KATRINA 10

Progress...Devastation to Recovery to Restoration to Rebuilding









10 Years Later

PRESENTED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS

August 29, 2015

About the Cover

The photos on the cover represent the theme of the K10 book. The Sewerage and Water Board in the aftermath of Hurricane Katrina began immediate progress, going from devastation, recovery, restoration to rebuilding of the most complex water, sewer, drainage and power generation infrastructure in the country.

Katrina 10 Years Later
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The stories in this booklet were prepared on behalf of The Sewerage & Water Board of New Orleans by its Community and Intergovermental Relations Department.

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

Sewerage & Water Board of New Orleans

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Notice To The News Media From The Sewerage & Water Board: An Introduction to "Katrina 10 Years Later...Progress...Devastation to Recovery to Restoration to Rebuilding"

The Board of Directors and the men and women of The Sewerage and Water Board of New Orleans are proud to be a part of rebuilding the water, sewerage, drainage and power systems devastated by Katrina.

The Board is providing this packet of information about our many achievements in the 10 years since Katrina so that the citizens of New Orleans know of our accomplishments. Enclosed is a review of many projects completed, ongoing or planned.

Almost $2 billion in funding has been dedicated to rebuilding the system. The total estimated project cost amount for all FEMA-related activity to date is approximately $852 million. Of this amount approximately $682 million is obligated by FEMA. Corps funding has included $1.5 billion for SELA and $145.8 million for storm proofing. About a million dollars of stimulus funds has also been received.

These articles include information on a new plan to coordinate infrastructure management, commitment to reform,the ongoing rehabilitation of the sewage collection system, the major rebuilding of the massive drainage system and improvements to the water system and the Board's own power plant. Historical Perspective stories about the heroics of the Board's own "first responders" who stayed on duty in dangerous situations and those that risked their lives to report to their duty stations are included. Also, there is a glimpse at the S&WB response to Hurricane Isaac in 2012.

S&WB Gets a Jump on Hurricane Preparedness With Reliable, Complete and Multi-Faceted Plan

Each spring the Sewerage & Water Board institutes its multi-faceted hurricane preparedness protocols well in advance of the June 1st start of the hurricane season. This year was no different, as the S&WB completed its planning and training exercises several weeks in advance. According to Executive Director Cedric Grant, "the Board's team of emergency responders, managers, directors and crucial employees are prepared to go into action at any time."

Grant added, "Hurricane readiness is an everyday experience for us because of our record-breaking rainfalls in the spring and early summer. Many of these rainstorms often create more runoff than are experienced in hurricanes. However, we still take the early preparedness very seriously. Many goals are built into the plan, including an immediate response to any problems, which may develop, that would interfere with the protection of our city's citizens and the safety of employees. The board's Emergency Management Office and mobile command center further enhanced communications."

The Sewerage & Water Board joined with The Coastal Protection & Restoration Authority of Louisiana, the City of New Orleans and agencies across the metropolitan area for the annual hurricane preparedness press conference held June 1st at the Port of New Orleans. The press conference was the culmination of a coordinated, region-wide preparation effort. Grant said, "S&WB leaders met with the U.S. Army Corps of Engineers and its partners in flood protection, to ensure that coordination of operations and communications between the two were in place and tested. Preparation meetings and tabletop exercises and contingencies that are triggered when a hurricane/ tropical storm enters the Gulf have been completed."

According to Sewerage & Water Board General Superintendent, Joseph Becker, "The Sewerage & Water Board's hurricane preparedness plan is multi-faceted, reliable and complete." Specific preparation efforts included:

- Emergency contracts for pre-staged generators at key facilities;
- Emergency response boats and communication equipment staged at various Drainage Pumping Stations;

- Arrangements for an Emergency Operation Center at the Main Water Plant to coordinate the S&WB's response to emergency events;
- Providing employees with placards for response and re-entry;
- Giving employees a 1-800 call-in number to report their location in the event they have evacuated;
- Building emergency protective Tiger Dams to protect against flooding at the Main Water Plant Power House; and

Establishment of a Mobile Command Post to be staged in Baton Rouge as an alternate Emergency Operations Center. Grant said, "Management and staff were confident that their team of experts was well-prepared and able to work internally with our own forces and externally with the City's overall Office of Emergency Preparedness Command Center, Corps of Engineers, levee districts and adjacent parishes. The input from those employees who experienced Katrina, Rita, Gustav, Ike and Isaac were invaluable resources in the event a major storm approaches."

At all of the many neighborhood, community, civic and business meetings S&WB teams attended, a prime concern of citizens was the Board's readiness for storms. Staff assured them that everyone knows what to do and when to do it and, yet, the Boards' plan was flexible enough to quickly adjust to unforeseen challenges. The citizens of New Orleans can be confident that the Boards' first responders are ready to go into action when needed.

The Sewerage & Water Board of New Orleans

How It Began...
The Way It Works...
The Job It Does...
The Challenges It Faced...
Overcoming Hurricane Katrina...
Changes and Reforms...
"Re-Building The City's Water Systems For The 21st Century...Smarter, Stronger, Reliable and Resillient"

Message From The Executive Director, Cedric Grant

Hurricane Katrina represented the greatest challenge ever faced by the Sewerage & Water Board and the City of New Orleans. With 80% of the city flooded, thousands of New Orleanians lost their lives and their property. The Sewerage & Water Board almost lost an entire infrastructure built over. The impact of Hurricane Katrina to the board's water, sewer, drainage and power generation systems was devastating.

Over 300 Sewerage & Water Board employees manned their stations at board facilities throughout the city during Hurricane Katrina and during the catastrophic flooding that followed. These Sewerage & Water Board 'Katrina Heroes' literally risked their lives and their personal safety to salvage and repair vital Sewerage & Water Board facilities and equipment that made it possible to dewater the city in only 11 days after the levee breeches were repaired. Some of these 'Katrina Heroes' far exceeded the call of duty by rescuing city residents from flood waters and providing needed resources. The spirit of these 'Katrina Heroes' and the one thousand plus that returned have been the foundation that has carried us through recovery, restoration, and rebuilding.

Executive Director Cedric Grant is greeted by Bob Moenian, Chief of Drainage Operations and Gerald Tilton, Drainage Superintendent at Drainage Pumping Station #1, the oldest pumping station in the city.

August 29, 2015 New Orleans commemorates the 10th anniversary of Hurricane Katrina. The entire country is looking at New Orleans and how far we have come in the rebuilding of our city and its infrastructure. Indeed, we have come a long way in the 10 years of rebuilding. What we have accomplished in these last 10 years is the ultimate testimony to our resilience in the face of insurmountable challenges.


Meeting Press

No other American city has ever experienced such massive devastation in the aftermath of a disaster like Hurricane Katrina. But as the saying goes, 'straight roads do not make skillful drivers'. The Sewerage and Water Board has learned valuable lessons on how to deal with large-scale disasters through our experience with Katrina. Since then, we have faced and overcome many other challenges – like Hurricanes Rita, Ike and Gustav and tropical storms Lee and Isaac. The Sewerage and Water Board is an integral and critical part of the city's recovery story. The board turned tragedy into an opportunity for change and reform while going from recovery to resilience. For without the essential life services of water, sewer, and drainage services, there would have been no city in which to return.

The Sewerage and Water Board's mission is to provide safe drinking water to everyone in New Orleans; to remove waste water for safe return to the environment; to drain away storm water; to provide water for fire protection; to provide information about products and services; and to do all of this continuously at a reasonable cost to the community. The aftermath of Hurricane Katrina challenged our ability to achieve our mission. But we have faced the challenge and continue to rebuild smarter, stronger, reliable and resilient. We want our customers to get to know us better and we want to remind customers that the board and its employees will always be dedicated and committed to fulfilling its mission.

As we made plans for the future, we envisioned progressive and comprehensive changes and reforms that would positively impact our delivery of services to the customer. A year ago, the Board of Directors was restructured, in order, to diversify and strengthen public advocacy. Additionally, the Sewerage & Water Board has gained efficiency and effectiveness through its integration with the City Department of

Public Works. As a result of the restructuring, all capital improvement and infrastructure projects are fully coordinated in construction, acquisition, improvement, maintenance, and promotion of any public improvement or project.

The Sewerage and Water Board has completed the majority of the rebuilding and repairs to its facilities damaged by Hurricane Katrina with funding provided by the Federal Emergency Management Agency (FEMA). To date, FEMA has obligated $682 million to restoration of the system infrastructure. Vital drainage improvements are ongoing with $1 billion in SELA urban drainage projects throughout the city. And, an additional $48 million from FEMA for other drainage projects, a Hazard Mitigation Grant for the Water Hammer Project, designed to reduce the loss of water pressure and the retrofitting and hardening of the power plant further enhance board operations. Our projects on wetlands restoration in Bayou Bienvenue and the green infrastructure grant program for neighborhood organizations have garnered national and international attention.

Committed to aggressive rebuilding, Sewerage and Water Board forces completed over 31,000 work orders and service requests in 2014. This includes over 1,000 emergency requests such as sewer overflows and customers without water. The agency completed nearly 1,200 sewer mains, 1,500 water mains, nearly 10,000 water service requests, over 1,000 hydrants; and 1,100 valves. It met or exceeded all requirements of the consent decree, including 4,800 preventive maintenance activities at 83 sewer stations, inspected and exercised all sewer valves, cleaned nearly 1.5 million feet of sewer mains, inspected 750,000 feet of sewer mains, and inspected over 8,000 sewer manholes.

The federal government has invested $14.5 billion for a 139-mile flood protection system including the most powerful pumps in the world and a 1.8 mile, 26 foot high surge barrier. Right now, in the city of New Orleans, millions of dollars in water sewer, drainage and roadway improvements are underway. This is one of the largest infrastructure projects ever for the city – one that is creating thousands of jobs requiring new skillsets. And, the GE Foundation has stepped in with a $1.5 million grant to Delgado College, designed to fund a program to help the board train the next generation of water infrastructure personnel.

The board is moving forward with an on-going Capital Program. It is currently implementing a $3.3 billion capital improvement program comprised of over 600 projects that will create 25,000 construction jobs

Dedication of the Annex Building at Central Yard.

across the city. Through the rate increase approved by New Orleans City Council in 2012, bond rating upgrades for sewer and water, and the recent bond sale, S&WB's capital improvement program for water and sewer is funded for the first time in 25 years. This work is being paired with the City's $1 billion recovery program combining to create one of the largest infrastructure improvement efforts in the history of New Orleans.

We have accomplished so much in the last ten years. And moving forward, we maintain our commitment to the relentless pursuit of progress. To that end, I predict that the Sewerage and Water Board as it marks its 116th Anniversary in August, 2015 will continue to be a global model in the recovery of America's Most Interesting City, as we continue to provide quality of life services for over 384,000 residents and 9.5 million visitors a year. There is no better legacy and testament to the strength and the resilience of the Sewerage & Water Board.

Sewerage and Water Board Celebrates 116 Years

The City of New Orleans today enjoys water, drainage and sewerage services comparable or superior to any city in the country.

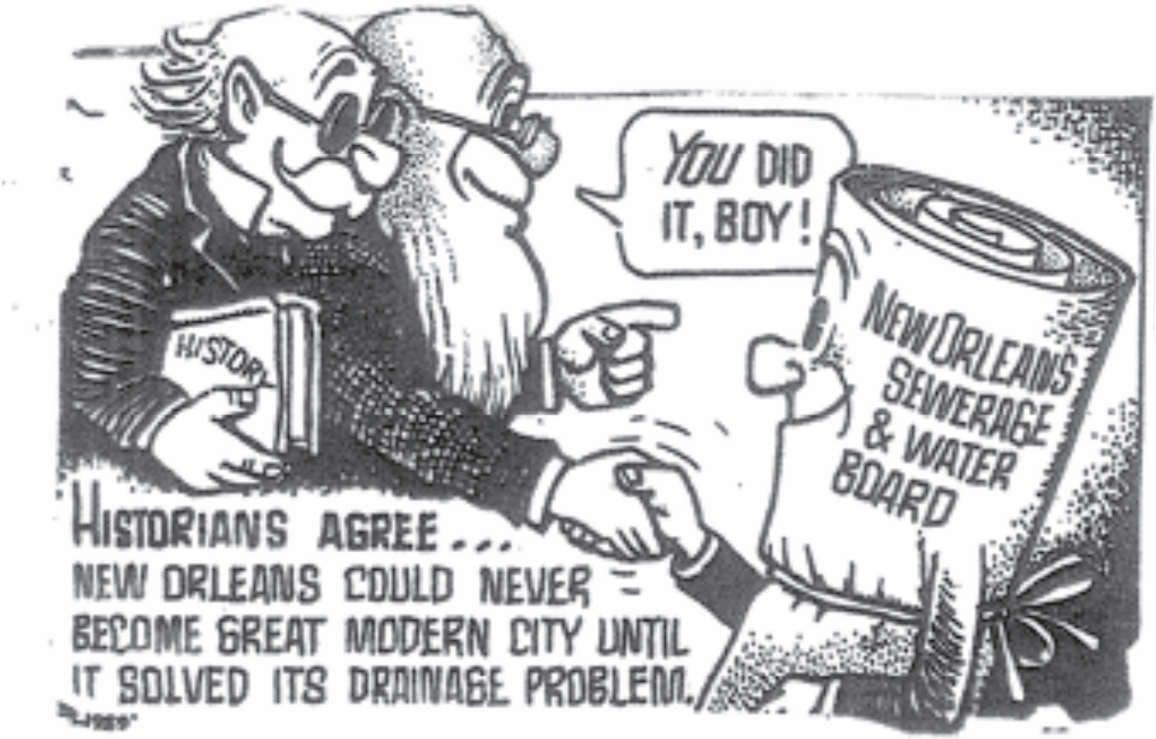
It has an abundant supply of water that exceeds the standards of the United States Environmental Protection agency.

A unique drainage system, with pumping stations having a combined capacity of more than 25 billion gallons a day, removes rain and stormwater during frequent deluges. The city's average rainfall of 58.12 inches is exceeded by only one other metropolitan area in the country.

An intricate sewerage system is able to dispose of more that 132 millions of gallons of wastewater per day and in order to minimize pollution, upgrade and expansion of sewage treatment plants is a continuing process.

The benefits of the tri-fold services of the water, drainage and sewerage

Orleans Avenue Canal Under Construction in 1936



systems have not always been available in the city. Let us look back.

New Orleans was settled by the French in 1718 on the high ground adjacent to the Mississippi River- only 14 feet above sea level. As a result of its unusual topography, the city was subject to periodic flooding from the Mississippi and Lake Pontchartrain, as well as frequent inundation from the high intensity rainfall.

Often, after one of these floodings, the inhabitants were forced to wade through the streets or be rowed in small boats to take care of their daily business. As late as 1884-1885, illustrations in the daily newspapers showed the main business section flooded with two or three feet of water and residents wading or rowing through the streets. It was not uncommon for such regular flooding to last for a week. In fact, many parts of the city were subjected to periodic flooding even after moderate rainfall.

Water for drinking or general use was either collected in large cypress cisterns that stored rain water from the roof tops or taken from the river and allowed to settle in large earthenware jars. At this time, there were no purification or sterilization procedures.

Without a municipal water supply, the greater part of the city burned to the ground in 1788 and again in 1794. Ironically, over 300 billion gallons of water a day were pouring down the Mississippi less than two blocks from the fire. This amount is more than the

present city uses in six years.

A sewage collection and disposal system was also non-existent. Human waste was disposed of in the open pit privy, while household wastes found their way into open gutters. Such unsanitary conditions gave rise to typhoid fever, yellow fever, cholera and other diseases, which decimated the population at regular intervals.

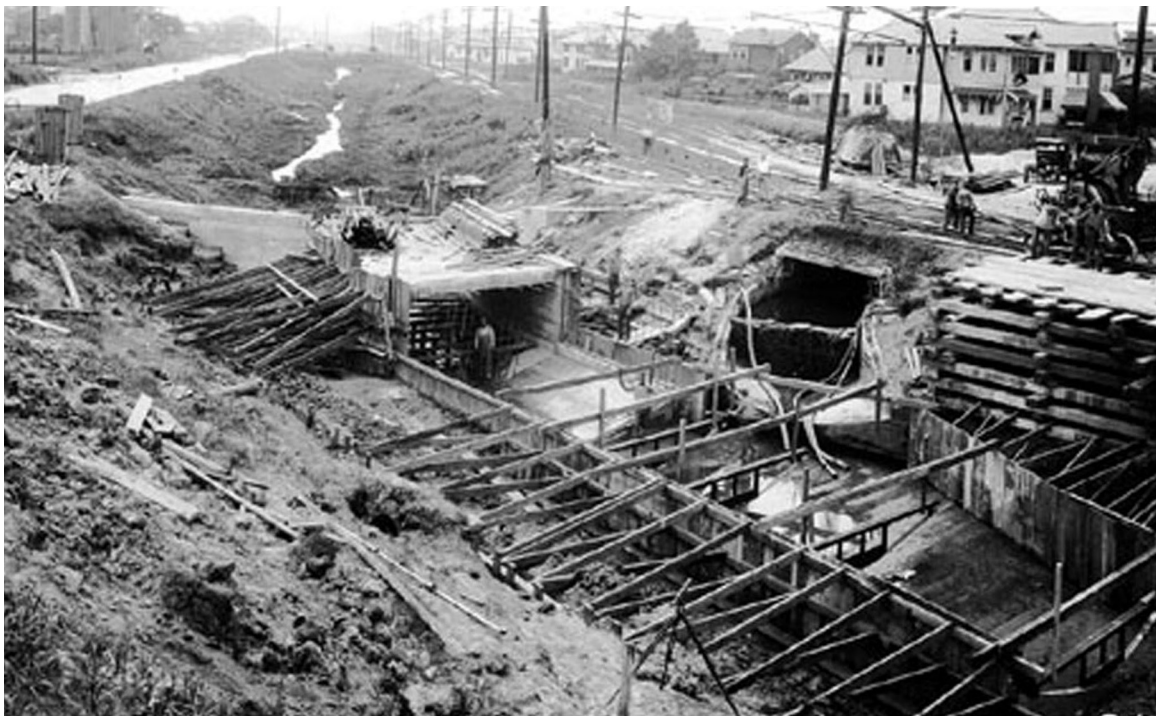
These conditions no longer exist. Today, New Orleans is provided with water, drainage and sewerage facilities 24 hours a day, 365 days a year, where and when they are needed.

The Louisiana Engineering Society, in honor of it's 75th anniversary in 1973, selected the water, drainage and sewerage systems of New Orleans as among the ten most outstanding engineering achievements in the state. This is a great honor accorded to both our community and the Sewerage and Water Board.

By 1893, it became apparent to city leaders that accommodation of area growth would depend on their ability to keep New Orleans drained, dry, adequately supplied with water for drinking and fire protection.

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, in 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. In 1903, the Drainage Commission was

South Claiborne and Lowerline Drainage Canals Under Construction



merged with the Sewerage and Water Board in order to consolidate drainage, water and sewerage programs under one agency for more efficient operations. This combined organization retained the title Sewerage and Water Board, and remains as such today.

Once formally organized, the Sewerage and Water Board set out to fulfill its goals of providing the city with adequate drainage, sewerage collection and drinking water. Between 1879 and 1915, $27.5 million was spent on construction of water, sewerage and drainage facilities. At that time, funds for construction came from either a special two-mill tax on all property or one-half of the surplus from the one per cent debt tax. Today, the Board gets funding in part from sources, which include a three-, six- and nine-mill property tax.

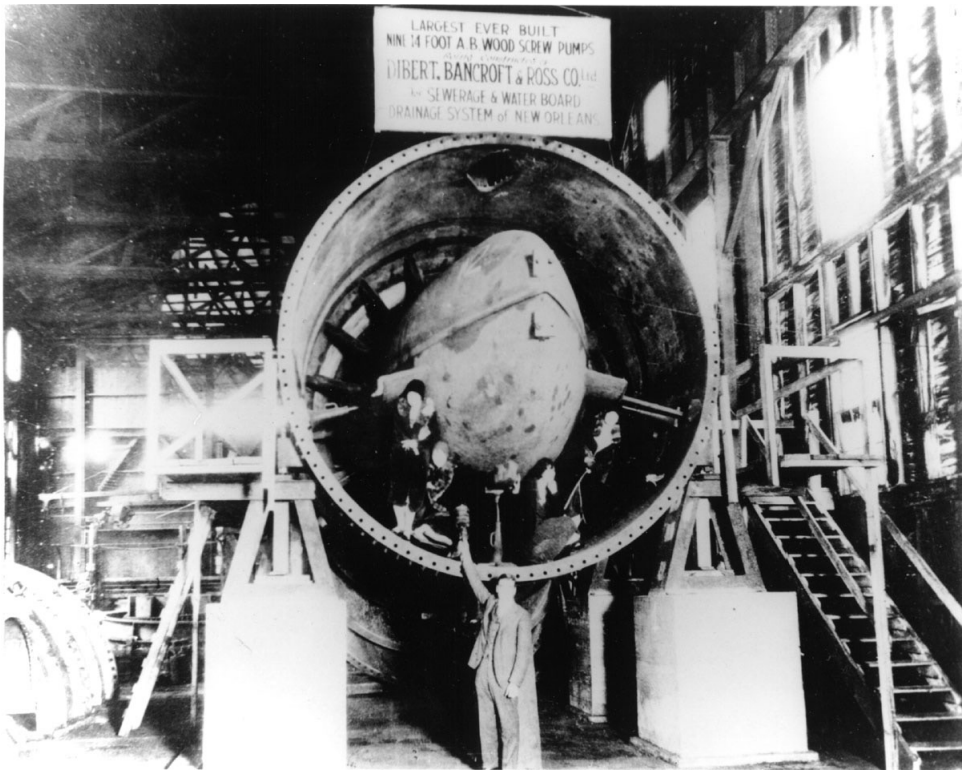
Such extensive construction was a bold step for a city at that time. Present day construction costs are more than forty times those of the early 1900's. At current prices, such a program could amount to billions of dollars. Furthermore, this monumental program was financed by a population of far less than that of present-day New Orleans.

A. Baldwin Wood
1879-1956
Inventor, Engineer, Genius
"The Man Who Made Water Run Uphill"

In the first year of its existence, the Sewerage and Water Board hired a 20-year old engineer, a recent graduate of Tulane University, named Albert Baldwin Wood. The young engineer's job was to inspect new equipment at the pumping stations. Later, his name and fame would spread throughout the world.

As early as 1906, Mr. Wood had invented a six-foot centrifugal pump that was the largest of its kind at the time. Shortly afterwards, he surprised the engineering world with the ingenuity and efficiency of "flap gates" he invented to stop water from backing up when pumps were not in operation.

He also invented a hydraulic meter testing machine in 1912 and in 1916 patented the Wood Trash Pump, which removed trash and debris at sewage pumping stations, allowing the S&WB's sewerage system to be one of the first in the nation to be automatically operated.



A. Baldwin Wood inspects his invention...the Wood Screw Pump.

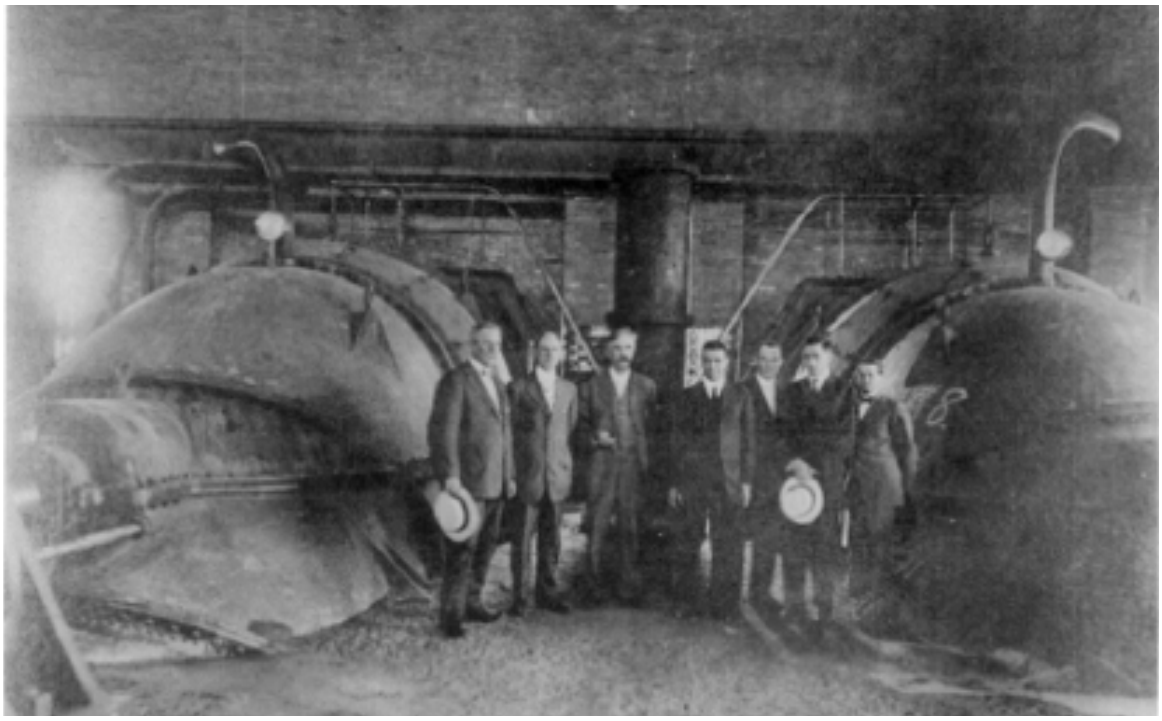
His most important and famous invention was the powerful and reliable Wood Screw Pump, the heart of the drainage system. In 1912, the Board urgently needed increased drainage capacity for the drainage pumping stations. Wood offered to design a special pump to address the high volume of runoff collected during heavy rain storms. In addition to his regular duties, he gave months of study to the design on his own time. In 1913, he presented the Sewerage and Water Board with plans for the 12-foot Wood Screw Pump, giving the Board "perpetual rights" to his invention.

He later designed a 14-foot version and oversaw the installation and testing of his pumps in numerous pumping stations. Those world-famous pumps are still in operation today, some 86 years later. His original design is still used when the Board orders new horizontal pumps for its modern-day drainage stations.

Wood's fame spread to Europe when the Dutch government sought his help in using the Wood Screw Pump to reclaim the Zuyderzee, land that the sea had stolen. Eventually a string of Wood Screw pumps stretched from Amsterdam to Zwolle. His design was also used to solve drainage problems in China, India and Egypt and several cities in the U.S.

Mr. Wood served the Board for 57 years: as an engineer from 1899 to 1908; as head of drainage operations from 1915 to 1939, and as general superintendent from 1939 to 1956.

Then & Now

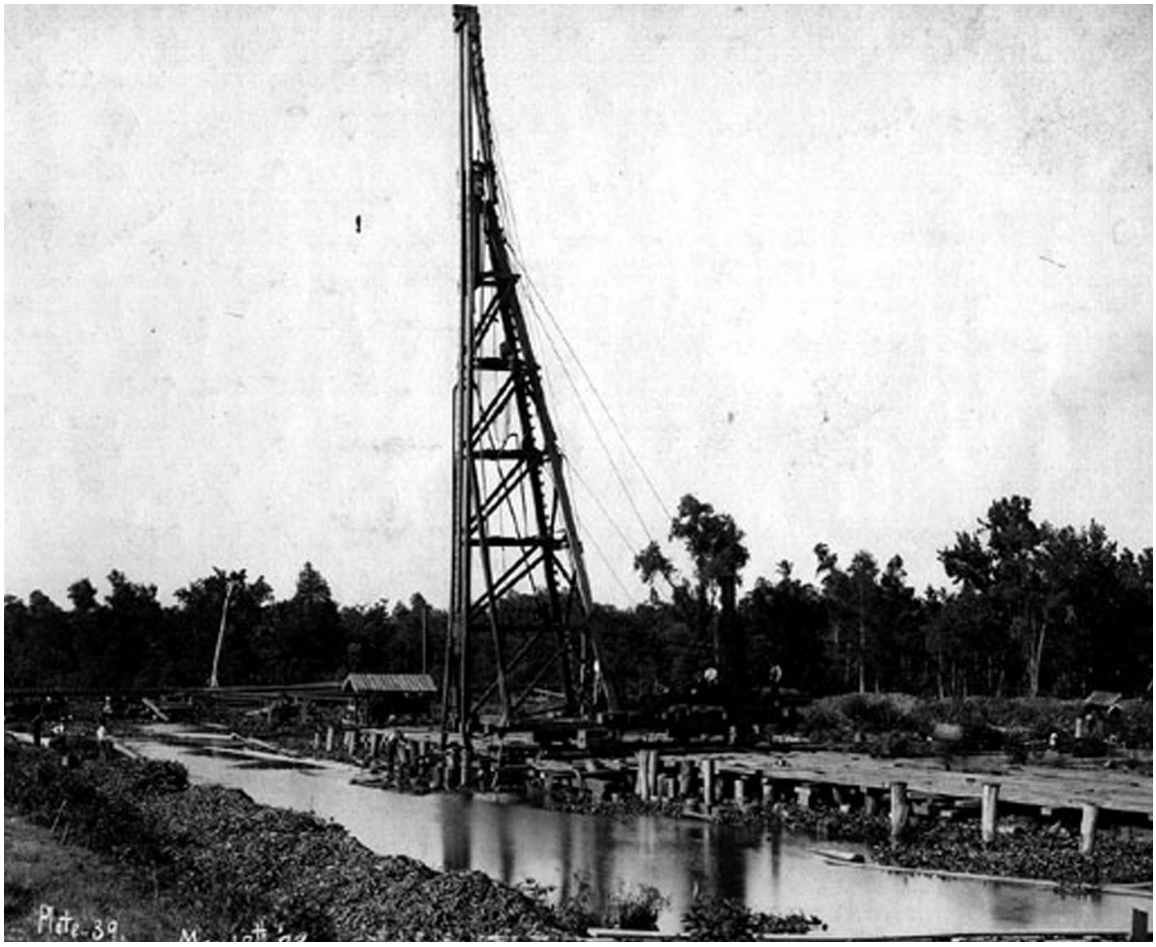


THEN - In 1915 the 12 ft Wood Screw Pump was the most advanced drainage pump in use. Wood's pumps were built all over the world after their successful operation in New Orleans was proven.

NOW - This photo of Drainage Pumping Station #2 shows the mighty Wood Screw Pumps from the exterior of the station.

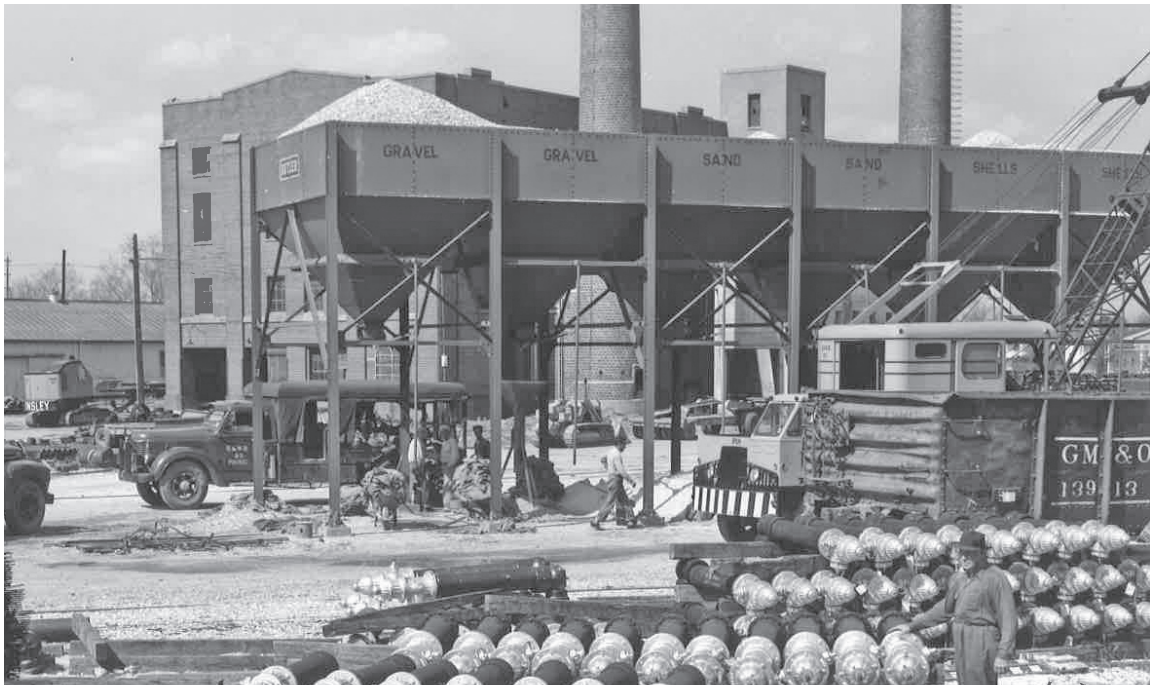
THEN - The building of the basins at the Carrollton Water Plant.

NOW - Today, the Power Plant continues to be rebuilt and upgraded.



THEN - Drainage Pumping Station 6 under construction along the 17th Street Canal

NOW - Drainage Pumping #6 is continuously maintained like all of the board's facilities and equipment.



THEN. - Central Yard, the early years.

NOW - Central Yard's newly built Site Relocation Facility that temporarily houses many services.

Katrina's Devastation and S&WB's Rapid Recovery Are Now A Part Of The Board's Storied History

The storied history of the Sewerage and Water Board of New Orleans cannot possibly be told without a major focus on Hurricane Katrina.

Katrina, of course, with a direct hit to New Orleans on August- 2005 was one of the most devastating storms ever to hit the United States.

In addition to storm surges from the Mississippi Gulf Outlet (MRGO), which destroyed the East Bank Sewage Treatment plant and several drainage pumping stations, floodwalls failed along outfall canals and the Industrial Canal. All of the water inundated 80 per cent of the East Bank of Orleans Parish damaging every Board facility, equipment and truck fleet.

Management and employees knew they had an incredible restoration and re-building challenge after Katrina, once all the damages and devastation to facilities and equipment were assessed.

So immediately after Katrina hit 10 years ago, the staff achieved more than most experts thought they could. But, with an organized plan and the knowledge and skill of many on-staff experts, an incredible number of construction and repair projects were begun to once again provide quality and reliable water, sewer and drainage services for the citizens of the City.

Like the citizens or New Orleans--- the men and women of the S&WB are resilient and began to work immediately to restore as many systems as possible.

The most crucial job was to de-water the city so repairs could be accomplished as soon as possible. Some experts said the process would take months, but the Board's dedicated employees completed the task in 11 days.

Simultaneous, the restoration of the power plant was underway to provide power generation so the various facilities could go online.

Since so many employees stayed on the job and others returned to duty as quickly as possible, many miracles were achieved in a short period of time.

Today, millions of dollars have been invested in the changes to the restoration process, including funds from the Board, FEMA and the U.S. Army Corps of Engineers.

Marcia St. Martin was Executive director at the time. She said, "Our goal of full restoration remains, so that we can provide maximum service to those residents and business owners who stayed in the City and those who have returned, have opened new businesses or who are still planning to return. We are resolute in this challenge."

"While we did get a fast start on repairs, we will not rest on our laurels. Instead, we are using our minds, expertise and knowledge of our systems to restore many of our pumps, machinery, equipment, computers, facilities and vehicles and put them back into service more quickly than expected."

She added, "And, while we still have a lot of critical work to do, I think it's important for our citizens to know we've already had many successes in all departments and there are many more to come."

Mayor Mitch Landrieu said upon her retirement, "Marcia guided the Sewerage and Water Board and its staff through its most trying times. Her bold leadership during the months following the storm and swift response in getting the agency back into operation was critical to our city's recovery. Hurricane Katrina destroyed much of the agency's water, sewerage, and drainage systems, as well as the power plant, but Marcia was committed to the rebuilding of New Orleans. I want to personally thank her for her decades of remarkable service to the people of New Orleans."

Restoration And Resilience -10 Years Of Progress

The last 10 years since Hurricane Katrina has encompassed the most massive and extensive infrastructure restoration and rebuilding effort in the Sewerage and Water Board's 116 year history. Today, the board is building smarter, stronger, more resilient and more reliable.

While much of the systems were damaged or destroyed by Hurricane Katrina, the men and women of the Sewerage and Water Board because of their dedication and commitment stayed on the job and had all the systems back up and running in record time, enabling our citizens to return to the city.

Then the real work began- rebuilding and fortifying our water, sewer, drainage and power systems. Thousands of projects have been completed and many new ones are underway or on the drawing board. Some of the major water, sewer, drainage and power systems initiatives are provided in this report.

This information is designed to help customers know the board better and to understand the comprehensive efforts undertaken to insure delivery of quality of life services to the City of New Orleans.

Sewerage And Water Board Major Initiatives
Water System Major Initiatives

Water Purification Division

- Water Quality Master Plan draft engineering report submitted December 2014.
- Response to DHH Emergency Disinfection Rule successfully implemented. Monitoring and system flushing plan resulted in 100% compliance for 2014.
- Aggressive Operator Certification training program has successfully provided several much needed DHH certified Water Treatment operators for the system. Program will continue to meet system needs.

Water quality instrumentation with remote monitoring capability added to Algiers Elevated Tank site

Carrollton Water Purification Plant

- G4 flocculation/sedimentation work is completed and is on standby for service.
- Staff washed L3 basin. Flocculation basin needed a thorough mechanical overhaul. Facility Maintenance assessed

This photo shows crews replacing a water line in the Lower Ninth Ward neighborhood, an area of the city severely impacted by Hurricane Katrina. This is a part of the larger city-wide multi-year infrastructure repair/recovery effort funded by FEMA. This program is designed to restore the city's water distribution system. To ensure that the city is maximizing available funding, various agencies are involved in the co-ordination efforts of the program. The program is managed on a neighborhood by neighborhood basis. The Sewerage and Water Board co-ordinates with the Department of Transportation and Development (DOTD) and the Department of Public Works (DPW) to repair or replace water lines with roadway repair projects. FEMA has obligated to date $188 million.

material needs, ordered materials and has completed most repairs.

- Floating dredge for in-situ basin cleaning purchased and on-site ready for service.

Water Quality Laboratory

- Lab has been inspected for State certification for Total Organic Carbon analysis and anticipating certification approval in early 2015.
- Corrosion control monitoring program: Data collection continues to gauge the effectiveness of the treatment processes and any process change on corrosivity.
- Lab staff continuing work on establishing a new protocol to analyze halo acetic acids.
- Participated in required sampling for EPA's Unregulated Contaminant Monitoring Rule.
- Participated in Water Research Foundation Project 4491 – Unintended Consequences of Implementing Nitrosamine Control Strategies

Algiers Water Purification Plant

- Additional sodium hypochlorite metering pumps were purchased and are in the process of being installed by staff.
- New flow and head loss

instrumentation for the Filter Gallery operations were purchased. Half of the instrumentation has been installed by staff and is operational. The second half of the installation is in process.

- Additional SCADA node added to Algiers Chemical Building for process monitoring.

Water Pumping & Power

- The $12.8 M Turbine 4 (20 MW) project replaces the steam path, rotor, auxiliaries and condenser. A new modernized governor control system is included in the project which will add stability and better control to the unit. Additionally, the 20 megawatt, 25 cycle generator is being totally rewound and restacked to like new condition making the entire driver generator package whole. The project is scheduled to be completed by mid-2015.

- Turbine 6 (15 MW 60 Hz) is currently in final testing phase. The federally funded project was awarded in November 2009 and will enable the Board to power 60 Hz equipment in the event of commercial power interruption.

- The $2.8 M project to replace boiler pre-heater at the power complex was awarded in November 2011. The project was completed in 2014.

- The $12.7 M reconditioning of the DE Laval steam driven portable water distribution pumps and turbines continues. One pump unit is complete with the second unit scheduled for completion in mid-2015. FEMA also funded addition of a 60 HZ motor and pump reconditioning of No. 2 pump unit at Panola St. High Lift Station. This addition coupled with the complete overhaul of the 48 million gallon/day pump is complete and currently in testing period.

- The $32.6 M FEMA Water Hammer project to repair the pumps at Claiborne and the Panola Pump Stations and add new storage tanks is under design.

- Corps storm proofing projects have been completed at the power plant, the Oak River and New River Intake Stations, and the plant frequency changer building.

- The Retrofit Power Plant Hazard Mitigation Project design is underway for the power plant (boilers, turbines, structural hardening), fuel tank, and power network. Repairs to Generator No. 4 and installation of two 60-HZ feeders are scheduled to be

completed in mid-2015

Installation of two new transformers and construction of new electrical duct bank was awarded in December 2014

Water Distribution System

A new leak detection contract was awarded in 2014.

- Over 14,563 work activities occurred in the water system in 2014. These included 309 water leaks investigations, 2,260 water valves inspected, and repairs to 10,221 water service lines, 1,647 water mains, 1,190 valves, 1,074 fire hydrants and 39 water manholes. Also, 3,337 water meters were installed, removed or reset.
- Preventative maintenance of fire hydrants is continuing in coordination with the local fire department. The Board has performed preventative maintenance for 3,742 of the 16,500 fire hydrants mapped.
- The Board is continuing to coordinate with Department of Transportation (DODT) and Development and Department of Public Works (DPW) to repair or replace water lines associated with the Submerged Roads Program and other roadway repair projects. FEMA has to date obligated $185 M for water line replacements.

Sewer Systems Major Initiatives

East Bank Wastewater Treatment Plant

- Repairs were made to the fluidized bed incinerator (installation of venturi throat liners, replacement of failed tuyers and rehab of the refractory wall and dome).
- Bids for the new sludge dryer were rejected and the project is being re-evaluated. However, design and construction plans and preparations are underway.
- Influent TSS and BOD concentration are approx. 108 milligrams per liter (mg/L) and 90 mg/L, respectively. Effluent quality has been good with five (5) exceedances: two (2) BOD exceedances in February and April, one (1) TSS exceedance in April, and two (2) daily fecal coliform permit violation occurred in January and December 2015. The East Bank plant has again earned the Silver Award for environmental compliance from the National Association of Clean Water Agencies.
- The Central Wetland Assimilation project is under construction and expected to be completed in 2015.

- The construction of a +17' MSL $33 M earthen/structural berm was awarded March 2012 and was completed in early 2015.
- Contract to rehabilitate the Bio-Reactor Train No. 1 was awarded in December 2014.

West Bank Wastewater Treatment Plant

- Treatment was exceptional with zero permit violations or process overflows in 2014. This treatment plant has earned the Platinum Award from the National Association of Clean Water Agencies for zero permit exceedences during the past five (5) years.
- Repairs were made to the main breaker for the standby power generator to ensure its continued reliability in the event of a power outage.

Sewage Pumping and Lift Stations

- All the sewer pump stations are operational having undergone FEMA funded rehabilitation, i.e., electrical repair, pump and motor repair/replacement, and flood proofing.
- Design funded by hazard mitigation grant is continuing in the elevation and rebuilding of nine sewer pump stations. Eight of the projects are in construction.

Sewer Collection System

- Final sewer rehabilitation construction project for the

Because of Hurricane Katrina's storm surge the East Bank Wastewater Treatment Plant was almost destroyed. As result of the impact of the storm to this critical facility that provides waste treatment services to the entire East Bank of the city, FEMA funded through its Hazard Mitigation Grant Program a Berm/Floodwall of +17 feet. The berm/floodwall is designed to reduce the risk of future flood damage by providing protection to the wastewater treatment plant. It replaces a 7 foot high earthen levee that previously surrounded the plant. The berm/floodwall was designed to enhance reliability and resiliency for the future. The new T-Wall berm which includes closure gates that are closed and sealed during flooding events began construction in March 2012 and was recently completed. It is designed to protect 26.4 acres of land. FEMA funding for the project was $33M.

- Design continuing for multiple point repair and replacement of sanitary sewers in the Carrollton, Mid-City, New Orleans East and South Shore areas.
- Construction projects for replacement of sewer mains from manhole to manhole for various sites throughout Orleans Parish were awarded.
- DOTD and DPW coordination in repair of sewer lines (Submerged Roads Program, SSERP, ESSA) as well as routine reconstruction and maintenance.
- Preventative maintenance of the collection system included inspection of 976,1301 ft. of sewer line utilizing closed circuit television and smoke testing, cleaning 1,539,899.7 ft., inspection of 9,616 sewer manholes and repairs to 1,276 sewer breaks, inspection and maintenance of 34 air release valves and 390,196 ft. of the force main.
- Cathodic protection survey is performed annually on the 22 systems in the collection system. Repairs were completed in 2013.

Drainage System Major Initiatives

Pump Stations

- The Corps ($23.8 M) project to install two new 300 cfs pumps and a generator at DPS 5 is expected was completed in 2014. The $15.9 M storm-proofing project for DPS-1, 2, 3, 4 and I-10 was completed by the 2nd quarter of 2014.
- Repair work to several of underpasses pumping stations are in progress as part of FEMA funded program.
- The Corps began the design build of three new permanent pump stations at 17th Street, Orleans and London Canal at Lake Pontchartrain was awarded.

Canals

- Florida Ave. Canal Phases II and III from Peoples Ave. are in design.
- Napoleon Ave. Canal Phase II ($55.1 M) 4,300 ft. canal from S. Claiborne Ave. to Carondelet St. and Phase III ($38.1 M) 2,800 ft. canal to Constance St. are in construction.
- S. Claiborne Ave. Canal Phase I ($27.1 M) 2,500 ft. canal and Phase II ($27.8 M) 3,500 ft. canal is from Leonidas St. to Lowerline St. are in construction.
- Jefferson Ave. Canal Phase I ($59.9 M) 4,400 ft. canal and Phase II ($46.2) 3,200 ft. canal are in construction.

After the disastrous flood of May, 1995, the United States Congress authorized the design and construction of the Southeast Louisiana Flood Control Project (SELA) in 1996 in partnership with the U.S. Army Corps of Engineers. SELA consists of canal and pumping station projects that are designed and constructed to reduce flooding. New Orleans could not exist without a modern and strong drainage system. Twenty projects were funded in Orleans Parish, eleven projects are complete and nine projects are under construction. The project shown is Claiborne Avenue Phase II. It will provide increased drainage for the Carrollton area. It includes drainage canal improvements along South Claiborne Avenue between Leonidas and Lowerline Streets. The $27.8 million project is the construction of 3,500 feet of covered drainage canal. The Corps continues to work closely with its partners at the Louisiana Coastal Protection and Restoration Authority and the Sewerage and Water Board of New Orleans.

- Louisiana Ave. Canal from S. Claiborne Ave. to Constance St. (82.6) is in construction.
- Reconstruction of the Florida Canal between Spain & Music Streets began in 2014.
- Algiers area drainage improvements Phase I is in design.
- Green infrastructure projects from creation of K-4th grade education program, providing professional workshops, and demonstration bio swales, green roofs and rain garden projects were awarded in June 2014.

Central Yard

- Construction of a new Annex Building shall be completed in early 2015.
- Construction of a new $1.8 M site relocation facility is expected to be completed in early 2015. The facility shall allow for the temporary relocation of staff and equipment from Garages 1 and 2, the machine and mill, body and tire shop while repairs are being made to those facilities.
- Repairs to Garage No. 1 and the Generator Building began in mid-2014.

Sewerage and Water Board of New Orleans Department of Emergency Management Hurricane Katrina 10 Year Status Report

A: Background Information

Hurricane Katrina Historical Information as it Relates to the Sewerage & Water Board

On August 29, 2005, Hurricane Katrina impacted Southeast Louisiana and the Gulf Coast of Mississippi and Alabama. In New Orleans, the levee breaches that occurred after the hurricane flooded 80% of the city. The Sewerage & Water Board infrastructure on the East Bank of New Orleans was decimated and many of the Board's 300 employees on duty through the storm were stranded in flooded facilities. Inundated and without vital water and sewerage services, much of the city was uninhabitable.

On the Westbank of New Orleans in Algiers, the Sewerage & Water Board Algiers Water Plant was high and dry. Operating on its tertiary power source – a large diesel-powered generator, the plant never lost water pressure. The Algiers Water Plant, at times, literally and figuratively, was a beacon in the night, and the only operating water plant in the entire area. The Algiers Water Plant supplied water, via Water Tank Trucks, to all comers, including the military, FEMA, the hotels, and the cruise ships providing living accommodations to thousands of displaced City employees and their families.

In the aftermath of Hurricane Katrina, the international technical community estimated that once the levees were sealed, it would take about 3 - 4 months to dewater or drain the City. It would then take another 6 months to restore the drinking water system, and about 1 year to restore the sewerage system making the City re-inhabitable.

The Sewerage and Water Board of New Orleans, its management, employees, and contractors were, however, able to dewater the City and restore vital services in record time.

It took the U.S. Army Corps of Engineers about 10 days to close the breeches in the federally built levees. It took the Sewerage and Water Board

and its pumps only 11 days to drain the City. The City was declared drained on September 19, 2005, about three (3) weeks after the storm.

Water pressure for fire protection was restored on September 6, 2005, about one (1) week after the storm. Potable Water was restored to the area between the 17th Street Canal and the Industrial Canal (from the River to the Lake) on October 5, 2005, or about five (5) weeks after the storm. Potable water was restored to almost all of the area east of the Industrial Canal on December 8, 2005, or about fourteen (14) weeks after the storm.

The Wastewater System, including the giant East Bank Sewage Treatment Plant was completely flooded by Katrina. Nevertheless, Primary Treatment of Wastewater began on October 16, 2005, or about seven (7) weeks after the storm. Secondary treatment of wastewater began on November 16, 2005, or about eleven (11) weeks after the storm.

B: FEMA Public Assistance Program

Estimated Project Cost	**$852,526,619.67**
Obligated Amount	**$682,070,279.15**
Nor Eligible PW	$ 10,896,751.08
Not Eligible Loan PW	$ 72,607,253.53
Insurance Deduction	$ 2,747,339.04
Insurance SETTLEMENT	$ 2,303,000.00
VERSION Request	$ 67,525,081.52
Appeal Amount	$
Close Out Reconciliation	$ (0.00)
Submitted Project Cost	$710,261,350.26
Awaiting Obligation	$ 14,376,915.35
Total Invoices in Progress State	$ 10,711,115.61

- *490 Project Worksheets*
- *232 Completed*

FEMA Funded Projects by System

Project Worksheets Groups	Original ESTIMATED PROJECT COST	SMALL PROJECT COST SUBMITTED	LARGE PROJECT COST SUBMITTED	NFIP Reduction	OBLIGATED Amount	*Water Obligated*	*SEWER Obligated*	*Drainage Obligated*
Project Management	$ 32,457,158.19		$ 15,391,018.77		$ 15,391,018.77	$ 8,559,489.71	$ 6,498,178.00	$ 333,351.06
GE Projects	$ 32,911,640.19		$ 32,911,640.19		$ 32,911,640.19		$ 8,227,910.05	$ 24,683,730.14
Misc	$ 11,491,368.63	$ 28,011.66	$ 11,463,356.97	$ -	$ 11,383,368.58	$ 3,794,456.19	$ 3,794,456.19	$ 3,794,456.19
Networks	$ 313,650,981.50	$ 33,336.98	$ 229,354,819.16	$ -	$ 215,822,525.98	$ 135,638,284.31	$ 80,184,241.67	
St.Joseph	$ 1,907,992.39	$ 21,000.00	$ 1,886,932.39	$ -	$ 792,532.37	$ 264,177.46	$ 264,177.46	$ 264,177.46
Central Yard	$ 8,629,273.15	$ 80,073.50	$ 8,549,199.65	$ 1,369,978.60	$ 6,285,966.08	$ 2,095,322.03	$ 2,095,322.03	$ 2,095,322.03
Sewerage Station	$ 44,318,290.54	$ 265,954.03	$ 38,229,223.98	$ -	$ 28,633,900.49		$ 28,633,900.49	
Drainage	$ 10,112,154.38	$ 298,740.10	$ 8,498,286.51	$ -	$ 3,528,276.67			$ 3,528,276.67
West Bank Sewerage Treatment Plants	$ 2,359,949.38	$ 61,125.40	$ 1,935,559.12	$ -	$ 2,245,515.26		$ 2,245,515.26	
East Bank Sewerage I	$ 102,230,161.08	$ 525,307.82	$ 101,663,037.46	$ 1,586,693.44	$ 91,919,108.55		$ 91,919,108.55	
West Bank Water Plar	$ 88,114.97	$ 19,989.99	$ 68,124.98	$ 26,622.81	$ 61,492.16	$ 20,497.39	$ 20,497.39	$ 20,497.39
East Bank Water Plan	$ 50,905,180.29	$ 299,114.04	$ 50,301,396.00	$ 102,552.00	$ 44,976,009.85	$ 14,992,003.28	$ 14,992,003.28	$ 14,992,003.28
Equipment	$ 20,089,577.07	$ -	$ 20,089,577.07	$ -	$ 16,184,808.50	$ 5,394,936.17	$ 5,394,936.17	$ 5,394,936.17
Entergy Power Poles	$ 1,851,554.99	$ -	$ 1,851,554.13	$ -	$ 1,851,554.13			$ 1,851,554.13
Closeout					$ 403,846.83	$ 134,615.61	$ 134,615.61	$ 134,615.61
						$ 170,893,782.14	$244,404,862.14	$ 57,092,920.13
Water Line Program	$ 186,434,970.36		$ 186,434,970.36		$ 188,000,000.00			
Water Line Account Management					$ 10,896,751.08	Not E Non loan PW's		
Grand Total	**$ 819,438,367.11**	**$ 1,632,653.52**	**$ 708,628,696.74**	**$ 3,085,846.85**	**$ -**	LAPA		
					$ 2,081,147.94	ADMIN FEE		
					$ 2,081,147.94	Obligated Amount		

C: Katrina Funded Major Milestones

Sewer Pumping Stations

62 Sewer Pumping Stations have been repaired and put back into service following the aftermath of Hurricane Katrina.

Damage Total = $39,272,513.10

Michoud Sewer Pumping Station

Before

After

Contract 3625 PW#803 – Replacement of the Michoud Sewer Pumping Station

Scope of Work: The existing sewer pumping station was demolished and replaced with the aboveground sewer pumping station.

Amount: $1,276,527.00 ***Status: Completed***

**Paid for by FEMA and SWBNO*

Drainage Pumping Stations

21 Drainage Pumping Stations have been repaired and put back into service following the aftermath of Hurricane Katrina.

Damage Total = $32,911,640.19

Drainage Pumping Station #5

Before

After

Scope of Work: On August 29, 2005 Hurricane Katrina caused catastrophic wind, rain and flood damage to Drainage Pumping Station #5 located in the Lower Ninth Ward of New Orleans. As a result, the station's electrical equipment was completely destroyed. The electricians of the Sewerage and Water Board responded quickly and restored the Drainage Pumping Station #5 within two months following the storm.

Amount: $4,037,575.31 ***Status: Completed***

**Paid for by FEMA*

Eastbank Waste Water Treatment Plant

Damage Total = $43 Million

Before

After

Contract 3675 PW #9747 – Rebuild of the East Bank Wastewater Treatment Plant Administration Building

Scope of Work: On August 29, 2005 Hurricane Katrina caused catastrophic wind, rain and flood damage to the Administration Building of the East Bank Waste Water Treatment Plant. As a result, the East Bank Waste Water Treatment Facility was completely submerged in more than 10 feet of water for approximately four weeks. The 4,000 square foot single story building (80 Feet by 50 Feet) was destroyed and subsequently condemned. This PW replaced the building structure and its contents.

Amount: $2,169,160.07 ***Status: Completed***

**Paid for by FEMA and SWBNO*

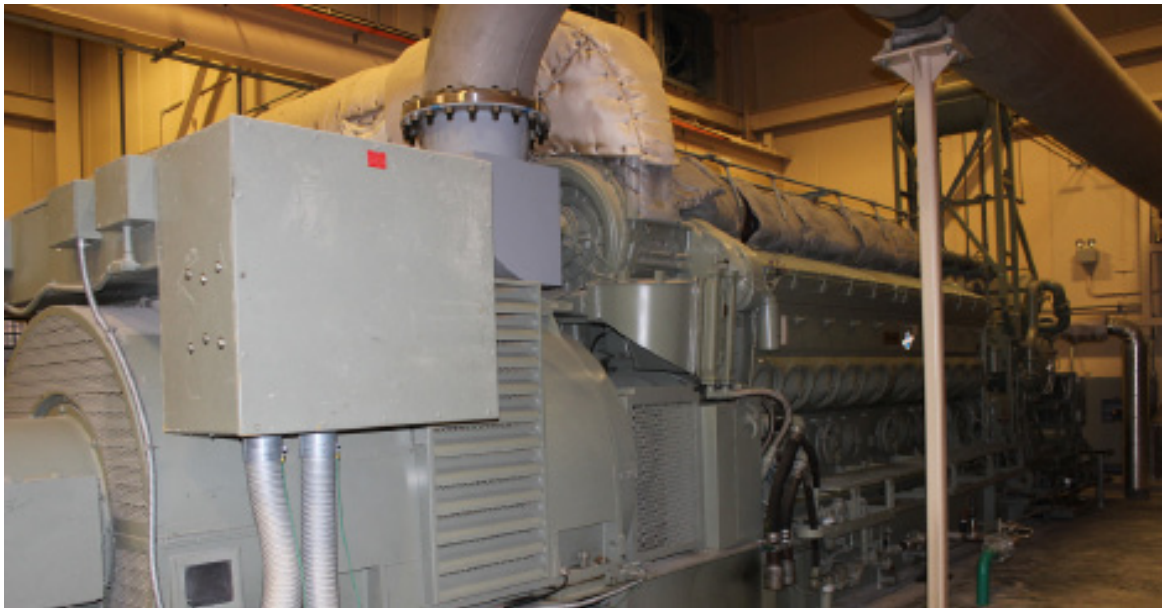
New Generator At The Eastbank Sewer Treatment Plant

Damage Total = $50,806,710.34

Contract 1347/3681/1229/3629 – New East Bank Wastewater Treatment Plant Backup Generator

Scope of Work: The installation of the new backup generator at the East Bank Wastewater Treatment Plant. This generator provides electrical power to the East Bank

Continued on Page 31



Continued from Page 30

Sewer Treatment Plant in the event of a power outage from the local power utility provider.

Amount: $12,321,035.24 ***Status: Completed***

**Paid for by SWBNO*

Upgrade BERM Of The Eastbank Waste Water Treatment Plant

Total = $33.4 Million

Before

After

Contract 3661 PW#19067 106 - HMGP Mitigation of the East Bank Wastewater Treatment Plant's BERM Floodwall

Scope of Work: The Sewerage and Water Board of New Orleans filed a request for Arbitration (CBCA-1758-FEMA) to receive federal funding for the Hazard Mitigation Grant Program. As a result, the Federal Emergency Management Agency (FEMA) responded to the panel and they agreed to obligate funds to elevate the height of the BERM floodwall.

Status: 100% Completed

**Paid for by FEMA and SWBNO*

S&WB Crews Repairing a Water Main on Carrolton Ave

Water Distribution System

1. PW#16612 Water Leak Detection Services $2,312,106.00 (Completed)
2. PW#20190 Water Data Analysis $2,883,769.00 (Completed)
3. PW#18836 Water Distribution system 406 HMGP $38 million (Design)
4. PW#649 Water Point Repair $70 million (Completed)
5. Water Line Replacement PW's $188 million (Under Design/Construction)

Total Value: $301,000,000.00

Sewer Collection Network

1. PW #3073 Sewer Point Repair $56 Million (Under Construction $32 million completed)

2. PW #371 Sewer System Inspection (ESSA 1 $13,958,000.00 Completed)

3. PW #16363 Sewer System Inspection (ESSA 2 $12,268,307.49 Completed)

Total Value: $82,000,000.00

404 HAZARD MITIGATION PROJECTS

Elevation Of Eight Pumping Stations:

3663 BULLARD
3665 DODT
3666 LAKE FOREST
3667 PLUM ORCHARD
3668 VICTORIA
3670 LAWRENCE
3788 BURK
3669 SPS 6

Total Value: $20,082,538.00

Status: 60% Completed

Before Mitigation

After Mitigation

HARDENING AND RETROFIT OF THE POWER PLANT:

S&WB Contract Number	Description	
CP-6247	Generator 4 Retrofit (construction only)	
CP-6250	Load Bank	
CP-6248	Feeders from Power Plant to DPS 1 (construction only)	
CP-6249	Harden Power Distribution Network (D-B)	
CP-1368	Oak Street Pump Station Retrofit	
CP-1369	Emergency Fuel Storage	
CP-1370	Boiler and Auxiliary Equipment Upgrade	
CP-1371	Structural	
CP-1372	Turbine Generator #5 and Auxiliary Equipment	
CP-1373	Turbine Generator #3 and Auxiliary Equipment	
PDR	PDR Engineering	
PM	Project Management (PM, PA,PC, QA/QC) soft costs	
CP-6252	Purchase & Installation of Transformers &	
	Duct Bank Construction	
CP-6253	Turbine/Generator 5	
	Inspection	
	SUBTOTAL	
	TOTAL	**$154,963,572**

Office Of Emergency Management Works To Secure FEMA Funding For Katrina-Damaged Infrastructure

With most of its infrastructure either severely damaged or destroyed after the post-Katrina flooding of the city, finding funding to rebuild the Sewerage & Water Board was an urgent matter. The Sewerage & Water Board Office of Emergency Management quickly mobilized to work with FEMA and the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). Director of Emergency Management, Jason Higginbotham and his staff utilized a standard industry best-practices process to work with FEMA and GOHSEP to process and evaluate rebuilding projects for FEMA eligibility and funding.

An estimated 60% to 90% of all Sewerage & Water Board construction plans are submitted to FEMA for review. Higginbotham described the 12-step FEMA funding process as "complex and time-consuming due to the scope of damages. But certainly worth the effort." FEMA project obligations have gone from $68,550,207.73 in 2005 to $681,539,007.68 in 2015. The value of FEMA obligated funds from 2005 through 2015 is provided in the chart below.

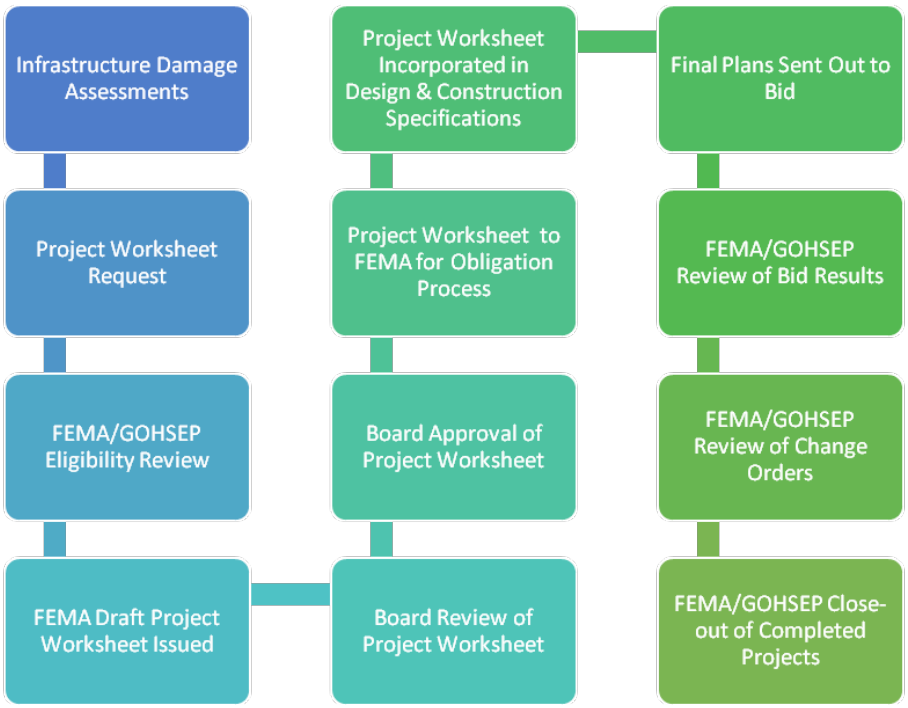
FEMA PROJECT WORKSHEET OBLIGATION VALUES

2005 – 2015

YEAR	OBLIGATION	YEAR	OBLIGATION
2005	$68,550,207.73	2011	$410,294,867.08
2006	$134,676,406.39	2012	$502,829,769.81
2007	$174,854,128.50	2013	$599,996,742.02
2008	$249,762,054.59	2014	$665,670,668.66
2009	$281,792,164.24	2015	$681,539,007.68
2010	$324,799,967.20		

12 STEP S&WB-FEMA PROJECT WORKSHEET DEVELOPMENT PROCESS

The diagram below shows the 12-step FEMA funding process utilized by the Office of Emergency Management.



Water Hammer Hazard Mitigation Project Will Minimize Power Disruptions

In 2014, the Sewerage and Water Board of New Orleans, with financial assistance from the Federal Emergency Management Agency (FEMA,) began the design phase of the $48 million Water Hammer Hazard Mitigation Project. When completed early in 2018, upgrades to the water distribution system will reduce future leaks and losses of water pressure and lessen the impact of the loss of power that causes major 'water hammer' events in pipelines. Water Hammer is the transient surge of water pressure caused by intermittent losses in power to the water facility. These shockwaves in the system can cause damage which can eventually lead to water main breaks and the loss of potable water.

The important benefits of these upgrades is that they will allow the Sewerage and Water Board to continue to provide water to the city for periods of up to 45 minutes in the case of a complete

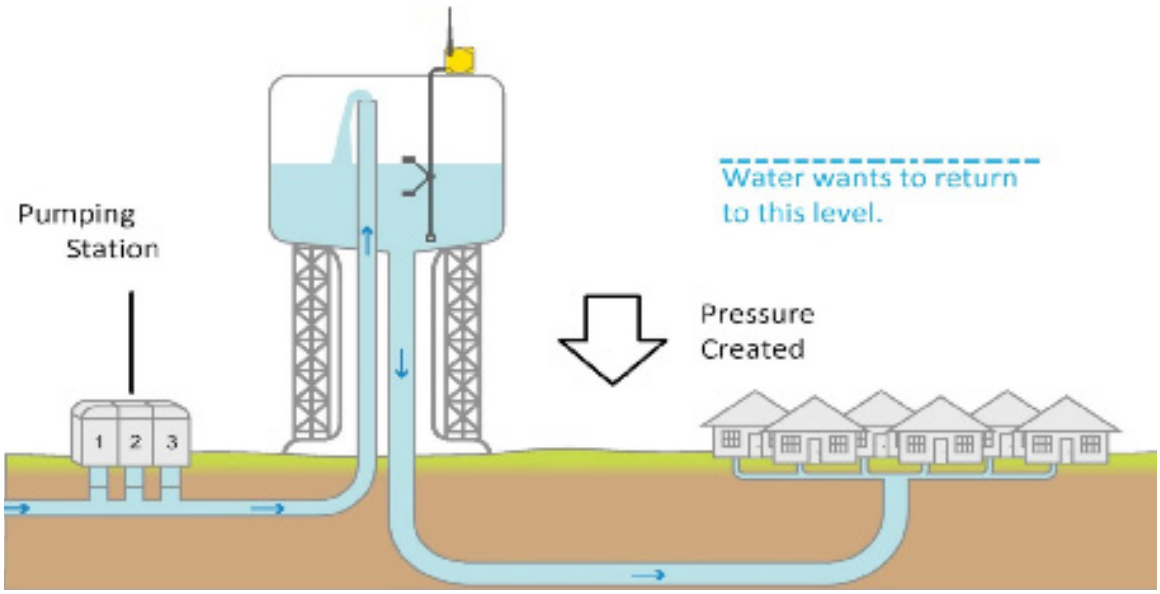
loss of power. This period would allow plant personnel time to switch power source generation from commercial power to the Board's own generated power.

To prevent losses in pressure, the Sewerage & Water Board of New Orleans will construct two new elevated water storage tanks at the Carrollton Water Plant along with another phase of the project that involves two other off-site pressurized bladder tanks; one near Michoud in New Orleans East and another on Airline Highway near Palmer Avenue. Rehabilitation and upgrades of the pumping system will also include rehabilitation of water pumps and motors and installation of new valves.

Water hammer is the transient surge of water pressure caused by intermittent losses in power to the water facility. These shockwaves in the system cause damage which eventually leads to water main breaks which can result in the complete loss of potable water to the entire city. Under these conditions a boil water notice would be required until the repairs can be made, the pressure restored and the system disinfected.

The two new tanks at the Carrollton Plant will be a compliment to those currently in service at site and that have been peacefully integrated into the community for well over fifty years. The elevated storage tanks will have a combined capacity of 4 million gallons and not exceed 200 feet in height. The construction phase of this project is scheduled to begin in Fall 2015 after completion of SELA road work in front of the plant.

The two small, off-site, 2,000 gallon pressurized water tanks will be placed in buildings. One will be located on Chef Menteur Highway at the site of the existing water storage tank. The other tank will be located on Streolitz Street.

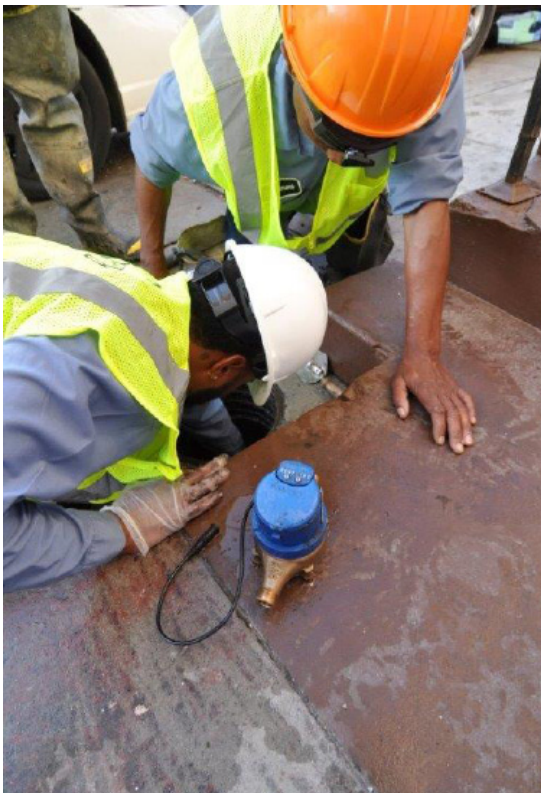


Closed Work Orders & Preventive Maintenance

The chart below provides details on the type and number of work order repairs and preventive maintenance completed by the Sewerage and Water Board between August 20, 2005 and December 31, 2014.

CLOSED WORK ORDERS AND PREVENTIVE MAINTENANCE *9/20/2005 - 12/31/2014*	
TYPE WORK/MAINTENANCE	**CLOSED WORK ORDERS**
SEWER WORK ORDERS	
SEWER INVESTIGATION	38,218
SEWER REPAIR	17,159
SEWER MAHNOLE	7,027
SEWER LINE CLEANING	17,470
TOTAL SEWER	79,874
WATER WORK ORDERS	
WATER MAIN	18,442
SERVICES	90,629
HYDRANTS	10,463
VALVES	7,577
FEMA WATER VALVE CL	129
WATER MANHOLE	308
WATER INVESTIGATION	3,925
WATER LINE REPLACE	8
TOTAL WATER	131,481
METER	40,225
GEN MISC	20,735
PREVENTIVE MAINTENANCE	
SEWER MANHOLE INSPECTIONS	90,761
SEWER LINE CLEANING	8,304,054.3 ft
SEWER LINE INSPECTION "SMOKE"	7,017,789 ft
HYDRANT INSPECTION	26,627
VALVE INSPECTION	11,082

Closed Work Orders & Preventive Maintenance From 2005-2014



The Sewerage and Water Board Network Crews on a daily basis are assigned maintenance and repair jobs throughout the city. These crews work in shifts 365 days a year and 24 hours a day, available for system emergencies.

CAPITAL IMPROVEMENT PROGRAM A $2.6 BILLION INVESTMENT IN WATER, SEWER AND DRAINAGE

The 2015-2024 Capital Improvement Program contemplates $2,623,599,000 in projects for the water, sewer, and drainage systems:

WATER SYSTEM	**$1,071,251,000**
■ Waterworks	$ 816,472,000
■ Water Distribution	$ 94,980,000
■ Water System Share of Power Projects	$ 59,948,000
■ Water System Share of General Projects	$ 84,851,000
■ Contingency	$ 15,000,000
SEWER SYSTEM	**$ 667,379,000**
■ Sewerage System	$ 517,231,000
■ Sewerage Treatment	$ 39,555,000
■ Sewer System Share of Power Projects	$ 29,282,000
■ Sewer System Share of General Projects	$ 74,311,000
■ Contingency	$ 7,000,000
DRAINAGE SYSTEM	**$ 884,969,000**
■ Canals	$ 335,962,000
■ Pumping Stations	$ 317,476,000
■ Drainage System Share of Power Projects	$ 163,994,000
■ Drainage System Share of General Projects	$ 60,537,000
■ Contingency	$ 7,000,000

Dwyer Pumping Station-New Orleans East gets a new pumping station.

Hard work and dedication of an experienced and skilled workforce led the Sewerage & Water Board of New Orleans through the arduous task of recuperating and rejuvenating after Hurricane Katrina in 2005. This team of professionals was the catalyst that began the recovery and restoration of the Sewerage & Water Board of New Orleans. Their goal was to recover from the devastation and to begin restoration and rebuilding the systems for strength and resiliency for the future with industry innovations, and high tech initiatives. Their leadership, vision, courage and tenacity has provided a sound and sturdy foundation to continue the continuous rebuilding of the water, sewer, drainage and power generation systems for years to come. In the future, their footprints will be etched in the history of recovery of this massive utility, allowing the Water Board to face and conquer any obstacles that may arise.

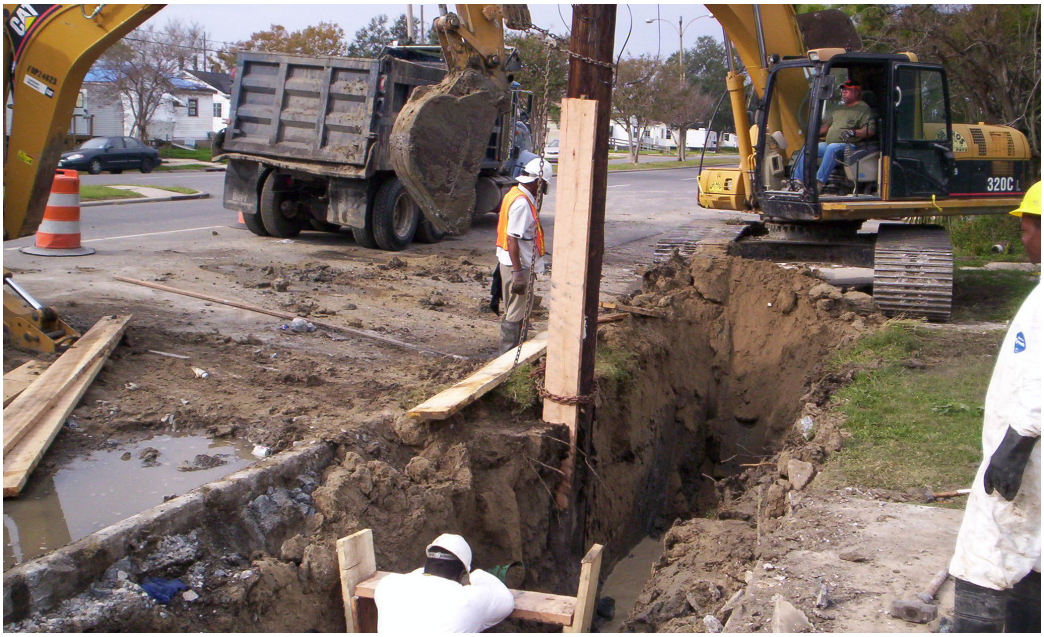
2015 Operating and Capital Budgets Reflect The 2013-2020 Financial Plan

The Board of Directors of Sewerage and Water Board of New Orleans approved the 2015 Operating and Capital Budgets. This overview includes the key highlights of the recommended budgets.

The 2015 Operating and Capital Budgets are based on the 2015 elements of the recently updated 2013-2020 Financial Plan and Rate Study.

The 2015 Operating Budget meets liquidity and debt service coverage targets and allows funding of key strategic initiatives:

■ System Point Repairs	$5,000,000
■ Employee Training	$ 860,000
■ Plant Operations Staffing	$ 750,000
■ Facilities Maintenance Staffing	$ 750,000
■ Engineering Staffing	$ 500,000
■ Canal Maintenance and Dredging	$ 500,000
■ Compensation and Benefits Study	$ 500,000
■ Information Technology Planning	$ 500,000
■ Grounds Maintenance Staffing	$ 250,000
■ Contingency of Emergencies	$3,250,000



The approval of the capital budget allows for planned improvements to the systems.

The 2015 Capital Budget is fully funded for planned improvements to the water and sewer systems and nearly fully funded for the drainage system.

The 2015 Operating and Capital Budgets will fund elements of the 2011-2020 Strategic Plan to build necessary infrastructure, rebuild our financial capabilities, improve our customer service capabilities, enhance our business performance, enhance the capabilities of our employees, and protect the environment.

The 2015 Capital Budget is fully funded from cash generated from operations, contributions in aid of construction, and the proceeds from planned bond issues. The projects were prioritized based upon an industry-standard methodology and were sequenced based upon that prioritization as well as constructability. Power and general projects are shown within the water, sewer, and drainage capital programs from which their funding will be provided.

The 2014 Operations and Maintenance Budget was utilized as the starting point for the recommended 2015 Operating Budget. This "baseline budget" was then modified for known changes and correction of errors. We then increased staffing up to limits allowed with targeted funding levels for previously unfunded initiatives.

We will continue funding cash reserves up to amount equivalent to 180 days of operations and maintenance expenses as established in the Financial Plan. Likewise, we will also continue payoff of previously unfunded liabilities for tort judgments, inter-fund transfers, and capital improvements funded by Department of Public Works. Debt service coverage is expected to exceed minimum requirements.

SEWERAGE AND WATER BOARD OF NEW ORLEANS GREEN INFRASTRUCTURE PROGRAM

The Sewerage and Water Board of New Orleans is initiating the use of Green Infrastructure (GI) as an approach to capture stormwater runoff, maintain healthy waters, provide multiple environmental benefits, and support sustainable communities in New Orleans.

The Green Infrastructure Plan is a formal commitment by the Sewerage and Water Board of New Orleans and the City of New Orleans to explore and pursue inclusion of green infrastructure as fulfillment of the Third Modification of the Consent Decree lodged on April 24, 2014. The Plan represents input gathered from presentations made to various organizations (Horizon Initiative, Lake Pontchartrain Basin Foundation, League of Women Voters of New Orleans, Louisiana Environmental Action Network, Louisiana Civil Engineering Conference and Show, Lower Ninth Neighborhood, Orleans Audubon Society, Sierra Club, and Sustainability Series), discussions with EPA representatives, and participation in the Greater New Orleans Foundation Urban Water Series. The Plan describes policies, principal goals and objectives for green infrastructure, approach toward achieving the goals, and establishment of performance measurements.

Furthermore, as part of the commitment to green infrastructure, the SWBNO agreed to dedicate $500,000 per year, averaged over five years, to be subsequently used for green infrastructure projects and activities carried out pursuant to the Plan. Therefore, the Plan is expected to be updated to reflect the projects awarded, the lessons learned, and reflect the successes and failures in changes to the goals and objectives.

In January 2014, SWB issued a RFP from qualified environmental professionals to implement three different types of GI projects which include installation of demonstration projects, education, and outreach. Successful proposers work closely with SWB representatives throughout the entire process of the project, with a project period of 18 months.

The following types of proposals were requested during this process:

- Type 1: Plan, develop, design, implement, construct, monitor, and maintain one or more GI demonstration projects on public land within Orleans Parish.
- Type 2: Develop and implement a GI educational curriculum to be implemented in Orleans Parish schools.
- Type 3: Develop and implement a GI workshops curriculum for educating professionals, commercial businesses, homeowners, and neighborhood groups.

The following projects received grant funding from SWB for the first and second year of the GI program:

Dana Brown & Associates - Green Infrastructure Project, Central City

Type 1 - $38,268 (in-kind $5,000)

In coordination with New Orleans Redevelopment Authority, Land Trust for Louisiana, Professional Ground Maintenance, Inc., Hike for KaTREEna, Lake Pontchartrain Basin Foundation, Global Green, and Louisiana Urban Stormwater Coalition, this project is the installation, maintenance, and monitoring of a rain garden on a double lot at 2423/2427 S. Galvez Street, as well as educational outreach. The project is currently in the design phase and is scheduled for installation in fall 2015.

Groundwork New Orleans - Lower 9th Ward Earth Lab

Type 1, 2, 3 - $100,000 (in-kind $27,000)

In coordination with Common Ground Relief, NET Charter High School, GAEA Engineering Consultants, Waggonner and Ball Architects, Deltares, and Sustainable Ecosystem Restoration, LLC, this project is the construction of the Caffin Avenue Lower 9th Ward

Earth Lab which includes a rain garden, bioswale, green roof, pervious pavement, stormwater quantity and quality monitoring equipment, and groundwater monitoring; development of a curriculum for high school students and a neighborhood adaptability model; and professional development workshops for neighborhoods, community groups, residents and professionals.

This summer, Groundwork is hosting workshops on watersheds, flow-through planters, rain barrels, rain gardens, recycling, and healthy soils. The Lower 9th Ward Earth Lab on Caffin Avenue has broken ground and will have the shade structure with green roof completed summer 2015.

Hanging Gardens - The Rabouin International High School Green Infrastructure Lab

Type 1 - $99,631 (in-kind $55,094)

In coordination with Rabouin International High School and VertiFarms, this project is the installation of a combination green roof and blue roof piloting three types of green roof (extensive sedum, watergrip brownie, and food). The project will provide educational webinars to staff, personnel, and students to facilitate and foster analysis of the green roof system's performance. The design for this project is complete and on schedule for fall 2015 installation.

Historic Faubourg Tremé Association - Tremé-St. Ann Rain Gardens

Type 1 - $98,772 (in-kind $26,150)

In coordination with Dana Brown and Associates, Groundwork New Orleans, and the City of New Orleans Department of Public Works, this project is the design, implementation, maintenance, and monitoring of four rain gardens located at the corners of St. Ann Street and North Robertson Street. This project will coordinate with the City of New Orleans Department of Public Works Roadwork Project for installation.

Land Trust for Louisiana - The WEB Project

Type 1 - $82,750 (in-kind $57,397)

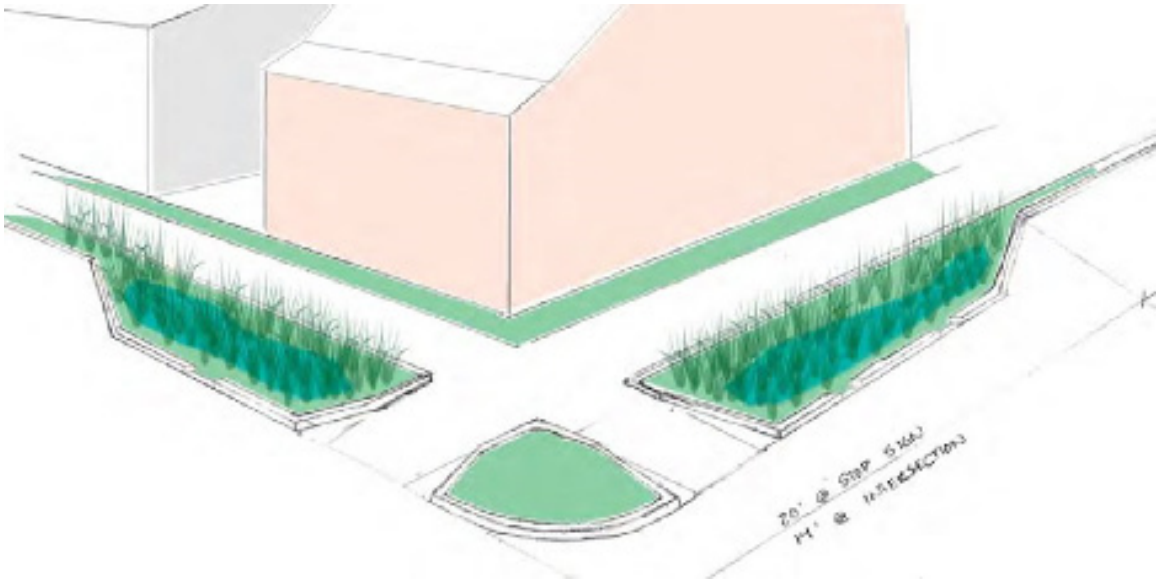
In coordination with The City of New Orleans, Broadmoor Development Corporation, Evans & Lighter Landscape Architecture, Trigon Associates, and E&E Strategies this project will study the soils and hydrology on a residential-scale site in Broadmoor and design, implement, and maintain bioswales, rain gardens, and tree plantings to reduce stormwater runoff and improve water quality.

The team is currently working on brochures and outreach material for the Broadmoor community and conducting soil samples and hydrologic and hydraulic analysis of the site. The project is on schedule for installation in 2015.

Louisiana Urban Stormwater Coalition – Water Wise NOLA Green Infrastructure Education Program

Type 3 - $100,000 (in-kind $16,000)

In coordination with Dana Brown and Associates, Global Green USA, Water Works, Neighborhood Partnership Network, Engineers Without Borders, Hike for KaTREEna, and Project Home Again, this project is a series of comprehensive outreach and workshops for educating professionals, commercial businesses, homeowners,

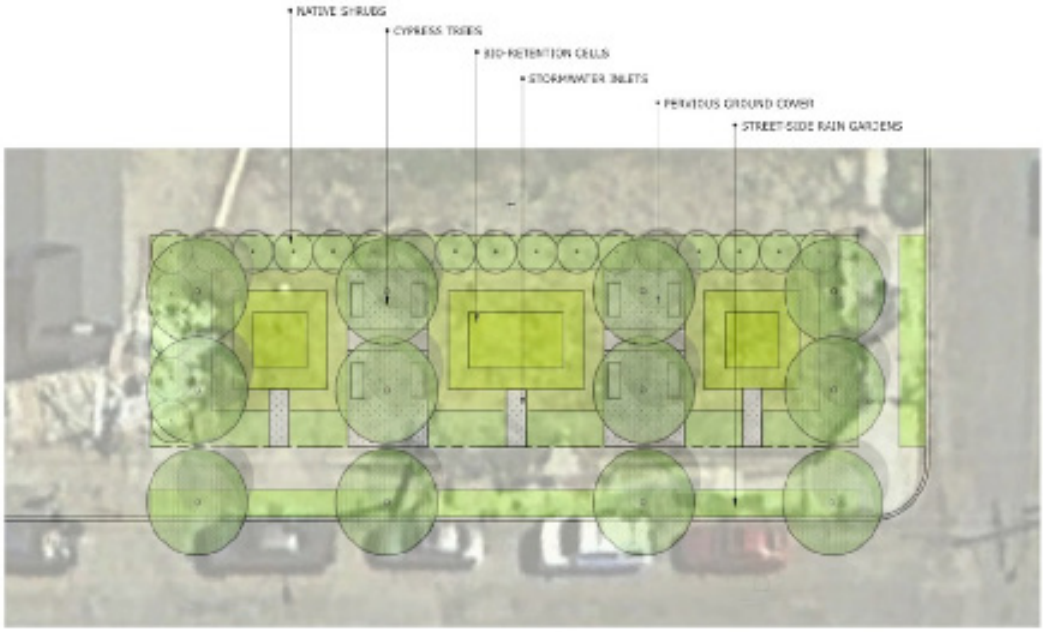


and neighborhood groups about green infrastructure as a means to improve water quality and to mitigate flooding.

With funding from the Sewerage & Water Board of New Orleans, Water Wise NOLA has worked across the city to educate residents about the benefits of Green Infrastructure. The messaging is that we are all in this together. By each parcel increasing its on-site permeability, we can enhance the water quality of Lake Pontchartrain, add natural beauty to our neighborhoods, and prevent localized flooding and subsidence.

Funding from S&WB has allowed Water Wise NOLA to table and present at over 95 community events and neighborhood association meetings. Examples of these events include: Community and Church Health and Resource Fairs, Rain Barrel Build Demonstrations, Homeowner Stormwater Assessments, Farmers Markets, Festivals, etc. At these events, the team provides residents with information and resources to bring awareness of the need for on-site permeability through the use of green infrastructure.

More in-depth events, known as Water Wise Workshops, occur in different neighborhoods in collaboration with neighborhood associations across the city. Since the inception of Water Wise NOLA, six neighborhoods have been reached (Pontilly, Hollygrove, Treme/Lafitte, 7th Ward, Gentilly, Central City) and five more neighborhoods will be reached in 2015 (Lower 9th Ward, Algiers, Mid City, Broadmoor, and Gentilly). The average attendance of each workshop is about 25 residents. At these workshops, residents learn simple solutions to managing rainwater that falls on their property and receive a guide, known as the Joy of Water,



to help them through the process of implementing the green infrastructure solutions.

Finally the Water Wise NOLA team works on trainings for professionals. Four Green Infrastructure workshops (Design/ Construction and Planning/Policy) have been conducted, and an online education program will be accessible to an even broader audience later this year.

Parkway Partners - Green Keepers

Type 3 - $26,350 (in-kind $46,482)

In coordination with Dana Brown & Associates, Evans & Lighter Landscape Architecture, Spackman, Mossop & Michaels, The Urban Conservancy, Colectivo, and the Magellan Street Garden, Green Keepers is a 15-hour educational series that teaches New Orleanians how to better live with their stormwater using Green Infrastructure practices. Classes take place both in the classroom and in the landscape, with expert speakers hailing from backgrounds in landscape architecture, ecological systems design, architecture, urban planning, and urban farming.

Parkway Partners hosted its first Green Keepers series in September 2014 its second in June 2015 with approximately 100 people attending from 30 different neighborhoods in New Orleans. Surveys were distributed to participants throughout the first and second series with excellent results. The SWB funding for this project has been fulfilled and Parkway Partners intends to continue the Green Keepers program through other funding sources.

Ripple Effect - In-School Curriculum

Type 2 - $75,500 (in-kind of $4,500)

Every New Orleans citizen must graduate high school with basic "water literacy" in order to play a role in shaping the city's infrastructure and urban environment. Teachers, designers, and water experts are working together to develop a growing library of design-based water literacy curriculum called Ripple Effect. All lessons and units are aligned to rigorous Next Generation Science and Common Core standards. Each unit is conceived and planned as a design challenge, during which students conduct research, develop concepts, test ideas, and present solutions.

Ripple Effect just completed its pilot year during the 2014-2015 school year with grades K-4 and plans on expanding to additional schools and grade levels in coming years.

The work is expressed in three ways:

1. Tools and processes for rethinking science and environmental education as a place- and design-based curriculum, which is co-developed by a team of teachers, designers, and local water experts
2. In-school teaching of Ripple Effect units that educate and empower our youngest citizens to take on urgent local and global water issues, all while meeting rigorous national science standards
3. Community-centered site remediation projects that support student learning through the physical expression

of the principles and knowledge that students are building in the classroom

This year, the team worked with six teachers across five grade levels, reaching over 300 students at the pilot school location, KIPP Central City Primary. The team also successfully designed, funded, and is constructing a "water literacy" playground at this same school. This effort directly addresses existing flooding issues and connects directly to the water instruction students received through Ripple Effect lessons.

This coming year, Ripple Effect will use research and in-class observation to further refine its unique approach to curriculum development and teacher training, thereby strengthening the ability to measure impact across different grade levels. The program will also grow the community of teachers, designers, and local water experts interested in building environmental stewardship through rigorous in-school science instruction based in real places and urgent, local water issues.

Sankofa Community Development Corporation - Florida Ave Corridor Learning Trail

Type 1 - $100,000 (in-kind $66,250)

In coordination with Evans & Lighter Landscape Architecture, Dr. John Day of LSU School of the Coast and Environment, Hike for KaTREEna, and key Lower 9th Ward community stakeholders, this project is the design, implementation, maintenance, and monitoring of a 1000 foot Learning Trail to include educational signs with green infrastructure features on a 3.75 acre property at the terminus of Dubreuil and Delery Streets between Florida Avenue and the Norfolk Southern Railroad property line adjacent to the SWB Eastbank Wastewater Treatment Plant in the Lower 9th Ward neighborhood. The project is in the design phase and has begun clearing the lot of invasive plant species. The project is on schedule for a fall 2015 installation.

Tulane City Center - Hollygrove Greenline – A Water Management and Community Education Initiative

Type 1 - $100,000

In coordination with Carrollton-Hollygrove CDC, Dana Brown & Associates, Engineers Without Borders, and Twin Shores Landscape & Construction Services, this project is the design, implementation, maintenance, and monitoring of a

unique Sunshower Canopy roof and bladder system to collect rainwater and distribute to nearby trees and rain garden, as well as grading and site improvements on Board property at the corner of Forshey and Monroe Streets (approximately 3300 Monroe Street), located in the Hollygrove neighborhood. This project is in the design phase and is on schedule for 2015 installation.

EPA Urban Waters Small Grant – Green Infrastructure Monitoring Project

$60,000 federal grant

The Sewerage & Water Board of New Orleans received an EPA Urban Waters Small Grant to partner with New Orleans Redevelopment Authority (NORA), the Lake Pontchartrain Basin Foundation (LPBF), and Louisiana Urban Stormwater Coalition (LUSC) to conduct water quality and quantity monitoring at five (5) sites in the Pontchartrain Park and Gentilly Woods (Pontilly) neighborhoods before and after installation of green infrastructure for the Pontilly Rain Water Management Project.

The Project will also engage community volunteers (Rain Rangers) to monitor important visual

characteristics of the stormwater runoff. The expected results are that the quality of stormwater runoff into the drainage system will improve and the quantity of runoff will be reduced as the green infrastructure sites are implemented.

Currently, the partners are monitoring the water quality and quantity pre-construction of the GI features to assess baseline conditions. After the GI features are installed and have a chance to grow we will come back and monitor them again to see how efficient they are at cleaning stormwater. The ultimate goal of this project is to find effective ways to aid the New Orleans are drainage system and clean water discharging into Lake Pontchartrain!

For more information about the Sewerage & Water Board of New Orleans Green Infrastructure program please refer to the website: http://www.swbno.org/work_greeninfrastructure.asp or contact Brad Klamer, Senior City Planner in the Environmental Affairs Department, at (504) 942-3896 or bklamer@swbno.org.

GREEN EDUCATION PROGRAM ENGAGES STUDENTS IN STORM DRAIN MARKER CONTEST

In May of 2015, the Sewerage and Water Board of New Orleans honored students at the Mary Bethune Elementary School who participated in a Sewerage and Water Board Green Education program Storm Drain Marker contest. Students were asked to render a drawing about the things they learned during the Green Education program. The drawings were judged and the winners had their drawing created into a decal that is used to mark catch-basin covers located throughout the city. The slogans will help educate the public on the importance of the role of the catch basins in storm water management and the importance of water quality preservation of Lake Pontchartrain. The 1st, 2nd and 3rd place winners had a 1,000 decals made from their drawings.

In October of 2014, the Sewerage and Water Board Environmental Affairs Department and the Community and Intergovernmental Relations Department, in partnership, with the Water Environment Federation (WEF) began a two part program with

Student reads to classmates narrative on the "Water Cycle"

Art exhibit on rainwater and drainage.

the students at the Mary Bethune Elementary School. In the first part of the program, the students had an art exhibit, wrote and performed a skit that was based on the pressing need for forming the Sewerage and Water Board in 1899. During their preparation for the art exhibit and performance, the students gained an understanding of the responsibility of the Sewerage and Water Board, as it relates, to drainage pumping. The students were also introduced to the concepts of rainwater harvesting and using "retention ponds" to help lessen the burden on the Drainage System.

The second phase of the Green Education project began early in February with presentations from Ann Wilson, Scott Finney, and Thelma Cager of the Sewerage and Water Board's Environmental Affairs Department. These small group interactions gave students a better opportunity to understand the critical idea of storm water management and to ask questions, as well as, learn about how they could participate in water conservation/storm water management activities at home. The culminating activity for this project was the Storm Drain Marker Contest. All students who participated in the Storm Drain Marker contest will receive certificates. Mary Haynes Smith is principal of Mary Bethune Elementary School and Maxine Cager is the Ranking Teacher who coordinated the Green Education Program with the Sewerage and Water Board.

Sewerage & Water Board Helps Community Understand Their Water "From Source To Tap" During National Drinking Water Week

The Sewerage and Water Board of New Orleans, the American Water Works Association (AWWA), the Environmental Protection Agency (EPA) and the water community across North America celebrated National Drinking Water Week, May 3 – 9, 2015 by asking the question "What do you know about H2O?" Throughout the week, the Sewerage & Water Board and its water community partners touted the value of water and the role it plays in our daily lives and in the quality of life we enjoy because of it.

Every day, millions of people in North America turn on their faucets but give little thought to the water that flows out. How does water get from its initial source, through the treatment process and then out of the faucet? Also, who are the professionals that are responsible for treating and distributing drinking water? What federal organizations regulate and set the laws to protect our drinking water supply? Discovering the answers to these important questions is a valuable part in understanding our drinking water.

According to Sewerage & Water Board Executive Director, Cedric Grant, "National Drinking Water Week provides a unique opportunity for both water professionals and the communities they serve to join together in recognizing the vital role water plays in our daily lives. Too often, water utilities receive publicity only when something bad happens. Drinking Water Week celebrations focus on the critical role our water systems play in maintaining public health, economic vitality, fire protection and quality of life."

Each year, the American Water Works Association (AWWA) and an alliance of organizations, including the U.S. Environmental Protection Agency (EPA), sponsor Drinking Water Week to highlight the importance of tap water and the need to reinvest in our water infrastructure.

Tap water plays a critical role in the success of a society, from meeting the

taffed by chemists, microbiologists and technicians, the Sewerage and Water Board Water Quality Laboratory assures the safety and purity of the city's water by testing for some 150,000 organic, inorganic and microbiological compounds. The 8,500 square foot lab is located within the Carrollton Water Plant and monitors river water and finished water sampled from both the East Bank and Algiers. Pictured here, a Laboratory chemist performs water analysis.

basic public health needs of providing safe drinking water — and adequate sanitation, to promoting dental health (through fluoridation) and supporting industrial, agricultural, medical, and recreational activities.

Despite the safety of our tap water, new challenges require us to continue to work to protect our water supply. A primary concern is the fact that our drinking water infrastructure, which includes the pipes that bring water to our homes, is aging (up to 100 years old in some cases) and needs to be upgraded or replaced.

The Value of Water Coalition (VWC) recently released the results of a poll that asked Americans about the importance of water in their lives. The survey explained that water and wastewater service providers are the primary source for funding water infrastructure, and customers are typically charged relatively small fees for water compared to other household utilities such as electricity, heat, cable, or Internet. Surprisingly, more than half of respondents agreed that water bills need to increase so water systems can be modernized.

The Sewerage and Water Board is meeting the challenges of infrastructure modernization using a multi-faceted approach. In 2014, a Cooperative Endeavor Agreement between the City of New Orleans and S&WB, created an Integrated Infrastructure

Management System to coordinate all infrastructure projects and repairs. According to Mayor Mitchell Landrieu, "By creating an Integrated Infrastructure Management System between the City and S&WB, we will create efficiencies on all projects and produce real time savings while at the same time minimizing disruption to our streets, sidewalks and other public spaces. By working hand in hand like never before, we will build a stronger, more resilient city."

The board has completed the majority of the rebuilding and repairs to its facilities with funding provided by the Federal Emergency Management Agency (FEMA). It is, also, moving forward with an on-going Capital Program to build the systems smarter, stronger, more resilient and reliable. Confidence in the board's management and fiscal responsibility resulted in water rate increases, the first ones, since the 1990's. These increases will be the solid building blocks for the growth, development, crucial construction of the aging infrastructure and continuous rebuilding of the board's systems in the future.

The massive water line replacement program entails the complete replacement of the east bank water system, including the 1,400-mile pipe network, plus manholes, valves, meters, mains and booster pumps that blast purified water to customers.

The Sewerage & Water Board plans to spend $196 million by 2015 to comply with a newly revised federal court order aimed at reducing the flow of sewage into Lake Pontchartrain from New Orleans' crumbling east bank sewer system. The sewer rehabilitation project amounts to the most comprehensive single effort to recondition the city's century-old sewer network.

International School students on tour of the water plant.

Sewerage and Water Board Celebrated the Essential Nature of Public Works Services During "National Public Works Week"

The New Orleans Sewerage and Water Board joined with thousands of public works agencies and communities across the country in May to pay tribute to the essential nature of 'Public Works' in building and maintaining healthy, sustainable communities. Since 1960, the American Public Works Association (APWA) sponsored "National Public Works Week" has been a vehicle to educate the public on the vital nature of the infrastructure that makes modern communities possible. "There would be no community without the quality of life public works provides." said Sewerage and Water Board Executive Director, Cedric Grant. During "National Public Works Week, May 17 -23, 2015, the Sewerage and Water Board focused on the water, sewer, drainage and power generation systems and the board employees that provided these public works services with a number of special public events.

This year's national theme "Community Begins Here" took on special meaning for the Sewerage and Water Board now in its 10th year of rebuilding the water, sewer, drainage and power generation systems post hurricane Katrina. According to Cedric Grant, "the events and activities during "National Public Works Week" represented and symbolized the board's progress from devastation, recovery, restoration, to rebuilding of one of the most complex utilities in the country. Regarding lessons learned, Grant said, "We are now building smarter, more resilient, and more reliable".

During "National Public Works Week" the Sewerage & Water Board offered public tours of the East Bank Waste Water Treatment Plant. The public was also invited to attend a ribbon cutting ceremony at the newly renovated Central Yard Annex Building. Additionally, the Sewerage & Water Board will host a Public Works Week equipment demonstration, informational career day, and environmental presentation at Station A.

City And Sewerage And Water Board Announce New Plan To Coordinate Infrastructure Management

Operations and Management for All Infrastructure Projects to be Fully Coordinated

On August 20, 2014 Mayor Mitch Landrieu joined the leaders of the Sewerage and Water Board of New Orleans (S&WB) to announce a new plan to coordinate infrastructure management. Under a Cooperative Endeavor Agreement between the City of New Orleans and S&WB, an Integrated Infrastructure Management System will be created to coordinate all infrastructure projects and repairs to ensure that they are performed properly and in a timely manner.

"Upon taking office, I committed to the citizens of New Orleans that we would not just rebuild our city, but that we would be a city for the ages," Mayor Mitch Landrieu said. "As part of that commitment, I promised to reform and modernize the Sewerage and Water Board because it is our most important utility. To meet the challenges we face, everyone must be on the same page but for too long the City and S&WB were not working with each other. Today,

Mayor Mitch Landrieu (center) is joined by Sewerage and Water Board members, city officials and Board Executive Director at a press conference to announce new plan for infrastructure management coordination.

we aim to change that. By creating an Integrated Infrastructure Management System between the City and S&WB, we will create efficiencies on all projects and produce real time savings while at the same time minimizing disruption to our streets, sidewalks and other public spaces. By working hand in hand like never before, we will build a stronger, more resilient city."

Under terms of the agreement, the S&WB will coordinate all its repair, maintenance, and construction projects with the City, including the Department of Public Works, Department of Property Management, and Capital Projects Administration including the Disaster Recovery Unit and all Disaster Community Development Block Grant funded projects. All water management planning and implementation for both the City and S&WB will be under direction of the Cedric Grant, Executive Director of S&WB. City and S&WB personnel will coordinate jointly on projects including construction, acquisition, improvement, maintenance and promotion of any public improvement or project, specifically including activities related to public utilities, sewerage, flood control, drainage, and streets. Through combined procurement and project development, efficiencies will be created resulting in real time savings on programs and projects.

Cedric Grant, Executive Director of S&WB said, "I am 100% committed to reforming and modernizing this critical public utility and bringing it into the 21st century. We have an unbelievable opportunity to build for our future starting right now. By implementing a comprehensive and integrated maintenance plan, all City infrastructure repairs and projects will be coordinated from start to finish. With the City and S&WB working hand in hand, we are positioned to build a more resilient system that can handle the challenges of the future and improve customer service."

Ray Manning, President Pro-Tem of S&WB said, "We are excited about the future of the Sewerage and Water Board. This is an opportunity for this vital public utility to take a leading role in our City's future. This Integrated Infrastructure Management System between the City and S&WB will save money, save time, and it just makes sense."

Commitment To Reform

Since taking office, the Landrieu administration has successfully secured federal dollars for key infrastructure projects including more than $200 million in new funding from FEMA for repairs to thousands of water and sewer lines, pumps, and pump stations. In addition, $150 million in FEMA Hazard Mitigation funds has been secured to help repair the aging S&WB power plant.

In December 2012, Mayor Landrieu, with the support of local business, political, and community leaders, worked with the New Orleans City Council to pass a water and sewer rate increase that will generate $583 million and help fund a large portion of the S&WB's $3.3 billion infrastructure improvement program composed of over 600 projects that will create 25,000 construction jobs and 200 permanent jobs. As a direct result, Standard and Poor's Rating Service upgraded S&WB's bond rating which will save the S&WB millions of dollars. In June 2014, the S&WB sold bonds for water and sewer systems to refinance outstanding debt and fund its capital improvement program which is now fully funded for the first time in twenty-five years. To meet the anticipated demand for workers to repair the city's aging infrastructure, the City, S&WB, and JOB1 Business and Career Solutions Center are developing a worker training program with Delgado Community College aimed at increasing the pool of certified water and wastewater treatment personnel.

The S&WB has already implemented a number of internal reforms to improve its performance and accountability. The S&WB now hosts public meetings to report out on its performance. Key department heads and program managers get feedback on what works, what doesn't, and what needs to change. To improve coordination, the S&WB and the Department of Public Works engineers are now working in the same room so that they can work hand in hand to fix pipes and streets in a coordinated and timely manner. And to improve reliability, the S&WB has enhanced its Water Help Program for elderly and low-income customers and is moving forward on implementing electronic metering to help detect water leaks.

Governance Reform

In order to reform the governance of the S&WB, changes were required to both Louisiana State law and the New Orleans City Charter by a vote of the citizens of Orleans Parish.

During the 2013 Louisiana Legislative Session, State Senator J.P. Morrell and Representative Walt Leger, III passed Senate Bill 47 which reduced the S&WB from 13 to 11 members with reduced terms of service from 9 to 4 years and limits to serving two consecutive terms. This legislation eliminated three seats previously held by New Orleans City Councilmembers and added a new citizen appointment made by the Mayor.

In July 2013, the New Orleans City Council unanimously approved placing the reform proposal on the October 2013 ballot which was later overwhelmingly approved by the Orleans Parish residents.

In January 2014, the S&WB issued a Declaration of Vacancies, announcing there would be vacancies on its Board of Directors and began accepting applications for persons interested in serving. As stipulated by the newly passed state law and city charter change, to fill the 8 citizen member seats on the newly constituted Board of Directors, a Selection Committee was assembled. This committee was composed of representatives from 7 local universities representing Delgado Community College, Dillard University, Loyola University, Southern University of New Orleans, Tulane University, the University of New Orleans, and Xavier University and three civic associations representing the New Orleans Chamber of Commerce, the New Orleans Regional Black Chamber of Commerce, and Urban League of Greater New Orleans.

The Selection Committee met twice in February and reviewed 90 applicants. For each of the 8 open Board seats, the Selection Committee recommended three individuals for the Mayor to choose from and then send to the New Orleans City Council for approval.

In May 2014, Mayor Landrieu nominated the following 8 citizens to serve on the S&WB who were unanimously approved by the New Orleans City Council:

Council District A: Scott Jacobs

Scott Jacobs has spent the last twenty-four years in the insurance and risk management industry. Since 2003, he has served as the Chief Administrative Officer of Strategic Comp, a division of Great American Insurance Group.

Council District B: Robin Barnes

Robin Barnes is the Executive Vice President and Chief Operating Officer of Greater New Orleans, Inc., the regional economic development alliance serving the 10-parish region of Southeast Louisiana. There she oversaw administration of the Greater New Orleans Urban Water Plan.

Council District C: Kerri Kane, JD

Kerri Kane is an attorney serving as Counsel at Irwin, Fritchie, Urquhart &

Moore LLC since 2005. There, she has worked in areas of complex litigation, pharmaceutical defense, medical device litigation, and personal injury defense.

Council District D: Marion Bracy

Marion Bracy is Vice President for Facility Planning and Management at Xavier University of Louisiana. Mr. Bracy has overseen the $200 million restoration of the Xavier University campus after Hurricane Katrina and help increase FEMA funding participation from $5 million to over $100 million.

Council District E: Mark Moody

Mark Moody is Lead Engineer in the Rocket Propulsion Test Program Office at NASA's Stennis Space Center. His duties include providing guidance and technical expertise on NASA rocket propulsion test facility capabilities and utilization.

At-Large: Tamika Duplessis, Ph.D.

Dr. Tamika Duplessis is Lead Chemistry Instructor at Delgado Community College, where she has taught since 2009. She is also a Collaborator/ Contributing Scientist with Xavier University of Louisiana College of Pharmacy where she does research on breast cancer.

Consumer/Community Advocate: Kimberly Thomas, JD

Kimberly Thomas is currently the CEO of KT Consultants, a small business consulting firm. She currently serves on the Advisory Board of Algiers Economic Development Association and is the Director of Team You Support Group.

Consumer/Community Advocate: Joseph Peychaud

Joseph Peychaud is a lifelong resident of New Orleans with over forty-eight years of continuous service as a community advocate and activist, educator, facilitator, and public and private sector administrator. Since 2011, he has served as President of St. Katharine Drexel Preparatory School (formerly Xavier University Preparatory) where he has overseen all operational components of the school.

Two additional members were appointed:

Board of Liquidation, City Debt Syndicated Member:Wm. Ray Manning

Wm. Ray Manning is Founder and CEO of Manning Architects which has established a local and national reputation in architecture, interior design, urban design and planning. The core of his work has been the development, planning, and urban design of the City of New Orleans before and after Hurricane Katrina.

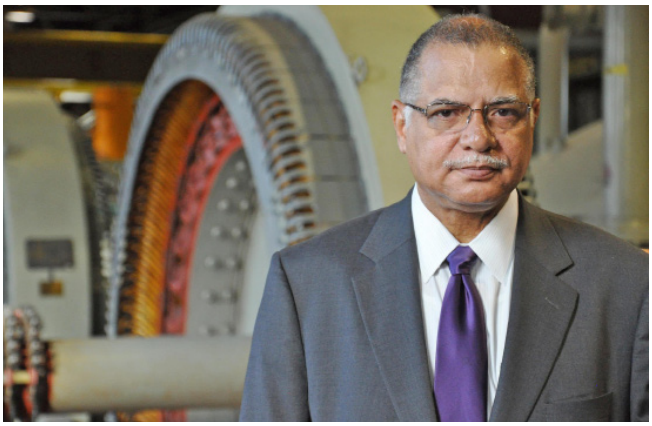
Board of Liquidation, City Debt Syndicated Member: Alan C. Arnold

Alan C. Arnold is President of Midsouth Realty Management, Inc., Arnold & Co. Inc. and former President of Howard, Weil, Labouisse, Friedrichs Inc. He is on the Board of Visitors for the Loyola Business School, serves on the Investment Committee of the Archdiocese of New Orleans and the Board of Christopher Homes and is a former Board member of the World Trade Center.

Note: Some board changes have been made in 2015.

Cedric Grant Named Sewerage & Water Board Executive Director

The Board of Directors of the Sewerage & Water Board of New Orleans (S&WB) selected Cedric Grant as its new Executive Director by a unanimous vote at its July 16, 2014 board meeting. Mr. Grant has served as Deputy Mayor of Facilities, Infrastructure, and Community Development for the City of New Orleans since 2010. He succeeds Marcia St. Martin who retired earlier this year after serving nine years in the position and Deputy Director Robert Miller who served as Interim Executive Director since her retirement. Mr. Grant assumed his duties on Monday, July 28, 2014 as the S&WB begins a $3.3 billion capital improvement program comprised of over 600 projects that will create over 20,000 construction jobs.



"Throughout his distinguished 40 year career, Cedric Grant has demonstrated exceptional leadership and integrity as a public servant and he is supremely qualified to lead the Sewerage and Water Board," Mayor Mitch Landrieu said. "As the new Executive Director of the Sewerage and Water Board, he will continue his efforts to rebuild and strengthen the infrastructure that is so critical to our city's growth and future. There is no person better prepared to take on the task of modernizing this critical public utility."

For the last four years, Deputy Mayor Grant has overseen the City's infrastructure and jump started Hurricane Katrina recovery projects in nearly every neighborhood in the city. In this capacity, he has overseen the City's capital development, infrastructure projects, and community development initiatives. Under his direction in negotiations, the City has secured over $828 million in new FEMA recovery funds to repair important facilities and interior neighborhood streets. He has also improved coordination between S&WB and the City's Department of Public Works (DPW) on the $280 million FEMA-funded Recovery Roads Program that is repairing Hurricane Katrina-related damages on and beneath City-managed

streets throughout New Orleans. A new joint S&WB-DPW project management unit was created to better facilitate design review designs and coordinate on joint capital improvement projects. Now, engineers from both the S&WB and DPW are sitting in the same room, reviewing the same plans.

Mr. Grant came to City Hall after serving as Chief Administrative Officer of Ascension Parish, Louisiana, where he was responsible for management and oversight of all governmental operations. In 2004, Governor Blanco appointed Mr. Grant as Deputy Secretary of the Louisiana Department of Transportation and Development, where he served until 2008. Prior to his appointment at the State, Mr. Grant held numerous managerial and administrative positions in government, including service as Chief Administrative Officer for the City of New Orleans. Mr. Grant has also served as Planning Manager for the Port of New Orleans and Director of Capital Projects for the New Orleans Downtown Development District. Mr. Grant served his country in the U.S. Army and completed 23 years of active and reserve service, retiring in 1995 with the rank of major. He earned a Master's of Public Administration from the University of New Orleans in 1981 and a Bachelor of Arts in Political Science from Xavier University of Louisiana in 1974.

The Sewerage and Water Board of New Orleans solicited proposals from qualified Executive Search Consultants/ Firms to advise the Board with regard to filling the Executive Director position. In August 2013, the Board contracted with the firm of Colin Baenziger & Associates, a national executive search firm, to help the Board's Search Committee seek applicants for the position. Following a nationwide search

An opportunity to walk through the warehouse.

Executive Director Grant is briefed on critical instrumentation in the drainage pumping station control room.

and reviewing 60 applicants, Mr. Grant was unanimously selected in December 2013 as the strongest and most qualified candidate for Executive Director by the SW&B Board of Directors.

Cedric Grant said, "The Sewerage and Water Board is at a crossroads of change, and its mission of providing sewerage, water, and drainage to the City of New Orleans is the bedrock on which New Orleans' survival and development rests. Everything I have accomplished before has prepared me for this challenge. As the Sewerage and Water Board begins a $3.3 billion capital improvement program, I am committed to integrating its work with the City to become the economic, civic, and cultural engine of growth needed to secure New Orleans' future."

As Executive Director, Mr. Grant has committed to reforming and improving the S&WB by implementing the following strategies:

- Infrastructure Management Integration: Implement a comprehensive and integrated maintenance plan so all infrastructure repairs are coordinated with the City and New Orleans utilities and performed properly and in a timely manner to ensure the reliability and survivability of the City's infrastructure while providing quality service to the citizens of New Orleans.

Reviewing the meter reading process.

- Training, Job Opportunities, and Organizational Change: Upgrade training and development of staff and focus on providing job opportunities to youth and citizens of New Orleans. Implement a strong retention and succession planning strategy.
- Financial Integration: Implement the approved operating and capital plan and develop innovative public-private partnerships to fund capital and operation programs.
- Business Process Integration: Improve customer service, outreach, billing operations, and enhancements to the S&WB's community assistance programs.
- Environmental Integration: Implement green infrastructure to combine with the City's storm water management strategies.
- Intergovernmental Integration: Serve as the city's point person on issues of infrastructure and water management as well as continuing to serve as a member of the C40 Global Initiative on Climate Change and the Delta Cities Initiative, the Clinton Global Initiative, and Rockefeller Foundation's 100 Resilient Cities Initiative.

The Facility Maintenance Department fabricates, in-house, gears of various dimensions and specifications to accommodate the many different size valves that are used throughout the water and sewer systems.

Being First In All Aspects Of Duties Is The Goal of S&WB Employees

Many citizens don't realize it, but a cadre of managers and employees of the Sewerage & Water Board are considered "first responders" in emergency situations, much like fire fighters, police and gas and electric utility workers.

The Board reacts quickly when a fire breaks out, sending personnel to the scene to make sure firefighters can locate and activate the nearest and most powerful hydrants in the area.

In other situations, such as chemical or fuel spills in the river, water intake and water plant operators join with managers and chemists quickly to react with proper procedures, equipment and chemicals to offset the danger of the material in the river from entering the treatment

plant. Quick action is also required when a problem develops at the Board's electrical generation plant, which provides power to pump water at high pressure to all homes, businesses, commercial operations and more than 17,000 fire hydrants.

Many times parts must be manufactured on the plant site at the Facility Maintenance Department because of the age and design of some parts. These parts no longer can be found "off the shelf" and are manufactured as sole source parts by the board.

The Mississippi River water is treated at the Carrollton Water Purification Plant for East Bank customers in Orleans Parish and at the Algiers Water Purification Plant for West Bank customers in Orleans Parish. In 2012 the Carrollton Water Purification Plant provided an average of 138 million gallons of drinking water per day to a population of 319,275. The Algiers Water Plant provided an average of 11 million gallons of drinking water per day to a population of 53,082.

The staff also refurbishes various pumps, motors, generators and other parts at Board facilities.

In the field, the Board's "First Responders are often called to repair a locked valve, large water main or a problem at one of the underground power cables serving the water distribution system.

The Board's staff is constantly finding new ways to improve operations and save funds, especially post-hurricane events since 2005 that caused a great deal of impact to the system.

One such project is a specially-designed turbine which will power a 15-megawatt generator constructed by the U. S. Army Corps of Engineers. The generator will give the S&WB's Division of Pumping and Power the capability to improve the operation of its drainage, sewerage and water pumping systems in emergencies. The generator, funded 100% by the Corps, is part of a storm-proofing project for Orleans Parish. The project, located on the grounds of the Carrollton Water Purification Plant, costs in excess of $32 million.

Another such project is in operation at the Carrollton Water Purification Plant. The Sodium Hypochlorite Bulk Storage/Feed Facility eliminates the need for transporting chlorine by rail and storing it on the plant grounds. Instead, the Board is using the safer sodium hypochlorite for disinfectant in the purification process and easily stores it in a nearby facility. This chemical increases safety for

surrounding neighborhoods and Board employees.

Underway is the FEMA water line replacement program with the goal of reducing the volume of unaccounted for water in the distribution system. Staff worked diligently with FEMA and the award of funds continues to be granted.

New Orleans continues to be the festival, special and sports events Capital in the World and one of America's Most Interesting Cities. During events, the City's population increases often with an additional surge of as many as 250,000 visitors in a very compressed time frame.

City officials have often recognized the Sewerage & Water Board's role in the successful staging of the events as crucial. In fact, providing the essential quality of life services of water, sewer and drainage is always extremely important. It is a priority of the men and women of the S&WB to make sure that the Sewerage and Water Board can continue to fulfill its mission as that constant provider for the city.

The services that the Board provides are an integral part of allowing the City to put on the biggest and best extravaganzas in the world. The Board's staff is working hand and hand with the City as we go about the process of improving streets, the streetcar line and the spruce up of the City for all of our citizens and the hundreds of thousands of guests who make our city home during their visit.

Since 1998, the U.S. Environmental Protection Agency (EPA) requires all water utilities to produce and distribute annual water quality reports. The sixteenth report included testing results for the year 2012. We hope that you found this Consumer Confidence Report both interesting and informative.

We want all of our valued customers to be well informed about all aspects of the water system. For more information go to the Board's website: www.swbno.org

The Sewerage and Water Board's staff is constantly developing and exploring new processes to improve its operations. One such project is in operation at the Carrollton Water Purification Plant. The Sodium Hypochlorite Bulk Storage/ Feed Facility was completed in 2012. It eliminates the need for transporting chlorine by rail and storing it on the plant grounds. Instead, the Board will use the safer sodium hypochlorite for disinfectant in the purification process and easily store it in a nearby facility. This chemical increases safety for surrounding neighborhoods and Board employees.

Water

Water Department Processes 55 Billion Gallons of Highest Quality Water Each Year

Federal Emergency Management Assistance (FEMA) has obligated, to date, Project Worksheets for all neighborhoods in the amount of $188,000,000 for water line replacements. Versions are being drafted to update construction estimates with actual bid costs and survey estimates. The work is being conducted in partnership with the City of New Orleans Department Of Public Works from development of an integrated schedule to community outreach. Work is underway in all phases from survey, design and construction for neighborhoods on the East Bank.

At the Carrollton Water Treatment Plant, design is underway through the water hammer hazard mitigation project to install two water storage tanks on

site for surge protection and to reduce the risk of low water pressure and repair the distribution pumps at both the Claiborne and Panola Pump Stations. Staff has initiated a water quality Master Plan at both the Carrollton and Algiers Water Treatment Plants to identify system vulnerabilities that could impact water quality and plant production capacity, including assessment of infrastructure, and recommend improvements. Many projects have been identified and work will begin soon. Staff is continuing to rehabilitate the flocculation-sedimentation basin L4 (refurbushing gearboxes, sludge pumps, replacing bearings and mixer components, and repairing sludge). The Water Quality Laboratory is pursuing state certification for Total Organic Carbon (TOC) analysis while continuing to perform routine monitoring of the TOC removal through the treatment process. yt. Staff is comissioning new instrumentation on the filters at the Algiers Water Treatment Plant.

The muddy Mississippi River, which flows past New Orleans at an average rate of 300 billion gallons per day, is the city's reliable source of raw water. On a normal day, the city uses approximately 145 million gallons of water for vital health, industrial and fire-fighting purposes. In periods of emergency, such as prolonged freezes, water consumption in Orleans Parish has approached the system's capacity of 250 million gallons per day.

Raw water is taken from the river, carrying an average of 131 parts per million of suspended materials, through intakes in both Algiers and the East Bank plants. After being drawn from the river, raw water flows through underground pipelines into the Carrollton and the Algiers purification plants.

The city's purification plants employ modern processes, which remove suspended matter, destroy disease causing substances. Those processes produce drinking water exceeding all federal and state standards.

The S&WB also provides water for firefighting purposes via 17,000 hydrants located throughout the city.

There are two separate intake stations, which can continuously pump Mississippi River water to the East Bank's Carrollton Water Purification Plant. The Oak Street intake station draws water from below the river's surface through two 48-inch diameter pipelines and a 72-inch pipeline over the levee, with

four electrically driven pumps. The Industrial Avenue intake station draws water from below the river's surface with three electrically driven pumps, which have a combined capacity of 210 million gallons per day.

There are two intake stations serving the West Bank's Algiers Water Purification Plant. Intake Station #1, draws water from below the river's surface with three electrically driven pumps whose combined capacity is 45 million gallons per day.

Intake #2, draws water from below the river's surface with two electrically driven pumps whose combined capacity is 10 million gallons per day.

The purification process at the Algiers Plant is similar to that of Carrollton, utilizing a complex system of chemicals.

Two of the three up-flow treatment units in Algiers have a capacity of 12 Million Gallons per Day (MGD) each with the third capable of 8 MGD.

The Carrollton Plant normally yields about 135 million gallons per day of finished water for the east bank of Orleans Parish. The Algiers Plant, which serves the predominately residential west bank portion of the parish, purifies about 10 million gallons per day of water. Combined, the two plants treat approximately 55 billion gallons of water per year, removing about 20,000 tons of solid material from the raw river water.

The Sewerage and Water Board produces water for the New Orleans Fire Department pumpers.

State-of-The Art Water Laboratory Can Test For 150,000 Compounds

In 1986, after more than four years of planning and construction, the Board opened its new Water Quality Laboratory. Occupying 8,500 square feet of floor space in the Carrollton Water Plant, the lab is an advanced environmental analysis facility, utilizing state-of-the-art technology for detecting and identifying contaminants in water at sub part per billion concentrations. The overall laboratory is divided into areas specifically designed and equipped for organic, inorganic, microbiological and plant production analyses.

The Water Quality Laboratory is staffed by chemists, microbiologists and technicians. Major items of instrumentation include a gas chromatogaph-mass spectrometer system, a gas chromatograph, and a total carbon analyzer. The laboratory performs analyses for monitoring the quality of river water and finished water sampled from locations throughout the East Bank and Algiers sections of the city. Information generated in the laboratories is used for controlling plant treatment processes and researching methods of improving those processes and the drinking water.

S&WB Water Meets All EPA Quality Requirements and Is Delivered to Customers Through 2,000 Miles of Pipes and Mains

For pumping purified water into the distribution system at 70 per square inch pressure, the Board uses eight high pressure pumps, located at the Carrollton Water Purification Plant having a total pumping capacity of 350 million gallons per day. Six of these pumps are driven by electrical power and two by steam turbines. The Algiers Plant has 10 electrically driven high pressure pumps, with a total pumping capacity of 62 million gallons per days.

The water purified and pumped at the two plants is distributed through more than 2,000 miles of mains, ranging in size from 4 inches to 54 inches in

diameter. It is distributed to consumers through more than 143,600 service connections, ranging in size from 5/8 inch to 16 inches in diameter. Practically all of these services are metered.

The S&WB also provides water for firefighting purposes via 17,000 hydrants located throughout the city. S&WB personnel are called to duty during larger fires to assist the Fire Department in locating various size mains and provide other necessary services.

Water Quality Report

Since 1998, the U.S. Environmental Protection Agency (EPA) requires all water utilities to produce and distribute annual water quality reports. The report is extensive and elaborates in its discussions on how the board meets EPA water standards and regulations.

The EPA, with further enforcement by the Louisiana Department of Health and Hospitals (DHH), regulates for containments that are selected for enforcement. The board has been vigilant and proactive in its water purification mandates and complies expediently to any action mandated by regulatory agencies. Regulations will continue to change and the board must be able in the future to continue to act expediently.

IMPORTANT RECOVERY PROJECTS CONTINUE TO GROW IN NUMBER AND COMPLEXITY

The Board of Directors of the Sewerage and Water Board of New Orleans, its management and employees knew they had an incredible restoration and re-building challenge after Katrina, once all the damages and devastation to facilities and equipment were assessed.

So immediately after Katrina hit ten years ago, the staff achieved more than most thought they could. But, with an organized plan and the knowledge and skill of many on-staff experts, an incredible number of construction and repair projects were begun to once again provide quality and reliable water, sewer and drainage services for the citizens of the City. Many have been completed and numerous others are in progress, in the bid cycle or ready for bid. Funding of these projects have been a cooperative effort with the Federal Emergency Management Agency (FEMA) and the Army Corps of Engineers.

To assure a rapid response and realizing the magnitude of the repair and re-building work, the Board contracted with three program managers, one each for water, sewerage and drainage recovery projects. The Board also contracted with design firms to help speed the construction process.

The total estimated project cost amount for all FEMA-related activity to date is approximately $852 million. Of this amount approximately $682 million is obligated by FEMA. Additionally, major projects scheduled before the storm have now begun, been completed or are underway.

The Sewerage & Water Board's recovery efforts began the day after Katrina hit and have continued constantly thanks to the dedication of the Board members, management and employees. These individuals stayed during Katrina or returned quickly to plan and restart operations immediately.

These are just some of the major under-takings the Board staff and program managers have accomplished in the last ten years:

Through 2014 FEMA obligated $319 million to the water system. Some of the projects in this area include:

• Repair of Old Carrollton Pumping Station and Central Yard Annex Building overall complete restoration repairs

• Modifications to Algiers Water plant disinfection system

• Removal of residential meters from abandoned accounts

• Building of the Sodium Hypochloride Water Line Replacement Program

Also, there were thousands of jobs completed which included 36,887 meters replaced, 16,796 main repairs, 80, 402 service leaks repaired, 9,368 hydrant repair work orders and 6,433 valve repair work orders.

In addition, there was 22,846 hydrant inspections, 8,818 valve inspections, and 21,017 paving projects related to water leaks.

In the area of sewer projects FEMA has obligated $226 million in 2014. Projects included:

• Fluidized Bed Incinerator at the East Bank Sewage Treatment Plant

• Michoud and Lamb Sewage Pumping Stations

• Mechanical repairs to various citywide sewage pumping stations

• Continued rehabilitation of the East Bank Sewage Treatment Plant destroyed by Katrina

• Emergency installation of bypass pumps around damaged sewage pumping stations

• Sewer line leaks and breaks repairs

• Electrical repairs to sewage pumping stations

• Completed the rehabilitation of over 60 sewer pumping stations

• Completed sewer repairs related to the Emergency Sanitary Sewer Assessment project.

• Hurricane Katrina nearly destroyed the East Bank treatment plant and flooded almost every lift station on the East Bank.

• Following Katrina, the Sewerage and Water Board of New Orleans, Environmental Affairs Division was successful in obtaining a $400,000 grant from the Delta Regional Authority to develop feasibility and pre-design for the Wetlands Assimilation Project. The Environmental Affairs Division was also able to obtain a $10 million grant from the state's Coastal Impact Assistance Program (CIAP) to construct the first phase of the estimated $65 million project. Construction of the

project has commenced with a 20-acre demonstration project adjacent to the East Bank Sewage Treatment Plant.

A history making completion of a Memo of Understanding with the Corps of Engineers and the State for $1 billion in SELA urban drainage projects throughout the city was executed. Total funding for Orleans Parish will be $1.5 billion from inception to completion.

Harrell Park was returned to the New Orleans Recreation Department after construction of a new football field and track. This NORD park was used to house S&WB employees whose homes were destroyed so they could return to work. The park was a priority of the Board to restore as a New Orleans Recreation Department NORD facility.

The Sewerage and Water Board continues to work very closely with the city's Department of Public Works, in the coordination of street projects. The board's staff evaluates, plans and ensures that any water lines or sewer lines that need to be repaired are done. The closely co-ordinated work schedules on the Recovery Roads Program makes the street construction activity less inconvenient on the residents of the affected areas. The board staff also collaborates to co-ordinate infrastructure work with the state's Department of Transportation and Development, along with the city, on the Paths To Progress Program. Both of these programs include the paving of selected streets on the eastbank of the city.

Overall, this work marks the most aggressive and important rebuilding of the water, sewerage and drainage systems in the 116-year history of the Sewerage & Water Board.

Harrell Park restored after being used as a Trailer Park site for employees.

Sewerage & Water Board Partners With City Department of Public Works On Road Recovery, Water and Sewer Line Replacement

The Sewerage and Water Board has made millions of dollars of capital improvements in the water capital program, the sewer capital program and road improvements through Southeast Louisiana Urban Flood Project (SELA). These capital investments will further enhance the city's infrastructure recovery.

The Sewerage & Water Board is responsible for most of the water, sewer and drainage pipes beneath the streets, but it is the Department of Public Works that is responsible for the streets themselves. After sewer and water lines are repaired or replaced by the Sewerage & Water Board the streets need to be renovated. This necessitates that the Board coordinate with DPW on street repairs.

The roles and responsibilities of both agencies are clearly defined within this partnership. The Sewerage & Water Board is responsible for design and construction inspection of all underground infrastructure (water, sewer, drainage lines) while the Department of Public Works is responsible for all above ground surveying, design and construction inspection of above ground Infrastructure (streets, sidewalks) Responsibilities for contract bid and award has been assigned to the agency having the majority of the work. Public Works employees stationed inside the S&WB's Carrollton offices and communication between the agencies occurs daily.

In 2013 the Sewerage & Water Board made $45 million in water capital improvements, $44 million in sewer capital improvements, and $130 million in road improvements through Southeast

Louisiana Urban Flood Control Project (SELA).

The massive water line replacement program entails the complete replacement of the east bank water system, including the 1,400-mile pipe network, plus manholes, valves, meters, mains and service lines. This project consists of identifying, prioritizing, and replacing waterlines that met specified criteria established by FEMA and the Sewerage and Water Board. The scope of work includes the design of waterlines deemed eligible for replacement by the S&WB, the development of construction documents including plans, specifications, opinions of probable cost, and contract documents in accordance with the S&WB standards. The design also includes repairs and restoration, and the replacement of drainage and sewerage systems which meet City, Federal Highway Administration and S&WB standards. Milestones include completion of survey, final waterline design, drainage assessment and design, DPW road design, advertising notice to proceed, and completion of construction.

Along with the water pipes, the construction contracts will Incorporate if feasible repairs to the east bank's sewage collection system, which remains under a federal consent decree aimed at reducing the flow of sewage from crumbling pipes into Lake Pontchartrain.

The Sewerage & Water Board plans to spend $196 million by 2015 to comply with a newly revised federal court order aimed at reducing the flow of sewage into Lake Pontchartrain from New Orleans' east bank sewer system. The sewer rehabilitation project amounts to the most comprehensive single effort to recondition the city's century-old sewer network.

Though the objectives of the revamped consent decree mirror the original version, the new document includes a few key modifications. Chief among them is the delay from 2015 to 2025 of the deadline for the wholesale rehabilitation of every inch of sewer pipe and manhole on the city's east bank, as well as the East Bank Wastewater Treatment Plant.

SEWAGE COLLECTION SYSTEM, VIRTUALLY DESTROYED BY KATRINA, IS BEING RESTORED WITH FEMA FUNDS BECAUSE OF WELL-DOCUMENTED REQUESTS

All sewer pumping stations have been repaired post Katrina and are fully operational. However, under FEMA Hazard Mitigation Grant Program and in conjunction with the City of New Orleans, nine (9) sewer Pump stations will be reconstructed to above ground standards and with better equipment. Total award of this project is about $20 million.

The sewage collection system operated by the Sewerage & Water Board of New Orleans serves an area of approximately 86 square miles and a population of approximately 350,000. Work on the system continues as the Sewerage and Water Board rebuilds and upgrades the infrastructure.

It consists of over 1,300 miles of gravity collection and trunk sewers ranging in size from 8-inches to 84-inches in diameter and over 120 miles of force mains ranging in size from 6-inches to 72-inches in diameter.

There are 84 sewer lift pump stations which help convey wastewater to the City's two wastewater treatment plants, one on the East Bank and one on the West Bank (Algiers) of the Mississippi River, with a combined capacity of 132 million gallons per day (mgd).

Hurricane Katrina destroyed the East Bank treatment plant and flooded almost every lift station on the East Bank. The FEMA funds obligated to repair the sewer system to date is $226 million. In addition, the Board also received $141 million in Hazard Mitigation Grant funds from FEMA for the Power house.

We have spent over $33 million at the EBSTP to build a berm to protect the plant from levee overtopping. This project is 99% complete, and funded by FEMA.

Employees of the S&WB Networks Division are on duty 24 hours a day for emergencies and scheduled repairs. Here, two members of a crew repair a sewer line deep below the street.

Awards for Wastewater Treatment Operations

Nationally, the Sewerage and Water Board has received many high level awards for its work in wastewater. Recently for 2011 and 2012 the Sewerage and Water Board earned two Gold awards for operations at both the West Bank and East Bank wastewater treatment facilities.

In 2013, the Westbank Wastewater Treatment Plant qualified and received a Gold Award. The Eastbank Wastewater Treatment Plant received the Silver Award for 2013.

In 2014, the Westbank Wastewater Treatment Plant received the Platinium Award. Platinium Awards recognize 100% compliance over a consecutive five year period. This award is given to facilities with a consistent record of full compliance for a consecutive five year period. The Eastbank Wastewater Treatment plant received a Silver Award for 2014. Silver Awards are presented to facilities with no more than five violations for the entire calendar year. The awards were presented by the National Association of Clean Water Agencies (NACWA).

Every Mile of Sewer Infrastructure Studied Via Aggressive, Multi-Faceted Review of Subsurface Pipes and Mains

The Sewerage & Water Board of New Orleans (S&WB) began a major rehabilitation and capacity upgrade of its aging sewage collection system in 1996 called Sewer System Evaluation and Rehabilitation Program (SSERP.)

Since Katrina, under the SSERP Program, the S&WB has completed 19 construction contracts and is currently executing one (1) construction contract for a total cost of approximately $41 million. Under these contracts, the Board has completed to date over 5,300 repairs to the sewer collection system. The sewer system repairs include the following:

1. Full line replacements from manhole to manhole
2. Full length lining of the line segment from manhole to manhole
3. Sewer main line point repair
4. Sewer service lateral point repair
5. Manhole rehabilitation

Like most of the nation's major metropolitan areas, New Orleans' underground water and sewer systems are at least 50 years old and, in many cases, up to 100 years old. Factors common

Smoke testing is one of the methods used to detect leaks or breaks in sewage lines.

to this area, such as unstable soil conditions, high ground water table and large numbers of tree roots, contribute to a higher-than-normal number of breaks and deterioration of the sewer pipes.

At a public meeting in 1996, the S&WB's staff and consultants provided details of a $631 million multi-year program to the public, environmental, preservation and neighborhood groups, elected officials and the news media.

SSERP was incorporated into a consent decree the S&WB signed with the EPA in 1998 to ensure that system repair work was done on a fixed schedule. At that time, timetables and deadlines were established for the work.

SSERP is used to identify and address structural deficiencies in the wastewater collection system.

A number of new processes are being used for the rehabilitation, including trenchless methods, which allow for rehabilitation of buried pipes and manholes without the need for excavation and the disturbance to residents that it causes.

Sewer inspection methods include smoke and dye testing, sewer flow monitoring rain fall data collection, manhole inspections and facility surveys and closed circuit televising (CCTV) of the sewer lines. Sonar technology was also employed to determine the condition of sewer lines that cannot be de-watered.

With the implementation of repairs identified and completed in SSERP, the S&WB continues to be in compliance with federal regulations, and it will also be accomplishing its goals of protecting the environment and increasing the sustainability of the sewer system.

Hurricane Katrina struck in 2005, causing extensive damage to the sewer collection system. SSERP work was interrupted due to the storm, and the S&WB invoked force majeure (conditions beyond control) with respect to its obligations under the Consent Decree.

Between 2006 and 2009, the S&WB presented to the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Justice revised schedules for SSERP, reflecting the disruption of work and new activities associated with recovery of the sewerage systems from the damages sustained in August 2005. March 22, 2010, the S&WB entered into a Modified Consent Decree (MCD) that maintains the same basic structure of the original 1998 Decree. The MCD set new schedules for completing the remediation of the sewer collection system. On April 24, 2013 and July 17, 2014, the Sewerage and Water Board entered the 2nd and 3rd Modified Consent Decree with the United States Environmental Protection Agency, the U.S. Department of Justice and other

parties, extending the construction completion dates for the remaining SSERP Basins to 2025.

As a part of the Consent Decree, a Green Infrastructure Program is included to educate the community on best practices for storm water management. The program includes workshops and demonstration projects.

The Sewerage & Water Board is responsible for the coordination of the numerous engineers and contractors carrying out the planning, design and construction of improvements to the sewer system.

As a result of initial planning, the city was divided into the following ten service basins: Lakeview, Central Business District/French Quarter (CBD/FQ), Gentilly, Uptown, Mid-City, Ninth Ward, Carrollton, New Orleans East, South Shore, and Algiers. The sewer rehabilitation in the tenth basin, Algiers, is not included under the Consent Decree.

The S&WB has been in compliance with every aspect of the Consent Decree. Four of the basins (Lakeview, Central Business District/French Quarter (CBD/FQ), Gentilly, Uptown) were completely rehabilitated in accordance with the requirements of the Decree.

For information on SSERP visit the S&WB website; www.swbno.org., then click on About the Board, click on The Sewerage System and click on GOSSEREP website.

SSERP expenditures to date are $229 million including rehabilitation and capacity related design, construction, and program management services.

The Future of SSERP

Thus far, the S&WB and its contractors have met the milestones set forth in the consent decree timeline for the initial phases of the project--most ahead of schedule.

At this time, discussions of future funding options are underway by the S&WB, its financial advisors and bond counsel. The future of SSERP, naturally, depends on the availability of funds to complete the projects in accordance with EPA deadlines to avoid large fines of up to $15,000 per day.

The S&WB has kept the public informed of the SSERP projects through billing inserts, its website, news releases, media briefings, public hearings and meetings, special neighborhood meetings and participation in meetings scheduled by the Mayor and councilpersons.

Wetlands Assimilation Project

Creative Environmental Project Brings Two Parishes Together To Enhance Wetlands and Provide Better Flood Protection

The Wetlands Assimilation Project, the brainchild of the S&WB's Environmental Affairs Division, is an innovative partnership between the Sewerage and Water Board and the St. Bernard Parish government to restore 20,000 acres of Bayou Bienvenue. The bayou was severely damaged by Katrina's salt-water surge from the now-closed Mississippi River Gulf Outlet (MRGO).

The restoration includes planting Bald Cypress and Tupelo trees to enhance wetlands growth. Established trees will aid in wetland stability, water filtration and storm protection in the future.

The project broke ground and construction is well underway and progressing on schedule. The project is designed to re-establish cypress swamps that will help protect Orleans and St. Bernard parishes from future storm vulnerability because wetlands and barrier islands can take the brunt of a storm.

The Wetlands Assimilation Project begins with turning of the soil.

The S&WB obtained a $400,000 grant from the Delta Regional Authority to develop feasibility and pre-design for this project. The Board's Environmental Affairs Division was also able to obtain an $8 million grant from the state's Coastal Impact Assistance Program (CIAP) to implement two separate wetlands assimilation projects with the S&WB. The first of these projects consists of building a 12-acre demonstration project adjacent to the East Bank Sewerage Treatment Plant (EBSTP).

The original $10 million was utilized to build two demonstration wetlands cells at the Eastbank waste water treatment plant and an effluent pipeline to St. Bernard Parish for their wetlands. The first is still in construction and the second is in design.

The Louisiana State Coastal Protection and Restoration Authority (LA CPRA) has recently approved the wetlands project expansion in the amount of $4.5 million. Processing of the amendment was in January 2014.

Dredge material will be used to raise the elevation of the bayou in order to support the trees that will be planted. The innovative aspect of this project is 1) It will take five dry tons of bio-solids and 1,000 tons of incinerated ash from the Board's nearby East Bank Sewage Treatment Plant (EBSTP) and 2) Treated effluent

that will be pumped into the bayou to control salinity and provide nutrients necessary to promote the growth and health of the area.

The backside of Bayou Bienvenue runs along the perimeter of the plant in the Lower Ninth Ward. A 20-acre section adjacent to the plant will be used for this demonstration project.

The exact same environmental effort will be made by the partners on the St. Bernard Parish side of the project.

Construction of the project has commenced with a 20-acre demonstration project adjacent to the East Bank Sewage Treatment Plant.

The Sewerage and Water Board's Wetlands Assimilation Project, when completed, will reestablish wetlands in the area of the East Bank Sewage Treatment Plant. It will protect parts of the City from suffering future devastation as experienced in the aftermath of Hurricane Katrina.

Use of the wetlands for assimilation of wastewater has several benefits, including reducing the effects of salt water intrusion in the project area and increasing the build up of sediment to improve habitat quality and plant productivity. Ultimately, cypress replanting will aid in wetland stability, water filtration and storm protection for future generations. In this photo, effluents have been distributed to the open water area.

DEVASTATING FLOODS AND HURRICANE KATRINA LEAD TO AGGRESSIVE DRAINAGE CONSTRUCTION SCHEDULE

The United States Army Corps of Engineers (USACE) post Katrina improvements are near completion of several drainage facilities. Generally, the storm-proofing measures include water intrusion protection; roof and wall reinforcement; strengthening of louvers, doors, shutters and ventilation systems; providing a house generator and fuel tank; and miscellaneous electrical and mechanical equipment storm proofing measures. Several facilities received new 60 Hz generator facilities for back-up emergency generators to enable pumping capacity. As a result of hurricane Katrina and its devastating effect on the levee systems, the USACE is building new drainage pumping stations at the mouth of 17th Street Canal, Orleans Canal, and London Ave. Canal. The long-delayed $614.8 million project to build permanent storm surge gates and pumps in New Orleans was officially kicked off on Friday June 14, 2014. The new structures, which will look much like the brick-faced pumping stations that are part of New Orleans' interior drainage system, will be designed to block storm surges caused by a hurricane. The stations must also be able to pump rainwater that drains into the canals during hurricanes into Lake Pontchartrain, at a rate that will keep canal water levels low enough to avoid overtopping or damage to floodwalls along the canals. Current schedule includes a beginning of construction in November with estimated completion in February 2017. These three facilities are expected to increase Operations & Maintenance (O&M) cost by approximately $20 million annually. Several Underpass pumping stations are currently being repaired, and others still need major repairs.

When it comes to topography, New Orleans is like a saucer. Levees that have been built to keep out the Mississippi River and Lake Pontchartrain serve to keep in all the rainwater that falls. Many parts of the city are as much as 6 feet below sea level, requiring rainwater (an average of 58.12 inches a year) to be pumped out.

Six inches of rain across the city produces about 69.8 billion pounds of water. That's about 8.2 billion gallons, enough to fill a lake ten feet deep and two miles square. Because the river levees are higher than the lake levees, most storm runoff is pumped into Lake Pontchartrain.

Exceptions are the two West Bank pumping stations and two stations in Eastern New Orleans that pump into the Intracoastal Waterway or the Industrial Canal.

The drainage system of today dates back to the turn of the century. The New Orleans Drainage Commission was established in 1896 and merged in 1903 with the Sewerage and Water Board.

There are 24 Drainage Pumping Stations (DPS) in New Orleans. Station

ORLEANS PARISH STORM PROOFING SUMMARY

Project Description

- DPS 6 Generators
- 15 MW Generator and building -Power House No. 3
- DPS 20, 6 and 3 Storm Proofing
- DPS 13 Generator & Storm Proofing
- DPS 7 Gen. & Storm Proofing
- DPS 1, 2, 4 & 1-10 Storm Proofing
- CWT&PP as part of OSP-01
- 2 River PSs Storm Proofing
- New Two 300 cfs pumps w/Gen. at DPS 5 Pending
- DPS 12 & 19 Storm Proofing
- DPS 11, 14 & 16 Storm Proofing
- 60 Hz Underground Feeder
- DPS 17 Generator
- DPS 10 Generator & CWTT&PP Water Perimeter Prot.
- Existing DPS 5 Storm Proofing
- Water Well as OSP Projects
- Design Not Started
- DPS 17 Storm Proofing
- Carrollton Freq. Changer Bldg.
- DPS 15, 18, Grant, Monticello & Pritchard Storm Proofing

STORM PROOFING SUMMARY MORE THAN $200 MILLION

Storm Proofing is designed to make the pumping stations operationally reliable during a hurricane. The Corps of Engineers funds the Storm Proofing projects. For many of the projects, funds have been received and the projects are completed. Other project funds are pending awaiting approval or have been identified for funding construction approval. Storm Proofing includes equipment upgrades, generator power, new windows and doors and other critical infrastructure upgrades to fortify a pumping station.

personnel are on duty 24-hours a day, seven days a week.

There are also 11 underpass stations, each with two or three pumps that are automatically turned on by rising water. These pumps are checked routinely and are monitored by field personnel during rain events.

The system's pumping capacity is over 50,891 cfs (cubic feet per second) enough to empty a lake 10 square miles by 10.5 feet deep every 24 hours. That flow rate is more than the flow rate of the Ohio River, the nation's fifth largest.

The S&WB's drainage network includes approximately 90 miles of open canals and 99 miles of newer subsurface canals. Many of the subsurface canals are large enough to drive a bus through.

Millions of dollars were invested to upgrade the system after the flooding rains of the 60s, 70s, 80s and 90s, which ruined homes and businesses.

Then came Katrina, destroying the newer parts of the system as well as the older parts which served us so well for so long.

Fortunately, through the Board's long-standing relationship with the Corps of Engineers, millions of dollars in projects were carried out when Board funding was not available.

Immediately following the storm, after the breaches were closed, it took the S&WB employees 11 days to de-water the city. Then, the Corps worked with Board employees to repair the salt-water damaged motors by rewiring and baking them so that the pumps could continue to do the work of the drainage system

The Corps also spent $39.6 million to repair and restore 23 of the hardest hit stations and the Carrollton Frequency Changer Building to their Pre-Katrina levels of operation. The final station to be repaired in Orleans Parish was the Elaine Street Pump Station, which was completed in October 2010.

Additionally, the Corps storm-proofed stations throughout the City so that they can remain operable during and immediately following tropical storm events. This work strengthened the existing buildings, making it safer for S&WB employees that stay on site, as they work throughout all significant weather events. The storm-proofing cost is over $200 million.

Also, in many cases the pumping stations have back up power making them more dependable. Commercial power losses can occur during a storm and adverse weather events.

The Board of Directors, the engineering staff and the Corps work together in the best interest of the citizens to continue to improve a most crucial asset—the Board's massive drainage system.

U.S. ARMY CORPS OF ENGINEERS HURRICANE PROTECTION OFFICE & SEWERAGE & WATER BOARD OF NEW ORLEANS ARE WORKING TOGETHER

DPS 6 Generator

These completed projects provide for two (2) 60 Hz, 3 mega watt emergency back-up generators for the 60 cycle equipment at DPS 6. Program cost $1.7 Million *.

15 MW New Generator & Storm-Proofing of The Power Plant

This completed project provides S&WB with a 15 MW, 60 Hz generator at the Carrollton Power Plant Complex. This new Facility is called Power House No. 3. Also this project will apply storm-proofing measures at the Carrollton Power Plant complex (High Lift, Low Lift, Boiler Room, Power House No. 2, Central Control, etc.). These storm-proofing measures include, but are not limited to water intrusion protection, roof and wall reinforcement, strengthening of louvers, doors, shutters and ventilation systems and miscellaneous electrical and mechanical equipment storm proofing measures. Program cost $51.0 Million.

** All costs are based on the 4/29/2013 Information provided by USACE*

Storm-Proofing of Old & New River Intake Stations

This completed project provides storm-proofing measures at the Old and New River Intake structures. These storm-proofing measures include water intrusion protection, roof and wall reinforcement, strengthening of louvers, doors, shutters and ventilation systems and miscellaneous electrical and mechanical equipment storm-proofing measures. Program cost $4.1 Million.

Two 300 CFS Pumping Station and Generator

To help ensure the operability of DPS No. 5 during hurricanes, storms and high water events, two new-elevated vertical pumps, at 300 cubic feet per second (cfs) each was installed. These pumps will be housed in a new elevated hurricane-proof structure. A 60 Hz, 3-megawatt generator will be installed to provide back up power. Project is about 50% complete. Program cost $26.0 Million.

DPS 20 Generator Bldg. and Storm-Proofing of DPS 3, 6, & 20

This completed project will apply many of the previously described storm-proofing measures at DPS 3, 6, & 20 along with storm-proofing the existing generator at DPS 20. These storm-proofing measures include water intrusion protection, roof and wall reinforcement, strengthening of louvers, doors, shutters and ventilation systems, providing fuel tanks and miscellaneous electrical and mechanical equipment storm-proofing measures. At DPS 20 the existing generator is relocated in a new flood-proof building that is above the Design Flood Level. The new generator building is now connected to the existing DPS 20 building with a secure covered walkway. This walkway will be used by the pump station operators to move between the existing DPS 20 control room and the new generator building. Program cost $12.7 Million.

DPS 7 Generator and Storm-Proofing

This completed project provides many of the previously described storm-proofing measures at existing DPS 7 along with a new 60 Hz, 3-megawatt generator and accessories. This generator is installed in a new generator building. These storm-proofing measures include water intrusion protection, roof and wall reinforcement, strengthening of louvers, doors, shutters and ventilation systems, providing a fuel tank and miscellaneous electrical and mechanical equipment storm-proofing measures. Program cost $16.5 Million.

Storm-Proofing DPS 1, 2, 4, 19 & I-10

This completed project will apply many of the previously described storm-proofing measures at DPS 1, 2, 4, 19 and I-10. These storm-proofing measures include water intrusion protection, roof and wall reinforcement,strengthening of louvers, doors, shutters and ventilation systems, providing house generators and fuel tanks and miscellaneous electrical and mechanical equipment storm-proofing measures. Program cost $16.4 Million.

DPS 13 Generator Building and Storm-Proofing

This completed project utilized many of the previously described storm-proofing measures at DPS 13. These storm-proofing measures include water intrusion protection, roof and wall reinforcement, strengthening of louvers, doors, shutters and ventilation systems, providing a house generator and fuel tank, and miscellaneous electrical and mechanical equipment storm-proofing measures. Also as part of this project a new 60 Hz generator building facility is built with two 3-megawatt back-up emergency generators to enable pumping capacity. Program cost $17.4 Million.

SELA Brings Much-Needed Federal Funds To S&WB for Massive Expansion of Drainage System Throughout City

The Southeast Louisiana Urban Flood Control Project (SELA) consists of canal and pumping station projects that are being designed and constructed to reduce flooding caused by 10-year frequency rainfall events (estimated at over 9 inches in a 24-hour period) throughout the tri-parish area of Orleans, Jefferson, and St. Tammany.

Authorization

SELA was authorized in 1996 by the United States Congress and administered under a Project Cooperation Agreement (PCA) between the Sewerage and Water Board of New Orleans and the U.S. Army Corps of Engineers. A new Project Partnering Agreement (PPA) agreement was signed in January 2009 by the Louisiana State Coastal Protection and Restoration Authority (LA CPRA) on behalf of the S&WB.

Prompted by the severity of damages associated with rainfall flooding in southeast Louisiana, local officials in the tri-parish area of Orleans, Jefferson, and St. Tammany requested Federal assistance in developing and implementing solutions to the flooding problem.

After the disastrous flood in May 1995, the United States Congress authorized the design and construction of SELA in the 1996 Energy and Water Development Appropriations Act and the Water Resources Development Act (WRDA).

Project Organization

For all SELA Orleans work ongoing whether in the design phase or in the construction phase, the breakdown of responsibilities are as follows:

The S&WB will:

- Complete the project design
- Complete design changes during construction
- Provide community information concerning the projects
- Respond to the community's questions regarding the projects

The U.S. Army Corps of Engineers, as the Federal representative, will:

New Orleans could not exist without a modern and strong drainage system. That is why the S&WB joined with the Corps of Engineers to upgrade or build canals, pumping stations and electrical generator power. One of those projects is canal work underway now Uptown. The work consists of constructing approximately 4,300 linear feet of concrete box canal under the median along Napoleon Ave., from South Claiborne Ave. to Carondelet St. The new canal will parallel an existing box canal and will tie in to the existing canal at South Claiborne Ave. The cost of the project is $55.1 million, with 65% federal funds and 35% S&WB funds.

• Obtain permits for affected utility companies

• Award the construction contact

• Administer the construction contract

• Inspect the construction work

The Louisiana State Coastal Protection and Restoration Authority (LA CPRA) will:

° Serve as the official local non-federal sponsor and act as the facilitator between the parish entities and the Corps of Engineers

Funding

The Project Cooperation Agreement (PCA) executed by the Sewerage and Water Board of New Orleans (S&WB) in January 1997 required that the Federal government provide 75% of the total project cost of the SELA projects in Orleans Parish, and that the S&WB provide 25%.

In the years immediately preceding Hurricane Katrina, the Federal funding level did not support the start of projects that had been approved as SELA projects in Orleans Parish. In the aftermath of Hurricane Katrina, Congress appropriated $224.8 million to accelerate the completion of SELA. This appropriation was 100% federally funded.

Because of the increased construction cost in southeast Louisiana as the region rebuilt from Hurricane Katrina, the 3rd Supplemental Appropriation was not enough to fund the remaining project components of SELA at 100%. Subsequently, in 2008 Congress appropriated an additional $1.3 billion for SELA. These additional funds are to be cost shared at 65% Federal and 35% local. Also, the agreement allows for the S&WB

to pay its share over a 30 year period. It is anticipated that the 30-year payback amount will be $9.7 million per year starting in 2018.

The relocation of utilities such as water and sewer lines was necessary before construction could begin on some projects. However, the Corps made a decision to not allow the cost of relocations to be included in the 30-year payback for the SELA program. Therefore, the S&WB will have paid $54.0 million for utility relocations for the presently authorized SELA projects.

Total SELA funding for Orleans Parish will be $1.5 billion from inception to completion.

Construction of SELA is proceeding at an accelerated pace. Currently there are nine (9) projects ongoing in Orleans parish totaling over $609 million in construction funds.

The last of the currently authorized SELA Orleans construction projects are scheduled to be completed in 2018. However, there are two (2) studies that are in the planning stage. The Algiers Canal study has been approved in 2011 by the Corps and will need Federal funding to proceed. The London/ Orleans Improvements study needs updating and additional funding is needed to complete.

Above Ground Tunnel? Actually, it s view of the inside of a 60-inch corrugated pipe used as a temporary drain line to move storm water around areas where new box canals are being built-- In this case, near Monticello Avenue at South Claiborne Avenue. The work consists of constructing approximately 2,500 linear feet of single-barreled reinforced concrete canal under the median along South Claiborne Avenue from Monticello Avenue to Leonidas Street. The new canal will parallel an existing canal and tie in to the existing Monticello Canal. Cost is $27.1 million and the completion date is mid-2014. The project is part of SELA, a cooperative agreement between the S&WB and the U.S. Army Corps of Engineers.

SELA Projects Continue The Fight For Improved Drainage

$1 Billion Investment

Heavy rainfalls in the late 70's, 80's and 90's brought severe and frequent flooding of thousands of homes, businesses, streets and cars in the City, with damages in the millions.

Citizens hurt most by the flooding formed drainage committees and called on the Sewerage and Water Board to upgrade its aging and inefficient network of canals and pumping stations.

A plan to greatly increase the capacity of the drainage system was prepared by the Board, but it did not have the massive funding to do all of the construction projects needed throughout the City.

But the rain event of May of 1995 showed the drainage needs when as much as 18.75 inches of rain fell on the City, causing massive flooding and, again, millions in damages.

This rain event caused serious damages to homes, business losses and major inconveniences associated with rainfall flooding in Southeast Louisiana. Citizens, and local officials in the tri-parish area of Orleans, Jefferson and St. Tammany requested Federal assistance in developing and implementing solutions to the flooding problem.

In 1996, Congress quickly authorized the design and construction of the Southeast Louisiana Urban Flood Control Project (SELA), in a partnership with the U.S Army Corps of Engineers.

Most of the SELA projects were large and expensive construction projects or improvements to canals, pumping stations and power facilities.

The Project Cooperation Agreement executed by the Sewerage and Water Board of New Orleans (S&WB) in January 1997 required that the Federal government provide 75%of the total cost of the SELA projects in Orleans Parish, and that the S&WB provide 25%.

The S&WB files applications on a project-by-project basis, with the Statewide Flood Control (SWFC) program, administered by the Louisiana Department of Transportation (LaDOTD). The SWFC program provides 70% of the S&WB cost share for projects approved by the SWFC program.

The Phase One SELA projects, completed before Katrina through August of 2005 at a cost of $238 million were:

Another SELA project is the Napoleon Avenue Canal project. It consists of building a larger concrete box canal next to the existing canal. The new concrete box canal will be 7,100 feet long and will parallel the existing box canal from Constance Street to S. Claiborne Ave. The new canal, under the neutral ground along Napoleon Avenue, will range in size from 14 by 8 ft. at Constance Street to 28 by 10 ft. at S. Claiborne Avenue. The new canal will connect to the canal built under the Napoleon Avenue Phase 1 project at S. Claiborne Avenue and the existing box canal at Constance Street.

Expansion of Drainage Pumping Station No. 1 at S. Broad and Martin Luther King Jr. Blvd. by 2,400 cubic feet per second (cfs).

New concrete box canals beneath Napoleon Ave. from S. Broad to S. Claiborne; on Claiborne from Nashville Ave. to Jena St. and on Claiborne from Jena to Louisiana Ave.

New canals in Hollygrove beneath the railroad right of way and Eagle, Forshey and Dublin streets, and the Dwyer Road Pumping Station Outfall Canal in eastern New Orleans.

In the years immediately preceding hurricane Katrina, the Federal funding level did not support the start of many approved SELA projects in Orleans Parish. But, in the aftermath of hurricane Katrina, this appropriation was 100% federally funded, which was $107 million.

Because of the increased construction costs in southeast Louisiana, as the region rebuilds from Hurricane Katrina, in 2008 Congress appropriated an additional $1.3 billion for SELA. These funds are to be cost shared at 65% Federal and 35% local with payback via a 30-year plan granted by the Administration.

A new Project Partnership

Agreement was executed in January 2009 which provides that 65% of the total project cost will be Federal, and 35% will be S&WB. Also, the agreement allows for the S&WB to pay its share over a 30-year period. It is anticipated that over $800 million of this money will be utilized to complete SELA Orleans projects.

Among them are:

Federal SELA Projects – Phase 2 – Construction started in 2010 and beyond:

The next Federal SELA projects to be constructed in Orleans Parish with post-Katrina 6th and 7th Emergency Supplemental Funds of $838M with a 65/35 cost share ($545M Federal/$293M S&WB):

- Florida Ave. Canal Phase 2 (Mazant to Piety) Under Constructiod
- Florida Ave. Canal Phase 3 (Piety to St. Ferdinand) Under Constructiod
- Florida Ave. Canal Phase 4 (St. Ferdinand to Deers & Peoples) Under Constructiod
- Louisiana Ave. Canal (Claiborne to Constance) Under Constructiod
- Napoleon Ave. Canal Phase 2 (Claiborne to Carondelet) Under Construction
- Napoleon Ave. Canal Phase 3 (Carondelet to Constance) Under Construction
- Jefferson Ave. Canal Phase 1 (Claiborne to Dryades) Under Construction
- Jefferson Ave. Canal Phase 2 (Dryades to Constance) Under Construction
- S. Claiborne Canal Phase 1 (Monticello to Leonidas) Under Construction
- S. Claiborne Canal Phase 2 (Leonidas to Lowerline) Under Construction

Through the combined forces of the Board and the Corps, drainage is being improved throughout the entire City through the many projects underway an, nearing completion. All of these projects add to the protection against flooding.

For more info on SELA and projects, see the S&WB website: swbno.org. On the home page click Current Projects and then select Drainage (SELA).

Progress Continues

Turbine No. Four, at the Board's Water Purification and Power Plant, has a futuristic look, but is actually a 1920 vintage turbine-generator set that has been serving the citizens of New Orleans since the 1950s.

The turbine is capable of producing as much as 20 megawatts of 25 cycle power used to run the 25 cycle water distribution pumps and 25 cycle power drainage pumps located throughout the city. The Sewerage and Water Board's redundant, unique system is comprised of pumps, some with 25 cycle driven motors and some with 60 cycle driven motors. The benefit of the Sewerage and Water Board's system is that if during a storm or severe rain event, 60 cycle commercial power is lost because of overhead power line failure or other reasons, the Board has underground feeders which are protected from wind or storm damage that still have the ability to power and run 25 cycle drainage pumps.

Since Turbine No. Four is a permanently mounted structure, it was necessary to work inside of the turbine casing with portable machinery, for the purpose of refurbishing it and bringing it from a Katrina-damaged diminished capacity back to original condition and capacity of 20 megawatts.

The purpose of The Southeast Louisiana Drainage Program (SELA) is to reduce flood damages in the City of New Orleans and surrounding parishes. This is accomplished by constructing new pumping stations and better drainage canals throughout the city. The program was authorized in 1996 by the United States Congress and administered under a project cooperation agreement between the Sewerage and Water Board of New Orleans and the U. S. Army Corps of Engineers.

One such SELA improvement is the Florida Avenue Canal project. It consists of widening the existing concrete canal section from Elysian Fields Avenue to Drainage Pump Station 19 on the Industrial Canal. In addition, the project design will improve the drainage system in the Peoples Triangle and along the south side of the Florida Avenue Canal. This will aid in getting more flow to the new canal. These modifications include the installation of sub-surface drainage, curb and gutter drainage, and pavement resurfacing along portions of Abundance, Treasure, Benefit, Deers, Eads, Painters, Montegut, and Desire streets. Due to a lack of federal funding for the SELA program, this project experienced delays. However, this project received post Katrina emergency funding and is underway. Shown above is the Florida Avenue Canal concrete traffic crossing culvert at France Road.

S&WB Needs Uninterrupted Power To Keep It's Systems Running Daily And During The Worst of Times

The Board's 25-cycle Power Generation System operated by the Board provides power for portions of the both Water Purification Plants, two large vertical sewer units at sewer pumping station "A", and powers approximately 60 percent of the system's drainage pumps. The facilities at the Carrollton power plant include three steam turbines and one dual fuel combustion turbine for a total capacity of 61 MW. The Carrollton Power/Water Plant boiler room has the capacity to produce 650,000 pounds of steam per hour to fuel the three steam turbines and two steam driven high lift pumps. The 25-cycle power capacity is presently 41 megawatts (MW). 20 MW steam turbine-generator 4 is currently undergoing FEMA funded total refurbishment and is scheduled to be back in service in the third quarter of 2015. The benefit to the Board's providing and distributing it's own power is that the It assures the public that our system continues functioning despite loss of power from local utilities. Additionally feeders to the multiple pump stations are underground and during storms when commercial power lines are down the system is still up and running.

Design and construction are ongoing for the $150,795,389 Hazard Mitigation Grant Program to Retrofit the Power Plant. The project provides for increased reliability in the production of power with upgrades to Turbines 3 and 5, Boilers 1, 3-6 , structural hardening of the facility and improvements to the power network distribution lines.

One major improvement at the Carrollton power plant includes the installation of a new 200 psi high pressure natural gas line to supply fuel for the new 15 MW, 60 cycle, dual fuel generator-turbine package. The Army Corps of Engineers (Corps) recently installed this new generator facility to supplement the current commercial power available from Entergy in order to provide power redundancy and continued service in the event of a commercial power loss due to storms or hurricanes. The generator will serve the plant and raw water intake

stations and provide additional drainage station capacity, and its going thru testing and commissioning The project, located on the grounds of the Carrollton Water Purification Plant, costs in excess of $32 million.

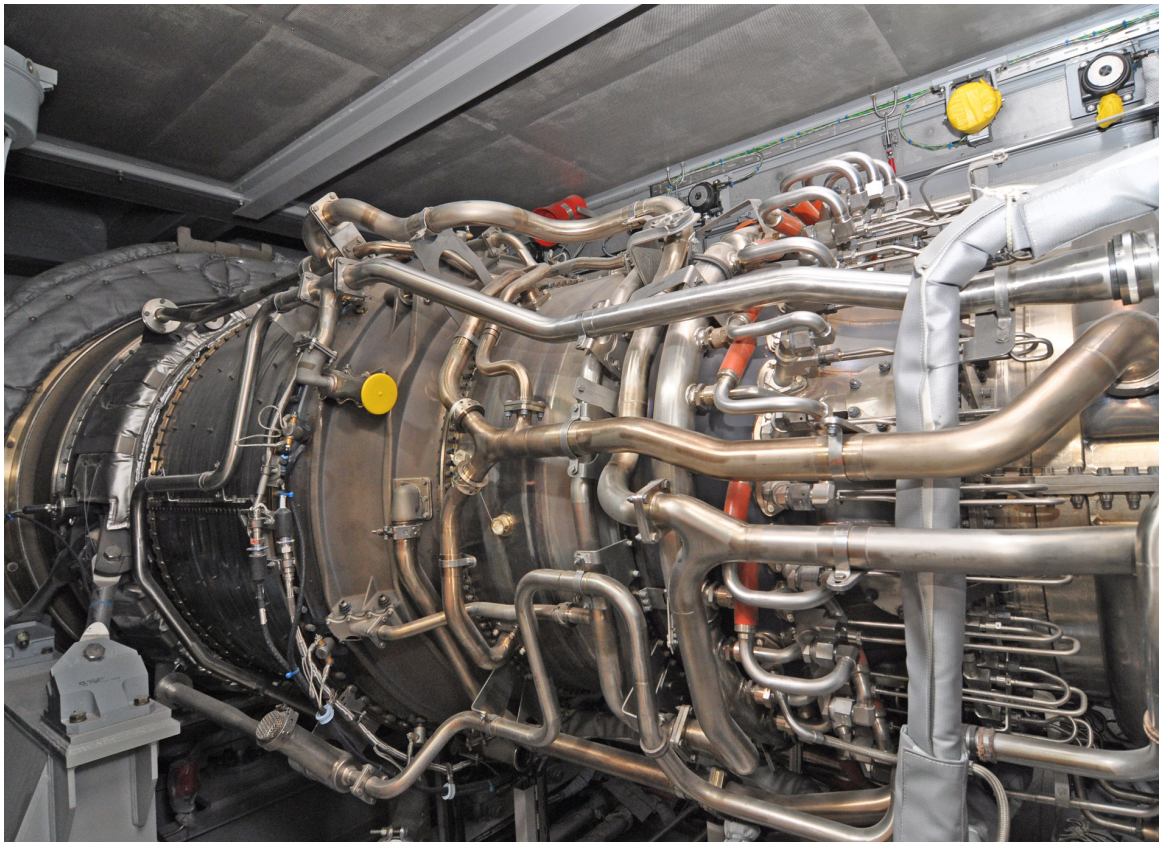
A great amount of electric power for running the pumping equipment is produced by the Board's power generator plant. Generators that provide much of the power for pumps throughout the city are located at the S&WB Power Plant. Unlike conventional 60-cycle power, a large portion of our equipment operates at 25 cycle and therefore not compatible with local utility. The power plant maintained and operated at the Main Water Plant has the ability to produce 25 cycle, three phase, and 61,000-kilowatt hour (219,600 Mega joules) capacity at 6,600 volts. In addition, the Board has the ability to convert the conventional 60-cycle power to 25 cycle for its use.

The power is transmitted to the drainage pumping stations by means of underground electrical cables (also known as Feeders) which are not subject to lightning, wind, and other hazards that cripple overhead transmission lines and cause power failures. Reliability of drainage pumping stations is therefore increased. In addition to this power some of the stations have diesel driven generators for extreme emergency back-up power.

Electrical energy for the operation of the water plant, the sewage pumping stations and the drainage pumping stations is generated at the water plant and distributed to the various points of consumption over the Sewerage and Water Board's own transmission system. During rainstorms, practically all power is transmitted to the drainage pumping stations by underground feeders which are not subject to lightning, wind and other hazards that cripple overhead transmission lines and cause power failures. Reliability of drainage pumping stations is therefore increased.

The power plant maintained and operated at the water plant has a 61,000 kilowatt capacity, an output sufficient to serve the electrical needs of a city of approximately 80,000 people. Unlike conventional power at 60 cycles, a large portion of our generation is at 25 cycles and therefore not compatible with the local utility.

To compensate for the incompatibility, conversion equipment allows approximately 27,000 kilowatts of Sewerage and Water Board power to be taken from or sent to the New Orleans Public Service, Inc. 60 cycle system. This equipment requires



Amy Corps of Engineers. The generator gives the S&WB's Division of Pumping and Power the capability to improve the operation of its drainage, sewerage and water pumping systems in emergencies. The generator, funded 100% by the Corps, is part of a storm-proofing project for Orleans Parish. The project, located on the grounds of the Carrollton Water Purification Plant, costs in excess of $32 million.

our system to be reduced to 24 cycles during the period of power interchange. During storm periods, a portion of the Sewerage and Water Board power distribution system is dedicated to 24 cycle service, while the remainder of the system operates on 25 cycles. The ability to split the power distribution system to dedicated alternate sources of power isolates a catastrophic failure to only that portion of the system. This procedure allows the other portions to remain in uninterrupted service.

Generation of the electrical power is accomplished by three steam turbine operator having a total capacity of 41,000 kilowatts and a gas turbine generator rated at 20,000 kilowatts. Generating steam for the steam turbines are six boilers with a total capacity of 750,000 pounds of steam per hour. All boilers are equipped to burn oil, gas or a mixture of the two. The gas turbine, at present, operates on fuel oil. Two fuel storage tanks, with a total capacity of one million gallons of oil, provide reserve fuel supplies.

Emergency generation is provided at various critical locations for power to supplement or replace the 60Hz utility services in the event of hurricane conditions or power outages. The emergency generation is provided by

diesel engine-driven generators, which provide power for essential loads in sewage treatment, drainage and within the main power generation complex itself.

This specially-designed turbine powers a 15-megawatt generator constructed by the U. S. Army Corps of Engineers. The generator gives the S&WB's Division of Pumping and Power the capability to improve the operation of its drainage, sewerage and water pumping systems in emergencies. The generator, funded 100% by the Corps, is part of a storm-proofing project for Orleans Parish. The project, located on the grounds of the Carrollton Water Purification Plant, costs in excess of $32 million.

Power Generation is Key To Operation

The Sewerage & Water Board, since its founding in the early 1900s, has always had its own power source to operate its systems in case of a failure of commercial power or the non-existence of an external source of power.

Until Katrina, the Power Plant had never completely gone out of service, but when the plant flooded during Katrina, the Board's main source of power was destroyed.

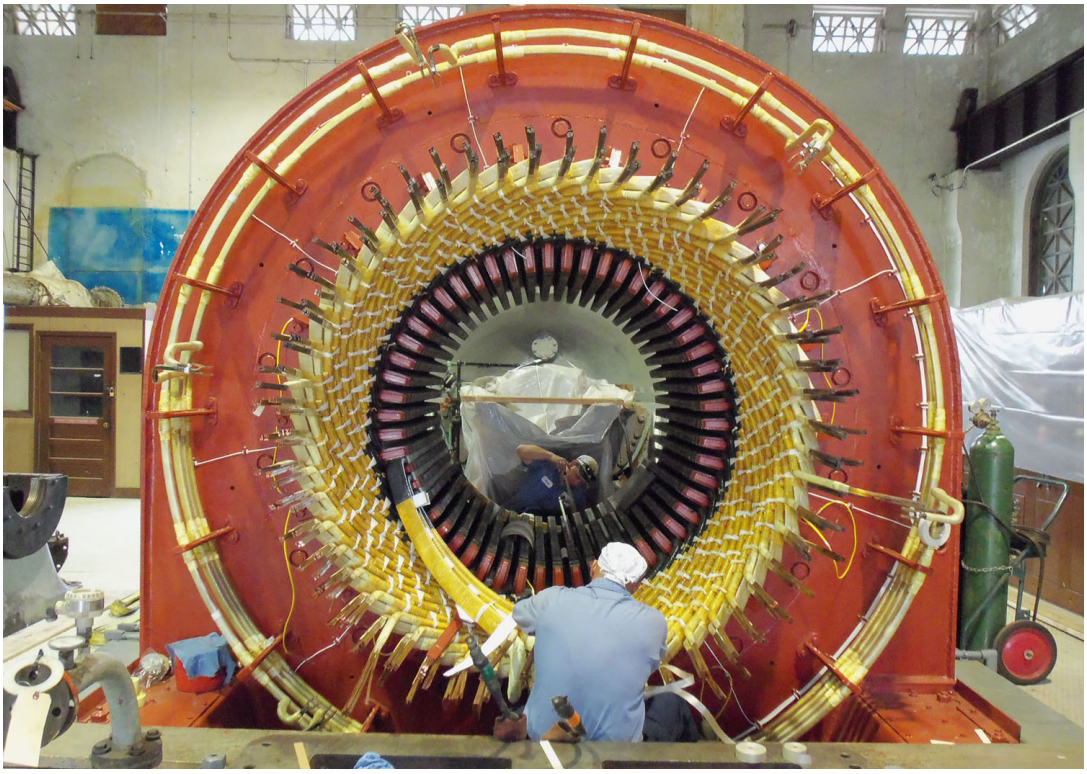
But the men and women of the S&WB remained on the job to immediately begin repairing and restoring the plant so that, among other priorities, the city could be de-watered in record time by the massive drainage system. Power was also needed to run the water and sewerage systems.

All of the employees are highly skilled, experienced and dedicated, with a great knowledge of the plant's operations and capabilities.

Power can be distributed to the water, sewerage and drainage systems as needed, demonstrating the flexibility built into the plant and the underground conduit system to send power throughout the system.

Since Katrina, millions of dollars have been invested in the plant, and there are more funds yet to come. The plant has since performed without problems during Hurricanes Gustav and Isaac due to those improvements. And there is more support coming for the Power Plant.

Since taking office, Mayor Mitchell J. Landrieu has worked to secure federal resources to keep customer rates as low as possible. He, working with



Turbine No. 3, a crucial element of the Sewerage & Water Board's own Power Plant, has undergone an extensive overhaul after it failed while in operation. The 1928 vintage, 25-cycle, 15-megawatt generator supplies 25-cycle power for low day-to-day power needs, as well as for peak potential loads to run drainage pumping stations during heavy rain events and hurricanes. Disassembly and repair were required to ensure the turbine will return to service in like-new condition and provide many more years of reliable service.

the Board, recently secured over $170 million through the Hazard Grant Program of which $150 million for power plant projects underway.

Recognizing the importance of the Power Plant to the Board's operations, FEMA has also provided $37.7 million through the Public Assistance Program (of which $15.5 million went for projects completed and $22.2 million is for work to be done). We also received $141 million in Hazard Mitigation Grant funds from FEMA for the Power house. This is an addition to the above dollars.

One such major project underway at the Power Plant is the full repair of Turbine No. 4, which was badly damaged by Katrina. The 20,000 Kilowatt steam turbine generator will increase the output at plant and provide back-up in case problems develop with one of the other turbines..

Electrical energy for the operation of the water plant, the sewage pumping stations and the drainage pumping stations is generated at the water plant and distributed to the various points of consumption over the Sewerage and Water Board's own transmission system. During rainstorms, practically all power is transmitted to the drainage pumping stations by underground feeders which are not subject to lightning, wind and other hazards that

cripple overhead transmission lines and cause power failures. Reliability of drainage pumping stations is therefore increased.

The Power Plant maintained and operated at the water plant has a 61,000 kilowatt capacity, an output sufficient to serve the electrical needs of a city of approximately 80,000 people.

Emergency generation is provided at various critical locations for power to supplement or replace the commercial utility services in the event of hurricane conditions or power outages. The emergency generation is provided by diesel engine-driven generators, which provide power for essential loads in sewage treatment, drainage and within the main power generation complex itself.

Facility Maintenance: You Can't Buy Parts For the Century-Old Equipment Off The Shelf. All Must Be Manufactured To Exact Specifications at the Machine Shop

The Department of Facility Maintenance is comprised of five divisions; Meter House, Plant Maintenance, Welding & Fabrication, Mechanical Maintenance and Electrical Maintenance. These divisions serve all areas of the S&WB system by providing various skilled trades functions. The Meter House performs meter repairs, removals and installations throughout the City. The Electrical Maintenance Division repairs and maintains the entire sewer, drainage and power electrical system. The Mechanical Maintenance Division is charged with repair or replacement of pumps, motors, gearboxes and other multiple pieces of equipment that makes up our unique System. The Welding & Fabrication Division responds to emergency sewer or water line breaks, by-pass pumping functions, welding fabrication/design and repairs of multiple nature. The Facility Maintenance team manufactures parts for aged equipment where parts are no longer available. This team is essential and responds to small and large routine and emergency system repairs 24/7.

Mayor Landrieu holds daily briefings and press conferences with all city departments and agencies to keep residents informed on hurricane preparedness updates.

Emergency Teams Prepare For Potential Disasters Year-Round; Emergency Operations Center and Mobile Command Post Improve Communications and Coordination

Emergency Preparedness has always been an integral part of the Sewerage and Water Board's preparedness for disasters and other emergencies that threaten the operations. Prior to Hurricane Katrina the operations and responsibilities of Emergency Preparedness was administrated by the General Superintendent in the Engineering Department. However, after Hurricane Katrina, the Emergency Management responsibilities was transferred to the Executive Director's Office

The sheer magnitude of destruction to the four systems, water, sewer, drainage and power generation from Hurricane Katrina changed the function, direction and the comprehensive responsibilities of Emergency Management and Preparedness..

Staff selection was vital because of the tedious and comprehensive aspects of the emergency management office. The office has functioned extremely well through the Hurricanes Katrina,

Rita, Gustave, Ike and Issac. And staff has grown strong in the skill sets needed to comply with regulations for FEMA funding.

The office has successfully negotiated over $650 million of recovery dollars from Hurricane Katrina and over $200 million of FEMA 404 Hazard Mitigation Grant Program funds for mitigating 9 Sewer Pumping Stations and the Board's Power Plant.

In the area of Preparedness the Board has a new state of the art Emergency Operations Center and Mobile Command Post. The Board has yearly preparedness drills with staff and key stake holders. It, also, has FEMA Grant Management training throughout the year to ensure that staff is trained and ready to respond to emergencies and to remain abreast of the changing FEMA guidelines.

Thus, the creation of an Emergency Management Department equipped with the staff and tools needed to prepare, prevent, respond, recover and mitigate the impact from future disasters has been a significant addition to the strength and durability of the agency's recovering from any catastrophic events.

New power house # 3 at the main water plant is nearing completion.

Rate Increase Will Help The Sewerage & Water Board Re-Build Aging Water and Sewer Systems

It is well documented that even before Katrina, the Sewerage & Water Board was in dire need of funds to repair and re-build its aging sewer and water systems.

Rates had not been increased in more than 20 years, while the cost of construction, materials and labor had increased in double figures.

Katrina only made matters worse, despite the Board's expertise and ability to obtain FEMA funds and other Federal assistance. The Board's costs grew with every new project brought on by the storm's damages.

But much help came when The City Council passed a rate increase that the Sewerage and Water Board had already approved at its monthly November 2012 meeting. The rate increase is 10% annually over 8 years beginning January 1, 2014.

> Overall, this rate increase was critical to provide the quality of life services of water, sewer and drainage that ensures the vitality and sustainability of New Orleans. The longer it would have been delayed the more expensive it would have been and the greater the risk to the city.

The process for getting to this conclusion started over two years ago with a comprehensive study of financial requirements in 2010. The purpose of the analysis was to identify financial requirements for the water, sewer and drainage systems and develop recommended approaches for funding.

The funding included constructing, operating and maintaining the systems. The board's broad based plan included a comprehensive approach to fund the overwhelming capital and operational needs to provide quality of life services to our residents.

Post Katrina conditions which included financial issues for survival plagued both the customer base and the agency. All of this and more were taken into

consideration as the board reviewed and re-evaluated every way possible financially to meet its Federal mandates and system rebuilding dictates while keeping the rate increase at an acceptable level.

Mayor Landrieu gave his full support and led the measure after the Board agreed to lower the amount of the increase and to install certain procedures and policies of the Board.

Staff and consultants reduced the rate from 12%-13% for 5 years to 10% annually for 8 years for both water and sewer. It was out of an abundance of concern for educating the public that citywide and area community meetings were held.

In July, 2013 and June, 2014, the board was pleased to announce the upgrading of the Sewer and Water Revenue Bonds. The Rating Services increases were based on the systems' financial position with the securing of the pre-approval of the rate increases.

Overall, this rate increase was critical to provide the quality of life services of water, sewer and drainage that ensures the vitality and sustainability of New Orleans. The longer it would have been delayed the more expensive it would have been and the greater the risk to the city.

The ferrator system at the East Bank Sewage Treatment Plant is designed to fully disinfect the effluent prior to discharge to the wetlands, with no residual effects or by-products. This new technology is being used in a pilot trial with the wetlands. In the foreground is the current effluent channel where all of the water that is currently treated is disinfected prior to discharge to the Mississippi River. Behind the Ferrator is a Final Clarifier that will be the source of water used in the first phase of the Wetlands Assimilation project, a partnership with Orleans and St. Bernard Parishes.

Sewerage and Water Board Issues Bonds for Water and Sewer Systems

The Sewerage and Water Board of New Orleans sold bonds for its water and sewer systems to refinance outstanding debt and fund its capital improvement program. The $103,525,000 water system revenue bonds and $158,990,000 sewer system revenue bonds attracted favorable attention from the marketplace after receiving ratings of BBB/BBB from Fitch and BBB+/A from Standard & Poor's. The bonds were sold by the Board of Liquidation through a negotiated underwriting process with co-financial advisors Public Financial Management and CLB Porter.

The refinancing of previous debt achieved one-time savings of more than $2.4 million for the water system and $9.0 million for the sewer system. Board President Pro-Tem Ray Manning noted that, "These savings will be used to pay for additional investments in construction projects." The water bonds carried an average interest rate of 4.47% while the higher-rated sewer bonds carried a rate of 3.91%.

The bond sale followed significant increases in water and sewer rates in December 2012. The rate increases were used to increase cash reserves, pay down other liabilities, and improve debt service coverage in advance of the sale, resulting in higher bond ratings announced in May 2014. Sewerage and Water Board and Board of Liquidation staff worked with a financing team composed of financial advisors, bond counsels, underwriters, and underwriter counsels to develop new bond documents for these deals. "The new bond documents represent standard terms and conditions used by other large high-grade municipal issuers", said David Gernhauser, Secretary for the Board of Liquidation.

The capital improvement program for the water system received $77.0 million and the sewer system received $47.3 million. "These bond proceeds represent the first occasion when the Board's capital programs have been fully funded for a plan year in more than twenty-five years," according to Joseph Becker, General Superintendent for the Board. Additional bond issues will be needed every one-to-two years for the next several years.

Interim Executive Director Bob Miller said, "We made several specific commitments to the community during the rate approval process. Since that time, we planned our work, worked our plan, and achieved remarkable results

The City's aging infrastructure, soft soils, Katrina damage and the high number of tree roots result in numerous breaks in underground water, sewerage and drainage pipes and mains. And, even though the Sewerage and Water Board has crews on duty 24 hours a day to repair thousands of broken pipes, the number of new breaks continue to rise. A good example, shown here, is the repair of a break in a major 30-inch water main in the Carrollton area which also supplies water to other parts of the City. Complicating the repair of the 80–year-old pipe was the difficulty identifying other utility lines in the area and having them shut down. Because of the age and design of the old pipe, the Board's own Machine Shop of the Facilities Maintenance Department made sleeves and fittings to match with the old main. Their work shortened the repair time and saved money for customers.

yesterday. This represents a significant promise made and kept."

There were more than $2.75 billion of orders placed by investors for the two bond issues or more than ten times the amount of bonds available to be sold. Mayor-President Mitch Landrieu said, "This is an extremely strong vote of confidence in the City of New Orleans and the direction underway at the Sewerage and Water Board. It will serve us very well for future borrowings which will be needed to continue the necessary capital improvements to rebuild the water and sewer systems."

Fire hydrant repair

PROGRESS-CUSTOMER SERVICE ENHANCEMENTS

STRONG WORKFORCE MAKES A STRONG AGENCY

One of the Board's most valuable assets is its team of hard-working, skilled and loyal employees. A dollar amount cannot be put on this asset, but without their skills, knowledge, expertise, communications, teamwork and professionalism, the S&WB could not exist. With the knowledge that 40 per cent of its more than 1,000 employees are eligible for retirement or will soon be eligible, the Board is taking steps to ensure that its workforce continues to be strong. The Board has developed a succession planning program, which includes cross training, advanced programs of instruction and tuition assistance programs. Employees are learning more about their agency via the internet, tours of facilities, an employee publication and special paycheck inserts.

Limited Vistas Partnership Provides Opportunities for City's Youth While Addressing S&WB Succession Planning

In the summer of 2010, the Sewerage and Water Board of New Orleans (S&WB) forged a unique partnership with the not-for-profit training provider, Limitless Vistas, Inc. (LVI) to provide classroom and hands-on job training for at-risk young adults in the water and wastewater treatment industries. The partnership not only creates employment opportunities for New Orleans' youth but also addresses the Board's critical need for succession planning as its existing workforce approaches retirement.

During the pilot program the S&WB embraced and nurtured the partnership by providing training facilities and staff support. Additionally, Veolia Water North America Operating Services, LLC (Veolia) which operates the Eastbank and Westbank Wastewater Treatment Plants provided internships for 10 students for practical applications. Program participants received training on water treatment, water distribution, water production and wastewater collection, spending 128 hours in the classroom and another 300 hours working in the field. During the 4-week internship students rotated through duties which included taking water samples and testing the water for various chemicals used in the water purification process.

With the success of the pilot training program in New Orleans, the Environmental Protection Agency (EPA) recognized the need for water operator job training and consequently in 2011 awarded Limitless Vistas, Inc. with a $200,000 grant to continue the program. The EPA awarded Limitless Vistas, Inc. with a second two-year grant for the program in 2013 which provides $200,000 over a two year period to train 40 at risk young adults and place a minimum of 32 program graduates in environmental jobs.

"This partnership in the training of water and wastewater operations through Limitless Vistas helps to address the critical need for succession planning as our workforce ages. It also prepares our young people for sustainable entry level jobs so they become vital participants in the water and wastewater industry. Students are introduced to the technical aspects of environmental work, the value of working in their communities, through service learning."

The S&WB hired its first program graduate in 2013. Charles Collins works in the Chemical House at the S&WB Carrollton Water Purification Plant. Collins credits the training partnership with preparing him for a life-long career in the industry.

Another program graduate, Granville Guillory has used this opportunity to truly excel.

Granville Guillory came to Limitless Vistas, Inc. (LVI) at 20 years old after several personal hardships and dropping out of college. During his interview with LVI, Mr. Guillory indicated he wanted to work for the New Orleans Sewerage and Water Board (S&WB) and follow in his Uncle's footsteps. According to Granville his uncle worked at the S&WB for most of his life and he was "set". Granville was looking for the same type of stability in his life.

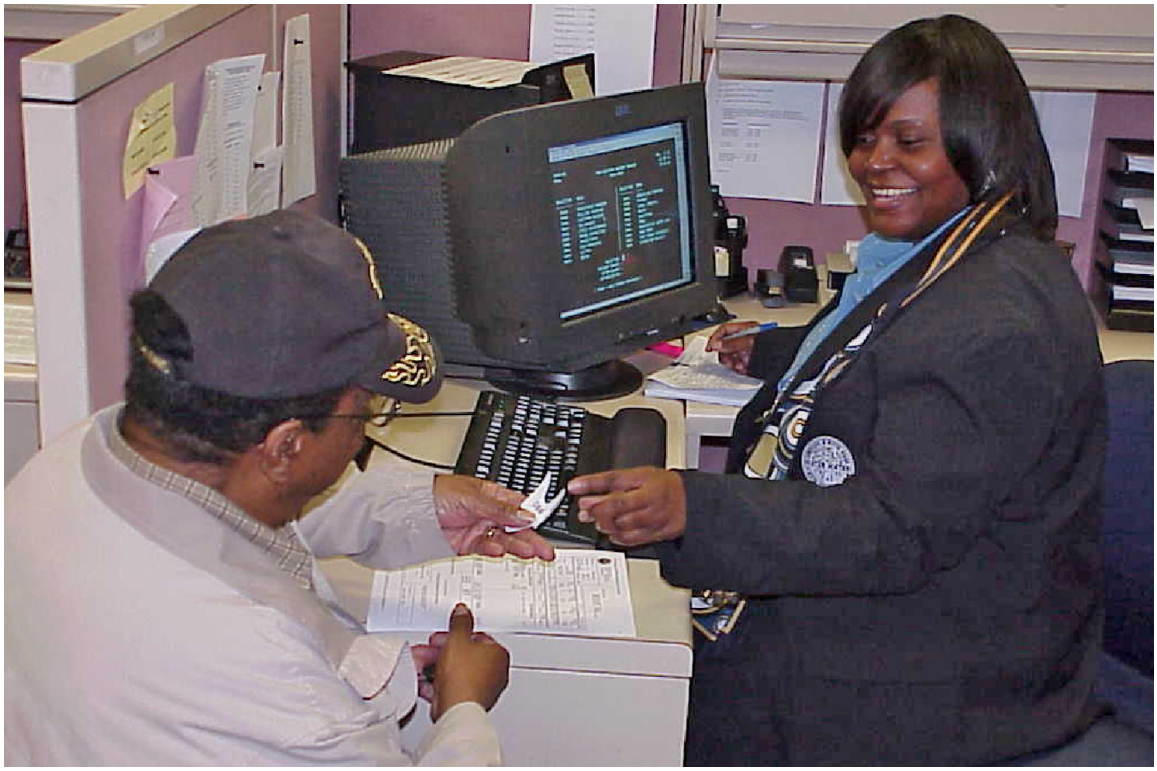
Granville Guillory at work with co-worker Veolia Eastbank Wastewater Treatment Plant

On June 21, 2012, LVI, EPA and S&WB held a press conference at the Veolia North America sewage plant in New Orleans, LA to announce the winners of the latest EPA Environmental Workforce Development and Job Training grant. During the press conference several students talked about their LVI experiences and Granville discussed his desire to work for the S&WB. His sincerity and personal enthusiasm earned him a private tour of the facility after the press conference.

Later that year, eight LVI members participated in an internship at the Veolia facility. Granville continued to impress the Veolia staff with his work ethic, curiosity and natural intuition for this type of work. Finally, his hard work paid off. After the LVI participants completed the Wastewater Operators State Board Exam, Granville and one other student were asked to join Veolia as full-time employees.

Now at age 23, Granville is excelling as a State of Louisiana Class III Wastewater Plant Operator. Some of Granville's duties require him to ensure that furnaces are operating properly. "If things go wrong, it is my responsibility to help make them right before any serious damage to the furnace or an emission violation occurs," stated Granville.

Based on his performance and interest in furnace operations, during his last personnel review, he was asked if he would be willing to travel overseas to broaden his capabilities. Later this year, Granville will travel to Tokyo for six months to learn about a new and more efficient furnace that Veolia is planning to incorporate in their U.S. operations.



Improved Customer Service Helps Citizens Solve Problems, Learn About New Programs Offered by the Board

Customer Service is an integral part and the life-blood of the Sewerage and Water Board. The Customer is the business, the most vital asset. Without customers there would be no business.

The agency has now embarked on a new well engineered customer service program to train Customer Service Representatives. The training is designed to be comprehensive and tailored to meet the individual skills level of the representative. The goal of the program is to make our customers continue to feel important and appreciated.

The Board's current account management and billing system, CAM, is a mainframe Cobol-based system which has been in use since the late 1980's when the Sewerage and Water Board moved to its current location on St. Joseph Street. The Board recently determined that it needed a new system which would offer additional functionality including e-billing, expanded payment methods, interfaces with GIS, IVR, AMI, and a new cashiering system. Staff began its

initial investigations by reviewing three systems in January, 2011. Three one-day seminars were held by CIS vendors to showcase the typical functionality of current server-based billing systems.

There are many other areas slated for improvement besides training. These include acquiring and implementing advanced metering infrastructure, opening of an additional customer service center, on-line customer account management and work order tracking. All of this is to improve the efficiency and reliability of the Customer Service processes.

Enhanced "Water Help" Program Assists Qualified Citizens With More Funds for High Bills and Minor Plumbing Repairs

The Sewerage and Water Board of New Orleans sponsors a program to help income-eligible elderly and handicapped customers who are having trouble paying their water bills.

The program provides financial aid for qualifying limited-income customers and is based on household income. Customers in need may be eligible to receive up to $200 in bill assistance per year, which is credited directly to the account.

The program is funded by employee contributions, customer donations of $1 included with the bill, Sewerage and Water Board matching funds and unclaimed customer deposits that would otherwise be sent to the Louisiana State Treasury.

The program is administered under a contract with Total Community Action, a local non-profit agency. To apply for assistance, customers must call for an appointment and appear in person to make a formal application at the Total Community Action office. Since the program was created in 1989 thousands of families have been helped.

The Water Help program is now being expanded with a new component. This new component is Plumbing Assistance. It will be available for qualifying customers. This annual assistance is $250. This assistance is offered to include minor repairs, such as leaking toilets, faucets and minor pipe repair. A certified plumber with the board will be utilized for the program.

The new Plumbing Assistance program is now beginning to be implemented.

The Community and Intergovernmental Relations Department Keeps Public Informed of Board Projects and Services Through the Media, Mailings and Meetings

The community relations program is designed to keep the public informed, handle customer concerns, resolve expansive customer issues, maintain and develop goodwill in the community. The principal objective is to gain long term benefits of community support, while building the agency's public image.

After Hurricane Katrina, the employees became the most noted ambassadors for community relations. The 300 employees that never left and who had the daunting task to dewater the city became the heroes. International, national, and local recognition was given to them. Today, employees are involved with community, neighborhood, civic, social and church organizations representing the board in various ways by their sheer involvement and participation.

There is a direct targeted involvement with the community through school, organizations, facility tours for groups and presentations. The devastation from Katrina and other storms increased the need to communicate effectively with the customers. The agency had to be brought to the community with direct and personal messages from the Board on the safety, security and sustainability of the water, sewer , drainage and power generation systems. It was the ability to articulate confidence in the delivery of quality of life services to residents that made the journey home more realistic.

Increased public contact has been effective, bringing the Board's message directly to citizens, through televised board and committee meetings and hundreds of town, organization and community meetings. The customer friendly website has added a greater dimension to communicate with customers.

As the board's SELA projects and massive FEMA funded water and sewer projects continue, it is essential to communicate project information to the public. There are several additional websites for SELA and SSERP information. The board continues to

work closely with the city's Department of Public Works in the coordination of street projects. It has been the effective joint communications plan that has been able to articulate construction plans, schedules, and scheduling changes to neighborhood residents.

Crescent Cover Says It All

Edwin Ford of the Ford Motor Box Company, Wabash, Indiana in 1921 designed a meter box that is adjustable, due to the problem of soil subsidence in New Orleans. Ford named the meter box the "Crescent Cover" after the City of New Orleans. Even the lid of the box was customized for New Orleans.

The mark of the "Crescent Cover" was registered with the U.S. Patent and Trademark Office in 2006. A bill to control the use of the logo was passed in the state legislature the prior year. The idea of control is to protect the Board's image.

After Katrina because of the Board employees' heroics, the design was promulgated even more through the use on jewelry, clothing, household goods and sorted other uses. Today, the Community and Intergovernmental Department monitors and certifies the use of the logo.

There is a continued increase in the use of the logo and plans continue to be developed, implemented and changed constantly as this industry of the Board expands.

G. Joseph Sullivan A Remarkable 39 Years of Service To The Sewerage & Water Board

G. Joseph "Joe" Sullivan, who served as General Superintendent of the Sewerage & Water Board of New Orleans for 36 years, passed away in December of 2011 at the age of 85. For three years he served as General Superintendent Emeritus, working with new Superintendent Joseph R. Becker.

In 1972 Sullivan was appointed general superintendent by then Mayor Moon Landrieu. He was only the 5th person to occupy this position since 1899.

As general superintendent, he oversaw the expansion of every system at the Board-water, sewerage, drainage and power generation.

Mayor Mitchell J. Landrieu, president of the Sewerage & Water Board, said, "The City of New Orleans has lost a great man and a creative engineer who knew the challenges and solutions to the problems of our below-sea-level City better than anyone."

"His peers throughout the nation respected him and recognized him with numerous awards for the many

Mr. & Mrs. G. Joseph Sullivan in front of Drainage Pumping Station No. 6

innovations which helped make our one-of-a-kind water systems continue to serve us so well for so long."

Sullivan led much of the post-Katrina recovery of the Board. This was no easy task. In his late 70s, he was involved with the Corps of Engineers construction of flood gates at the 17th Street Canal and other outfall canals, the restoration of drainage and sewer pumping stations and treatment plants, power plant recovery, water distribution and a myriad of other on-going projects.

Upon his retirement in 2008, the Board honored him with an event at the World War II Museum which was attended by Board members, present and former employees, elected officials and other dignitaries he worked with over the years.

During Katrina, Mr. Sullivan stayed at the Board's Power Plant in Carrollton. After the storm, he led restoration of the Board pumping stations, treatment plants and the water treatment plant.

In January of 2009, Drainage Pumping Station No. 6 on the 17 St. Canal, the world's largest pumping station, was named in his honor. Under Mr. Sullivan's watch, much of the modern and efficient water, sewer and drainage systems were constructed.

In 2003, he was honored By ASCE (American Society of Civil Engineers) with the ASCE Louisiana Section Outstanding Government Civil Engineer Award

Sullivan has received many awards for his technical expertise, lifetime accomplishments and contributions to his profession.

His retirement in 2008 brought to an end more than 36 years of hands-on service, leadership and direction to the Sewerage and Water Board and over 50 years of service within the construction industry.

Marcia St. Martin: She Left A Legacy of Dedication, Achievement And Positive Results Before, During and After Katrina

Marcia St. Martin, who served as Executive Director of the Sewerage & Water Board since August 2004, retired in February 2014. Ms. St. Martin, who was previously deputy director of S&WB for 12 years, served the citizens of New Orleans in various capacities for 42 years.

Ms. St. Martin commented on her retirement saying, "For the last several decades, I have focused on providing New Orleanians with quality water, sewer, and drainage services. We have come a very long way from devastation to recovery, rebuilding and restoration despite the mighty forces of Hurricanes Katrina, Rita, Gustav, Ike and Isaac. I am proud of our many accomplishments. Our board and staff have made the tough decisions that make our agency viable today. It is never the right time to leave, but I will leave with the satisfaction of knowing that our most caring and dedicated board and employees will continue the rebuilding of this agency that is so critical to the lives and well-being of all of our citizens."

During St. Martin's twenty-two year tenure in S&WB leadership, the agency experienced substantial innovative changes, development and growth despite significant challenges. As the S&WB's Deputy Director and Executive Director, Ms. St. Martin is credited with bringing the agency directly to the citizens through improved and increased public contact, hundreds of town meetings, and interaction with civic, business, and neighborhood organizations.

In one of her most important roles at the agency, Ms. St. Martin

has administered the complex and comprehensive terms of the 1998 sewer system consent decree with the U.S. Department of Justice and Environmental Protection Agency.

Under that agreement, S&WB and the City agreed to a $600 million rehabilitation of the aging sewage collection system throughout the city. Under St. Martin's leadership, the consent decree has recently been renegotiated, and S&WB is in full compliance with the decree, meeting all construction deadlines and avoiding the potential for millions of dollars in fines.

Of course, most importantly, Ms. St. Martin led S&WB through Hurricane Katrina and its aftermath, guiding the most extensive and massive reconstruction and restoration of a utility in U.S. history.

Though the U.S. Army Corps of Engineers predicted that it would take months to pump the water out of the city, S&WB made the tough decision to de-water the city using the S&WB pumping system, knowing that the brackish water could cause damage to the century-old system. Within a few days, S&WB had restarted most of its pumping stations and 11 days after the breaches were closed, the city was pumped out and ready to enter the next phase of its recovery.

She is also responsible for developing a modern, customer- friendly website and televised board meetings, both designed to bring S&WB closer to its customers. She has overseen the development of the SELA drainage program in 1995 with the U.S. Army Corps of Engineers, established the "crescent meter logo" as the agency's official and identifying symbol, and developed the extensive Bayou Bienvenue Wetlands Assimilation Project.

Under her leadership and command, all employees of S&WB remained at their posts during the hurricane.

Mayor Mitch Landrieu said, "Marcia guided the Sewerage and Water Board and its staff through its most trying times. Her bold leadership during the months following the storm and swift response in getting the agency back into operation was critical to our city's recovery. Hurricane Katrina destroyed much of the agency's water, sewerage, and drainage systems, as well as the power plant, but Marcia was committed to the rebuilding of New Orleans. I want to personally thank her for her decades of remarkable service to the people of New Orleans."

Her stint as head of the S&WB highlights a career committed to public service in New Orleans. Ms. St. Martin began as an accountant at City Hall in 1972 and was promoted to several positions there including directing the equipment maintenance division,

After passage of Isaac, now retired Executive Director Marcia St. Martin and Emergency Management Director Jason Higginbotham discuss plans for the aftermath initiatives.

parking division, and the Department of Safety & Permits.

Marcia St. Martin is a 1969 graduate of Xavier University of New Orleans, where she holds a bachelor's degree in accounting and business administration. She served on the board and was Treasurer of Water for People USA, an international humanitarian organization that aims to improve access to drinking water, adequate sanitation, and hygiene education throughout the world. She also holds membership in the American Water Works Association, Water Research Foundation, Water Environment Federation, American Public Works Association, Association of Metropolitan Water Agencies, National Association of Clean Water Agencies, and Clean Water America Alliance. Ms. St. Martin is on the Board of Trustees of the Louisiana Asset Management Pool, Inc. (LAMP), a trustee on the Water Research Foundation, and is on the EPA National Drinking Water Advisory Council.

"Marcia's leadership and vision will allow the board and staff to grow and thrive far beyond her tenure as Executive Director. It was great for her to share her plans for early retirement with us at this time. This announcement will give the Board an opportunity to begin the process of selecting the right successor during her transition," said Sewerage and Water Board President Pro Tempore Wm. Ray Manning.

Hurricane Isaac Can't Daunt Resolve of S&WB Employees

As Hurricane Isaac moved ashore on the eve of the seventh anniversary of Hurricane Katrina, the Sewerage & Water Board had 345 employees on duty around-the-clock working to keep its power system running, drainage pumps operating, and water services available to New Orleans residents and businesses. Packing sustained 80 mile per hour winds, the Category 1 storm was far less powerful than Hurricane Katrina, however, Isaac's large size and slow, 8 mph procession produced a sizable storm surge and significant rainfall resulting in widespread street flooding and downed power lines.

In response to Hurricane Isaac, President Obama declared states of emergency in Louisiana and Mississippi, Louisiana Governor Bobby Jindal activated 4,200 members of the National Guard, and the Red Cross opened 18 shelters in Louisiana. In the aftermath of Hurricane Isaac damages have been estimated at upwards of $2 billion – far less than the $45 billion in damages produced by Hurricane Katrina when levee breaches caused 80% of the city to flood. The levees and floodwall system in New Orleans was rebuilt by the U.S. Army Corps of Engineers at a cost of $14.45 billion and protected the city from massive

S&WB workers load a truck at Sewer Pump Station A in Armstrong Park with equipment and fuel

Hurricane Isaac preparations at the Emergency Command Center.

flooding from Hurricane Isaac. The storm did, however, trigger street flooding, downed trees, road closures, airline cancellations and power outages to approximately 75% of the city.

Although Hurricane Isaac lingered over New Orleans for two days pouring 9 to 12 inches of rain on the city, the Sewerage & Water Board drainage system continued pumping at full capacity. Its 24 drainage pump stations operated consistently, being powered by on-site generators or electricity from the board's own power plant. As a result, rainwater was quickly drained from City streets, the potable water system provided uninterrupted protection from the danger of fire, toilets flushed and showers worked. In addition to the 24 drainage pump stations, the Sewerage & Water Board operated 2 Potable Water Purification Plants, 2 Waste Water Treatment Plants, 2 Power Generation Plants, 83 Sewerage Pumping and Lift Stations, and more than 100 miles of Power Transmission and Distribution Lines during and after the storm. Additionally, the Board afforded ongoing assistance to the Plaquemines Parish Public Works Department by providing manpower to aid the parish in manning pumps dewatering Plaquemines Parish.

According to S&WB Executive Director, Marcia St. Martin, the successful performance of New Orleans' rebuilt storm protection system during Hurricane Isaac, is an important confidence builder for area residents and businesses. Sewerage & Water Board flood protection defenses include a pumping system with the capacity of over 30 billion gallons a day, enough to empty a lake 10 square miles by 13.5 feet deep every 24 hours. About $1 billion has been spent since

Katrina repairing and modernizing the pump stations. "The city pumps are able to push out 50,138 cubic feet of water per second - enough to fill the Mercedes-Benz Superdome in seven minutes," said St. Martin.

"It's a well-rehearsed, extremely well-exercised system," said St. Martin. "Twenty-four large drainage pumps throughout the city - some more than 100 years old - are designed to push rainwater out from city streets. The water is then sent to canals near Lake Pontchartrain on the northern edge of the city, where federally built pumps dump it to the lake."

To ensure power to operate its 24 drainage pump stations and 13 pump stations serving highway underpasses, the Sewerage & Water Board operates a 25 Hertz power generation plant and electrical distribution system to provide 60 megawatts of peak power. The electrical system began operation in the early 1900s at a time when much of the nation's railroad equipment was being built for 25 Hertz operation, and has been modified over the last century to meet the City's needs. Six (6) of the 60 Hertz-powered pump stations are also equipped with back-up diesel generators. In addition to draining the City of New Orleans, the system serves 22,000 acres of neighboring Jefferson Parish. The Interstate 10 pumps ensure that this critical pre-hurricane evacuation route and post-hurricane corridor for relief equipment and personnel is passable.

Staging of vehicles to higher ground.

AS THE STORM CLOUDS BUILD, S&WB PREPARES FOR HURRICANE ISAAC. AUGUST 2012

Some facilities have been equipped with boats for possible floods.

As soon as Hurricane Isaac passed, the clean up & Assistance began

August 2012

S&WB employees assisting the residents of Venetian Isles.

S&WB working with the Department of Public Works to clean up streets.

"We're Always Here. We Never Left."

The 300 S&WB employees on emergency hurricane duty thought the worst was over when Katrina blew through New Orleans on August 29, 2005 with minimal rainfall and strong winds, but not as strong or damaging as predicted.

That same morning, reports of flooding began to come in—it was described as heavy, deep flooding. Reports came from employees at their duty stations and citizens from all parts of the City wondering if the massive S&WB pumping system was working.

Then the news came in—there were several floodwall failures in outfall canals along Lake Pontchartrain and the Industrial Canal, dumping millions, possibly billions, of gallons of water into some of the lowest parts of the City in an instant. Eventually, 80 per cent of the City was flooded.

The 300 employees on duty, and those who risked their lives to reach whatever Board facility needed help, knew a major catastrophe was taking place.

For the first time in the Board's history, water service on the East Bank was interrupted when the Board's power plant flooded, despite bold efforts by employees to build a sand bag

Rufus Burkhalter, now retired, is wet down with bottled water after fighting a fire at Drainage Pumping Station No. 6. The fire occurred during the recovery period soon after Katrina hit the city. Hundreds of S&WB employees, first responders after the storm, performed similar heroics to help get the systems up and running again. Pumping stations throughout the city were quickly repaired to help de-water the flooded parts of the city.

barrier around it.

Efforts like this were taking place everywhere…even in drainage pumping stations where employees were stranded. Operators of two pumping stations on the Industrial Canal clung to rafters for days, with no food or water, until teams of employees and the Coast Guard could reach them.

Executive Director Marcia St. Martin said, "Some real heroics by our employees took place in the days after the flood to get systems up and running as quickly as possible.

"The 300 employees on duty and those who rushed to help did not know the fate of their families or friends who evacuated. But they did not leave. They did their jobs and did whatever they could to protect our facilities and help the struggling people of New Orleans."

The heroic efforts of the Sewerage and Water Board employees were displayed as these workers, even in the face of disaster, focused on their responsibility to keep the water, sewer and drainage system operating. They immediately understood that if there was no water, no sewer or no drainage services there would be no city of New Orleans.

In a speech Mrs. St. Martin delivered to a nationwide professional water group in 2006, she stated, "With so much destruction of our facilities, equipment and heavy truck fleet, we relied on the skill, expertise, knowledge and determination of our employees to

Flood waters from Hurricane Katrina submerged many of the giant motors which power the massive pumps of the S&WB's Drainage System. Within three days of the storm's passing, the Board had arranged for a team of experts from the General Electric Corporation to come to the City to work with S&WB staff to dry the motors and begin the re-winding process.

put our water, sewerage, drainage and power systems back in operation."

When experts said it would take months to de-water the system with our badly damaged drainage pumps, our staff was actually able to achieve the goal after breaches were closed, it took 11 days for the Sewerage and Water Board employees to dewater the city.

The extraordinary actions and reactions of the Sewerage and Water Board employees garnered international, national and local media attention as indicated in a Times-Picayune article in 2010.

In the lead-up to Katrina's fifth anniversary, more than 50 water board workers and administrators gathered Friday inside Pump Station No. 1 to retell survivor stories and to honor the work they've put in since, beginning with pumping the floodwater out of the city after the breaches were closed.

Many also bemoaned the fact that even though they report for duty during hurricanes just like other emergency workers -- and put in their most strenuous work during the height of storms, when others hunker down -- they don't seem to get the same respect.

"Especially right after Katrina, nobody was paying attention to our operators," said Bob Moeinian, Superintendent of Pump Stations. "Everything was about first responders: Police Department, Fire Department. And our folks, who were trying to help the city get up and running, you weren't hearing much about.

"We kind of felt like we were left behind," he said. "We're always here. We never left."

Nevertheless, the men and women of the Sewerage and Water Board are extensively trained to meet the challenges presented by extreme weather events. They remain prepared to risk their lives by working through storms, hurricanes, and flooding, knowing full well that the city's survival and future existence depends on the availability of water, sewer and drainage services.

Sewerage And Water Board Employees Working Through The Storm

In September 26, 2005 National Public Radio (NPR) reported, "One of the untold success stories of Hurricane Katrina is how quickly New Orleans was able to pump out floodwaters. That work was done by the New Orleans Sewerage & Water Board. For three weeks, about 300 employees did the work of 1,000 — in the most harrowing of circumstances."

Some 300 Sewerage & Water Board employees were working emergency hurricane duty when Katrina gusted through New Orleans on August 29, 2005 with mostly wind damage and minimal rainfall. The thought of "dodging a bullet" was, however, fleeting as reports from employees and citizens of heavy flooding started pouring in that same day. And although the drainage system has a 30 billion gallons per day or 50,268 CFS capacity, some wondered if the system built in 1903 had said 'no more'.

Then the news came in and all the employees knew a major catastrophe was at hand. There were several floodwall failures in outfall canals along

Lake Pontchartrain and the Industrial Canal, dumping millions, possibly billions, of gallons of water into some of the lowest parts of the City. Eventually, 80 percent of the City flooded.


Katrina's rain pulled car into canal

As the flood waters continued to rise, the 300 S&WB employees struggled to keep the systems operating. "Some real heroics by our employees took place in the days after the flood to get systems up and running as quickly as possible," said S&WB Executive Director Marcia St. Martin. "The 300 employees on duty and those who rushed to help did not know the fate of their families or friends who evacuated. But they did not leave. They did their jobs and did whatever they could to protect our facilities and help the struggling people of New Orleans."

For the first time in the Board's history, water service on the East Bank was interrupted when the Board's power plant flooded, despite bold efforts by employees to build a sand bag barrier around it.

A *Chicago Times* article from October 2005 reported the experiences of Chris Fontan and his coworkers as they worked desperately to get the plant back up and running. According to Fontan, a zone manager for the Sewerage & Water Board, the city cannot survive without water. *"Pressurized water is crucial for fire protection. It cools the bearings in massive pumps that drain the city after floodwaters. Almost any industrial operation, including the electric utility, needs it to operate."*

After Katrina hit New Orleans on Aug. 29, it shut down the city's Carrollton Purification Plant for the first time since it opened in 1906. Flooding at the huge facility on the city's West Side took down the generators, and that shut down the pumps that send purified Mississippi River water to much of the city.

Not only does a lack of pressurized water leave the city vulnerable to fire and make it more difficult to pump itself out, but it also allows groundwater to seep into the system, contaminating the water supply.

In the first days after the storm, Fontan and others raced out in boats to shut off the main valves closest to the plant to help restore water pressure at the plant itself.

Meantime, Rudy St. Germain, chief of engineering, led a team that rigged an old steam boiler to power the pumps.

With people running back and forth through the flood waters to communicate between the pump room and the control room, the team tried three times to start the system before the pumps finally came to life, sending clean water as far as the closed valves. This built pressure back up at the plant, stabilizing the situation.

The extraordinary actions and reactions of the Sewerage & Water Board employees garnered international, national, and local media attention. According to the national publication, *Public Works Magazine*, *"After Hurricane Katrina tore through New Orleans, the U.S. Army Corps of Engineers direly predicted that it would take months to pump the water out of the city. Within a few days, though, the Sewerage & Water Board of New Orleans (SWBNO), founded in 1903, had restarted most of its 24 drainage pumping stations and the water was receding. Within about three weeks, the city was mostly pumped out and ready to enter the next phase of its recovery."*

The heroic efforts of the Sewerage & Water Board employees were displayed as workers, in the face of disaster, focused on their responsibility to keep the water, sewer and drainage system operating. They knew if there was no water, no sewer or no drainage there would be no city of New Orleans.

The Winter 2006 edition of the *Tulanian*, highlighted the efforts of Gerald Tilton, a 24-year veteran of the

Electrical panels destroyed by water

S&WB. Tilton, rode out Hurricane Katrina at Pumping Station 19 adjacent to the Industrial Canal in the Ninth Ward.

His job is to make sure things are running well, dealing with operational concerns, maintenance and personnel matters.

On Monday, Aug. 29, things were not running well.

"Water came over the floodwall surrounding the station. It filled the pits in the station, and the water kept rising and came within about a foot of the third level in the pumping station, which is raised about 15 feet high."

At the back of the pumping station, Tilton and three pump operators walked in ankle-high water, fearing they might be electrocuted if the water rose higher. They dismantled the motor and blades of a big ventilation fan to make a potential escape hatch. But seeing a vortex of swirling water beneath the pumping station, they realized it would be impossible to escape the building. They started bringing food, water, cell phones and medications up a ladder to the top of a crane, which might be the only dry space if the water kept rising.

The next day, the workers at Pumping Station 19 peered into binoculars and across the Industrial Canal to Pumping Station 5, located in the Lower Ninth Ward.

"I saw some of my guys standing on an elevated balcony in water up to their chests. I could see water rushing back out of the Lower Ninth Ward, so I knew there was a breach in the levee system," Tilton says. "It was a traumatic experience. I feared for my life and for the lives of the other workers. When I got a call from a supervisor saying we were on our own, that the Coast Guard weren't coming, that the National Guard weren't coming, and we could see the water rushing in, it looked like it was the worst-case scenario we had all feared."

Tilton and another man swam through the floodwater to the generator building next to Pumping Station 19, hoping to start the generator necessary for the pumps to work.
Two feet down in the dirty, foul-smelling water were valves essential to the pumping operation that had to be opened. So

Tilton and another man dove in.

"Within 24 hours we were able to pump at 19, but it was fruitless," Tilton says, noting that any water pumped into Lake Pontchartrain would return via the breach in the levee. "We had to wait for the break to be fixed."

Eventually, the Industrial Canal breach was sealed and the Sewerage and Water Board was able to pump the floodwater out of the area. Then, only a few weeks later, came the threat of Hurricane Rita.

"Pumping Station 19 was the only one running in the old part of the city and I knew how to run it. We had done a real MacGyver job to get it up and running, with spit and bubble gum," Tilton says with a wry smile.

It was more than a month before Tilton went to his home in the Hollygrove neighborhood of Carrollton to survey the damage there.

Tulanian Winter 2006

In the lead-up to Katrina's fifth anniversary, more than 50 water board workers and administrators gathered inside Pump Station No. 1 to retell survivor stories and to honor the work put in since. In an October 2010 story covering that anniversary, *Times Picayune* reporter Michelle Krupa recounted one such story:

On Friday, Ricky Alexander recalled the moment before dawn on the Wednesday after Katrina that the two-way radio crackled to life inside his Algiers pump station.

Alexander, then a 26-year S&WB veteran, had heard about the catastrophic flooding across the river. And he had heard before bedding down the previous night that dozens of his colleagues were still stranded in S&WB facilities across the city.

But he'd also heard that boats and helicopters were expected to rescue them overnight.

As he heard the voice of pump operator Renauldo Robertson broadcasting from Pump Station No. 1, it became clear the plan had disintegrated.

"No one showed up," Robertson said. "We need to get out of here. Is someone coming?"

"Do you need me to come and get you?" asked Alexander, who had brought his own boat with him to work.

"More than you know, Ricky," his colleague said. "More than you know." Launching his boat from an Interstate 10 ramp at Earhart Boulevard, Alexander maneuvered the flooded city. He had to pass residents crying out for a ride, people balancing water containers on their heads as they waded through the water — and dead bodies afloat in the muck. He rescued his co-workers at the Broad Street pump station, ferried them to Algiers, then returned to check four more S&WB facilities before nightfall.

In a speech Mrs. St. Martin delivered to a nationwide professional water group in 2006, (page 39) she stated, "With so much destruction of our facilities, equipment and heavy truck fleet, we relied on the skill, expertise, knowledge and determination of our employees to put our water, sewerage, drainage and power systems back in operation."

The men and women of the Sewerage & Water Board are extensively trained to meet the challenges presented by extreme weather events. They remain prepared to risk their lives by working through the storms, hurricanes, and flooding, knowing full well that the city's survival and future existence depends on the availability of water, sewer and drainage services.

International Water Utility Professionals Show Great Interest In Sewerage & Water Board Emergency Response to Katrina

(The following is from a March 13, 2006 speech presented by Marcia St. Martin, executive director of the Sewerage & Water Board of New Orleans, at a Water Quality Conference of the Association of Metropolitan Water Agencies. This information serves as a model response for similar catastrophes facing water utility operators.)

Like many of you and other water utility managers throughout the nation, the week of August 22nd through August 26th, 2005 was a typical one for meetings with staff, Board members and engineers working on a host of enforcement and environmental projects detailed in a consent degree my agency signed with EPA and DOJ in 1998.

It was the week following a meeting of our Board of Directors, so there were actions to be implemented and newly approved projects to be started.

Little did I know that in just a few days, one of the most devastating storms to ever strike the United States would thrust me directly into one of the most massive utility recovery and reconstruction projects ever undertaken by a City or a major utility like ours--The Sewerage & Water Board of New Orleans.

I, along with most members of my family, and 80 per cent of our 1,200 employees lost our homes when several levees were breached, allowing a sea of

Helicopter tries to plug the breaches with sandbags

When one of the pumps at Drainage Pumping Station No. 3 began to "chatter" and make a loud noise, it was discovered that 5 of the 8 impeller blades were cracked. The Board's own employees from Facility Maintenance disassembled the pump, gouged out the cracked areas and weld-repaired the blades.

Additional work was done on the shaft while the casing was off. The pump, which has been in service for more the 80 years, was reassembled, test run and put back in service. The station is located at North Broad and the London Avenue. On many jobs, the Board's employees can make repairs more cheaply and quickly than contractors not as familiar with the Board's complex machinery.

water to flood 80 per cent of the City and destroying more than 200,000 homes and businesses.

The Sewerage & Water Board suffered massive losses of water, drainage and wastewater facilities, equipment, supplies, tools and numerous fleet vehicles, including heavy field equipment.

It is true…the devastation is so much worse than can be depicted in television reports or in newspaper accounts or photos. Even seasoned reporters, emergency experts, insurance company officials and Congressmen express disbelief upon seeing the destroyed areas for the first time.

Today we'll discuss the role of the Sewerage and Water Board in the City's full recovery, but first, let me give you some background on this unique and historical agency.

In 1896, a Drainage Commission was organized to carry out a master plan for drainage developed by the City. In 1903, the commission was merged with the Sewerage & Water Board to consolidate sewer, water and drainage functions under one Board.

The Board membership is the Mayor, three councilpersons, seven

citizen members with overlapping nine-year terms and two members of the Board of Liquidation, City Debt.

Today, the Drainage System consists of 24 major pumping stations with a combined capacity of 30 billion gallons per day or 50,268 cubic feet per second. The system can create a water flow to match that of the Ohio River. It drains 59,000 acres in the developed parts of the City and 2,250 acres in adjoining Jefferson Parish.

A network of subsurface drain pipes, 93 miles of covered canals and 82 miles of open canals transports runoff from the streets to the pumping stations.

The Water Department operates two water plants, one on the East Bank of the Mississippi River and one on the West Bank, with a combined capacity of 270 million gallons per day.

Purified water is distributed to 143,000 service connections and 17,000 fire hydrants via 1,610 miles of mains.

The Board operates a state-of-the art Water Quality Lab capable of detecting 100,000 compounds, a necessity since our only source of raw water is the Mississippi River.

We operate two wastewater treatment plants--one on the East Bank and one on the West Bank--with a combined treatment capacity of 142 million gallons per day.

Three major pumping stations and 83 lift stations; trunk sewers and force mains transport effluent through the gravity collection system, which consists of 1,450 miles of lateral and trunk sewers.

The Board also operates its own electrical generator plant, which can support all three systems. The 25-cycle plant has a 61,000-kilowatt capacity, an output sufficient to serve a city with a population of 80,000 people.

Now, with that background, I will detail for you the challenges the men and women of the Sewerage and Water Board faced immediately after the storm and what has been accomplished in the last six months.

We knew we had to face Katrina head on, using all the skills, training, experience, ingenuity, planning and

dedication of our management and employees and the leadership and support of the Board of Directors.

Katrina's attack left many Board facilities, vehicles and equipment inoperable, completely disrupted normal communication channels and put the lives of many employees who were on duty in jeopardy.


DPS # 6

A decision was made by top management early on to protect those assets not damaged and to focus on the business of providing water services (sewer, water and drainage) for the City of New Orleans and other communities devastated by the hurricane as quickly as possible.

Since the Board already had tried and tested hurricane plans and procedures in place for short-term hurricane rainfall runoff, we knew extraordinary and immediate action would need to be taken to offset this type of devastation… and destruction caused by the catastrophic levee breaches, which allowed water to flow into the city for days and remain in our "soup bowl" for weeks.

With a force of 300 employees already on duty, and many more reporting to duty in the next few days following the storm, a number of crucial actions were taken to begin restoration of the systems and to put business procedures in place.

Among them were:

- Establishment of a command center at the Algiers Water Treatment Plant on Aug. 31. The area had not flooded and the plant was in full operation, with power and phone service. The plant was also used to provide housing, food and water for employees on duty or reporting for duty.

It also served as a staging area from which food and water could be delivered to other employees at duty stations reachable only by boat or helicopter. Inoculations for tetanus and hepatitis a and b were also available to employees through the location.

Water produced at the plant was sold to FEMA via tanker trucks, which distributed it in New Orleans and other areas ravaged by the storm. 31,770,000 gallons were produced for sale to FEMA.

- On Aug. 30, we dispatched staff to the state's command center to secure diesel fuel to run the Algiers plant and other key operations and to obtain cement for a dam to prevent flooding of

the Board's crucial electrical generating plant on the East Bank.

- On Sept. 5, we opened an administrative office in Algiers and another on Sept. 10, in Baton Rouge, located 80 miles west of New Orleans. The BR office gave the S&WB access to the state's command center where FEMA and other key agencies were set up.

- On Aug. 31, we contacted GE seeking specialists to help with damage assessment and emergency repair of drainage pumping stations and power plant turbines, motors and pumps. GE began work on Sept. 3.

THERE ARE MANY STORIES OF HEROICS BY OUR EMPLOYEES TO KEEP THEIR FACILITIES OPERATING AT GREAT RISK, TO HELP CITIZENS FLEEING THEIR FLOODING HOMES AND TO SAVE THE LIVES OF FELLOW EMPLOYEES.

- On Sept. 6, established a toll-free phone number for employees to notify management of where they were and how they could be reached for work assignments.

- Held first staff meeting on Sept. 6 to assess damage, outline an action plan and coordinate activities. Restoration of damaged systems began two days after the storm's passing.

- Set up special communications system through Central Control's radio system when all other forms of communications failed.

- By Sept. 3, key staff were located and 350 personnel were on duty to provide services throughout the City at drainage pumping stations, sewer plants, Central Yard, power plants, water treatment plants, Central Control, Water Quality lab and the Engineering Department.

- By Sept. 5, the Computer Center was functioning at the Main Building on St. Joseph St. to begin business processes and assist the field operations in any way possible with damage assessment and restoration.

- On Sept. 7, the Board sought assistance from FEMA for temporary housing, medical support, food, water and other provisions for staff who had been working constantly since the storm. FEMA began providing assistance on the East and West Banks via boats and helicopters on Sept. 9.

- Oct. 16 restored primary treatment at the East Bank Waste Water Treatment Plant.

- Leased a fleet of vehicles to replace those flooded when the levees

failed. This allowed for staff to carry out duties in areas not flooded and other areas when they were drained.

- Nov. 16 restored secondary treatment at the East Bank Waste Water Treatment Plant.

- Worked with water, sewerage and engineering associations in posting the needs of area utilities on websites and seeking volunteers from the water profession to assist during the crisis.

There are many stories of heroics by our employees to keep their facilities operating at great risk, to help citizens fleeing their flooding homes and to save the lives of fellow employees.

But all of those employees who worked during and after the storm are part of a special team, which is a major part of the process of participating in the most massive reconstruction and restoration project in the 107-year history of the Sewerage and Water Board of New Orleans.

All of this first stage work helped us achieve one of two primary goals--repair parts of the field systems so that services would be available to citizens and businesses and to accommodate the rebuilding and restoration of the City.

The other goal was administrative functions to assess damages, file for FEMA funds and insurance claims and to ensure that revenue was collected for those services still being provided.

As more and more people returned to the City, water would be needed for personal and safety needs, clean-up efforts and fire fighting.

Sanitary sewer service would help prevent disease and allow customers to live in areas, which did not flood and allow hotels, restaurants and other businesses to re-open.

Drainage, of course, would be needed to protect the City from flooding, should additional rainstorms occur.

A key element in the field and administrative recovery process is the Board's extensive Computer Center which generates operational and financial reports, provides budget reports, processes customer bills, analyses and tracks field work, maintains inventories of supplies, equipment and vehicles, does payroll and maintains the Board's email network and website.

The Center was operational almost immediately--just days after Katrina hit. Its capabilities were of great importance to management in assessing damages, tracking expenses, filing insurance claims, helping determine the extent of damage in the field and to communicate internally and externally.

Through computer-generated reports and analyses, management was able to quickly forge and carry out a

comprehensive plan to restore services, file claims and to re-start a much-needed revenue stream.

I was pleased to report at the January Board Meeting of progress we have made in the field since the storm.

Though we had some $300 million in damages on the East Bank of Orleans Parish, we are projecting that the sewer and drainage systems will be ready for the heavy spring rains.

Initial inspections of the East Bank water distribution system revealed some 3,900 leaks, many of which were from lines broken by tree roots when they were toppled by high winds. By March 5 approximately 11,853 breaks had been repaired by local contractors hired by the Board board forces and volunteers.

It is still important and a priority to repair the leaks quickly to ensure a safe supply of potable water to all parts of the City and to prevent the costly waste of water.

The Federal government will pay 80 per cent of the $300 million for these and other repairs.

We suspect that many leaks that are draining the underground pipe system of millions of gallons of water daily have yet to be found, especially in parts of the Lower 9th Ward.

We know we're not finished, because we are pumping 120 million gallons a day, but our population should be using about 40 million.

An inspection of 92 percent of the East Bank's sewer system lines has shown that about half of the system still is blocked, either because water remains in the pipes or because there is no electricity in the area to power the pumps to move the water. To solve the problem, we are using emergency discharge systems or generators to make the pumps work. The process, known as bypass pumping, is under way or complete at 18 stations, and preparations are being made at seven more.

At this point after Katrina's Aug. 29 impact, we estimate that the board would be collecting about 30 percent of what it had received before Katrina to provide funds the board needs.

With leaner income in mind because of a drop in revenue from this source, the board has approved a budget for this year that, at $96.5 million, is almost 19 percent below the 2005 figure of $118.8 million.

Even though customers may not be occupying their pre-Katrina homes, everyone still owes a flat fee for S&WB services, even though the other part of the bill, for usage, would be virtually nil.

To get an even better grasp on

the future customer base and revenue projections, we are embarking on a study to best determine what a pre-Katrina population of 500,000 will be in the future.

We will use flood maps, overlayed by pre-Katrina zip code delivery figures, to determine the per cent of population living in the City. This, combined with actual water usage from meter reading in a zip zone, should give us a base for accurate revenue projections.

The Board expects 30 per cent of Pre-Katrina revenue and recovery expenses of 200 per cent over normal expenses.

So with the expected loss of revenue and increased costs for restoration, the Board is restructuring its debt, will borrow from the Community Disaster Program and continue to apply for disaster funds.

Before I close today, I would like to take this opportunity to publicly and sincerely thank three water utilities who answered our urgent call for help in the days and weeks after the storm struck.

While we received numerous offers of assistance from throughout the nation, the help these three groups could provide best matched our needs at the time. They are The Portland (Oregon) Water Bureau, The Lafayette (Louisiana) Utilities System and Central Arkansas Water, which serves Little Rock.

Lafayette Utilities dispatched pipeline crews and equipment to help repair numerous breaks in major water lines caused by roots from trees toppled by high winds. Restoring water service and pressure was crucial for citizen needs and to fight fires occurring throughout the City.

Lafayette also ran hundreds of bacteriological samples from the water supply system at its lab, allowing the Sewerage & Water Board to advise citizens of the quality of water in various parts of the City.

The Little Rock crews supplied staff, equipment and four gate trucks and greatly helped us in the repair and replacement of valves and pipelines.

I will go into more detail of the Portland team's work, because their plan is being cited as a model for future disaster assistance for major catastrophes.

Their response included a fleet of gate and maintenance trucks and backhoes and a 35-member emergency response team trained in operations and damage assessment required by FEMA to ensure loss reimbursement under its Public Assistance Program.

The Portland initiative is different than others, which provide short-term help. Its self-contained team is prepared to stay for weeks with its own rations

and emergency shelter.

The efforts of these three outstanding utilities are greatly appreciated by our Board, staff and the citizens of New Orleans. Their help was invaluable.

Thank you for allowing me to address you today and to describe what we experienced in New Orleans from Hurricanes Katrina and Rita.

I will also tell you that the men and women of the Sewerage and Water Board, our Board of Directors, our citizens and elected officials are all committed to the full renovation and restoration of our systems and one of the greatest, most resilient and unique cities in the nation--New Orleans..

We are determined to accomplish our long-term goal of "Tackling The World's Toughest Water Challenges."

Come visit us soon.

Conclusion

The Sewerage and Water Board of New Orleans is in an excellent position to tackle the many challenges only this city has experienced. The Board has completed the majority of the repairs to its facilities caused by the devastation of Hurricane Katrina. It is moving forward with an ongoing construction program to build the systems smarter, stronger, resilient and reliable. This program continues the many crucial construction projects as a result of an aging infrastructure.

Confidence in the Board's management and fiscal responsibility resulted in the first water and sewer rate increases since the 1990's. These increases will be the building blocks for the growth, development and continuous rebuilding of the board's systems in the future.

The state of the agency is strong. It is strong because it has been able to fulfill its mission to the citizens of the New Orleans in spite of the challenges. It is strong because it has gone from devastation to recovery and now to restoration and rebuilding of one of the most complex infrastructures in the country.

Progress-Rebuilding Smarter, Stronger, Reliable & Resilient

The Katrina 10 report was prepared for The Sewerage & Water Board of New Orleans by the Community and Intergovermental Relations Department with valuable contributions from Board personnel.

Our mission is to provide safe drinking water to everyone in New Orleans; to remove waste water for safe return to the environment; to drain away storm water; to provide water for fire protection; to provide information about products and services; and to do all of this continuously at a reasonable cost to the community.

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