not meet management's expectations. For example, in a 2014 contract for replacement of a sewerage station, there were at least seven different inspectors completing the project's daily inspection reports. The reports contained large variations in the amount of detail provided by each inspector. All of the logs contained a pre-filled date field of May 2, 2017, and none were signed.

In addition, there are no policies requiring supervisors to evaluate whether project managers are completing monitoring activities correctly and consistently. According to S&WB management, the agency has recently implemented a contract performance evaluation for staff to complete at the end of contracts that rates the contractors' performance. In addition, the S&WB approved a policy in 2014 that requires staff to complete a standardized evaluation report for each professional services contract.

Change Orders and Amendments

The S&WB drafted policies and procedures in June 2017 for approving change orders and contract amendments; however, such policies and procedures have not been finalized and are not consistently used by staff. As a result, the S&WB cannot effectively monitor change orders for economy or efficiency.

Change orders are a common and often necessary aspect of contracts, particularly for construction contracts. The S&WB's draft policies state that change order or amendment forms must go through several layers of approval and a cost analysis should be completed. According to S&WB management, for construction contracts, the Engineering Department often informally approves change orders, and the Board, the Procurement Department, and the Budget Department may not be notified of change orders until the work has begun or is complete. For example, in the 2014 construction contract for a sewerage station, Engineering submitted four change orders for Board approval after it accepted substantial completion of the project on

December 29, 2016. Furthermore, Engineering submitted a change order for Board approval in the same resolution as its recommendation for contract closeout. According to S&WB staff, Board members are concerned about the transparency of change orders because the Board is often notified of changes to contracts after the work has been completed. S&WB management stated that it has begun conducting monthly staff meetings to review change orders.

Exhibit 3 shows contract amounts and change order amounts, by contract type, for contracts active during fiscal years 2013 through 2017.

Exhibit 3				
Contract Amounts including Change Orders				
Fiscal Years 2013 through 2017				
Contract Type	Original Contract Totals	Change Order/ Amendment Totals	Change Order Percent of Original	Total Contract Costs
Construction	\$297,740,355	\$23,153,871	7.8%	\$320,894,226
Emergency	41,385,145	33,657,991	81.3	75,043,136
Goods and Services	77,195,498	None listed	None listed	77,195,498
Professional Services	110,691,800	200,025	0.2	110,891,825
Total	\$527,012,798	\$57,011,887	10.8%	\$584,024,685
Contract numbers and amounts are unaudited, self-reported information. We did not test the data set for completeness or accuracy. Also, totals do not include 67 contracts in which the total contract was not listed because the terms of the contract indicated a variable amount (i.e., 12% of collections, etc.). Source: Prepared by legislative auditor's staff using information from the S&WB.				

Following established approval policies that govern contract changes is important to evaluate whether work changes are necessary and fairly priced. For example, a 2017 emergency contract to repair a turbine was originally approved for \$500,000, but the contract had \$4 million in contract change orders. While change orders may be appropriate and necessary, the S&WB does not always conduct a review or obtain the documentation needed to monitor the reasonableness of costs and necessity of work performed. For example, in one contract, a change order was approved via email and did not go through proper approval procedures. In a 2018 contract for drainage pump repair, S&WB staff approved payment of two change orders before submitting the change orders to either the Director of Procurement or the Finance Committee, both of whom are required by S&WB's draft policy to approve change orders before payment may be made.

Payments

The S&WB Project Delivery Unit (PDU) has developed written policies and procedures regarding invoice reimbursement that only apply to FEMA and Hazard Mitigation Grant Program projects. The S&WB's only other written procedure regarding contract payments is a technical guide instructing employees in the Accounts Payable Unit how to key an invoice into the computer for payment. While the procedure instructs employees to review the invoice to make sure all documents are signed and dated by designated personnel, it does not identify who the designated personnel are. Also, the standardized purchase order and invoice forms do not identify the personnel responsible for approving the payment before it may be processed, thereby increasing the risk that errors or fraud may occur and not be detected timely.

In 2014, the S&WB started incorporating contract specifications in all construction contracts. The boilerplate language provides a minimal description of the payment process. Contractors submit invoices to project managers who must certify that the invoiced work was completed satisfactorily before forwarding the invoice for payment. However, as mentioned previously, the S&WB does not have policies and procedures outlining what project managers should do to monitor contracts as the work is being performed.

Recommendations: The S&WB should:

- Develop, adopt, and implement final comprehensive written policies and procedures over (1) recordkeeping and reporting, (2) procurement, (3) monitoring, (4) change orders and amendments, and (5) approving payments, including required personnel.
- Centrally track all contracts and total costs to identify trends and improve management decisions. In accordance with best practices, management should establish and maintain a master list of all contracts, including vendor information, start and end dates, cost of services, type of service to be received, and the employee responsible for monitoring the contract.
- Either comply with its specific bid law statutes (R.S. 33:4084 and 33:4085) or seek an Attorney General opinion as to whether these two specific statutes have been tacitly repealed.

Assessment of Contract Documentation

Obtaining Contracts and Related Documentation

Although we allowed approximately seven weeks for the S&WB to provide us with 12 contracts and related supporting documentation, we only received copies of 11 contracts and did not receive complete supporting documentation for any of the contracts.

In advance of the passage of HR 92, on April 18, 2018, we requested a complete listing of current contracts from the interim Executive Director. We followed up on our initial request on May 8, 2018, and expanded our request to include all contracts entered into since January 1, 2013, in accordance with the final language of HR 92. S&WB management responded that separate contract listings of professional services, construction, goods and services, and emergencies would be provided piecemeal because the S&WB did not have a contracts management system. All contract listings were not received until May 25, 2018, more than five weeks after our initial request.

On June 6, 2018, using the contract listings provided to us, we gave the S&WB a list of 25 contracts and asked for the related contracts, change orders and amendments, and all related procurement, monitoring, and payment documentation. On June 28, 2018, we reduced the number of requested contracts to 12 contracts, based on the fact that we still had not received complete documentation for any of the original 25 contracts requested. Four weeks later on

July 26, 2018, we still had not received complete documentation for any of the 12 contracts and notified the S&WB that we were ceasing all contract work on July 30, 2018. We provided the status of remaining items and pending questions for each of the 12 contracts and informed the interim Executive Director that any documentation not received, or questions not answered, by July 30, 2018, would not be considered in our results.

As of July 30, 2018, we only received copies of 11 of the 12 contracts requested and did not receive complete supporting documentation for any of the 12 contracts.

Results of Testing

Using partial supporting documentation, we identified control and compliance deficiencies, including possible constitutional violations relating to the donation of public funds, possible bid law violations, lack of appropriate approvals, and insufficient monitoring of conflicts of interest.

Of the 12 contracts we selected, five were for professional services, three were for the purchase of goods and services, three were construction related, and one was for emergency services. Five of these contracts had been completed and closed at the time of our assessment.

Our assessment of the contracts and the supporting documentation revealed the following control and compliance deficiencies:

- **Possible Donation of Public Funds:** The S&WB's contract listing included a \$35,368 contract for an employee awards program held at a local hotel on February 20, 2016. The S&WB requested proposals in mid-2015 for a banquet hall accommodation of 550 people and, among other things, a buffet-style dinner. Although payment documentation was not provided for this contract, S&WB staff told us that the program was held. The Louisiana Attorney General has opined (*Opinion No. 09-0238*) that such expenditure is not permitted under Article VII, Section 14 of the Louisiana Constitution, which prohibits the donation of public funds. Additional review of the S&WB contract listings identified similar payments of \$37,586 and \$34,584 in 2014 and 2013, respectively, which had descriptions indicating that they were also for employee award programs.

In addition, we identified four contracts on the listings totaling \$73,851 with descriptions indicating that annual service awards were purchased in 2013 (\$27,975), 2014 (\$23,921), and 2015 (\$21,955). Although these four contracts were not included in our final sample, we had been provided the 2015 contract under the original sample of 25 contracts. This 2015 contract included 152 items that ranged in price from \$66.75 to \$449.50 each. The items purchased included 10k solid yellow gold rings (men and ladies), 24k gold plated watches (men and ladies), 10k yellow gold pendants, 10k solid yellow gold tie tac pins, and sterling silver rings (men and ladies). The Louisiana Attorney General has opined (*Opinion No. 95-210*) that service awards purchased with public funds should be reasonably moderate in price. If not, these expenditures may violate Article VII, Section 14(A) of the Louisiana Constitution.

- **Possible Bid Law Violations:** None of the five contracts that were publicly bid met the advertising requirements of the S&WB's specific bid law (R.S. 33:4084-4085). The Procurement Director told us that the S&WB follows the advertising requirements in the state's Public Bid Law and was not aware of the S&WB's specific bid laws. The three construction contracts were advertised three times in accordance with the Public Bid Law, but not six times as required by R.S. 33:4085. Also, two goods and services contracts were advertised two times in accordance with the Public Bid Law, but not three times as required by R.S. 33:4084.
- **Incomplete/Inconsistent Documentation:**
 - We could not determine whether the correct amount was paid under each of the five completed and closed contracts. The S&WB did not provide us with a report of all payments made under each contract; therefore, we could not determine if the invoices and related payment documentation provided to us was complete.
 - Two of the hourly labor rates in the RFP for one professional services contract did not agree to the rates invoiced to the S&WB. Since only one invoice was provided, we could not determine if the different labor rates resulted in a net overbilling or under billing over the life of the contract.
 - One professional services contract referred to a fee schedule that was not provided; therefore, we could not verify that the invoice rates billed to the S&WB agreed to the contract rates. In addition, we also could not match amounts shown on invoices as "additional charges" to the contract exhibits.
 - 17 individual charges totaling \$377,025 paid under one professional services contract could not be verified to the contract documentation provided.
 - Five of the eight paid invoices provided under the emergency services contract did not have a labor rate schedule attached; therefore, we could not verify that the rates billed to the S&WB were in agreement with the contract.
 - The original contract amount shown on a change order and payment applications for one construction contract was \$18,000 less than the amount in the original contract document. This error had not been identified even though the change order and payment applications evidence the signatures of S&WB staff.
 - One change order item totaling \$147,786 that was billed on one construction contract could not be found in an approved change order document.

- The written contract for one professional services arrangement was not provided to us; therefore, we could not verify the accuracy of the rates charged to the S&WB.
- We were not provided complete documentation to support the cost analysis for two change orders on one construction contract. Without the appropriate detailed supporting documentation for cost analyses, it is not clear that the change order costs incurred by the S&WB were reasonable. For one change order, the S&WB indicated that the contractor's invoice did not include enough detail to verify that a change order "credit" given for a parts substitution was accurate, so an estimator prepared some rough calculations and felt the difference in price was fair and reasonable. For the second change order, the S&WB indicated that estimating software was used to verify that the cost was reasonable, but the documentation was not provided to us.
- S&WB staff explained that it would be difficult to find all monitoring documentation prepared by a third-party consultant on one professional services contract because the documentation was not organized by contract. Maintaining organized documentation and separating the documentation by contract increases the likelihood that all documentation related to each contract can be located timely.
- **Suspension and Debarment:** The S&WB's procurement procedures did not require staff to determine whether a vendor has been suspended or debarred by the federal government. However, we did observe documentation indicating that a search was conducted on the federal www.SAM.gov website for one of the 12 contracts.
- **Insufficient Monitoring of Conflicts of Interest:** The S&WB did not provide us with any evidence that it researched or verified vendor's signed declarations that they had no conflicts of interest relative to the contracts.
- **Lack of Appropriate Approvals:** Contract approval sheets were not provided for two professional services contracts; therefore, we could not verify that the contracts had been approved by all parties as required by policy.
- **Lack of Post Contract Evaluations:** Post contract evaluations were not completed for all five completed/closed contracts. Such evaluations are important to evaluate how the vendor performed during the contract and how well the internal contract management team performed. The information gathered from such evaluations should be used to improve the contract management process going forward.
- **Lack of Monitoring Documentation:** The S&WB did not provide us with monitoring documentation for one professional services contract. Effective

contract monitoring mitigates risk by ensuring that the objectives of the contract are accomplished and that vendors meet their responsibilities.

Recommendations: The S&WB should:

- Expedite the implementation of a centralized contracts management system.
- Cease spending public funds on meals honoring employees, and consult with legal counsel and/or Attorney General's office about the legality of expenditures made for employee awards.
- Either comply with its specific bid law statutes (R.S. 33:4084 and 33:4085) or seek an AG opinion as to whether these two specific statutes have been tacitly repealed.
- Require all invoiced items and related amounts to be agreed to the approved contract, including change orders. Any differences noted should be immediately investigated and resolved, in writing.
- Verify that payment documentation is complete and includes all appropriate approvals before making payments.
- Designate staff to search the federal government's website for registration and exclusion records on all potential vendors to determine if they are in good standing.
- Designate staff to search the Louisiana Secretary of State's website to identify the people registered as officials of potential vendors to evaluate possible conflicts of interest.
- Verify that change orders and amendments are properly approved, in writing, prior to the start of the work.
- Prepare and maintain contract approval sheets for each professional services contract, as required by policy.
- Prepare post contract evaluations, in writing, and maintain for each completed contract.
- Organize all contract related documentation, including monitoring and payment records, so that the documentation can be located timely and understood in the absence of the assigned contract manager. When there are multiple contracts with a single vendor, the documentation for each contract should be kept separate.
- Verify that the detailed cost analyses prepared to determine the reasonableness of change orders includes all documentation to support the analyses.

SECTION II – DRAINAGE OPERATIONS

Based on concerns relating to the August 2017 flooding and aftermath, the Louisiana Legislative Auditor began an assessment of the S&WB's drainage and financial operations in September 2017. We gained a basic understanding of the S&WB's drainage and financial operations by reviewing written policies and procedures and interviewing S&WB staff. We also obtained and reviewed written policies and procedures and interviewed the drainage staff of eight neighboring parishes in order to provide a proper context for S&WB operations. The eight parishes we used for comparative purposes were Jefferson Parish, St. Bernard Parish, Plaquemines Parish, St. Tammany Parish, St. John the Baptist Parish, St. Charles Parish, Lafourche Parish, and Terrebonne Parish.

Overview of the Drainage System

According to the S&WB, its operation of the drainage system dates back to 1903. In general, storm water is directed into curbside catch basins for transportation through pipes to and within the current network of more than 200 miles of open and covered canals to 24 major drainage pump stations, as well as 11 smaller highway underpass pump stations located in Orleans Parish.

The pumping stations mainly use electric pumps, although some are powered by diesel engines, and pull storm water from canals to discharge into outlet canals that flow into Lake Pontchartrain, the Intracoastal Waterway, or the Industrial Canal.

The City of New Orleans (City) also has certain roles and responsibilities that pertain to the drainage system; therefore, coordination is critical between the S&WB and the City. For example, the City is responsible for cleaning and maintaining the catch basins within the S&WB's drainage network, a critical role for the proper functioning of the network. Over the years, the S&WB and the City have executed several cooperative endeavor agreements (CEAs) that have, among other things, defined their respective roles and responsibilities. For example, the following is a brief summary of two active CEAs:

1. July 1, 1992 CEA – This CEA provides, among other things, that the S&WB is responsible for the installation, maintenance, repairs, and replacements on the major drainage system, including manholes. Specifically, this responsibility includes all drainage lines and manholes 36" in diameter and larger. The S&WB also agreed to maintain and repair the subsurface (smaller than 36") drainage if it has funds available and legal authority to use same.
2. February 6, 2012 CEA – This CEA augments the July 1, 1992, CEA by addressing construction projects funded totally or in part by State or Federal (FEMA) funds. The CEA provides that the S&WB will pay for all work on major drainage structures 36" in diameter and larger, including manholes, combination catch basins, conflict boxes, siphons, and all associated hardware, and that the

City's Department of Public Works will pay for all subsurface drainage repairs and replacements on pipes less than 36" in diameter, including all catch basins, catch basin laterals, manholes, and drain hose connections.

Pumps and Power Supply

Drainage Pump Stations and Pumps

The S&WB continues to use both 25Hz and 60Hz power pumps, while the eight neighboring parish systems rely solely on pumps requiring 60Hz power.

The S&WB operates and maintains a combination of older (25 hertz, or Hz) and newer (60Hz) pumps, and the pumps range in age up to more than 100 years old. There are 24 major pump stations that house a total of 120 pumps, of which 100 are drainage pumps and 20 are referred to as "constant duty" pumps. Drainage pumps are primarily used during rain events, whereas constant duty pumps operate continuously and are primarily used to pump out the daily groundwater. In addition, there are 27 pumps at 11 underpass pump stations that function similar to constant duty pumps.

The maximum pumping capacity of the S&WB drainage system is 51,285 cubic feet per second (CFS); however, all pumps cannot be operated simultaneously due to limitations of other components of the drainage system, such as the capacity of canals receiving the pumped water. In terms of volume/capacity of the drainage system, Jefferson Parish's system is the most comparable to the S&WB, with a maximum pumping capacity of 49,688. Of Jefferson Parish's 108 electric pumps, 101 pumps (93%) have generator backup, which includes all major pump stations.

The following table presents a comparison of certain aspects of the S&WB's drainage system to systems maintained by the other surveyed parishes:

	Flood Recurrence Interval	Water Flow Capacity (CFS)	No. of Pump Stations	No. of Pumps	Age Range of Pumps
1. S&WB	<10 year	51,285	24	120	1-109 yrs
2. Jefferson	10 year	49,688	69	183	1-100 yrs
3. Plaquemines	10 year	13,873	22	62	7-63 yrs
4. St. Charles	10 year	10,478	52	130	1-53 yrs
5. Terrebonne	2 to 25 year	10,148	70	168	1-47 yrs
6. Lafourche	25 year	8,523	75	159	6-40 yrs
7. St. John	10 to 25 year	1,181	13	24	1-32 yrs
8. St. Tammany	10 to 25 year	126	5	11	1-16 yrs
9. St. Bernard	25 year	unknown	20	18	1-7 yrs

Additional analysis of information provided by the S&WB and the surveyed parishes revealed the following:

- None of the eight surveyed parishes operate 25Hz drainage pumps. The pumps in the eight surveyed parishes are powered by 60Hz electrical power, diesel, or natural gas.
- The S&WB's drainage system is not currently designed for a 10-year flood recurrence interval (10% chance of flooding in any one year). However, the system is being upgraded to a 10-year flood recurrence interval piecemeal as system components are added or upgraded.
- The S&WB does not use video cameras in its daily monitoring of the drainage system, but indicated that it can use cameras to determine the cause of an issue. By comparison, five of the surveyed parishes reported that they use cameras for the following purposes:
 - Jefferson Parish – Inspect underground pipes and for security at pump stations
 - Terrebonne Parish – Monitor pump activity and for security
 - Plaquemines Parish – Monitor pump engines
 - St. Charles Parish – Monitor pump stations and inlets
 - St. John Parish – Inspect lines and monitor certain areas for flooding and security
- The S&WB uses computer software to monitor some, but not all, drainage pumps but does not have remote access to operate the pumps. Jefferson, St. Bernard, St. Charles and Terrebonne Parishes reported that they use software to monitor pump/lift station operations. Also, these parishes reported they have remote access (e.g., cellphone, computer, safe room) to operate some or all drainage pumps.
- The S&WB's underpass pumps are automatic (bubbler system or float switch), and approximately 50% of the major pump stations are automatic. Jefferson, St. Bernard, St. Charles, St. John, and Terrebonne Parishes reported that approximately 50% or more of their pumps are operated by float switches that automatically turn on pumps when water reaches a certain level.

Power - Produced and Purchased

It costs the S&WB more than double to produce 25Hz power rather than purchasing 60Hz power from Entergy. The eight neighboring parish systems purchase their electricity.

The 25Hz power used to operate the older pumps is produced on-site at the Carrollton Water Purification Plant (CWPP) by turbine generators and transmitted mostly through underground lines to pump stations. The 60Hz electrical power is purchased from Entergy and distributed to parts of the system over residential aerial lines. According to *Black and Veatch's* annual report on the S&WB's 2016 operations, the 25Hz turbines are capable of providing power to approximately 60% of the drainage pumps. S&WB staff told us that the remaining 40% operate on 60Hz power purchased from Entergy.

The S&WB's power generation system consists of five turbines, three of which are powered by steam (boilers) and two that can be powered by either natural gas or diesel (dual fuel). The turbines range in age up to 109 years old. The four oldest turbines were designed for generating 25Hz power, and the newest turbine is designed to generate 60Hz power.

In addition, the S&WB can utilize its five frequency changers to change electricity moving at 60Hz down to 25Hz to provide redundancy (backup) power to the 25Hz pumps. Furthermore, generators are maintained at certain pump stations to provide back-up power in the event of primary power shortage or interruption. There is also one turbine at the CWPP that can generate 60Hz power as a backup to Entergy power.

We note that the S&WB is purchasing 60Hz power significantly cheaper than it costs to produce the outdated 25Hz power. In 2016, it cost the S&WB more than double to produce its own power compared to what it cost to purchase power from Entergy. In 2016, purchased power cost the S&WB approximately 10.2 cents per kilowatt hour compared to the 27.4 cents per kilowatt hour that it cost the S&WB to produce power. In terms of total dollars, it cost the S&WB approximately \$9.1 million to generate 33.2 million kilowatt hours compared to paying \$7.1 million to purchase 69.7 million kilowatt hours from Entergy.

S&WB staff noted that Entergy's power is not as reliable as the S&WB's power because Entergy's power is transmitted over aerial power lines and thus more susceptible to interruption. By comparison, none of the surveyed parishes operate and maintain a power plant for use in their drainage operations, and all purchase and rely solely on 60Hz commercial power to provide primary power to electric pumps.

If all four of the aged 25Hz turbines are working, a conservative total of 50 MW of primary power can be produced. Also, the S&WB was capable of providing 50% of backup power on August 5th by using the newest turbine and frequency changers to produce 24.75 MW. With the completion of turbine repairs and the addition of electro-motive diesel generators purchased after August 5th, the S&WB anticipated having a total of 84.75 MW [50 MW primary + 34.75 MW (70%) backup] of 25Hz power available during the 2018 hurricane season to operate the entire utility system. According to S&WB staff, a total of 53 megawatts (MW) of 25Hz power is required (total connected load) to fully operate the entire 25Hz utility system, which comprises all 25Hz drainage pumps, water purification operations, and sewer operations.

According to S&WB staff, an estimated 49 MW of power is required to operate the 60Hz drainage pumps and the S&WB had 54.8 MW of 60Hz backup power available in the event Entergy's power was interrupted. Since August 5th, according to S&WB staff and

documentation provided, additional 60Hz generators have been acquired and placed at the Carrollton Station, Pump Station D, and various other stations, which further increased the backup power to 81.35 MW.

August 5, 2017 Flood in Old City

Although both broken pumps and out-of-service 25Hz turbines played a significant role in the severity of the August 5th flood, we cannot accurately quantify their impact on flood levels within Old City or other portions of New Orleans.

According to information from S&WB staff, the area of New Orleans that experienced the heaviest rainfall was west of the Industrial Canal to the Jefferson Parish line, referred to as “Old City” by S&WB staff. A rainfall analysis regarding the August 5th flood, authored by staff of the National Weather Service’s Lower Mississippi River Forecast Center, reported that gauge observations collected after the event indicated that an area in Old City received more than 9 inches in a three- to six-hour period. The analysis also states, “*This isolated afternoon thunderstorm produced a maximum estimated rainfall that had only a 1-in-100 chance of occurring annually.*”

Old City is served by 63 drainage and constant duty pumps (both 25Hz and 60Hz) within 10 stations, providing a pumping capacity of 35,698 cubic feet-per-second (CFS), or approximately 70% of the total system-wide drainage capacity of 51,285 CFS. On August 5th, nine drainage and constant duty pumps were out of service with mechanical problems, reducing pumping capacity in Old City by 5,665 CFS, or approximately 16%. Although there was diminished pumping capacity on August 5th due to broken pumps, S&WB staff told us that the failure to have adequate 25Hz power available was a bigger issue.

Two-thirds of the pumping capacity within Old City is comprised of 25Hz pumps. According to S&WB documentation, 3 to 5 MW of 25Hz power is typically used to operate all 25Hz equipment (both drainage and non-drainage equipment) on a sunny day. On approximately 10 days each year, the S&WB must generate more than 20 MW of 25Hz power to maintain all 25Hz operations, with 50 MW of 25Hz power representing maximum 25Hz generating capacity.

On August 5th, three of four turbines were down for repairs and only 5 MW, or 10% of maximum primary 25Hz power, was available system-wide. The S&WB had an additional 24.75 MW of backup power available for a total of 29.75 MW, or approximately 60% of maximum primary 25Hz power.

In contrast, the S&WB staff noted that 60Hz power provided by Entergy was not interrupted on August 5th. Even if power had been interrupted, the S&WB had sufficient 60Hz backup power to operate all 60Hz drainage equipment.

Although both broken pumps and out-of-service 25Hz turbines played a significant role in the severity of the August 5th flood, we cannot accurately quantify their impact on flood levels within Old City or other portions of New Orleans. In addition, even if the pumps and power systems were fully functional and fully utilized, the capacity of the canals receiving the pumped

water, as well as the condition (clear, clogged, partially clogged) of catch basins and drainage pipes leading to the pumping stations may have further constrained the maximum pumping system capacity of 51,285 CFS.

Maintenance and Recordkeeping

Routine maintenance cannot be performed on turbines that must operate continuously, resulting in potentially more costly maintenance or failure of such equipment in the future.

Best practices require standard operating procedures, or SOPs, to be in writing to guide employees in performing routine operations and aid them in their training. SOPs are a set of step-by-step instructions that can reduce miscommunication and help achieve efficiency, quality output, and uniformity of performance. Written procedures are necessary to meet management's expectations by providing a clear understanding of what should be done, how it should be done, when it should be done, and who should do it.

The S&WB has written procedures for performing routine maintenance on pumps; however, staff told us that the information about routine maintenance performed at the manned pumping stations is recorded in manual operator logs, and the routine maintenance performed at unmanned pumping stations is recorded on route sheets or daily checklists. The manual operator logs, route sheets, and daily checklists are not imaged for transfer into the S&WB's mainframe computer for backup and retention purposes. The manual operator logs are kept at the manned pumping stations, and the route sheets/checklists at the unmanned pumping stations are completed three days per week (Monday, Wednesday, and Friday) and turned in to the drainage supervisors. The assistant supervisors are supposed to be reviewing the logs at each manned station at least once a week, and reviewing the route sheets as they are turned in; however, the S&WB does not have monitoring policies and procedures in place to verify that supervisory review is being performed and documented.

S&WB staff told us that the S&WB has maintenance schedules for the turbines as well but that staff cannot perform routine maintenance on a turbine that must operate continuously. Scheduling routine/preventative maintenance allows management the opportunity to plan repair work that will anticipate problems, not constrain operations, and promote corrections before they become serious issues. All maintenance should be performed by qualified people, and if applicable, the manufacturer's recommended maintenance program and schedule should be followed.

Pump and turbine repairs are generally scheduled in what is referred to as Cass Works, an electronic work order system, and performed by the staff of the S&WB's Facility Maintenance department. Cass Works is backed up to the mainframe computer at least once a week. S&WB staff told us that major repairs or repairs that staff cannot perform, including turbine repairs, are contracted out for bid and are not scheduled or recorded in the Cass Works system. S&WB staff also told us that the Cass Works system is antiquated, does not track time and materials used, and is not user friendly.

By comparison, five parishes reported to us that they have detailed written policies and procedures for routine maintenance work, and four parishes reported that they utilize software to assist in managing such work. None of the surveyed parishes reported having deferred maintenance. Also, four parishes reported that they maintained manual drainage records, three reported that they have a combination of manual and electronic records, and one reported that they maintain an all-electronic drainage record keeping system.

The American Water Works Association recently noted that the nation is in the era of infrastructure replacement, as water and wastewater systems are nearing the end of their useful lives. A 2018 drainage assessment conducted by Veolia, under contract by the City of New Orleans, stated that the S&WB runs systems and assets to failure before conducting interventions and maintenance. The assessment noted that the S&WB had no performance standards for equipment, an overall lack of organization, and no standard operating procedures. According to S&WB management, it is not always able to conduct proactive maintenance because of budget restrictions. Because the S&WB's infrastructure is aging, proactive maintenance could result in cost savings in the future.

Recommendations: The S&WB should:

- Study and implement, where feasible, remote monitoring and operations at pump stations utilizing cameras and computers with the appropriate software to reduce response times and enhance overall operational efficiency.
- Bring together industry experts, in coordination with the Board's Strategy Committee, to provide the Board of Directors with options and long-term solutions regarding power and pumps. This is critical considering the ages of the turbines and pumps, the antiquated power (25Hz) being used, the related costs to operate and maintain the system, and the S&WB's significant upcoming financial obligations.
- Develop and implement comprehensive standard operation procedures for the entire drainage system, provide training to employees, and require the work and supervisory review to be documented.
- Replace the dated work order system with a modern-day system that is user friendly and capable of scheduling, tracking (e.g., labor and material costs), and providing detailed management reporting on all S&WB projects from start to finish. Employees should be properly trained on the new system.
- Develop comprehensive preventative maintenance schedules on infrastructure.
- Require manual records and logs to be scanned into the computer system for backup and records retention and consider upgrading to an electronic record and log system.

Communication

Organization Chart

Our assessment of the S&WB's organization chart, financial statements, other documents, and staff interviews revealed inconsistencies in the terminology used for the various departments, which could lead to miscommunication within the organization.

A chain of command is a hierarchy of reporting relationships that establishes who must report/communicate to whom from the bottom to the top of an organization and vice versa. It should be clear as to who is accountable for what, what the lines of authority are, and who has the decision-making powers. This is typically demonstrated by a detailed organizational chart.

According to the S&WB organizational chart included in the December 31, 2016, comprehensive annual financial report, the General Superintendent of Operations and all seven deputy directors in the agency reported directly to the Executive Director, who then reported to the Board of Directors. According to the interim General Superintendent, the Executive Director has the final authority to make decisions in both routine and emergency events.

Our general assessment of the S&WB's organizational chart, financial statements, other documents, and conversations with S&WB staff revealed inconsistencies in terminology used, which could lead to potential miscommunication. For example, although the S&WB's financial statements report the financial position and operations of the combined and separate drainage, water, and sewer departments, the organizational chart does not portray the existence of such named departments. Rather, the organizational chart shows the following four divisions reporting directly to the General Superintendent:

1. Operations
2. Facilities Maintenance
3. Networks
4. Plumbing

Furthermore, an attachment to the organizational chart shows the names of four division heads of the General Superintendent; however, two of the divisions (areas of responsibility) shown are not found on the organizational chart. The four division heads' responsibilities are shown as follows:

1. Water Distribution Maintenance and Sewer Collection Maintenance
2. Facility Maintenance
3. Power Production and Distribution/Water Treatment and Pumping/Wastewater Treatment Operation/Sewer Pumping and Drainage Pumping/Street Drainage Maintenance
4. Plumbing

Also, we noted that the individual staffing positions and reporting relationships within each of the divisions are not included on the official organizational chart. Based on our discussions with

S&WB staff, each director or manager of a department is responsible for creating his/her own detailed organizational chart. The chain of command is the same for both routine and emergency operations.

By comparison, seven surveyed parishes reported that their organizational charts reflect all positions of their drainage/public works department, and one parish reported having a separate organizational chart for emergencies.

Reporting to the Board of Directors

In March 2017, the Executive Director informed the Finance and Administration Committee that emergency repairs were needed to the 25Hz generators and notified the board about the emergency declaration; however, we did not observe any follow-up communications to the board on the status of the repairs prior to the August 2017 flood. Also, written board minutes for meetings held from April 1, 2017, through July 31, 2017, did not disclose any discussions about the status or operability of pumps.

The Board of Directors (Board) sets the tone at the top of an organization. Major responsibilities include, among others, providing direction for the organization and oversight of the chief executive officer. The Board should display effective communication and actions if any objectives of the organization appear to be at risk.

In the March 13, 2017, Finance and Administration Committee meeting, the S&WB Executive Director requested and received ratification of an emergency declaration concerning the turbines that are responsible for generating the 25Hz power that operates much of the S&WB's infrastructure. During this meeting, the Executive Director reported that the turbines were "having some fairly serious issues" on March 7, 2017, and had lost the ability to generate 25Hz power. Turbine repairs were estimated to cost approximately \$500,000 and take four to six weeks to complete.

We noted from our review of the March 15, 2017, Board meeting video, the Executive Director reported that an emergency declaration had been put forth and ratified by the Finance and Administration Committee. However, the Executive Director gave no details about the emergency declaration, and no questions were asked by attending Board members. Later in the same Board meeting, the Finance and Administration Committee Chairman also reported that the Committee had approved ratification of an emergency declaration and stated that it was made "to authorize some emergency contracts to repair generators at the power plant." Again, Board members did not ask any questions, and a motion was carried to accept the Committee's report and recommendations.

Our review of the written minutes of subsequent Board meetings held from April 1, 2017, through July 31, 2017 (prior to the August flood), did not reveal any follow-up reporting to the Board on the status of the emergency declaration or the operability of the turbines.

In the August 8, 2017, City Council meeting, the Executive Director and General Superintendent made presentations that indicated 14 pumps were out of service for repairs on August 5th, of

which eight were drainage pumps and the other six were constant duty pumps. Upon our inquiry about the number of pumps that were out of service on August 5th, S&WB staff told us that 17 pumps were out of service (12 drainage pumps and five constant duty pumps). Our review of the written minutes of Board meetings held from April 1, 2017, through July 31, 2017 (prior to hurricane season and the August flood), did not reveal any discussions held with the Board of Directors about the status/operability of pumps.

We further noted that in the August 8, 2017, City council meeting, a council member questioned the truthfulness of the S&WB's initial statement to the public that all the pumps were working to full capacity. In one of his responses, the General Superintendent stated, "*I think the intention of that statement was to imply that all of those stations were operating at the capacity that they had available to them.*"

Recommendations: S&WB management should:

- Provide the Board of Directors with clear, detailed reporting of all emergency declarations, including periodic status updates and after action reports.
- Prepare a comprehensive organizational chart that clearly shows all departments, job positions, and reporting relationships/chain of command within the S&WB. The chart should be shared with all employees to help them gain an understanding of how the organization is designed and where they fit within the organization.

Hurricane/Emergency Operations Plan

The minutes of Board meetings held from April 1, 2017, to July 31, 2017 (prior to and after the start of hurricane season) did not reveal specific discussions held with the Board regarding the status of hurricane preparations/issues and readiness of the S&WB's drainage, water, and sewer infrastructure.

The S&WB maintains a broad emergency operations plan (EOP) that provides a general overview of S&WB operations and the Board's approach to emergency management. The EOP notes that it is the responsibility of the departments to integrate their departmental procedures, guidelines, and emergency management activities into the plan. We noted that there is a separate hurricane preparation manual that addresses the S&WB's drainage operations. Seven of the surveyed parishes reported having a written hurricane preparation plan, of which six parishes indicated that it addressed drainage operations.

The S&WB's EOP addresses emergency operations for hurricanes as well as seven other potential hazards/threats. The EOP included hurricane checklists for the drainage pump stations that, among other things, designate the individual employees who are responsible for ensuring completion of the checklists, and include a timeline (e.g., 72 hours, 60-54 hours, 48 hours, and 24 hours) with actions to be taken prior to the event. Since hurricane season spans six months each year (June 1 to November 30) and demands significant resources in planning and monitoring, it is critical that repairs/replacements are made to the drainage system (e.g., pumps

and power equipment) on a timely basis. This increases the likelihood that the system will be working at capacity, which in turn lessens the risk of property damage.

Based on our discussions with S&WB staff, we did not find evidence of a formal process for lower level employees to report the status of preparations/issues up through the chain of command. Furthermore, our review of the written minutes of Board meetings held from April 1, 2017, through July 31, 2017 (prior to and after the start of hurricane season), did not reveal specific discussions held with Board members about the status of hurricane preparations/issues and readiness of the S&WB's drainage, water, and sewer infrastructure. S&WB staff told us that the Deputy Director of Security, as the head of emergency management, does not have direct communication with the Board. Emergency management personnel are not represented on any Board committees or subcommittees, and there are no policies/procedures requiring communication to the Board about the status of emergency plans, preparations, or operations.

Recommendations: The S&WB should:

- Consider forming a committee or subcommittee to be charged with all matters involving hurricane and emergency preparedness/readiness.
- Develop and implement policies and procedures that provide a process for ground level employees to communicate/report their findings and status of emergency preparations up the chain of command to supervisors and to the Deputy Director of Security.

Professional Qualifications/Staffing

At the time of the August 2017 flood, state law did not require any Board members or the Executive Director to have experience in the utilities industry. A significant portion of the S&WB's leadership will retire within the next five years, and very few potential successors have been identified to assume those leadership positions. None of the eight surveyed parishes have a domicile policy.

Board of Directors

State law (R.S. 33:4071) provides that the public water system, the public sewerage system, and the public drainage system of the City of New Orleans is to be operated by a sewerage and water board composed of 11 members. At the time of the August 2017 flood, state law did not require any board members to have experience in the utilities industry.

By contrast, drainage operations in the eight surveyed parishes are one of many direct functions within each parish government. One of the surveyed parishes has a separate board established by ordinance that advises the parish president on matters concerning water, sewer, and drainage operations in the parish. However, plans or proposals approved by this board are still submitted to the parish president for further transmission to the parish council prior to council action on those plans or proposals.

Following the 2018 Regular Session of the Louisiana Legislature, the S&WB's governing board is currently composed of the Mayor of New Orleans, who serves as the ex officio president; the chair of the City's Public Works, Sanitation and Environment committee (or a civil engineer appointee); two appointed representatives of the Board of Liquidation; and seven appointed citizens, of which five must represent council districts and two must be consumer advocates, with one of the two being a retired civil engineer.

Executive Director

State law and the S&WB's bylaws require the Board to elect an Executive Director and to provide the duties of the position. However, the law is silent with respect to any professional qualifications or experience required for this position, and there is no requirement that the Executive Director have experience in the utilities industry.

The bylaws also provide that the Executive Director is responsible for the daily operations of the organization. Executive Director responsibilities noted include, among other things, being present at all meetings of the Board and its Committees, keeping full and accurate written records of the proceedings at all such meetings, and being the custodian and holding in safekeeping all records and papers belonging to the Board. The bylaws also state that the Executive Director shall perform such other duties germane to his office, as may be required of him by direction of the Board.

We inquired about the qualifications and experience required for the Executive Director position and were provided a document dated October 25, 2013. The qualifications contained in this document state, "*A Bachelor's degree from an accredited college or university, with a major in relevant disciplines, including but not limited to, engineering, administration, management or a related field, is required. A Master's degree is preferred.*" This document also provides, "*The ideal candidate shall have a minimum of fifteen years of progressively responsible experience in public or private sector management and at least five years' experience in a manager's position overseeing the efforts of at least 400 employees.*" Furthermore, the Executive Director is required to be a resident of New Orleans.

General Superintendent

State law also requires the Board to elect a competent and skillful engineer as General Superintendent and to define the duties and powers of such position. According to the job description, the Utilities General Superintendent serves as the chief engineer for the S&WB and is responsible for not only the drainage activities, but also the water and sewer activities of the S&WB.

According to the S&WB's job requirements, the General Superintendent position requires the minimum education requirement of a bachelor's degree in Civil Engineering or a master's degree in Engineering. Furthermore, the S&WB requires certification as Professional Engineer and Certification as Class IV Operator in Wastewater Collection and Potable Water Distribution. In addition, 10 years of experience is required, preferably in a utilities-related organization.

The General Superintendent position is somewhat comparable to that of a parish's public works director in the sense that both positions are generally responsible for overseeing multiple public work-type activities. In comparison to the surveyed parishes, the S&WB requires similar or higher educational achievement and work experience for this position. Of the seven parishes that have a public works director or an equivalent, one parish requires the public works director to have an engineering degree. Also, work experience ranged from two years to 10 years. In addition, of those seven parishes with a public works director, five also employ a separate drainage department head or superintendent.

Board of Advisory Engineers

The Board of Directors has not established a Board of Advisory Engineers. R.S. 33:4075 gives authority to the Board to organize, employ, and fix the compensation of a Board of Advisory Engineers in order to arrange and devise an efficient public sewerage and drainage system and to provide an adequate public water supply. Given the current and past issues faced by the S&WB, together with an anticipated depletion in professional skills within the ranks of the organization, the creation of such an advisory board could be beneficial to the S&WB.

General Staffing Considerations

State law gives authority to the Board of Directors to employ all necessary clerks, engineers, firemen, and other skilled and unskilled employees necessary and proper to the efficient administration, operation, and control of the public water, sewerage, and drainage systems. Also according to law, all employees, except unskilled laborers, are required to pass the civil service examination administered by the civil service commission of the City of New Orleans. Civil service rules do not apply to the Executive Director, General Superintendent, or the Board of Advisory Engineers.

The 2016 *Black and Veatch* report notes that adequate staffing continues to be an issue for most departments at the S&WB, especially those departments requiring highly-educated and skilled personnel. The report also noted that a significant portion of the S&WB's leadership will retire within the next five years and that very few potential successors have been identified to assume those leadership positions.

S&WB staff told us that prior to August 5, 2017, the S&WB had a total of 1,501 authorized positions, of which 326 (22%) were vacant. These figures included a total of 98 drainage positions, of which 9 were vacant (9%). Additional positions have since been authorized, and as of January 1, 2018, the S&WB reported a total of 1,814 authorized positions, of which 609 (34%) were vacant. The January figures included a total of 144 drainage positions, of which 42 were vacant (29%).

According to the S&WB Human Resources department and management, the S&WB has experienced an overall staffing shortage for many years. The S&WB is facing external and internal challenges to hiring and retaining employees, including the lack of competitive salaries compared to the private utility industry. Another impediment to hiring and/or maintaining a qualified and experienced workforce that was noted by the S&WB is the policy of the Board

(and City) that requires full-time employees to have and maintain an actual domicile in Orleans Parish. By comparison, of the eight surveyed parishes, none had a domicile requirement. However, St. Charles Parish indicated that it gives preference to applicants that are parish residents but may hire applicants from outside of the parish when a position cannot be filled with an in-parish applicant. We also note that a consulting firm hired by the S&WB to perform a compensation and classification study recommended, in a report dated November 20, 2017, that the S&WB seek a waiver for the residency requirement and limit the requirement to senior management (Directors and above) positions only.

Recommendations: The S&WB should:

- Consider amending applicable legislation to require additional experience in the utilities industry for appointees to serve on the board.
- Develop a formal job description for the Executive Director position, to include a requirement for work experience in the utilities industry.
- Consider establishing a Board of Advisory Engineers to further its efforts in seeking input from professionals both locally and nationally.
- Continue its existing strategies to address the staffing shortage, including workforce development partnerships with local colleges, as well as continuing to work with the New Orleans Civil Service Commission.

Financial Management

The 2016 *Black & Veatch* report on S&WB operations indicated several concerns about the S&WB's financial position, cash reserves, debt capacity, and capital project funding for the period 2017-2021.

The 2016 *Black & Veatch* report on S&WB operations includes an analysis of financial operations projected for the drainage department for a five-year period (2017–2021), which indicates that current revenue sources are not adequate to meet projected operation and maintenance expenses and total debt service on existing bond issues beginning in 2021. However, we note that should operating cash reserves be depleted and not available, projections for next year (2019) indicate that the current tax revenue is not adequate to meet projected expenses and total debt service. In addition, the report states, “The Drainage Department will not have the debt capacity to fund all of the capital requirements through 2021. Due to constraints on revenue, it is anticipated that capital projects during the 5-year period will exceed the amount of funding available from the Drainage Department.” Black & Veatch recommended that the Board defer capital projects until an additional source of operating revenue has been identified and the S&WB has the capacity to debt finance more projects.

In our review, we noted that in a Finance and Administration Committee meeting shortly after the August 5th flood, the S&WB's Chief Financial Officer (CFO) reported that as of June 30, 2017, the S&WB had combined operating reserves available, in excess of required 90-day bond

reserves, totaling approximately \$85.3 million. The CFO reported that the Financial Management Policy requires the S&WB to maintain 180 days of operating reserves (180 days of projected operating expenses) but also gives the Board the authority to divert reserves in excess of 90 days (90 days is required to be maintained by bond covenants) on an interim basis during a declared emergency with specific intent to restore those reserves at a reasonable later date.

At the December 20, 2017, board meeting, the Interim Emergency Team reported that the combined emergency costs incurred to date to stabilize the system totaled approximately \$72 million. Two months later at the February 21, 2018, Board meeting, the S&WB reported that the emergency costs totaled approximately \$79 million, an increase of approximately \$7 million.

Furthermore, it is important to note that the S&WB's diminished cash reserve position will soon be further negatively impacted by upcoming payments required on the following two long-term financial obligations that pertain to improvements made over the years to the drainage system by the federal government:

1. On December 20, 2017, the Board of Director's authorized entering into a 10-year cooperative endeavor agreement (CEA) with the Coastal Protection and Restoration Flood Protection Authority Board and the Southeast Louisiana Flood Protection Authority – East (SLFPA). The CEA provides options to renew every five years thereafter.

In 2018, the CEA requires, among other things, the S&WB to start making certain annual payments to SLFPA who will begin operating and maintaining the three permanent canal closures and pump stations located at the 17th Street, Orleans Avenue, and London Avenue outfall canals upon transfer by the U.S. Army Corps of Engineers (USACE). The S&WB's 50% share could be more than \$2 million per year.

2. The S&WB anticipates that in 2019 it will begin repayment on a 30-year financial obligation to the federal government for construction of the Southeast Louisiana Urban Flood Control Project (SELA Project) in Orleans Parish. The SELA Project, authorized in 1996, is being constructed by USACE to reduce the risk of flood damages, and comprises 20 projects in Orleans Parish. The SELA Project encompasses, among other work, improving 12 major drainage canals and constructing two new pump stations.

In December 2017, the S&WB estimated that its obligation totals approximately \$212 million and that the SELA Project is approximately 80% - 85% complete. S&WB staff have estimated the initial annual payment in 2019 to be approximately \$1 million, increasing to \$4.3 million in 2020, and rising to a maximum annual payment of approximately \$11.4 million in 2021, as the remaining projects are completed.

Although the annual payments required under those two financial obligations are estimates, the payments are significant enough to further escalate the S&WB's need for additional revenue dedicated for the drainage department.

Recommendations: The S&WB should:

- Require the preparation of monthly operating cash flow projections on all three systems (drainage, water, and sewer). The timely preparation of cash flow projections are critical considering the significant reduction in operating reserves and the 90-day reserve required to be maintained by bond covenants. These cash flow projections should be presented to the Board of Directors for review/discussion and use in their decision-making process.
- Continue communications with the Board of Liquidation, Bond Counsels, and Rating Agencies as emergency costs and financial matters develop.
- Continue refining cost estimates of current and future capital projects to add as much precision as possible to its projected cash needs.
- Develop a formal plan to restore and maintain the operating cash reserve balances at the 180-day level, as required by policy.
- Bring together business and community leaders to review/discuss the S&WB's financial position, including cash flows, deficits (current and projected), and funding analyses to identify a long-term solution and funding source(s) for drainage operations and capital improvements.

Federal Program Reimbursements/Expenditures

From 2005 through December 31, 2017, the S&WB has received FEMA loans and reimbursements for project expenditures totaling approximately \$557 million, of which \$67 million (12%) was for drainage projects.

In the aftermath of Hurricane Katrina (August 2005), the S&WB has participated in the Federal Emergency Management Agency's (FEMA) Community Disaster Loan Program, Hazard Mitigation Program, and Public Assistance Program. As of December 31, 2017, federal reimbursements/expenditures made to or on behalf of the S&WB have totaled approximately \$557 million, of which \$67 million (12%) was for drainage projects. The following summarizes the federal expenditures made to or on behalf of the S&WB:

Community Disaster Loan Program

The S&WB received loans totaling \$61,956,747 through the Community Disaster Loan (CDL) program administered by FEMA. According to the S&WB, 59% of the total loan was forgiven (cancelled) in 2010, and the remaining balance and accrued interest was forgiven in 2013. The CDL program was available to assist local governments that experienced revenue

losses and/or increased operating expenses as the result of the presidentially-declared disaster. These loan funds were for carrying on existing local government functions and not for financing capital improvements or for repairing and restoring damaged public facilities.

Hazard Mitigation Grant Program

The S&WB has two grants through FEMA's Hazard Mitigation Program. Work is ongoing under one grant, and the other grant has been closed:

1. **Retrofit of Power Plant** - FEMA has approved funding \$150,795,389 (84%) of the \$178,955,968 total cost of multiple projects intended to harden or make parts of the Carrollton Water Purification Plant (CWPP) less susceptible to future storm damage. The work is ongoing and as of December 31, 2017, FEMA has funded \$47,661,044 (32%) of the approved budget.

The scope of work under this grant includes:

- Relocating the Oak Street River Intake and Pump Station to the river side of the levee and raising critical components above the river flood stage
 - Upgrading turbines, boilers, and associated mechanical, electrical, instrumentation, and controls in the CWPP
 - Hardening the CWPP complex, including replacement of structural beams, internal grating, floors, etc. as needed to support the turbines, boilers, finished water pumps, and auxiliary units
 - Hardening the CWPP power distribution network, including replacement of 13 underground electrical feeders and duct banks
 - Replacing the existing emergency fuel storage tank with smaller fuel tanks
2. **Hazard Mitigation Plan** - FEMA funded a total of \$43,200 for the development of a specific hazard mitigation plan for the S&WB. Although the S&WB was originally included in Orleans Parish's hazard mitigation plan, a separate plan was funded to allow the S&WB to specifically develop mitigation strategies and priorities with an emphasis on risks specific to S&WB facilities (water, sewer, and drainage systems). This grant was closed in August 2016.

Public Assistance Grant Program

The S&WB is also participating in FEMA's Public Assistance (PA) grant program. PA funds are intended to be used for debris removal, implementation of emergency protective measures, and permanent restoration of infrastructure. As of December 31, 2017, FEMA has obligated a total of \$810,205,316 to the S&WB, of which \$31,863,550 (4%) is for repairs to the drainage system.

As of December 31, 2017, of the \$810,205,316 obligated, FEMA had paid/reimbursed a total of \$409,483,220 (51%), of which \$29,515,483 was for drainage projects. The drainage projects comprise 12 small (less than \$55,500) and 27 large Project Worksheets (PW) prepared by FEMA to fund repairs to the drainage system caused by Hurricane Katrina, as well as one additional large PW that was written for damages caused by Hurricane Isaac. The large projects total \$31,633,763 and the small projects total \$229,787. See Appendix B for a complete listing of all large and small (drainage and non-drainage) projects in the PA program.

During our assessment, we also inquired about management decisions made years ago as FEMA was obligating projects for damage caused by Hurricane Katrina. More specifically, we asked why S&WB facilities were repaired rather than upgraded to more modern standards/equipment. S&WB staff told us that the Executive Director, General Superintendent, Chief of Operations, and Chief of Engineering at the time made these decisions, but that the overarching obstacle was the lack of funding. FEMA's repair versus replacement calculation was one factor that contributed to the decision to repair. Also known as the "50 Percent Rule," this calculation generally compares the repair cost to the replacement cost for a facility. If the repair cost is more than 50% of the replacement cost, then FEMA will fund the cost to replace the facility at the pre-storm size or designated capacity and function of the building to all applicable codes. If the repair cost does not exceed 50% of the replacement cost, FEMA will fund the repairs. Applicants may request an improved project from FEMA, which allows the applicant to make improvements to a facility while still restoring its pre-disaster function and at least its pre-disaster capacity. However, the funding is limited to the federal share of the costs that would be associated with repairing or replacing (based on the 50 Percent Rule) the damaged facility to its pre-disaster design. The balance of the funds is a non-Federal responsibility. The S&WB representative explained that the Board's bond rating was low after hurricane Katrina, and the Board had other priorities to address with the water and sewer systems (sanitation) to prepare for citizens re-entering the City, so funding was not available to update or upgrade the drainage system.

In November 2017, the U.S. Department of Homeland Security, Office of Inspector General, began an audit of FEMA Public Assistance grants to determine whether the S&WB accounted for and expended FEMA funds according to federal regulations and FEMA guidelines. As of the date of our report, this audit had not been completed.

Other Federal Expenditures

In the aftermath of Hurricane Katrina, the U.S. Department of the Army entered into an agreement with the S&WB to repair, restore, or rehabilitate 21 of the damaged non-federal pump stations at 100% federal expense, which was estimated to cost \$37,537,000. According to S&WB staff, the Executive Director and General Superintendent at the time decided to turn over the major portion of necessary pumping station repairs to the Corps so that the S&WB could focus its efforts on the water and sewer systems.

APPENDIX A: MANAGEMENT'S RESPONSE



"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

Sewerage & Water Board OF NEW ORLEANS

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NEW ORLEANS, LA 70165 • 504-529-2837 OR 52-WATER
www.swbno.org

November 1, 2018

Daryl G. Purpera, CPA, CFE
Louisiana Legislative Auditor
1600 North Third Street
Baton Rouge, LA 70804-9397
Via e-mail: dpurpera@lla.la.gov

Re: Advisory Services Audit Draft Final Report for Sewerage and Water Board of
New Orleans

Dear Mr. Purpera:

Thank you for sharing the draft of the final advisory services audit report from your office, regarding the operations of Sewerage and Water Board of New Orleans ("Board"). We appreciate the work and effort to provide guidance to us as the Board regains its footing following the past year of disrupted transition, and look forward to a healthy, productive relationship.

Many of your recommendations correspond to courses of action already charted and undertaken by the Board to modernize its infrastructure; standardize and control the contract procurement and monitoring process, and update policies and procedures -- in general, to complete the transformation to the most effective, resilient, and efficient condition possible. The new, permanent management team of the Board is fully committed to incorporating all such improvements.

Since the audit process started in September 2017, the Board has had a full year of temporary executive directors, financial officers, engineers and consultants, communications staff, and other managers and leaders (see attached "Management Overview/Changes Since August 2017"). Additional extreme weather events¹ further disrupted the physical², fiscal³, operational⁴, and human infrastructure of the Board. The

¹. Winter Storm Inga; see those and other multiple emergency declarations by the Mayor of New Orleans and the Governor of Louisiana (see attached copies).

² The area suffered extended deep freezing temperatures, ice and snow in January 2018. Pipes froze and burst throughout the city, causing pressure drops, extended "boil water" advisories, and related issues for Board emergency response, all at a time when the second interim executive director, Marcie Edwards, had just arrived from her home in Los Angeles to begin work.

membership and leadership of the Board changed and institutional stabilization began following the May 2018 inauguration of the new Mayor of New Orleans (who serves as Board President) delayed after her election in November 2017 due to a changed election cycle.

Flooding results from multiple, well-known factors including (in addition to torrential rainfall) “geographical dips in the terrain, several square miles of surface concrete and steadily sinking land that compounds all the negative effects.”⁵ Reported rainfall during the August 5, 2017 storm was from 2 to 16 inches during one afternoon (see attached chart). As your report notes, this, while highly unusual, was not out of line with other, occasional, historic events throughout New Orleans’ meteorological history⁶ including Hurricane Katrina, May 1995, June 1991, and November 1989 (see attached chart).

Clearly, comprehensive management of drainage in New Orleans requires better topographical awareness, creative and more environmentally friendly options, and better land-use and development planning, as well as traditional piping, pumping and power⁷. We understand the magnitude of such needs, the commensurate long-term, public and community commitments required, and that the integrity and credibility of Board leadership is critical. We appreciate your support of our holistic approach and specific recommendations to realize the suggested improvements

The draft report reflects both your original audit’s assessment of the Board’s drainage and financial operations (September 2017 – April 2018) (a copy of the May 1, 2018, response by previous management response is attached) and second audit of Board contracts (May – August 2018 prompted by legislative action (HR 92). It is worth noting, too, the concurrent creation of a special legislative task force to consider restructuring and possible privatization of the functions of the Board (HR 193 by the coauthor of HR 92)(copies of both Resolutions are attached).

We concur with many of your recommendations. Other comments, however, deserve response particularly in light of the passage of time and subsequent events. Each of your recommendations is addressed below, in a format that reflects the combined report in two sections that correspond to the two audit processes.

SECTION I – HOUSE RESOLUTION 92

Written Policy & Procedure Recommendations: The S&WB should:

- Develop, adopt, and implement final comprehensive written policies and procedures over (1) record-keeping and reporting, (2) procurement, (3) monitoring, (4) change orders and amendments, and (5) approving payments, including required personnel.

⁵ See attached articles.

⁶ “New Orleans dips its toes into living with water”, New Orleans Times Picayune, October 14, 2018 (attached

⁷ “Terrain, broken drains and too much rain: Why New Orleans floods”, New Orleans Times Picayune, October 14, 2018 (attached) .

RESPONSE: Management is in agreement and is working to finalize the draft procurement manual that was initiated in 2017. Recruitment of procurement personnel is currently underway.

- Centrally track all contracts and total costs to identify trends and improve management decisions. In accordance with best practices, management should establish and maintain a master list of all contracts, including vendor information, start and end dates, cost of services, type of service to be received, and the employee responsible for monitoring the contract.

RESPONSE: Management is in agreement with this recommendation. SWBNO is currently looking at its organizational structure to assign accountability for document and contract management and is looking to identify and implement a procurement technology solution that will reflect best practices.

- Either comply with its specific bid law statutes (R.S. 33:4084 and 33:4085) or seek an AG opinion as to whether these two specific statutes have been tacitly repealed.

RESPONSE: Management agrees, and will seek legislation to update or repeal its outdated statutes to align with the current Public Bid Law and Board policies.

Assessment of Contract Documentation Recommendations

Recommendations: The S&WB should:

- Expedite the implementation of a centralized contracts management system.

RESPONSE: Management is in agreement and is looking to identify and implement a new procurement technology solution that will be a centralized vehicle for contract initiation, management, payment and closeout. The intent is to ensure that all documentation management needs are compatible with the procurement system so that bid documents, contracts and invoice payments can be accessed from within the procurement system.

- Cease spending public funds on meals honoring employees, and consult with legal counsel and/or Attorney General's office about the legality of expenditures made for employee awards.

RESPONSE: Management is in agreement and the Board no longer holds such events.

- Either comply with its specific bid law statutes (R.S. 33:4084 and 33:4085) or seek an AG opinion as to whether these two specific statutes have been tacitly repealed.

RESPONSE: Management agrees, and will seek legislation to update or repeal its outdated statutes to align with the current Public Bid Law and Board policies.

- Require all invoiced items and related amounts to be agreed to the approved contract, including change orders. Any differences noted should be immediately investigated and resolved, in writing.

RESPONSE: Management agrees with this recommendation and will include these requirements within the final procurement manual as well as build compliance into the planned financial/procurement system.

- Verify that payment documentation is complete and includes all appropriate approvals before making payments.

RESPONSE: Management agrees with this recommendation and will include these requirements within the final procurement manual as well as build compliance into the planned financial/procurement system.

- Designate staff to search the federal government's web site for registration and exclusion records on all potential vendors to determine if they are in good standing.

RESPONSE Management agrees and this should be considered for inclusion as a step in the improved Procurement contracting process.

- Designate staff to search the Louisiana Secretary of State's web site to identify the people registered as officials of potential vendors to evaluate possible conflicts of interest.

RESPONSE: Management agrees, and this should be considered for inclusion as a step in the improved Procurement contracting process

- Verify that change orders and amendments are properly approved, in writing, prior to the start of the work.

RESPONSE: Management agrees with this recommendation and will include these requirements within the final procurement manual as well as build compliance into the planned financial/procurement system. Further, an internal working committee has been formed to work directly with management and the Board to address this recommendation, including review and consideration of policies, procedures and documentation considered industry standard (i.e., Department of Transportation and Development, the Port of New Orleans, the City of New Orleans, and other sources).

- Prepare and maintain contract approval sheets for each professional services contract, as required by policy.

RESPONSE: Management agrees with this recommendation and will include these requirements within the final procurement manual.

- Prepare post contract evaluations, in writing, and maintain for each completed contract.

RESPONSE: Management agrees with this recommendation and has already begun using such an evaluation process.

- Organize all contract related documentation, including monitoring and payment records, so that the documentation can be located timely and understood in the absence of the assigned contract manager. When there are multiple contracts with a single vendor, the documentation for each contract should be kept separate.

RESPONSE: Management is in agreement and is looking to identify and implement a new procurement technology solution that will be a centralized vehicle for contract initiation, management, payment and closeout. The intent is to ensure that all documentation management needs are compatible with the procurement system so that bid documents, contracts and invoice payments can be accessed from within the procurement system.

- Verify that the detailed cost analyses prepared to determine the reasonableness of change orders includes all documentation to support the analyses.

RESPONSE: Management agrees with this recommendation and this should be considered for inclusion in the updated procurement processes and procedures. Further, the Board has accelerated the creation of a subcommittee including engineering and other professional staff as well as Board members, to address change orders.

SECTION II – DRAINAGE OPERATIONS – We must respectfully disagree with your comparison of the Board infrastructure to that of other parishes. With respect to pumps and power, systems of other parishes were developed and installed at least half a century after the Board turbines and pumps were made. Additionally, most of the parishes chosen for comparison are also predominantly rural in nature, whereas New Orleans has been an urban center for well over 100 years (see attached historical information).

The Board's systems date to the late 19th and early 20th century (the Board is the 1899 successor entity to the Drainage Commission, all as reflected in your draft). At that time (the early 1900's), frequency standards for alternating current did not exist. But as early as 1895, the Niagara Falls Power Generation Plant was designed and constructed to

generate 25 Hz power. A “lower” frequency was used to accommodate efficient operation of large electric motors.

In 1913, Albert Baldwin Wood designed a new revolutionary type of large diameter high capacity drainage pump to drain the City of New Orleans. Large 25 Hz electric motors were chosen to efficiently drive the pumps. The electric power generating facilities that existed in the city at that time could not supply the power required to operate the large motors attached to the drainage pumps. Consequently, the S&WB had to construct and operate the power generating and distribution facilities needed to run the pumps.

In the early part of the 20th century, none of the surrounding parishes were utilizing electrically powered large capacity pumps for storm water drainage. And by the time those parishes started using electric drainage pumps, 60 Hz power had already become the standard in the United States. For instance, the electrically operated drainage pumps in neighboring Jefferson Parish were designed and constructed after the 60 Hz standard was established, thereby making it feasible to utilize electricity provided by the electric utility company. But because of reliability concerns, Jefferson Parish drainage pumping stations with electric pumps were constructed with back-up power generators on site.

As Orleans Parish development expanded into New Orleans East (beginning in the 1960’s and 70’s), the drainage pumping stations needed to service the new expansion were designed and constructed to use 60 Hz power supplied by the electric utility company. All the pumping stations in New Orleans East (DPS 10, 14, 15, 16, 18, 20, Dwyer, Grant, and Elaine) use 60 Hz power supplied by Entergy. Most of these stations also have 60 Hz back-up generators on site for redundancy.

The existing drainage pumping stations in the “Old City” area that presently use 25 Hz power do not have enough available land for back-up power generators to be located on site. The primary 25 Hz power generation capability is provided by the turbines located at the Carrollton Water Plant (CWP). Back-up 25 Hz power generation is provided by frequency changers located at CWP, the Carrollton Station, and DPS 17 (Sta. D). The frequency changers convert 60 Hz power from Entergy to 24 Hz power that can be used by the 25 Hz motors at the drainage pumping stations. Five Electro-Motive Diesel (EMD) Generators that produce 25 Hz power have recently been added at the CWP and provide additional back-up 25 Hz power generation.

“After Hurricane Katrina, officials re-fitted some of the pumping stations to accept 60-cycle power from Entergy New Orleans. That power moves through special step-down equipment to convert it into 25-cycle electricity for the Wood Screw Pumps.”⁸ In fact, the Board utilizes both 25Hz and 60Hz power at its drainage pumping stations. The LLA report on page 19 is specific to the “Old City Drainage” system that is based upon 25Hz power since its inception. The reference of utilizing “reliable” 25Hz power in lieu of 60Hz power is associated to the water distribution pumps at the Carrollton Water Plant, not drainage operations.

⁸ Id.

Green Infrastructure and Related Innovations - There have been efforts to better mitigate the effects of such occurrences including the CNO HMGP projects (i.e., Mirabeau Gardens, St. Roch, Lafitte, etc. water storage projects) and the SWB green infrastructure program of pilot projects aimed toward public education and demonstration of the benefits of such practices (see attached description by the Board's Environmental team). Beyond that, discussions had begun regarding the concept development of a system of more large-scale retention projects including the City Park Lagoon System, Bayou St. John, neutral grounds (similar to the old Canal Boulevard "Sunken Gardens", and other public parks and lands throughout the city.

-
Professional Qualifications/Staffing - It is not accurate to indicate that state law did not require any Board members to have experience in the utility industry. Since the Board was reconstituted in 2014⁹ board members must have utility-related experience in the areas representing specific facets of board operations and public utility-related disciplines, i.e., architecture, environmental quality, finance, accounting, business administration, engineering, law, public health, urban planning, facilities management, public administration, science, construction, business management, community or consumer advocacy¹⁰. They also must reflect the geographic¹¹ and cultural diversity of the city¹²

-
Drainage, Pumps and Power Supply, and Related Recommendations –

Study and implement, where feasible, remote monitoring and operations at pump stations utilizing cameras and computers with the appropriate software to reduce response times and enhance overall operational efficiency.

RESPONSE: Management is in agreement with this recommendation, and is working towards implementation as funding may permit.

Bring together industry experts, in coordination with the Board's Strategy Committee, to provide the Board of Directors with options and long-term solutions regarding power and pumps. This is critical considering the ages of the turbines and pumps, the antiquated

⁹ Act 345 of 2013 reconstituted the Board to remove City Council members, establish related qualification criteria, and create an independent board for making recommendations to the Mayor to nominate Board members subject to approval by the City Council. Copies of both the final Act and the final "engrossed" bill, which shows the changes from prior law, are attached.

¹⁰ La. R. S. 33:4071(A)(3) provides: "Each nominee shall have experience in architecture, environmental quality, finance, accounting, business administration, engineering, law, public health, urban planning, facilities management, public administration, science, construction, business management, community or consumer advocacy, or other pertinent disciplines."

¹¹ La. R. S. 33:4071(A)(1)(d) provides: "The members appointed pursuant to Subparagraphs (b) and (c) of this Paragraph shall include one citizen from each of the five councilmanic districts within the city of New Orleans. In addition, two of the appointments shall be consumer advocates with community advocacy or consumer protection experience or experience in a related field.

¹² La. R. S. 33:4071(A)(6) provides: "The appointments to the board shall reflect the racial and gender diversity of the population of the city of New Orleans to the extent practicable."

power (25Hz) being used, the related costs to operate and maintain the system, and the S&WB's significant upcoming financial obligations.

RESPONSE: Management agrees. In addition to the Strategy Committee, the Board may also reinstitute the Infrastructure Committee and/or activate the Board of Advisory Engineers provided by statute but never implemented.

Develop and implement comprehensive standard operation procedures for the entire drainage system, provide training to employees, and require the work and supervisory review to be documented.

RESPONSE: Management agrees with this recommendation, although standardization of operations for all elements of the drainage system may be infeasible due to the unique physical structure and situation of various components.

Replace the dated work order system with a modern-day system that is user friendly and capable of scheduling, tracking (e.g., labor and material costs), and providing detailed management reporting in all S&WB projects from start to finish. Employees should be properly trained on the new system.

RESPONSE: Management is in agreement. The current "Cassworks" system deserves to be upgraded or replaced, and management is keenly aware of the importance of selecting the proper technology and ensuring the complete and ongoing training of staff with regard to same. Funding for acquisition, maintenance, enhancement, security and training remains an issue.

Develop comprehensive preventative maintenance schedules on infrastructure.

RESPONSE: Management agrees and this is currently being done.

Require manual records and logs to be scanned into the computer system for backup and records retention and cosnde4r upgrading to an electronic record and log system.

RESPONSE: Management agrees, and would incorporate this mechanism as part of the overall work order, monitoring and compliance system desired.

Communication Recommendations

The S& WB management should:

Provide the Board of Directors with clear, detailed reporting of all emergency declarations, including periodic status updates and after action reports.

RESPONSE: Management agrees and this is being done.

Prepare a comprehensive organizational chart that clearly shows all departments, job positions, and reporting relationships/chain of command within the S& WB. The chart should be shared with all employees to help them gain an understanding of how the organization is designed and where they fit within the organization.

RESPONSE: Management is in agreement and this is in progress presently.

Hurricane/emergency Operations Plan Recommendations

The S& WB should:

Consider forming a committee or subcommittee to be charged with all matters involving hurricane and emergency preparedness/readiness

RESPONSE - The S&WB has an Emergency Planning Committee composed of Board's Management to review emergency plans and planning activities. Also, the S&WB has a Hazard Mitigation Planning Committee made up of S&WB Staff and Community Members.

Develop and implement policies and procedures that provide a process for ground level employees to communicate/report their findings and status of emergency preparations up the chain of command to supervisors and to the Deputy Director of Security.

RESPONSE - The Emergency Operations Plan is available on the S&WB Internal Website. Also to ensure all employees know what to do during an emergency, Emergency Management has Emergency Procedures Books posted at office and facilities throughout the S&WB. In addition to posting the Emergency Procedures Books, the S&WB Emergency Management distributed Emergency Procedures Guides to Operations, Networks, and Maintenance crews to put in their Board vehicles. Finally, the Emergency Plan is available in an app for the Boards Issued smartphones.

Professional Qualifications/Staffing

The S & WB should:

Consider amending applicable legislation to require additional experience in the utilities industry for appointees to serve on the board.

RESPONSE – State law already requires that each nominee “shall have experience in either architecture, environmental quality, finance, accounting, business administration, engineering, law, public health, urban planning, facilities management, public administration, science, construction, business management, community or consumer advocacy, or other pertinent disciplines” (La.R.S. 33:4071(A)(3))

Develop a formal job description for the Executive Director position, to include a requirement for work experience in the utilities industry.

RESPONSE – This has been done. Further, the current Executive Director has extensive, comprehensive public utility experience as the former public works director for the City of Milwaukee, as well as pioneering work on urban, green infrastructure and innovation.

Consider establishing a Board of Advisory Engineers to further its efforts in seeking input from professionals both locally and nationally

RESPONSE – Management agrees with this recommendation.

Continue its existing strategies to address the staffing shortage, including workforce development partnerships with local colleges, as well as continuing to work with the New Orleans Civil Service Commission.

RESPONSE – Management is in agreement with this recommendation and continues enhance efforts at all workforce development, recruitment and relationships including those with Civil Service. For example, in partnership with the City of New Orleans and funding from General Electric (GE), Delgado Community College has instituted a S&WBNO workforce development training program that incorporates both academic and experiential learning opportunities. Also, a Water and Waste Water Technology Training Program at Delgado Community College has been developed to train water and wastewater operators and provide academic pre-licensure coursework.

Financial Management Recommendations –

The S & WB should:

Require the preparation of monthly operating cash flow projections on all three systems (drainage, water, and sewer). The timely preparation of cash flow projections are [sic] critical considering the significant reduction in operating reserves and the 90 day reserve require to be maintained by bond covenants. These cash flow projections should be presented to the Board of Directors for review/discussion and use in their [sic] decision-making process.

RESPONSE: Management agrees with this recommendation and does make regular, monthly presentations on fiscal matters (see attached examples from Board meetings).

Continue communications with the Board of Liquidation, Bond Counsels, and Rating Agencies as emergency costs and financial matters develop.

RESPONSE: Management agrees with this recommendation particularly as it reflects continuation of ongoing communicative relationships. In fact, a rating agency meeting was recently held and the Board's rating has been maintained at the A- level with Fitch Rating Agency.

Continue refined cost estimates of current and future capital projects to add as much precision as possible to its projected cash need.

RESPONSE: Management agrees with this recommendation particularly as it reflects continuation of ongoing practices.

Develop a formal plan to restore and maintain the operating cash reserve balances at the 180- day level, as required by policy.

RESPONSE: Management agrees with this recommendation and has acted to reinstate collections of delinquent accounts, ending the moratorium imposed by the Initial I-Team. Further, management has accelerated and enhanced the administrative hearing process to further address delinquencies and resolve disputed account balances.

Bring together business and community leaders to review/discuss the S & WB's financial position, including cash flows, deficits (current and projected), and funding analyses to identify a long-term solution and funding source(s) for drainage operations and capital improvements.

RESPONSE: Management agrees with this recommendation and appreciates the recognition of the long-term funding requirements for implementation of improvements. SWBNO is currently working with the City administration and the State to coordinate on one of the larger federally funding capital programs to expedite needed cash flow for the effective delivery of the projects within the program. Also, a long-term review of revenues and funding sources is planned for 2019.

Again, we appreciate the work and effort you have made to provide guidance to us. Your team was professional throughout the process. We are grateful for their thorough attention, for making multiple visits concluding with the final exit conference with our new leadership, and for the opportunity to provide this response.

We are engaging all stakeholders to maximize progress on all fronts following the past year of challenges, refreshed and recommitted to rebuilding the Board's infrastructure and becoming a model utility.

Thank you.

Respectfully submitted,



GHASSAN KORBAN, P.E.
EXECUTIVE DIRECTOR

cc: Eric Sloan esloan@lla.la.gov
Thomas Cole tcole@lla.la.gov
Bradley Cryer bcryer@lla.la.gov
Hon. LaToya Cantrell
Board of Directors, Sewerage and Water Board of New Orleans
Yvette Downs
Yolanda Grinstead, Esq.

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Management Overview/Changes from August 2017

Executive Director

September 2018 – present – Permanent Executive Director Ghassan Korban, P.E.
August 20 – September 5, 2018 Interim Executive Director Admiral Dave Callahan (Ret. USCG)
June -- August 20, 2018 – Acting Executive Director Jade Brown-Russell
December 2017 – May 2018 - Interim Executive Director Marcie Edwards
August 5, 2017 – October 15, 2017 – Interim Executive Director (and also Deputy Director and Chief Financial Officer) Robert Miller
July 2014 - August 2017 – Executive Director/Deputy Mayor Cedric Grant

Chief Financial Officer

June 25, 2018 present – Yvette Downs
Through June 2018 - CFO Marina Kahn (by contract with the Orleans Parish Assessor's Office)
August 2017 – October 2017 – Robert K. Miller (overlapped with service as interim executive director)

General Superintendent

October 2017 – present – interim general superintendent Bruce Adams
September 2017 - General Superintendent Joseph Becker

Communications Director

Date – present – Communications Director Richard Rainey
August 2017 – date – interim communications director Renee Lapayerolerie (CDM Smith)
Resigned August 2017 – Communications Director Lisa Martin

First Initial Interim Management Team (“I Team”) Paul Rainwater (Rainwater Consulting) August 22 2017 - --; Brig. Gen. Owen McConduit and aide; (Louisiana Military Department); Terrence Ginn; (Louisiana Board of Regents) Robert “Bob” Turner (South Louisiana Flood Authority - East); Ehle Mehsele, Ph. D. (Water Institute of the Gulf) Renee Lapayerolerie (CDM Smith)

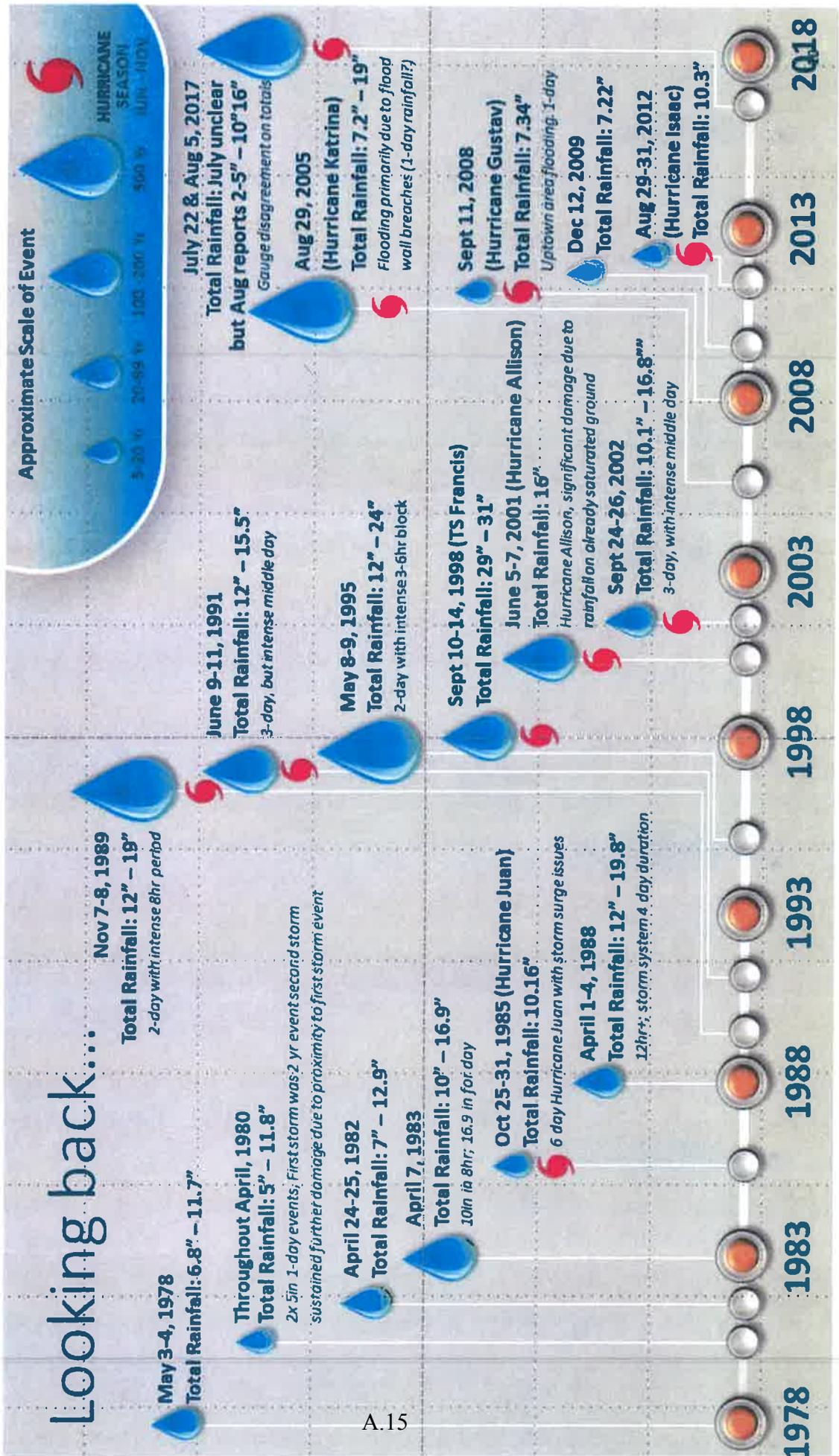
Second “I Team” – Marcie Edwards (retired from Los Angeles – title); Maria Kahn; (title, City of New Orleans); Robert “Bob” Turner, (title), SLFA (spell out); Joseph Sensebe; P.E. (Arcadis USA); Jade Brown-Russell, Esq. (Interim Special Counsel until appointed Acting Executive Director through forced resignation August 20, 2018)

Resignations/Retirements

Deputy Director for Human Resources (including Board Relations matters) Sharon Judkins
Deputy Director for Security Ronald Doucette

Deputy Director for Logistics (including procurement) Valerie “Vickie” Rivers
Acting Executive Director Jade Brown-Russell
Acting Special Counsel Jade Brown-Russell
Special Counsel Nolan Lambert (October 2017)
Deputy Special Counsel Harold Marchand (October 2017)
Water Purification Superintendent Vincent Fouchi (November 2017)
Procurement/Purchasing Director Willie Mingo (currently on extended leave)

Historically Rain Events



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NOLA.COM

Terrain, broken drains and too much rain: Why New Orleans floods

By Beau Evans | Posted October 14, 2018 at 06:03 AM | Updated October 14, 2018 at 12:55 PM

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A woman walks down a flooded street in New Orleans after the torrential downpour of August 5, 2017. (Photo by Michael DeMocker, NOLA.com | The Times-Picayune)

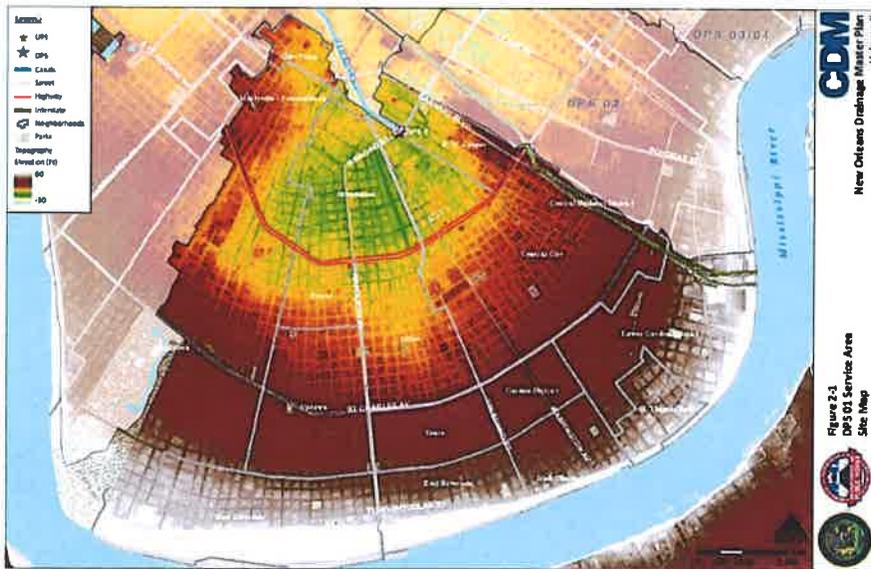
Story by Beau Evans, NOLA.com | The Times-Picayune

Like many New Orleans neighborhoods, low-lying **Broadmoor** dips below sea level. Its wide stretches of pavement and houses leave few options for rain to escape besides the city's **drainage system** of catch basins, underground pipes, canals and pumps.

When **uncommonly heavy** rain hits, Broadmoor's streets can flood along with areas surrounding it, including parts of Central City, Audubon, the Lower Garden District and Uptown. That's even if the **pumps** are all working at full tilt, the **underground pipes** are in perfect condition and the **catch basins** are completely unclogged.

Mid-City, the Central Business District, Gentilly, Lakeview and several other neighborhoods would fare little better during a severe storm, according to a key document city officials commissioned in 2010 called the **Drainage Master Plan**.



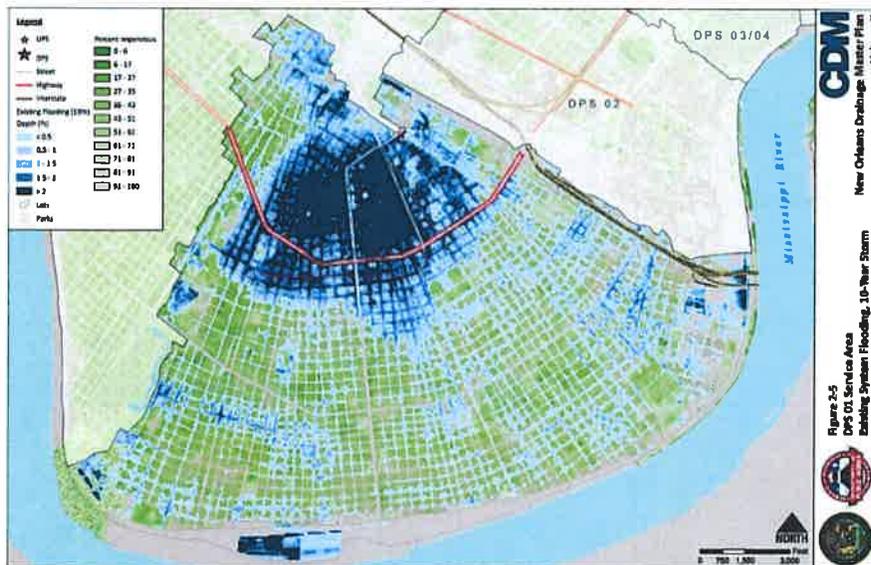


This image from the city's Drainage Master Plan shows land elevations for neighborhoods -- including Broadmoor -- that are drained by the Sewerage & Water Board's Drainage Pump Station No. 1. The green shades mark the lowest elevations, while the red shades mark the highest. (Drainage Master Plan by CDM)

While the **Sewerage & Water Board's** pumps have been the focus of much public attention **over the past year**, New Orleans remains at risk of flooding from standard seasonal downpours -- not to mention **hurricane season** threats -- due to a confluence of inadequate and broken underground pipes, **geographical dips** in the terrain, several square miles of **surface concrete** and **steadily sinking land** that compounds all the negative effects.

This portrait is the consistent view of several local experts, drainage assessments and scientific studies that NOLA.com | The Times-Picayune has reviewed.

The findings begin to answer persistent questions: How did the city get to this point, why do some areas of the city flood more often than others, and **what's being done now** to address the worsening trend?



The Drainage Master Plan here shows the projected effects of flooding from a 10-year storm in the area drained by the Sewerage & Water Board's Drainage Pump Station No. 1. Note how flooding appears most prevalent in the low-lying, "bowl" area of the basin. (Drainage Master Plan by CDM)

A city of bowls



In New Orleans, the natural high ground lies along the banks of the Mississippi River, and artificial high ground was built along part of the Lake Pontchartrain shore, **according to Richard Campanella**, a geographer and professor at Tulane University's School of Architecture. Both the river and lake are additionally rimmed with artificial levees to guard against seasonal river swelling and storm surge.

Running almost right through the middle of the East Bank is a long slight natural ridge built up from an abandoned river distributary. There are also other man-made embankments along outfall canals that lead rainwater to the lake.

The city's elevation ranges from nearly 20 feet above sea level along the river levees down to about 16 feet below sea level in spots where swamps and marshes were drained to make way for urbanization, according to the Drainage Master Plan. In between, the land slopes from the banks and ridges down to several topographical depressions, commonly called bowls.

Broadmoor, for instance, sinks 4 to 5 feet below sea level, according to the master plan. In St. Roch, the bowl dips between 7 and 8 feet at Deers and Law streets.

This interactive map shows the varying land elevations throughout New Orleans, and models the way different theoretical amounts of water would pool up in the city. Click the image above to view the map and select water amounts. (Graphic created by Sean McKeown-Young, Advance Local)

Given how low the city sits, the practice for more than a century has been to expel as much rainwater through its mechanical drainage system as possible. But while it has kept New Orleans drier over time, experts say the drainage system has also exacerbated the sinking of the city's bowls.

According to Campanella, New Orleans citizens of the late 19th century grew fed up with the frequent flooding in their young, muddy city. They called on officials to deliver a drainage system able to keep them dry. By the mid-20th century, the pipe-and-pump system had worked so well the city was able to spread out to the lakefront.

The drainage system's successes brought new challenges, Campanella said. Chief among them, the pumps sucked away water so efficiently that precious little could reach the ground to help keep the organic soils there hydrated, worsening the sinking of the land that began once the levees kept the river from depositing new soils during seasonal floods.

The result, Campanella said, was the birth of the numerous bowls that now dot the New Orleans landscape.

"Half of greater New Orleans would subside below the level of the sea, into a series of bowls -- even as they were paved, further reducing the soil's absorption capacity and increasing runoff," Campanella said.

This video shows severe flooding in New Orleans on August 5, 2017. (Video by NOLA.com | The Times-Picayune)

The 10-year storm

During a storm in New Orleans, rainwater flows from streets into catch basins and through around 1,700 miles of underground pipes and canals to two dozen Sewerage & Water Board pump stations. From there, the pumps lift huge amounts of water up to **outfall canals** that run down to the lake.

All of that movement happens by gravity before reaching the pumps. Along the way, the water encounters an array of obstacles such as damaged pipes and small surface bumps that can cause "pockets of flooding in neighborhoods," according to Ramiro Diaz, a designer and planner at the architecture firm Waggonner & Ball Architects.

Water is always rushing toward the city's lowest points, the bowls, where it can pool up quickly if the rain is falling fast, Diaz said.

"You can see it very clearly on an elevation map of the city," Diaz said. "It tracks almost exactly with where the flooding problems are."



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NOLA.COM

New Orleans dips its toes into living with water

By Beau Evans | Posted October 14, 2018 at 08:03 AM | Updated October 15, 2018 at 10:08 AM

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A series of photos published in the April 17, 1927 edition of The Times-Picayune shows the flooding impacts of the Good Friday storm. (Newsbank archive)

Story by Beau Evans, NOLA.com | The Times-Picayune

The Good Friday storm of April 15, 1927, was another wake-up call for New Orleans. Slapped with 14 inches of rain, the city flooded just as thousands of people were heading home from work, leaving them "marooned on street corners" as the water kept rising, **according to a story in The Times-Picayune.**

It was, the newspaper says, the fourth time within a year that a hard rain had "revealed the inadequacy of the city's drainage system," which was just beginning to incorporate the **A. Baldwin Wood-designed screw pumps** that remain a critical part of New Orleans' drainage system today. The response from the mayor and the **Sewerage & Water Board** was to build the system bigger.

Within three years, the city had doubled its pumping capacity, with more than a dozen new pumps installed Uptown and several more in the works throughout the city. The objective was to create a system large enough to handle 14 inches of rain in a day without flooding.

A 1930 Times-Picayune headline boasted that New Orleans had the "**largest drainage pumps in the world.**" Mayor Thomas Walmsley heeded the public to have no fear of the next storm.

"At last we can broadcast to the world that we in New Orleans can go to bed at night without fear of awakening with the water around our beds in the lowlands of the city," **Walmsley told a crowd** at a dedication ceremony of the new pumps on May 2, 1930.

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This photo shows severe flooding around the Circle Food Store in New Orleans on August 5, 2017. (Photo by Brett Duke, Nola.com | The Times-Picayune)

Despite the rosy outlook, hard rains have continued to unleash major flooding in New Orleans in the nine decades since the Good Friday storm. The goal of handling a massive storm pouring 14 inches of rain in a day seems like a pipe dream.

According to the city-commissioned **Drainage Master Plan** of 2010, New Orleans' drainage system in the modern era can't beat back flooding from 8.5 inches of rain in a day, let alone 14 inches. More recently, heavy rains last summer twice flooded several east bank neighborhoods and brought renewed attention to the old pumps.

Unlike the pumping expansion push of the late 1920s, the conversation about what New Orleans should do to upgrade its drainage system in the modern era has shifted dramatically. Now, city officials and local water-management experts trumpet the importance of holding more water rather than pumping away as much as possible.

This video shows severe flooding in New Orleans on August 5, 2017. (Video by NOLA.com | The Times-Picayune)

According to officials and experts, the benefits of retaining water on a large scale are twofold: Doing so would ease the burden placed on pumps and underground drainage pipes during storms, and more water stored over time would help replenish the city's groundwater levels to counteract the sinking effects of subsidence.

But **limited public funds** present hurdles for adding more water-holding features to the city's landscape. And relying solely on city government to fix the flood problem won't be enough, according to David Waggoner, the principal architect at the firm Waggoner & Ball Architects and one of the most vocal advocates for retaining water in New Orleans.

"How should we do it?" Waggoner asked in a recent interview. "That's a reasonable question, but I don't know that the population is ever going to break that question."

"And this is as big an effort as any city has ever had to take, to put this question on the table," he said.

This interactive map shows the varying land elevations throughout New Orleans, and models the way different theoretical amounts of water would pool up in the city. Click the image above to view the map and select water amounts. (Graphic created by Sean McKeown-Young, Advance Local)

Shifting the conversation

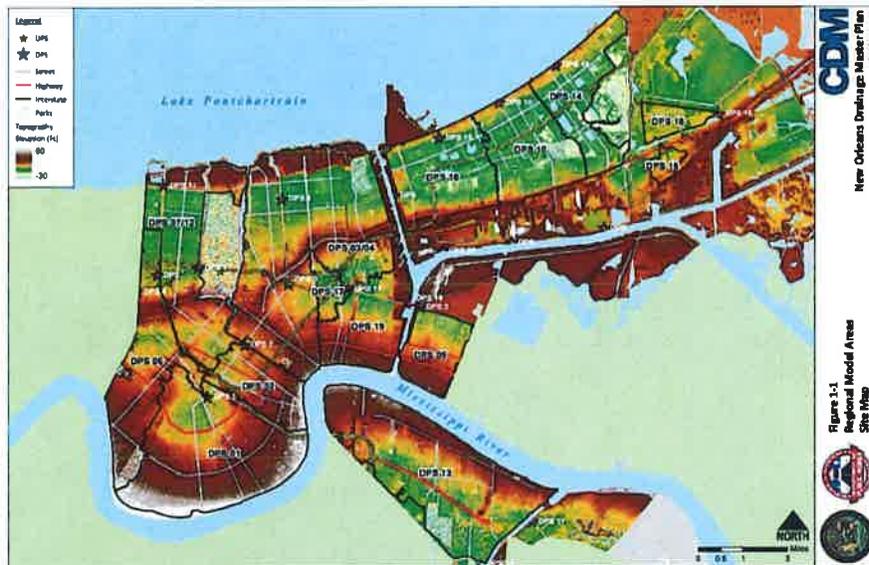
The **grandest vision** for how New Orleans could hold more water is laid out in the Greater New Orleans Inc.'s **Urban Water Plan**, released in 2013. Perhaps more concisely than any other document, it dissects the combined influences of the city's low-lying topography, subsidence, impervious surfaces and the constant threat of heavy rains that often overwhelm the drainage system.



"The current approach to rainfall is to pave, pipe, and pump, resulting in a hardened landscape that sheds massive quantities of runoff into single-purpose drainage systems," the Urban Water Plan says. "This paradigm exacts enormous costs on the region and its residents, in energy use, and the loss of water assets."

Waggoner, who was a lead author of the Urban Water Plan, argues water-holding features must be incorporated into the city "at every scale," from large ponds funded by federal grants to smaller techniques in the streets.

"Every project should factor this," Waggoner said. "Every city street should have to deal with the groundwater effects."



This image from the city's Drainage Master Plan shows land elevations for the entire city of New Orleans. The green shades mark the lowest elevations, while the red shades mark the highest. (Drainage Master Plan by CDM)

Over the past few years, the city **has crept** toward the first wave of water-retention and dual drainage-holding projects, the bulk of which are funded largely through federal hazard mitigation grants and the National Disaster Resilience Competition. But time-consuming environmental and historical design reviews had kept around \$250 million-worth of water-holding projects **on the back-burner** by the time Mayor **LaToya Cantrell** took office in May, according to Ramsey Green, Cantrell's deputy chief administrative officer overseeing drainage and resilience issues.

In an interview last month, Green, as well as the city's new chief resilience officer, Mary Kincaid, pointed to several projects set to begin construction in the coming months, including drainage upgrades in Mid-City and Pontchartrain Park that will add rain gardens, permeable pavement and storm-water lots to capture water. Those projects, as well as a future plan to use City Park's lagoons as retention ponds, are part of a plan to hold millions of gallons of water instead of pumping it to Lake Pontchartrain.

"We have to hold water because we cannot pump or suck-truck our way out of this problem," Green said.



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NEW ORLEANS, LA WEATHER FORECAST

Here's how New Orleans' drainage is supposed to work

Updated Aug 11, 2017;
Posted Aug 11, 2017

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By **Mark Schleifstein**, mschleifstein@nola.com,
NOLA.com | The Times-Picayune

The Aug. 5 New Orleans flood has perplexed many residents knowledgeable of the vast network of canals and underground pipes that make up the city's drainage system. Much of the head-scratching focused on what Sewerage & Water Board



employees told the public about which pump stations were operating at full capacity that day, then on the fire that threatened delivery of electricity to the pumps.

Now might be a good time to review what the system is actually designed to handle.

The best place to start is with the shorthand used for years by the Sewerage & Water Board to describe how much water the drainage system can capture and dispose safely: 1 inch during the first hour then a half inch every hour. This is usually followed by a statement that such precipitation represents a rain event with a 10 percent chance of occurring in any year, a "10-year storm."

A review of the 1996 study that led to construction of 20 Southeast Louisiana Urban Flood Control Projects in the city shows that the Army Corps of Engineers designed those improvements to raise the drainage system to that 10-year storm level. But there's a bit more to the story.

The projects were generally designed for a storm with a 10 percent chance of occurring in any year. But they were specifically designed for a storm that would drop 9.2 inches of rain over 24 hours. The design report said a one-hour 10-year event actually would be 3.5 inches of rain, well above the the 1 inch cited by S&WB and city officials.



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It's also good to remember that the drainage system relies on all of its pieces to be in working order, from catch basins to pumping stations to the canals in which they pump the water.

Bob Moeinian, who retired last year as chief of operations for the S&WB, said the drainage process begins when rain flows off lawn and pavement into streets and then into the catch basins. From there, it is fed through relatively small pipes to larger pipes and then to either underground or above-ground canals. The canals funnel the water to pump stations, which push it into larger canals and eventually into Lake Pontchartrain.

And yes, Moeinian uses the 1-inch language to explain the system's limitation. "When you get a deluge of rain like we received this past weekend, you will see street flooding," he said. "Even if all of the pumps were working, the system just can't handle that massive amount of rain all at once."



It's once the rain stopped that the problems with the pumping system became clear, he said. The system was unable to push the water into larger and larger canals and eventually the lake.

The pumps in all of those drainage stations operate on electricity, with many still using 25-cycle power instead of the 60-cycle electricity used in residences and most businesses. The slower power is a holdover from the early days of the drainage system and was installed just after the turn of the 20th century.

The slower power remains in place largely because of the type of pumps in the system. The Wood Screw Pumps were designed in 1913 by New Orleans inventor and engineer A. Baldwin Wood, who would later become superintendent of the water board. They are still among the largest in many of the city's pumping stations. Their slow but steady turning requires 25-cycle power. As a result, the S&WB has its own generating station to produce the unusual type of electricity.

After Hurricane Katrina, officials re-fitted some of the pumping stations to accept 60-cycle power from Entergy New Orleans. That power moves through special step-down equipment to convert it into 25-cycle electricity for the Wood Screw Pumps.



The 25-cycle power is not inherently a problem, says engineer Bruce Thompson, who chaired a 2012 New Orleans Citizen Sewer, Water & Drainage System Reform Task Force subcommittee that studied how to redevelop the SW&B's electric power generation facilities. But Thompson said Thursday that the agency's reliance on its own generating facilities -- which were hit Wednesday night by fire that disabled all but one turbine -- remains a concern.

"We proposed that the board abandon its 25-cycle generation and purchase 60-cycle electricity and convert it to 25-cycle, so you have multiple converters and multiple feeds of electricity," he said. "The source would be coming in from one or another transmission line and then you would keep the 25-cycle generation to be standby in case something happens."

At the time, Thompson was also pushing the notion that such a system would be more reliable in providing power at the lakefront for the three new storm surge gate and pump stations. But his proposal was turned down by the Army Corps of Engineers, which instead is installing diesel generators at the 17th Street, Orleans Avenue and London Avenue stations. When completed in 2019, those stations are be turned over to the Sewerage & Water Board.

SPONSOR CONTENT



SWBNO Green Infrastructure Summary

The City of New Orleans receives, on average, over 60" of rain each year, which is pumped out of the city to large receiving bodies of water. The Sewerage and Water Board is capable of pumping one inch of water for the first hour and a half inch of water every hour after during a rain event. This is not always fast enough, as was evident on August 5, 2017 when parts of the city were flooded after receiving over 8 inches of rain in an hour.

In order to minimize flood risk, recharge groundwater, manage stormwater, and filter the amount of pollutants released into receiving water bodies, the Sewerage and Water Board made a commitment to invest \$2.5 million dollars in green infrastructure projects and activities over a 5-year period, in accordance with the 3rd modified Consent Decree. As a part of the Consent Decree, the SWB's Green Infrastructure Plan, approved by EPA in 2014, guides green infrastructure projects by requiring them to embody the principles of living with water, comply with green infrastructure design criteria, develop partnerships and outreach, and monitor the effectiveness of the project through water quality monitoring and recordkeeping.

Since 2014, SWB has spent approximately \$1.6 million on green infrastructure projects and activities on public land. Notably, SWB has funded the installation of two green/blue roofs, including the first in the New Orleans region, on the SWB downtown location at 625 St. Joseph St. This roof holds 15,000 gallons of rainwater per rain event and is planted with native species. Five various stormwater lots/rain gardens have also been installed throughout the city. The Water Effectiveness in Broadmoor stormwater lot in the Broadmoor neighborhood uses bioswales which are connected to underground water storage tanks to infiltrate up to 6,000 cubic feet of stormwater per rain event.

All of the green infrastructure sites incorporated educational outreach during development and have educational signage on site. Some of the sites, such as the Florida Ave. Corridor Learning Trail and the Lower 9th Ward Earth Lab serve their neighborhoods as being outdoor classrooms.

In addition to funding green infrastructure installation projects, SWB has also funded initiatives to improve site suitability for future green infrastructure projects. SWB funded a soils survey for 23 parks and vacant lots throughout the city. The survey provides meaningful morphological and hydrological data to assist the city in determining landscape and soil suitability for future green infrastructure projects. SWB also funded a set of standard green infrastructure design guidelines and a storm water calculator which provide engineers, architects, and planners with consistent design standards for green infrastructure in New Orleans and a tool to evaluate development projects in accordance with the City's Stormwater Code.

On September 19, 2018 SWB released an RFP for green infrastructure projects totaling up to \$843,618.00. Projects are intended to use green technologies and innovative education to mitigate flooding in areas that have been impacted by severe repetitive flood loss. These projects should be substantially completed within 18 months of receiving the award with project maintenance continuing for an additional 3 years. This phase of funding will complete SWB's \$2.5 million dollar investment into incorporating green infrastructure into its traditionally grey infrastructure system.

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SECTION NO. 4

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CITY OF NEW ORLEANS

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DEPUTY CLERK

MAYORAL PROCLAMATION DECLARATION OF STATE OF EMERGENCY

WHEREAS, the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, et seq., confers upon the Mayor of the City of New Orleans emergency powers to deal with emergencies and disasters, including those caused by fire, flood, earthquake or other natural or manmade causes, in order to ensure that preparations of this City will be adequate to deal with such emergencies or disasters, and to preserve the natural resources of the City, lives, and property of the people of the City of New Orleans; and

WHEREAS, La. R.S. 29:727(F)(1) confers upon the Mayor the authority to suspend the provisions of any regulatory ordinance, orders, rules, or regulations of any local prescribing procedures for the conduct of local business which would in any way prevent, hinder, or delay necessary action in coping with the emergency; and

WHEREAS, a declaration of emergency is necessary to allow City agencies to thoroughly prepare for and respond to any eventuality and to allow state and federal agencies and state and federal resources to be deployed, if necessary; and

WHEREAS, on January 16, 2018, a strong cold front moved into and across the City of New Orleans and the State of Louisiana causing freezing precipitation and freezing temperatures;

WHEREAS, freezing temperatures, ice accumulation, high winds, road and bridge closures, and other dangerous conditions due to winter weather could result in the endangerment and threat of life, injury, and possible property damage including public water systems;

NOW THEREFORE, I, MITCHELL J. LANDRIEU, Mayor of the City of New Orleans, by virtue of the authority vested in me as the Mayor of the City of New Orleans by the Constitution and laws of the State of Louisiana and the Home Rule Charter and laws of the City of New Orleans, **HEREBY ORDER AS FOLLOWS:**

SECTION 1: Pursuant to the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, et seq., a state of emergency is declared to exist in the City of

New Orleans as a result of freezing temperatures and freezing precipitation, which could result in the endangerment and threat of life, injury and possible property damage, as well as the economic livelihood and property of the citizens of the City.

SECTION 2: The Director of the City's Office of Homeland Security and Emergency Preparedness is hereby authorized to undertake any activity authorized by law which he deems necessary and appropriate in response to this declaration, and all city agencies, including the New Orleans Sewerage and Water Board, are hereby authorized to take any actions directed by the City's Office of Homeland Security and Emergency Preparedness in response to this emergency, including the receipt of direct support from the federal and state government.

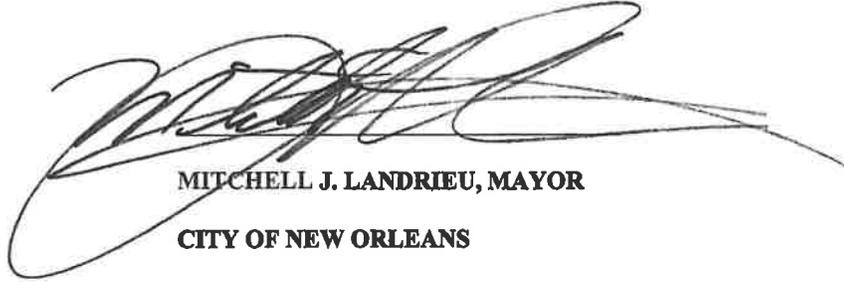
SECTION 3: The Emergency Authority may commandeer or utilize any private property if it finds this necessary to cope with the local disaster emergency.

SECTION 4: The Emergency Authority, on my order as Mayor of the City of New Orleans, is hereby empowered to direct and compel the evacuation of any and all persons from any part of the City deemed by the Emergency Authority to be suitable for evacuation, if necessary, for the prevention of life or other disaster mitigation, response, or recovery.

SECTION 5: The "Emergency Authority" as used in this proclamation refers to the Superintendents of Police, Fire, and Emergency Medical Services, and any other authorized entity that is under the supervision of the Mayor through the Director of Homeland Security, or acting directly under the supervision and control of the Office of the Mayor of the City of New Orleans.

SECTION 6: This Declaration of State of Emergency shall apply to the entirety of Orleans Parish effective 3:00 pm Tuesday January 16, 2018 and extends for thirty (30) days from 3:00 pm Tuesday January 16, 2018, unless terminated sooner.

WITNESS MY HAND THIS 19th DAY OF JANUARY, 2018, AT NEW ORLEANS, LA.



MITCHELL J. LANDRIEU, MAYOR
CITY OF NEW ORLEANS

CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS

STATE OF LOUISIANA

SECTION 6

NO. 2017-7738

DIVISION " "

DOCKET

CITY OF NEW ORLEANS

CIVIL DISTRICT COURT

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DEPUTY CLERK

MAYORAL PROCLAMATION
STATE OF EMERGENCY

WHEREAS, the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, *et seq.*, confers upon the Mayor of the City of New Orleans emergency powers to prepare for and respond to emergencies and disasters, including those caused by fire, flood, earthquake or other natural or manmade causes, in order to ensure that preparations of this City will be adequate to deal with such emergencies or disasters, and to preserve lives and property of the people of the City of New Orleans; and

WHEREAS, La. R.S. 29.727(F)(1) confers upon the mayor the authority to suspend the provisions of any regulatory ordinance, orders, rules, or regulations of any local agency prescribing procedures for the conduct of local business which would in any way prevent, hinder, or delay necessary action in coping with the emergency; and

WHEREAS, a declaration of emergency is necessary to allow City agencies to respond to any eventuality and to allow state and federal agencies and resources to be deployed, if necessary; and

WHEREAS, generators that provide much of the power for pumps throughout the city are located at the New Orleans Sewerage and Water Board's (S&WB) power plant;

WHEREAS, on August 9, 2017, the S&WB's power plant malfunctioned and is in need of immediate, emergency repair; and

WHEREAS, a declaration of a state of emergency is appropriate and warranted to provide for the use of all extraordinary measures to ensure the public health, safety, welfare, and convenience.

NOW THEREFORE, I, MITCHELL J. LANDRIEU, Mayor of the City of New Orleans, by virtue of the authority vested in me as the Mayor of the City of New Orleans by the

Constitution and laws of the State of Louisiana and the Home Rule Charter and laws of the City of New Orleans, **HEREBY ORDER AS FOLLOWS:**

SECTION 1: Pursuant to the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, *et seq.*, a state of emergency is declared to exist in the City of New Orleans.

SECTION 2: The Emergency Authority is hereby vested with the full authority of La. R.S. 29:721, *et seq.*, and is empowered to suspend the provisions of any ordinance or regulation prescribing the procedures for conduct of local business or the orders, rules, or regulation of any local agency, whenever in a particular set of circumstances strict compliance with any order, rule or regulation would in any way prevent, hinder or delay necessary action in coping with the emergency.

The “Emergency Authority” as used in this Proclamation refers to the Executive Director of the S&WB and Superintendents of Police and of Fire, under supervision of the Office of the Mayor through the Director of Homeland Security, or under direct supervision of the Office of the Mayor, all acting directly under the supervision and control of the Mayor of the City of New Orleans.

The Director of the City’s Office of Homeland Security and Emergency Preparedness is hereby authorized to undertake any activity authorized by law which he deems necessary and appropriate in response to this declaration, and all city agencies are hereby authorized to take any actions directed by the City’s Office of Homeland Security and Emergency Preparedness in response to this emergency, to include the receipt of direct support from the federal government and the State of Louisiana.

Resources of the City of New Orleans and its boards and agencies may be utilized by the Emergency Authority for the purpose of performing or facilitating emergency services. The direction, personnel, and functions of all local departments, agencies and units are hereby transferred, to the extent necessary, to the Emergency Authority for the purpose of performing or facilitating emergency services.

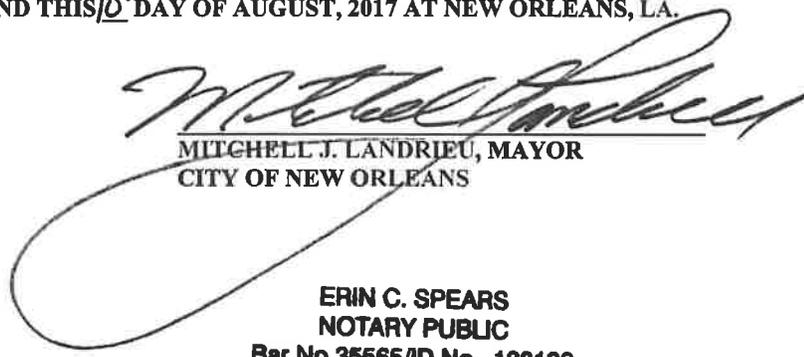
The Emergency Authority is hereby empowered to direct and compel the evacuation of any and all persons from any part of the City deemed by the Emergency Authority to be suitable for evacuation, if necessary for the preservation of life or other disaster mitigation, response, or recovery.

The Emergency Authority is hereby empowered to prescribe the routes, modes of transportation and destinations for such evacuation, to control ingress and egress to and from the disaster area and the movement of persons and occupancy of premises therein

The City Attorney is directed to file this proclamation promptly in the office of the Clerk of Court.

SECTION 3: The state of emergency extends until September 9, 2017, unless terminated sooner.

WITNESS BY MY HAND THIS 10th DAY OF AUGUST, 2017 AT NEW ORLEANS, LA.



MITCHELL J. LANDRIEU, MAYOR
CITY OF NEW ORLEANS

ERIN C. SPEARS
NOTARY PUBLIC
Bar No.35565/ID No. 138192
State of Louisiana
My Commission Is Issued for Life

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DISTRICT COURT



EXECUTIVE DEPARTMENT

PROCLAMATION NUMBER 17 JBE 2017

STATE OF EMERGENCY – SEVERE WEATHER

WHEREAS, the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, *et seq.*, confers upon the Governor of the State of Louisiana emergency powers to deal with emergencies and disasters, including those caused by fire, flood, earthquake or other natural or manmade causes, in order to ensure that preparations of this State will be adequate to deal with such emergencies or disasters and to preserve the lives and property of the people of the State of Louisiana;

WHEREAS, when the Governor determines that a disaster or emergency has occurred, or the threat thereof is imminent, La. R.S. 29:724(B)(1) empowers the Governor to declare a state of emergency by executive order or proclamation, or both;

WHEREAS, on February 7, 2017, severe storms moved through much of southeast Louisiana which caused the National Weather Service to issue several tornado watches/warnings for much of southeast Louisiana;

WHEREAS, a violent storm system, covering much of southeastern Louisiana, moved through the area bringing strong winds and at least six (6) tornados which caused severe damage, including multiple injuries, dozens of damaged homes, and thousands left without power.

WHEREAS, the parishes of Ascension, Livingston, Orleans, St. James, St. Tammany and Tangipahoa have declared, or are in the process of declaring, states of emergency in order to assist residents in areas damaged by the tornados and severe weather.

NOW THEREFORE, I, JOHN BEL EDWARDS, Governor of the State of Louisiana, by virtue of the authority vested by the Constitution and the laws of the State of Louisiana, do hereby order and direct as follows:

SECTION 1: Pursuant to the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721 *et seq.*, a state of emergency is hereby declared to exist statewide as a result of the severe weather caused by this event, the effects of which continue to threaten the lives and property of the citizens of the State.

SECTION 2: The Director of the Governor's Office of Homeland Security and Emergency Preparedness is hereby authorized to undertake any activity

authorized by law which he deems appropriate in response to this declaration.

SECTION 3: All departments, commissions, boards, agencies and officers of the State, or any political subdivision thereof, are authorized and directed to cooperate in actions the State may take in response to the effects of this severe weather event.

SECTION 4: This order is effective upon signature and shall remain in effect from Tuesday, February 7, 2017 until Thursday, March 9, 2017 unless terminated sooner.

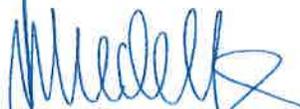


IN WITNESS WHEREOF, I have set my hand officially and caused to be affixed the Great Seal of Louisiana, at GOHSEP, in the City of Baton Rouge, on this 7th day of February, 2017.



GOVERNOR OF LOUISIANA

**ATTEST BY
THE GOVERNOR**



SECRETARY OF STATE



EXECUTIVE DEPARTMENT
PROCLAMATION NUMBER 14 JBE 2018

STATE OF EMERGENCY – WINTER WEATHER

- WHEREAS,** the Louisiana Homeland Security and Emergency Assistance and Disaster Act, La. R.S. 29:721, *et seq.*, confers upon the Governor of the State of Louisiana emergency powers to deal with emergencies and disasters, including those caused by fire, flood, earthquake or other natural or manmade causes, in order to ensure that preparations of this state will be adequate to deal with such emergencies or disasters and to preserve the lives and property of the people of the State of Louisiana;
- WHEREAS,** when the Governor determines that a disaster or emergency has occurred, or the threat thereof is imminent, La. R.S. 29:724(B)(1) empowers the Governor to declare a state of emergency by executive order or proclamation, or both;
- WHEREAS,** on January 16, 2018, a strong cold front moved into and across the state causing freezing precipitation and low temperatures;
- WHEREAS,** the freezing temperatures have caused major road closures throughout the state; and
- WHEREAS,** the weather forecasts predict another hard overnight freeze on January 17, 2018 across the state with little opportunity for roads to defrost during the day.

NOW THEREFORE, I, JOHN BEL EDWARDS, Governor of the State of Louisiana, by virtue of the authority vested by the Constitution and the laws of the State of Louisiana, do hereby order and direct as follows:

- SECTION 1:** Pursuant to the Louisiana Emergency Powers Act, La. R.S. 29:721 *et seq.*, and more specifically, La. R.S. 29:724, a state of emergency is hereby declared to exist statewide.
- SECTION 2:** The Director of the Governor’s Office of Homeland Security and Emergency Preparedness is hereby authorized to undertake any activity authorized by law which he deems appropriate in response to this declaration.
- SECTION 3:** All departments, commissions, boards, agencies and officers of the State, or any political subdivision thereof, are authorized and directed to cooperate in actions the State may take in response to the effects of this event.
- SECTION 4:** This order is effective upon signature and shall remain in effect from Wednesday, January 17, 2018 until Friday, February 16, 2018, unless terminated sooner.

IN WITNESS WHEREOF, I have set my hand
officially and caused to be affixed the Great Seal of
Louisiana, in the City of Baton Rouge, on this 17th
day of January, 2018.

s/ John Bel Edwards

GOVERNOR OF LOUISIANA

**ATTEST BY THE
SECRETARY OF STATE**

SECRETARY OF STATE



"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

Sewerage & Water Board OF NEW ORLEANS

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52-WATER
www.swbno.org

May 1, 2018

Daryl G. Purpera, CPA, CFE
Louisiana Legislative Auditor
1600 North Third Street
Baton Rouge, LA 70804-9397
Via e-mail: dpurpera@lla.la.gov

RE: Advisory Services Audit Draft
Sewerage and Water Board of New Orleans
Drainage Program Assessment and Recommendations

Dear Mr. Purpera:

Thank you for sharing the captioned draft report, including recommendations, with the Sewerage and Water Board of New Orleans ("Board"). We appreciate the thorough attention of your professional team and the opportunity to respond to the draft report. Your suggestions in large part correspond to courses of action already charted by the Board, and we welcome the opportunity to respond to those and other aspects of the draft report.

Specifically, you recognized, and we will continue, existing efforts towards:

- Good communication with Board of Liquidation, bond counsel and rating agencies.
- Refining cost estimates of current and future capital projects.
- Communication with Board of Liquidation, bond counsel and rating agencies.
- Refining cost estimates of current and future capital projects.
- Providing the Board of Directors with clear, detailed reporting of all emergency declarations, including periodic status updates and after action reports.

EXECUTIVE and FINANCIAL MANAGEMENT

We agree with your recommended long-term strategy approaches including bringing together industry experts to provide the Board of Directors with options and long-term solutions regarding power and pumps; improvement of the Board's financial position, specifically and funding analyses to identify a long-term solution and funding source(s) for drainage operations and capital improvements; and address technological needs. Since your team's visit, the Board has engaged several independent and objective consultants to provide the following services with respect to executive and financial management:

- a. Develop tailored position descriptions for highest managerial levels, specifically the Executive Director and Chief Financial Officer, including required educational, professional experience preferably with public utility management, and other criteria for potential candidates.
- b. Independent and comprehensive management and budget consulting and advisory services to assist with its overall financial and budgetary understanding, planning, investment, expenditure and related strategic planning, development and management of resources.
- c. Bond feasibility study and provide related advice and services for issuance of revenue bonds to fund needed improvements.
- d. Identification and collection of unaccounted water and sewer service services consumed from, and/or water consumption and sewer service revenue losses to, the Board, which are not being utilized, to maximize billable revenue.
- e. Evaluation of the Board's customer service operations (excluding the Board's billing and collections system) and create a recommendation report focusing on the customer experience with the Board's customer service call center and possible future integration with the 311 system operated by the City of New Orleans.
- f. The 2018 budget is currently being "reset", with the objective review and advice of several independent sources being conducted already. It is hoped that these comprehensive efforts will yield the plan you recommended to restore the sewer, water and drainage operating reserve balances back to 180 day levels and enable the frequent and detailed cash flow and other reports you recommended.

Your specific recommendations included:

- a. Accelerate the overall hiring process to increase staffing, including analysis of whether authority delegated from New Orleans Civil Service to Board for Board-specific positions and enhancing recruitment efforts (rebranding, rebuilding, rehiring retirees, using temporary employment agencies)
- b. Prepare a comprehensive organizational chart that clearly shows all departments, job positions, and reporting relationships/chain of command within the Board, and sharing it with all employees

RESPONSE: As stated in your recommendation, the Board has identified several strategies to address the staffing shortage, including workforce development partnerships with local colleges and the Board is continuing to work together with the New Orleans Civil Service Commission to overcome the challenges facing the Board with respect to staffing and competitive pay scales.

HURRICANE/EMERGENCY OPERATIONS

You recommended that management:

- 1. Consider forming a committee or subcommittee for all matters involving hurricane/emergency preparedness/readiness to ensure regular communications to the Board**
- 2. Consider forming a committee or subcommittee for all matters involving hurricane/emergency preparedness/readiness to ensure regular communications to the Board**
- 3. Develop and implement policies and procedures that provide a process for ground-level employees to communicate/report their findings and status of emergency preparations**

RESPONSE: There is currently an employee suggestion form and emergency management training that employees can communicate their concerns on emergency management related issues. The forms are located on the Board's intranet Emergency management webpages. Also, all the Emergency Plans are located on the Board's Emergency Management webpage "Emergency Plans". Reference is made to the following specific resources:

<http://intranet/Departments/EmergencyManagement/suggestionform.aspx>

and

<http://intranet/Departments/EmergencyManagement/trainingcalendar.aspx>

DRAINAGE SYSTEM; PUMPS AND POWER

Since the founding of New Orleans, its drainage has posed unique challenges that were addressed earlierⁱ than in any of the eight (8) other parishes to which the Board's system was compared. None of those parishes had any drainage systems in place when the Board's operations were undertaken, and the Board's continued use of 25Hz power, while transitioning to more modern 60Hz power, is a partial result of this very early work and innovation. The Board often operates where possible on its own 60Hz power in lieu of reliance on Entergy as a source, due to lack of confidence in the reliability of Entergy. Power surges lead to drops in pressure within the water distribution system and trigger boil-water advisories.

There have been few rainfall events comparable to that of August 5, 2017, which appears to have been the event precipitating your inquiries resulting in the draft report (from 2 to 16 inches reported in one afternoon). As indicated on the attached diagram, comparable rain events would be Hurricane Katrina (7 to 19 inches but over an extended period rather than 1 to 3 hours); May 8-9 1995 (12 – 24 inches over two days, with one intense block), June 9 -11, 1991 (12 to 16 inches over 3-days with one intense midday storm) and November 7-8, 1989 (12 – 19 inches over 2 days).

Regarding August 5, 2017, rain event – your report states:

On August 5, three of the four 25Hz turbines (turbines #3, #4, and #5) were down for repairs which resulted in only 5 MW of 25Hz primary power (turbine #1) being available to operate the pumps. According to S&WB personnel, there was a total of 29.75 MW of power available on August 5th when taking into account the backup power (24.75 MW). However, while S&WB personnel indicated that areas of the city still would have flooded on August 5th, it was speculated that as much as 20 to 25 MB of additional power may have been needed to drain the water more quickly.

RESPONSE: Many factors affect drainage, including congestion in the system. Strength and availability of power alone are not enough if the system into which water is pumped cannot accept it. In January 2018 (6 months after the August rain event and flooding), tons of debris have been removed from the catch basin and drainage systems for which, as your report notes, the City of New Orleans is responsible (under 36 inches in diameter). Indeed, within one 5-block area of St. Charles Avenue alone, some 40 tons of Mardi Gras beads were removed in January 2018 by contractors hired by the City of New Orleans Department of Public Works.ⁱⁱ

This is a longstanding and well-known issue. In 2011, the city made plans to clean and repair 6,000 catch basins, clearing less than 3,000 in the first nine months of the year.ⁱⁱⁱ The City website states: “The Department of Public Works’ maintenance department is responsible for cleaning and clearing catch basins of debris. There are 68,092 catch basins in the City. Each year the City budgets resources to clean approximately 3,500 catch basins”.^{iv} In 2017, that was \$3 million. According to the August 16, 2017, Times Picayune:

New Orleans set aside \$3 million to spend in 2017 on repairs to drainage lines and prioritized catch basin cleaning. But that work hadn't started in earnest by the time severe storms flooded several city neighborhoods on July 22 and again on Aug. 5. It turns out it will take more than seven times that amount to address issues with some 15,000 catch basins around the city, including 3,700 said to require extensive work. [and] far ahead of this summer's flooding, the dilapidated state of catch basins was well known.

...

Public Works Director Mark Jernigan told City Council members in July that environmental reviews were needed before his staff could use the \$3 million set aside for cleaning and fixing the city's storm drains. His explanation varied little after the Aug. 5 flood, and Landrieu asked him to resign. Landrieu also noted that the city depends on residents to help with catch basins and called on people to stop illegal dumping in drainage canals. "There are 65,000 catch basins," Landrieu said. "One of

the things that have to happen with catch basins is neighbors and homeowners can help a lot by making sure the catch basins that are not broken are cleaned out."^v

While the Board acknowledges the needs to fully repair, improve, and maintain its existing and future sources to power its pumps, the facts and impacts of New Orleans' geographic situation, changing and unpredictable climatic conditions, and the condition, maintenance and funding for City drainage infrastructure, should not be underestimated or overlooked.

Again, we appreciate the effort that was devoted to preparation of your draft report, and the opportunity to view and respond to it. We thank you for acknowledging the efforts made thus far by the Board to improve its circumstances and services, and the suggestions for further efforts in the future.

Sincerely,



Marcie Edwards
Interim Executive Director

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ⁱ In 1896, the New Orleans Drainage Commission was organized to carry out a master drainage plan that had been developed for the city. Three years later, by Act 6 of 1899, the Sewerage and Water Board was authorized by the Louisiana Legislature to furnish, construct, operate, and maintain a water treatment and distribution system and a sanitary sewerage system for New Orleans. Website of Sewerage and Water Board, online at https://www.swbno.org/history_history.asp; also, State ex rel. Porterie v. Walmsley, 1935, 183 La. 139, 162 So. 826, appeal dismissed Board of Liquidation v. Board of Com'rs of Port of New Orleans, 56 S.Ct. 141, 296 U.S. 540, 80 L.Ed. 384, rehearing denied 56 S.Ct. 246, 296 U.S. 663, 80 L.Ed. 473.

ⁱⁱ (See article, "46 Tons of Mardi Gras Beads Found in Clogged Catch Basins", posted January 25, 2018, online http://www.nola.com/politics/index.ssf/2018/01/catch_basins_cleaned_mardi_gra.html).

ⁱⁱⁱ (See article "Everything You Need to Know About New Orleans Catch Basins", posted August 21, 2018, online http://www.nola.com/politics/index.ssf/2017/08/catch_basins_new_orleans.html)

^{iv} <https://www.nola.gov/dpw/catch-basins/>

2018 Regular Session

HOUSE RESOLUTION NO. 92

BY REPRESENTATIVES CONNICK AND HILFERTY

A RESOLUTION

To urge and request the legislative auditor to conduct an audit of the contracts of the New Orleans Sewerage and Water Board entered into by the board since January, 2013.

WHEREAS, Act No. 6 of the 1899 Extraordinary Session of the Louisiana Legislature created the New Orleans Sewerage and Water Board to furnish, construct, operate, and maintain a water treatment and distribution system and a sanitary sewerage system for the city of New Orleans; and

WHEREAS, in 1903, the Drainage Commission of the city of New Orleans was merged with the Sewerage and Water Board in order to consolidate drainage, water, and sewerage programs under one agency for more efficient operations; and

WHEREAS, the Sewerage and Water Board set out to fulfill its goals of providing the city with adequate drainage, sewerage collection, and drinking water by constructing new facilities with funds from a local property tax; and

WHEREAS, over the years, the costs associated with the construction and maintenance of the facilities has continued to escalate, particularly after the devastating damage caused by Hurricane Katrina in 2005; and

WHEREAS, although the Sewerage and Water Board has received billions of dollars in funding from the federal government and local property taxes, the board has struggled to rebuild its facilities and to make timely infrastructure improvements; and

WHEREAS, many questions have been raised recently regarding the expenditures of the Sewerage and Water Board as well as the board's billing practices, its tracking of ongoing construction projects, and its safeguards against theft.

THEREFORE, BE IT RESOLVED that the House of Representatives of the Legislature of Louisiana does hereby urge and request the legislative auditor to conduct an audit of the contracts of the New Orleans Sewerage and Water Board entered into by the board since January 1, 2013, with any individual or entity, including but not limited to all professional, general, noncompliance bid, and competitive bid contracts.

BE IT FURTHER RESOLVED that the House of Representatives of the Legislature of Louisiana also requests that the legislative auditor analyze the economy, efficiency, and effectiveness of the contracts.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the state legislative auditor and the executive director of the New Orleans Sewerage and Water Board.

SPEAKER OF THE HOUSE OF REPRESENTATIVES

2018 Regular Session

HOUSE RESOLUTION NO. 193

BY REPRESENTATIVE HILFERTY

A RESOLUTION

To create the Task Force on New Orleans Sewerage, Water, and Drainage Utilities to study issues related to the management of sewerage, water, and drainage facilities and services in the city of New Orleans and to provide a written report of findings and recommendations regarding the best strategies and procedures for the management of such facilities and services to the mayor of the city of New Orleans, the New Orleans City Council, and the members of the Orleans Parish legislative delegation not later than January 31, 2019.

WHEREAS, Act No. 6 of the 1899 Extraordinary Session of the Louisiana Legislature created the New Orleans Sewerage and Water Board to furnish, construct, operate, and maintain a water treatment and distribution system and a sanitary sewerage system for the city of New Orleans; and

WHEREAS, in 1903, the Drainage Commission of the city of New Orleans was merged with the Sewerage and Water Board in order to consolidate drainage, water, and sewerage programs under one agency for more efficient operations; and

WHEREAS, as the population of the city of New Orleans grew rapidly over the next one hundred years, the Sewerage and Water Board faced many new challenges in its attempt to provide efficient sewerage, water, and drainage services to the city's residents; and

WHEREAS, in 2005, Hurricane Katrina severely damaged the facilities of the Sewerage and Water Board, and the board has had to contend with rebuilding those facilities and making necessary infrastructure improvements; and

WHEREAS, costs associated with providing sewerage, water, and drainage services to the city's residents continue to escalate, and the city's population is again on the rise; and

WHEREAS, over the last several years, many residents, business owners, and local officials have questioned whether the Sewerage and Water Board is the best entity to manage sewerage, water, and drainage facilities and services in the city of New Orleans; and

WHEREAS, suggestions abound regarding the best management options for the city's sewerage, water, and drainage facilities and services, including but not limited to public-private partnerships, granting control to the city, or allowing the Sewerage and Water Board to retain control; and

WHEREAS, there is an urgent need for a comprehensive review of the management options for sewerage, water, and drainage facilities and services in the city of New Orleans, including a review of the state law governing the Sewerage and Water Board, as provided in R.S. 33:4071 et seq., so that the residents of the city can have confidence that such facilities and services are being managed as efficiently as possible.

THEREFORE, BE IT RESOLVED that the House of Representatives of the Legislature of Louisiana does hereby create the Task Force on New Orleans Sewerage, Water, and Drainage Utilities to study issues related to the management of sewerage, water, and drainage facilities and services in the city of New Orleans and to provide a written report of findings and recommendations regarding the best strategies and procedures for the management of such facilities and services to the mayor of the city of New Orleans, the New Orleans City Council, and the members of the Orleans Parish legislative delegation not later than January 31, 2019.

BE IT FURTHER RESOLVED that the task force shall be composed of the following members:

- (1) The mayor of the city of New Orleans or his designee.
- (2) The chairperson of the Public Works, Sanitation and Environment Committee of the New Orleans City Council or his designee.
- (3) A representative of the New Orleans chapter of the Louisiana Engineering Society designated by the president of the chapter.
- (4) The general superintendent of the New Orleans Sewerage and Water Board or his designee.
- (5) A representative of the New Orleans Metropolitan Convention & Visitors Bureau designated by the president of the bureau.

- (6) A representative of the Business Council of New Orleans and the River Region designated by the chair of the council.
- (7) A representative of the New Orleans Office of Inspector General designated by the inspector general.
- (8) A member of the New Orleans Board of Liquidation, City Debt designated by the board.

BE IT FURTHER RESOLVED that mayor or his designee shall serve as the chairman of the task force and the chairperson of the Public Works, Sanitation and Environment Committee of the New Orleans City Council or his designee shall serve as the vice chairman.

BE IT FURTHER RESOLVED that the chairman shall call the first meeting of the task force, and the meeting shall be held no later than August 1, 2018.

BE IT FURTHER RESOLVED that all representatives and designees shall be named no later than July 1, 2018.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the mayor of the city of New Orleans, the New Orleans City Council, and the members of the Orleans Parish legislative delegation.

SPEAKER OF THE HOUSE OF REPRESENTATIVES

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AN ACT

To amend and reenact R.S. 33:4071(A), (B), (C)(1), and (E) , 4074, and 4091 and to repeal R.S. 33:4071(C)(2) and (3), relative to Orleans Parish; to provide relative to the Sewerage and Water Board of New Orleans; to change the membership of the board; to provide relative to the terms and removal of board members; to require the board to report on contracts for the construction and repair of its public systems of water, sewerage, and drainage and on the operations of such systems; and to provide for related matters.

Notice of intention to introduce this Act has been published.

Be it enacted by the Legislature of Louisiana:

Section 1. R.S. 33:4071(A), (B), (C)(1), and (E), 4074, and 4091 are hereby amended and reenacted to read as follows:

§4071. Creation and organization of sewerage and water board

A.(1) The public water system, the public sewerage system, and the public drainage system of the city of New Orleans shall be constructed, controlled, maintained, and operated by a sewerage and water board to be composed as follows:

- (a) The mayor.
- (b) ~~Three members of the New Orleans city council selected by the council. At least one of such members shall be an at-large member of the council.~~
- (~~e~~) Two **syndicate** members of the board of liquidation, city debt, to be appointed by the mayor on the recommendation of the board of liquidation, city debt.
- (~~d~~) ~~Seven~~ **(e) Eight** citizens, to be appointed by the mayor, with the advice and consent of the city council ~~as follows:~~ **from a list of nominees submitted by**

- 1 the Sewerage and Water Board Selection Committee.
- 2 (d) The members appointed pursuant to Subparagraphs (b) and (c) of
3 this Paragraph shall include one citizen from each of the five councilmanic
4 districts within the city of New Orleans. In addition, two of the appointments
5 shall be consumer advocates with community advocacy or consumer protection
6 experience or experience in a related field.
- 7 (2)(a) For purposes of this Section, the Sewerage and Water Board
8 Selection Committee, hereinafter referred to as the "selection committee", is
9 hereby created to be comprised as follows:
- 10 (aa) The president of Dillard University or his designee.
11 (bb) The president of Loyola University or his designee.
12 (cc) The president of Tulane University or his designee.
13 (dd) The president of Xavier University or his designee.
14 (ee) The chancellor of Delgado Community College or his designee.
15 (ff) The chancellor of University of New Orleans or his designee.
16 (gg) The chancellor of Southern University at New Orleans or his
17 designee.
- 18 (hh) The chair of the board of directors of the New Orleans Chamber of
19 Commerce or his designee.
- 20 (ii) The president of the board of directors of the New Orleans Regional
21 Black Chamber of Commerce or his designee.
- 22 (jj) The chair of the board of directors of the Urban League of Greater
23 New Orleans or his designee.
- 24 (b) Notice of a vacancy on the Sewerage and Water Board shall be
25 published in the official journal for Orleans Parish by the Sewerage and Water
26 Board and shall be communicated through any other publication, website, or
27 electronic medium maintained by the New Orleans Sewerage and Water Board
28 or the city of New Orleans for the purpose of achieving public awareness of the
29 vacancy. Such notice shall advise potential candidates of the residency
30 requirements, professional qualifications, and application deadlines. Such

1 notices shall be published no less than two times within a thirty day period after
2 a vacancy has been declared by the Sewerage and Water Board. Any interested
3 person who meets the qualifications provided for in this Section shall submit an
4 application to the Sewerage and Water Board confirming their eligibility,
5 professional qualifications, and experience. The Sewerage and Water Board
6 shall transmit all applications received to the selection committee within seven
7 days after the deadline for submission of applications.

8 (c) The selection committee shall meet no less than fifteen days and no
9 more than thirty days after close of the application deadline to consider each
10 name submitted for nomination. Selection committee members may also submit
11 names of persons who also meet the qualification requirements provided in this
12 Section. The selection committee shall verify that each nominee meets such
13 qualification requirements. After a thorough review of each application, the
14 selection committee shall by majority vote submit to the mayor three names for
15 each vacancy on the Sewerage and Water Board.

16 (d) Within sixty days of receipt of the list of nominees, the mayor shall
17 select one of the three nominees for submission to the city council for approval.

18 (e) The city council shall have thirty days from receipt of submission of
19 the nomination by the mayor to disapprove the nominee. If the city council does
20 not disapprove the nominee within such time, it shall be deemed that the city
21 council consents to the appointment.

22 (f) If the city council disapproves the nominee from the mayor, the
23 selection committee shall convene in no less than thirty days and no more than
24 sixty days after disapproval to resubmit three nominees to the mayor.

25 (g) If for any reason the mayor fails to submit a nomination to the city
26 council within sixty days of receipt of the list of nominees by the selection
27 committee, the selection committee shall submit such list of nominees directly
28 to the city council for selection and approval.

29 (i) Two from the city at large.

30 (ii) One from each of the five councilmanic districts of the city.

1 (3) Each nominee shall have experience in either architecture,
 2 environmental quality, finance, accounting, business administration,
 3 engineering, law, public health, urban planning, facilities management, public
 4 administration, science, construction, business management, community or
 5 consumer advocacy, or other pertinent disciplines.

6 ~~(2)(4)(a)~~ The ~~For members appointed pursuant to Subparagraphs~~
 7 ~~(A)(1)(b) and (c) of this Section, the~~ terms of office of board members shall be nine
 8 ~~four years~~ after initial terms as provided in Subparagraph (b) of this Paragraph.
 9 A member shall serve no more than two consecutive terms of office.

10 (b) Two members shall serve an initial term of one year; two members
 11 shall serve an initial term of two years; two members shall serve an initial term
 12 of three years; and two members shall serve an initial term of four years, as
 13 determined by lot at the first meeting of the board.

14 ~~(3)(5)~~ If the mayor is unable to attend a meeting of the sewerage and water
 15 board, he may be represented at any such meeting by a person designated by the
 16 mayor who shall be an unclassified member of the mayor's administration. Any such
 17 person shall have all rights and powers granted to the mayor with regard to any such
 18 meeting and shall have the right to vote for or in the stead of the absent mayor. In
 19 addition, any such person shall be counted for purposes of a quorum.

20 (6) The appointments to the board shall reflect the racial and gender
 21 diversity of the population of the city of New Orleans to the extent practicable.

22 B.(1) Each of the citizen members ~~must~~ shall be a registered voter in ~~the area~~
 23 ~~from which he is appointed;~~ Orleans Parish and ~~he must~~ shall have been a resident
 24 domiciliary of ~~the area~~ Orleans Parish for two years previous to his appointment.

25 (2) Any person designated by the mayor to attend a meeting of the sewerage
 26 and water board in his absence shall be a resident and qualified voter of the city of
 27 ~~New Orleans~~ In the event any appointed member is elected to any office or
 28 removes his domicile from Orleans Parish, his membership on the board shall
 29 be ipso facto vacated, and his successor shall be immediately appointed.

30 C.(+) All vacancies occurring in the membership of the board under

1 appointment by the mayor shall be filled in the manner prescribed by this ~~Part~~
2 Section for the original appointment.

3 * * *

4 E. ~~The board shall make rules fixing its own meetings and procedure, and~~
5 ~~these rules may be changed only by a vote of nine members at a regular meeting. A~~
6 quorum of the board shall adopt rules fixing its own meetings and procedures.
7 Any amendments or changes to such rules shall be adopted only after approved
8 by a quorum of the board.

9 * * *

10 §4074. Meetings of the board

11 All meetings of the board shall be held in accordance with rules adopted by
12 the board and shall be open and public. All its transactions shall be recorded in the
13 minutes to be kept in writing by the executive director, and its records shall be
14 public. ~~Seven~~ Six members thereof shall constitute a quorum.

15 * * *

16 §4091. Reports of board

17 A. On or prior to the first day of May of each year, the board shall make to
18 the city council, in writing, a full and detailed report of its acts, doings, receipts, and
19 expenditures, the same to be put in printed form for public distribution, and a
20 synopsis of same, including a statement of receipts and disbursements, published in
21 the official journal of the city.

22 B. In addition to the requirements of Subsection A of this Section, the
23 board shall report quarterly, in September, December, March, and June, to the
24 city council relative to the contracts let in the construction and repair of its
25 public systems of water, sewerage, and drainage. Such report shall include the
26 following for new contracts let during the reporting period:

27 (1) The total number of contracts let to all contractors.

28 (2) The total value of contracts let to all contractors.

29 (3)(a) The total number of contracts let to local disadvantaged business
30 enterprises expressed as a percentage of the total number of contracts let.

- 1 **(b) The total number of contracts let to local businesses expressed as a**
 2 **percentage of the total number of contracts let.**
- 3 **(4)(a) The total value of contracts let to local disadvantaged business**
 4 **enterprises expressed as a percentage of the total value of contracts let.**
- 5 **(b) The total value of contracts let to local businesses expressed as a**
 6 **percentage of the total value of contracts let.**
- 7 **(5) The total number of contracts let to a fifty-fifty joint venture**
 8 **enterprise expressed as a percentage of the total number of contracts let.**
- 9 **C. In addition to the requirements of Subsections A and B of this**
 10 **Section, the board shall report quarterly, in September, December, March, and**
 11 **June, to the city council relative to its operations. Such report shall include the**
 12 **following in a manner as prescribed by the city council:**
- 13 **(1) Standard industry metrics for best practice, including but not limited**
 14 **to:**
- 15 **(a) Percentage of water loss.**
- 16 **(b) Percentage of water paid.**
- 17 **(c) Percentage of receivables outstanding, including delinquency**
 18 **schedule.**
- 19 **(d) Customer service improvements.**
- 20 **(2) Processes and indicators for prevention of waste or fraud.**
- 21 **(3) Performance metrics for employees and contractors.**
- 22 **(4) Benchmarks of success regarding improved coordination between**
 23 **the board and the Department of Public Works to ensure priority and resource**
 24 **alignment.**
- 25 **(5) Report on the efficiency and effectiveness of information systems.**
- 26 **(6) Detailed reports on assessment and status of technologies and**
 27 **operation programs and strategies for system redundancy and service**
 28 **improvements.**
- 29 **(7) Detailed reports on assessment and status of operational reforms,**
 30 **capital improvement programs, and service assurance programs.**

1 Section 2. R.S. 33:4071(C)(2) and (3) are hereby repealed.

2 Section 3. This Act shall take effect and become operative on the first day of January
3 following an election at which a majority of the voters of the city of New Orleans approve
4 an amendment of Article V, Chapter 3, Section 5-301 of the home rule charter of the city to
5 change the composition of the Sewerage and Water Board of New Orleans to provide the
6 identical composition of the board as contained in this Act.

7 Section 4. The terms of the members of the Sewerage and Water Board for the city
8 of New Orleans in office on the effective date of this Act shall terminate on the effective
9 date of this Act; however, such members shall remain in office until the board members are
10 appointed as provided in this Act and take office. The members of the Sewerage and Water
11 Board for the city of New Orleans shall be appointed and shall take office as provided in this
12 Act and shall serve terms of office as provided in this Act. This Section shall not be
13 construed to prevent the reappointment to the board of a member in office on the effective
14 date of this Act.

PRESIDENT OF THE SENATE

SPEAKER OF THE HOUSE OF REPRESENTATIVES

GOVERNOR OF THE STATE OF LOUISIANA

APPROVED: _____

APPENDIX B: PUBLIC ASSISTANCE PROGRAM PROJECTS (DRAINAGE AND NON-DRAINAGE)

All FEMA Public Assistance Drainage Projects						
Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	440	Permanent	Small equipment replacement in multiple locations.	\$95,585	\$95,585
Katrina	Large	785	Permanent	Repair and replacement for electronic equipment.	234,617	234,454
Katrina	Large	817	Permanent	Repair and replacement for electronic equipment.	307,171	268,708
Katrina	Large	820	Permanent	Repair and replacement for electronic equipment, pumps, and motors.	428,977	286,216
Katrina	Large	1168	Permanent	Repairs to underpass pumping station at St. Bernard Ave	209,420	160,717
Katrina	Large	1390	Permanent	Repair and replacement for electronic and mechanical equipment.	274,133	29,858
Katrina	Large	1842	Permanent	UT/Broad Avenue Underpass Pump Station - Repair and replacement for electronic equipment.	264,594	45,958
Katrina	Large	1843	Permanent	Underpass Pump Station - Franklin Ave Repairs - Repair and replacement for electronic equipment, pumps, and motors	290,509	157,972
Katrina	Large	1856	Permanent	UT/Underpass Pump Station - Paris Ave Repairs - Repair and replacement for electronic equipment.	250,009	86,823

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	1954	Permanent	UT/EBWWTP – Plant Air & Water Board of New Orleans - Repair and replacement for electronic equipment, pumps, motors, and the building.	\$56,110	\$15,455
Katrina	Large	2239	Permanent	Underpass Pump Station - Hospital Street - Repair and replacement for electronic equipment.	127,146	54,651
Katrina	Large	3012	Permanent	Drainage Pump Station - Grant Repairs - Repair and replacement for electronic equipment.	41,369	41,369
Katrina	Large	3087	Permanent	Drainage Pump Station - Press Drive Repairs - Repair and replacement for the underpass pump station	209,740	39,307
Katrina	Large	3130	Permanent	Drainage Pump Station 19 Repairs - Repair and replacement to the drainage pump station	104,553	49,357
Katrina	Large	3375	Permanent	Drainage Pump Station 4 - Repair and replacement for electronic equipment.	2,972	2,972
Katrina	Large	4268	Permanent	Marconi Dr. Underpass Pump Station (UPS 7) - Repair to the underpass pump station.	110,641	5,881
Katrina	Large	6943	Emergency	Drainage Pump Station 10 “Citrus”- Reconstruction of the electrical feed for drainage pump station.	107,973	107,973
Katrina	Large	6952	Emergency	Drainage Pump Station 4 - Reroute and construction of the electrical feed for drainage pump station 4.	419,302	419,302
Katrina	Large	6964	Emergency	Drainage Pump Station 15 - Reroute and construction of the electrical feed for drainage pump station.	86,471	86,471
Katrina	Large	6970	Emergency	Drainage Pump Station 19 - Reroute and construction of the electrical feed for drainage pump station.	346,408	346,408

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	6974	Emergency	Drainage Pump Station 1- Reroute and construction of the electrical feed for drainage pump station.	\$190,456	\$190,456
Katrina	Large	7047	Emergency	Drainage Pump Station D - Reroute and construction of the electrical feed for drainage pump station.	343,930	343,930
Katrina	Large	9695	Permanent	Station D Building Contents - Repair and replacement to the equipment and inventory in Station.	88,727	0
Katrina	Large	11317	Permanent	Drainage Station D - Mechanical/ Structural Repairs - Repair and replacement damaged bldg for Pump Station.	1,356,973	532,017
Katrina	Large	14607	Permanent	Drainage Pump Stations #2 & #5 – Asbestos Removal and Roof Replacement	62,961	62,961
Katrina	Large	17786	Permanent	Drainage Collection System and Facilities - Project Management costs for underpass pump station and drainage pump station projects	335,018	316,908
Katrina	Large	17803*	Emergency	Emergency Protective Measures - Repair and replacement in 34 sites, including drainage pump stations.	25,281,244	25,303,987
Isaac	Large	1525*	Permanent	Repair to buildings and facilities in 20 different pump stations, including drainage pumps	6,754	0
Subtotal – Large Drainage Projects					\$31,633,763	\$29,285,696
Katrina	Small	12 projects	Emergency & Permanent		\$229,787	\$229,787
Total – Large and Small Drainage Projects					\$31,863,550	\$29,515,483

All FEMA Public Assistance Non-Drainage Projects						
Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	272	Emergency	Emergency Protective Measures	\$759,865	\$759,298
Katrina	Large	321	Emergency	Emergency Protective Measures	892,637	694,184
Katrina	Large	369	Emergency	Emergency Protective Measures	127,081	51,170
Katrina	Large	371	Permanent	Public Utilities	13,634,579	13,634,020
Katrina	Large	377	Permanent	Public Buildings and Facilities	79,252	79,252
Katrina	Large	629	Emergency	Emergency Protective Measures	78,604	78,604
Katrina	Large	644	Permanent	Public Utilities	733,005	733,348
Katrina	Large	649	Permanent	Public Utilities	68,515,248	66,122,323
Katrina	Large	666	Permanent	Public Buildings and Facilities	136,561	136,561
Katrina	Large	667	Permanent	Public Buildings and Facilities	156,591	156,591
Katrina	Large	688	Emergency	Emergency Protective Measures	175,518	175,518
Katrina	Large	803	Permanent	Public Buildings and Facilities	1,282,910	1,335,186
Katrina	Large	819	Permanent	Public Buildings and Facilities	172,106	172,106
Katrina	Large	825	Permanent	Public Utilities	242,385	242,385
Katrina	Large	853	Permanent	Public Buildings and Facilities	150,600	82,300
Katrina	Large	863	Permanent	Public Utilities	1,452,959	1,411,026
Katrina	Large	865	Emergency	Emergency Protective Measures	2,609,914	2,125,274
Katrina	Large	876	Emergency	Emergency Protective Measures	165,516	165,516
Katrina	Large	937	Permanent	Public Utilities	1,897,441	2,001,055
Katrina	Large	1164	Emergency	Emergency Protective Measures	463,290	463,290
Katrina	Large	1171	Permanent	Public Utilities	200,489	158,283
Katrina	Large	1321	Permanent	Public Utilities	291,888	291,888
Katrina	Large	1339	Permanent	Public Utilities	300,215	300,215
Katrina	Large	1361	Emergency	Emergency Protective Measures	59,169	59,169

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	1385	Permanent	Public Utilities	\$274,809	\$235,087
Katrina	Large	1395	Permanent	Public Utilities	122,384	36,826
Katrina	Large	1396	Permanent	Public Utilities	217,742	217,742
Katrina	Large	1635	Permanent	Public Utilities	297,241	297,241
Katrina	Large	1737	Emergency	Emergency Protective Measures	204,788	204,788
Katrina	Large	1834	Permanent	UT/Sanitary Sewer Pump Station 15 Repairs	864,169	864,169
Katrina	Large	1848	Permanent	UT/Central Yard-Power Building & Generator Room	178,384	177,471
Katrina	Large	1864	Permanent	UT/EBWWTP - Pre-Disaster Damages	57,378	57,378
Katrina	Large	1936	Permanent	UT/Water Treatment Plant (West Bank)	88,856	88,856
Katrina	Large	1955	Permanent	UT/EBWWTP - Plant Air & Water Board of New Orleans	268,621	268,621
Katrina	Large	1958	Permanent	UT/Central Yard - New Warehouse	62,303	62,303
Katrina	Large	1965	Emergency	UT/WBWWP Temp Equipment Rental	199,787	196,895
Katrina	Large	2003	Emergency	UT/1 Waste Water Treatment Pumping Station - Emergency Generators	1,008,276	1,008,276
Katrina	Large	2038	Permanent	UT/EBWWTP - Plant-wide Pumps	681,580	615,530
Katrina	Large	2212	Emergency	West Bank Wastewater Treatment Plant - Emergency Debris	192,628	192,628
Katrina	Large	2432	Permanent	UT/1 Central Yard Administration Building	196,748	196,748
Katrina	Large	2448	Emergency	Debris Removal	2,944,037	2,944,037
Katrina	Large	3073	Permanent	Repair Sewage Collection Network	37,787,308	37,787,308
Katrina	Large	3076	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Plant Equipment	367,047	367,047
Katrina	Large	3081	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Plant Equipment II	480,425	462,242

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	3105	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Plant Equipment IV	\$401,421	\$401,421
Katrina	Large	3166	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Plant Equipment IV	328,862	328,862
Katrina	Large	3305	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Plant Equipment III	299,048	282,224
Katrina	Large	3399	Permanent	SWB Mobile Radio System	998,064	998,065
Katrina	Large	3414	Permanent	East Bank Wastewater Treatment Plant - Mechanical & Electrical	2,012,726	1,925,400
Katrina	Large	3511	Permanent	Damaged Heavy Equipment Reimbursement	39,025	1,996,024
Katrina	Large	3535	Emergency	Emergency Work	4,759,689	4,759,689
Katrina	Large	4019	Emergency	Pump Station Cleaning & Disinfecting	159,398	159,398
Katrina	Large	4021	Permanent	Meter Reader Handheld Computers	76,546	76,546
Katrina	Large	4031	Permanent	Public Utilities	1,925,718	1,808,358
Katrina	Large	4053	Permanent	UPS System Replacement	85,727	85,727
Katrina	Large	4090	Permanent	SCADA Systems Repair Sanitary Sewer Pump Stations	795,997	0
Katrina	Large	4116	Permanent	St. Joseph Street Office Building	97,364	4,221
Katrina	Large	4143	Permanent	Public Utilities	148,905	148,905
Katrina	Large	4161	Emergency	East Waste Water Treatment Plant Temporary Power	187,955	187,955
Katrina	Large	4168	Permanent	Central Yard Garage #1	687,182	687,182
Katrina	Large	4183	Permanent	EAST WWTP Mechanical Repairs 1-10	2,387,700	2,243,227
Katrina	Large	4193	Permanent	Public Utilities	1,168,107	1,111,096
Katrina	Large	4194	Permanent	East WWTP RAS Pump Testing, Calibration Relays, Oxygen Oasis	497,276	494,552
Katrina	Large	4400	Emergency	New Orleans Sewerage & Water Board - Various Locations	163,806	0

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	4544	Emergency	Sewer Station Pumping - Through Emergency Discharge	\$328,781	\$446,252
Katrina	Large	5119	Permanent	Carrollton Facility - Hamilton Storage Building	107,165	107,165
Katrina	Large	5124	Permanent	East Bank Wastewater Treatment Plant	82,538	82,538
Katrina	Large	5214	Permanent	Documents Restoration	107,384	107,384
Katrina	Large	5414	Permanent	Repair of Electric Breakers and MCCS at the East Bank	70,332	70,332
Katrina	Large	5483	Emergency	Primary Residences of New Orleans Sewerage & Water Board Employees - Harrell Trailer Park	1,182,047	608,717
Katrina	Large	5488	Permanent	West Bank WWTP Sludge Thickener	1,741,096	1,741,096
Katrina	Large	5788	Permanent	East Bank Wastewater Treatment Plant - Windows & Doors	290,647	294,618
Katrina	Large	5968	Permanent	East Bank WWTP Electrical Items 1,2,3,4,& 6	281,945	281,945
Katrina	Large	5974	Permanent	East Bank WWTP - #4 Effluent Pump Resistors	98,437	98,437
Katrina	Large	5989	Permanent	West Bank WWTP Electrical Item 5	57,327	57,382
Katrina	Large	5992	Permanent	East Bank Wastewater Treatment Plant	707,352	707,352
Katrina	Large	6035	Permanent	East & West Bank Waste Water Treatment Plants	586,884	586,884
Katrina	Large	6955	Emergency	East Bank Wastewater Treatment Plant - Rental Diesel Pumps for Dewatering	161,026	149,156
Katrina	Large	6956	Permanent	East Bank Wastewater Treatment Plant	231,710	231,708
Katrina	Large	6963	Permanent	East Bank WWTP O2 Generator Unit	4,841,744	4,841,744
Katrina	Large	6965	Emergency	Primary Residences of New Orleans Sewerage & Water Board Employees - LaMarque St. Trailer Park	779,629	477,775
Katrina	Large	6973	Emergency	East Bank Wastewater Treatment Plant	172,062	172,062

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	6979	Emergency	East Bank WWTP Potable Water Supply	\$132,258	\$132,258
Katrina	Large	7227	Permanent	East Bank Wastewater Treatment Plant - Building Painting	316,781	316,781
Katrina	Large	7250	Permanent	EBWWTP: Oxygen Oasis Repair to 4th Train Concrete	438,410	438,410
Katrina	Large	7898	Permanent	Central Yard Garage #2	903,030	845,389
Katrina	Large	8085	Permanent	EBWWTP - Mechanical Building and O2 Building Repairs	223,048	223,891
Katrina	Large	8098	Permanent	East Bank Waste Water Treatment Plant - Roadway Repairs	140,768	140,457
Katrina	Large	8101	Permanent	EBWWTP - Bus Duct and Transformers	762,506	762,506
Katrina	Large	8104	Permanent	Fluidized Bed Incinerator for East Bank WWTF	6,389,216	6,245,357
Katrina	Large	8129	Emergency	Sewer Station Pumping - Additional Emergency Discharge Connections	690,829	188,790
Katrina	Large	8137	Permanent	Michoud Sewer Force Main at Bayou Bienvenue	56,280	0
Katrina	Large	8152	Permanent	East Bank WWTP - Floating Aerator (Mixer) & Storm Pump	8,332	8,332
Katrina	Large	8199	Permanent	EBWWTP Repair of Mixers on Train 3	114,964	114,964
Katrina	Large	8276	Permanent	East Bank Wastewater Treatment Plant - Maintenance Building Contents	93,159	93,159
Katrina	Large	8323	Permanent	East Bank Wastewater Treatment Plant - Miscellaneous Mechanical	166,648	163,314
Katrina	Large	9663	Permanent	East Bank Wastewater Treatment Plant - Concrete Structures and Sidewalks	281,777	281,777
Katrina	Large	9665	Permanent	Central Yard Body Shop	111,762	0
Katrina	Large	9688	Permanent	Public Utilities	1,903,176	1,883,649
Katrina	Large	9747	Permanent	SWB OF NO - Administration Building	1,710,942	1,710,942
Katrina	Large	10093	Emergency	East Bank Wastewater Treatment Plant - Generator Usage	681,759	681,759

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	11017	Permanent	East Bank Wastewater Treatment Plant - Underground Wiring and Conduit for Plant	\$1,730,788	\$1,730,788
Katrina	Large	13336	Permanent	Miscellaneous Mechanical Repairs for the East Bank Waste Water Treatment Plant	273,827	273,827
Katrina	Large	13498	Permanent	East Bank Wastewater Treatment Plant, Control Wiring Replacement	573,484	573,484
Katrina	Large	13625	Emergency	Sewerage and Water Board of New Orleans - Canal Cleaning	327,197	327,197
Katrina	Large	13854	Permanent	Cathodic Protection System Parish wide	139,753	125,778
Katrina	Large	13927	Emergency	East Bank Wastewater Treatment Plant, Generator Rent after June 30, 2006	1,858,689	1,858,689
Katrina	Large	13929	Emergency	East Bank Wastewater Treatment Plant, Office Trailer Rent after June 30, 2006	180,029	46,134
Katrina	Large	13930	Permanent	St. Joseph St. Office and Central Yard: Miscellaneous Small Computers	61,595	0
Katrina	Large	14019	Permanent	St. Joseph St. Office Building, Call Center Phone System	167,990	2,123
Katrina	Large	14253	Emergency	St. Joseph St. Office Building, Relocated to Baton Rouge	113,811	0
Katrina	Large	14337	Permanent	Central Yard Garage #2 Spare Parts	1,982,708	0
Katrina	Large	14600	Emergency	Emergency Protective Measures	1,174,678	1,059,337
Katrina	Large	14604	Emergency	Lift Stations Parish-wide, Rental of Temporary Generators	22,307	22,307
Katrina	Large	14605	Emergency	Lift Stations Parish-wide, Rental of Temporary Pumps Required	7,472,812	3,338,652
Katrina	Large	14648	Emergency	Security of Interim Housing New Orleans Sewer and Water	365,942	365,942
Katrina	Large	14649	Emergency	Security of Interim Housing New Orleans Sewer and Water	137,228	0
Katrina	Large	14650	Emergency	Management of Interim Housing - New Orleans Sewer and Water	195,438	171,065

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	16224	Permanent	Parish Wide Water Services Repair (Water Meter Removal)	\$4,011,458	\$1,781,967
Katrina	Large	16363	Permanent	Parish Wide Sanitary Sewer Inspecting and Cleaning	12,268,307	11,279,812
Katrina	Large	16589	Permanent	East Bank Wastewater Treatment Plant Sludge Disposal	1,719,953	271,020
Katrina	Large	16605	Emergency	Carrollton Water Treatment Plant - Sedimentation/Flocculation G3 Basin Complex	422,635	0
Katrina	Large	16612	Emergency	Water Distribution Piping System Leak Detection Program	2,323,667	1,332,115
Katrina	Large	16693	Emergency	Carrollton Water Treatment Plant - Low Lift Pump Station	223,556	0
Katrina	Large	16698	Emergency	Carrollton Water Plant	4,030,785	3,556,862
Katrina	Large	16708	Emergency	Management of Interim Housing - New Orleans Sewer and Water	329,363	56,955
Katrina	Large	16937	Permanent	Carrollton Water Treatment Plant - 36 Inch Water Main	251,250	0
Katrina	Large	17131	Permanent	Revenue and Customer Service Loss	90,684	0
Katrina	Large	17134	Emergency	Central Yard Garages #1, #2, #3 Temporary Office Trailer	89,667	64,188
Katrina	Large	17135	Emergency	Central Yard Building - Temporary Office Trailer	91,183	10,171
Katrina	Large	17552	Permanent	Water Meters	2,661,516	43,221
Katrina	Large	17784	Permanent	Sanitary Collection System & Facilities - Project Management	9,170,263	5,964,126
Katrina	Large	17785	Permanent	Water Distribution System & Facilities - Project Management	11,773,627	6,886,214
Katrina	Large	17803*	Emergency	Emergency Protective Measures	4,571,249	4,571,249

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	17819	Emergency	Emergency Mutual Aid Support/Water Systems Repairs provided by Lafayette City - Parish Consolidated Govt at the request of NOSWB	\$192,002	\$192,002
Katrina	Large	18057	Permanent	Carrollton Water Treatment - Panola Building Electrical and Mechanical	247,468	0
Katrina	Large	18058	Permanent	Post Disaster Water System Inspection (Appeal NEMIS 8195)	634,846	634,846
Katrina	Large	18060	Emergency	Emergency Mutual Aid Support/Water Systems Repairs	230,141	150,945
Katrina	Large	18087	Permanent	East Bank Wastewater Treatment Plant Restoration of Clarifiers - Continuation of NEMIS 4031	138,953	138,953
Katrina	Large	18089	Permanent	Multiple Hearth Incinerator for East Bank Wastewater Treatment Facility	5,893,831	369,580
Katrina	Large	18397	Permanent	Industrial Avenue Raw Water Intake (New Raw Water Intake)	1,091,377	437,913
Katrina	Large	18408	Emergency	Provide Potable Water (Tanker Trucks)	230,129	0
Katrina	Large	18836	Permanent	Water Distribution System Point Repairs by Force Account	66,027,563	23,187,468
Katrina	Large	18944	Permanent	Sewer Collection System Point Repairs by Force Account	6,043,757	5,439,381
Katrina	Large	18978	Permanent	Fire Hydrant Rehabilitation	588,260	0
Katrina	Large	19067	Permanent	East Bank Wastewater Treatment Plant Protective Berm	33,421,421	26,457,965
Katrina	Large	19102	Permanent	Replacement of Damaged Vehicles	5,800,543	0
Katrina	Large	19221	Permanent	Public Utilities	241,979	103,428
Katrina	Large	19224	Permanent	Five Sewer Pump Stations - Roll-up	1,025,678	745,860
Katrina	Large	19225	Permanent	Seven Sewer Pump Stations - Roll-up	961,690	274,938
Katrina	Large	19247	Permanent	Fence Along Florida Street	56,642	0
Katrina	Large	19257	Permanent	Vehicles & Equipment (Roll-up)	9,421,912	7,744,933

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	19278	Permanent	Two Sewer Pump Stations - Roll-up	\$1,455,494	\$1,365,916
Katrina	Large	19280	Permanent	Three Sewer Pump Stations - Roll-up	612,794	497,028
Katrina	Large	19281	Permanent	Two Sewer Pump Stations - Roll-up (5,14)	1,115,320	745,763
Katrina	Large	19316	Permanent	Two Sewer Pump Stations - Roll-up	1,609,325	1,470,272
Katrina	Large	19320	Permanent	Three Sewer Pump Stations - (16, B, Crowder)	748,795	694,253
Katrina	Large	19343	Permanent	Four Sewer Pump Stations - Roll-up	834,542	363,951
Katrina	Large	19346	Permanent	Three Sewer Pump Stations - Roll-up	1,813,586	1,428,247
Katrina	Large	19358	Permanent	Central Yard Annex Building	684,130	857,465
Katrina	Large	19371	Permanent	Eight Sewer Pump Stations Roll-up (Bridge Plaza, Berg, Burke, Briarwood, K-Mart, Liggett, Shorewood, and Weber)	4,125,655	3,487,914
Katrina	Large	19386	Permanent	Six Sewer Pump Stations - Roll-up	3,147,560	2,670,333
Katrina	Large	19434	Emergency	Panola Pump House Motor Installation	621,740	493,983
Katrina	Large	19448	Permanent	Water Distribution System (50 Waterline Crossing IHNC)	341,700	0
Katrina	Large	19544	Permanent	Three Sewer Pump Stations Roll-up (1, 3, Memorial)	1,415,575	1,415,575
Katrina	Large	19682	Permanent	Sewer Pump Stations Roll-up (6&8)	752,520	436,986
Katrina	Large	19757	Emergency	Water Distribution System (So. Claiborne Ave. Water Pump Station)	641,454	640,821
Katrina	Large	19820	Permanent	Carrollton Water Treatment Plant - Roll-up Nine Project Work Sheets	442,020	147,300
Katrina	Large	19846	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	16,334,209	7,151,097
Katrina	Large	19861	Permanent	Security Surveillance System at the Central Yard & Carrollton Water Plant	86,001	0
Katrina	Large	19862	Emergency	Temporary Facility at Central Yard for Garages	2,242,170	1,382,717
Katrina	Large	20190	Permanent	SWBNO Water Distribution Piping - Line Assessment Protocol	2,847,938	1,509,847

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	20228	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Lake Shore - Lake Vista Neighborhoods	\$509,447	\$601,411
Katrina	Large	20229	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Lower Ninth Ward West	530,847	386,224
Katrina	Large	20230	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Lower Ninth Ward South	2,074,127	323,204
Katrina	Large	20232	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	2,244,463	507,883
Katrina	Large	20233	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Treme-Lafite Neighborhood	108,324	92,129
Katrina	Large	20234	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Central Business District Neighborhood	6,868,736	3,930,695
Katrina	Large	20300	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	92,688	54,981
Katrina	Large	20303	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Seventh Ward Neighborhood	166,308	100,577
Katrina	Large	20313	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Lakewood Neighborhood	274,913	279,715
Katrina	Large	20347	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Navarre Neighborhood	132,608	90,016
Katrina	Large	20348	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Read Blvd East Neighborhood	73,042	41,508

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	20350	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Touro Neighborhood	\$197,760	\$21,336
Katrina	Large	20484	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	172,123	118,262
Katrina	Large	20486	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	521,831	368,227
Katrina	Large	20515	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - West Lake Forest Neighborhood	61,986	22,946
Katrina	Large	20527	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - City Park Neighborhood	56,547	34,287
Katrina	Large	20530	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Little Woods Neighborhood	256,689	196,773
Katrina	Large	20531	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	199,190	155,328
Katrina	Large	20536	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - St. Bernard Neighborhood	153,596	96,927
Katrina	Large	20640	Permanent	Replace Identified Damaged Water Main Segments	654,556	429,040
Katrina	Large	20646	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Lake Terrace & Oaks Neighborhood	1,404,974	309,397
Katrina	Large	20647	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Milan Neighborhood	90,855	40,766
Katrina	Large	20648	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Filmore Neighborhood	466,605	327,164

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	20649	Permanent	Replace Identified Damaged Water Main Segments	\$356,580	\$230,849
Katrina	Large	20650	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Dillard Neighborhood	197,820	178,038
Katrina	Large	20658	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Bayou St. John Neighborhood	114,174	64,321
Katrina	Large	20659	Permanent	Replace Identified Damaged Water Main Segments	229,011	148,864
Katrina	Large	20660	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Irish Channel Neighborhood	38,267	0
Katrina	Large	20663	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	138,373	93,065
Katrina	Large	20666	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	114,438	125,217
Katrina	Large	20667	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	28,427	14,927
Katrina	Large	20669	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - St. Roch Ward	326,844	226,973
Katrina	Large	20679	Permanent	Replace Identified Damaged Water Main Segments	226,407	153,706
Katrina	Large	20683	Permanent	Replace Identified Damaged Water Main Segments	101,678	77,670
Katrina	Large	20690	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Dixon Neighborhood	65,609	44,208
Katrina	Large	20692	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - A Village De Lest Neighborhood	149,155	85,827

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	20693	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	\$38,496	\$24,794
Katrina	Large	20694	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	376,842	278,088
Katrina	Large	20696	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Pines Village Neighborhood	221,000	110,262
Katrina	Large	20701	Permanent	Replace Identified Damaged Water Main Segments	547,434	358,008
Katrina	Large	20730	Permanent	Replace Identified Damaged Water Main Segments	19,862	17,442
Katrina	Large	20735	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - B.W. Cooper Neighborhood	58,734	51,191
Katrina	Large	20736	Permanent	Replace Identified Damaged Water Main Segments	590,105	222,436
Katrina	Large	20737	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Viavant Neighborhood	381,609	300,013
Katrina	Large	20738	Permanent	Replace Identified Damaged Water Main Segments	392,636	370,225
Katrina	Large	20740	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Fairgrounds Neighborhood	203,976	161,703
Katrina	Large	20750	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Garden District Neighborhood	45,740	39,603
Katrina	Large	20751	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Gentilly Terrace Neighborhood	503,189	417,044
Katrina	Large	20752	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Hollygrove Neighborhood	255,598	234,743

Disaster	Project Size	Project Number	Emergency/ Permanent Work	Project Description	Federal Amount Obligated	Federal Reimbursed Amount
Katrina	Large	20753	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Gert Town Neighborhood	\$199,237	\$178,878
Katrina	Large	20756	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	209,870	142,914
Katrina	Large	20759	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System	25,803	26,011
Katrina	Large	20769	Permanent	Replace Identified Damaged Water Main Segments at the Water Distribution System - Leonidas Neighborhood	251,875	197,271
Katrina	Large	20808	Permanent	Direct Administrative Costs Activities for Various Sewerage	1,106,100	116,644
Katrina	Large	20817	Permanent	New Orleans Sewerage & Water - Contents and Equipment - Improved Project	67,517	0
Katrina	Large	21022	Permanent	Carrollton Water Treatment Plant	50,106,352	44,313,416
Katrina	Large	21030	Permanent	Direct Administrative Costs/Close-out Incentive	3,888,929	0
Katrina	Large	21031	Permanent	Water Distribution and Sanitary Sewer Collection Infrastructure	265,902,284	584,376
Gustav	Large	1749	Emergency	East Bank Waste Water Treatment Plant	262,627	257,478
Gustav	Large	1944	Emergency	Station A	206,555	206,555
Gustav	Large	5561	Emergency	Force Account Labor	128,711	128,711
Isaac	Large	361	Emergency	Emergency Protective Measures	1,048,508	894,284
Isaac	Large	994	Permanent	Sewage and Water Facilities	403,175	42,681
Isaac	Large	1525*	Permanent	Pump Station	53,779	0
Subtotal – Large Non-Drainage Projects					\$777,070,301	\$378,701,024
Katrina, Gustav, and Isaac	Small	148 projects	Emergency & Permanent		\$1,271,465	\$1,266,713
Total – Large and Small Non-Drainage Projects					\$778,341,766	\$379,967,737
Grand Total - ALL Public Assistance Projects					\$810,205,316	\$409,483,220