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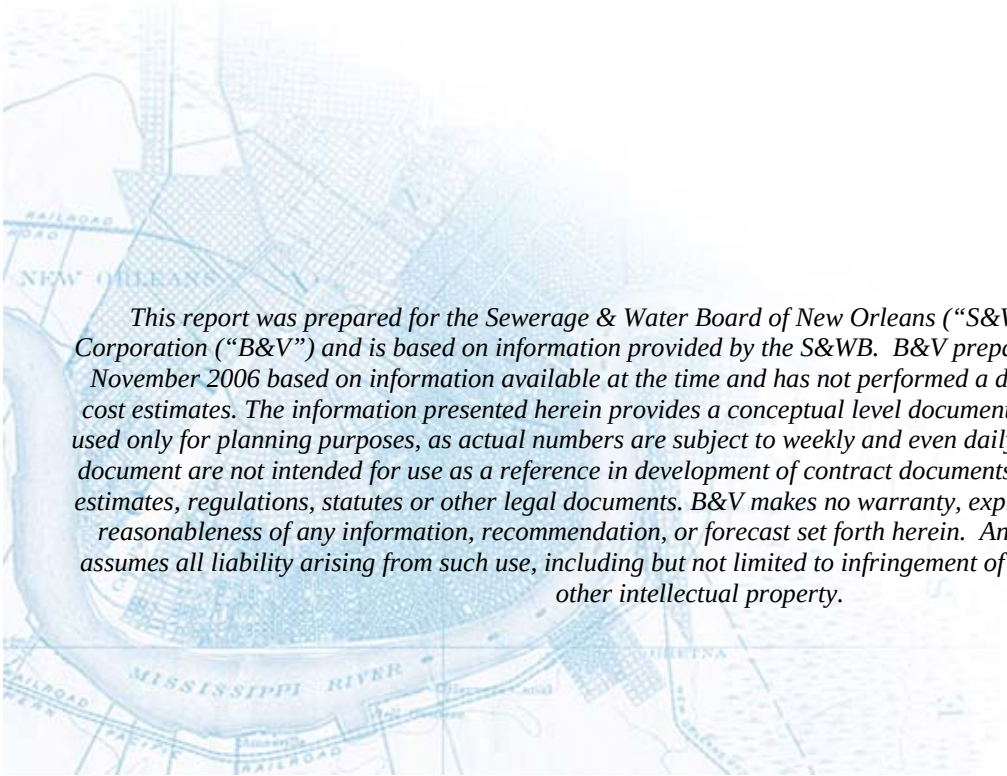
Report on Current and Future Capital Needs 2006

Sewerage & Water Board of New Orleans

December 2006

Report on Current and Future Capital Needs 2006

Prepared for the Sewerage & Water Board of New Orleans
by
Black & Veatch



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1.0 EXECUTIVE SUMMARY

Primary Responsibilities of the Sewerage & Water Board of New Orleans

The primary responsibilities of the Sewerage & Water Board of New Orleans (S&WB) are to provide drinking water, wastewater, and drainage services to the City of New Orleans. Drinking water and wastewater services protect public health through disease prevention, and the drinking water system provides essential water for fire protection. Drainage services remove stormwater from within the levee system. The S&WB also maintains a power plant, which provides electricity to much of its equipment and was essential in dewatering the city after Hurricane Katrina.

It is imperative that the systems be restored to their pre-disaster functionality to protect future health and safety in New Orleans.

These four systems—drinking water, wastewater, drainage, and power—represent billions of dollars worth of assets, including treatment plants, pumps, underground pipelines, canals, power generation plants, electrical circuitry, controls and instrumentation, and more. Some but not all of these assets have been returned to operational status; however, as a result of Hurricane Katrina, many are neither reliable nor sustainable. It is imperative that the systems be restored to their pre-disaster functionality to protect future public health and safety in New Orleans.

The Cost of Recovery

The interruption of water, sewer, and drainage services and the limited return of the evacuated population caused the S&WB to experience a substantial reduction in water and sewer service revenues and ad valorem tax-based revenues for drainage services. A long-term reduction of revenue is anticipated. This will have a significant impact on the financial condition of the utility and its ability to restore and maintain its infrastructure. The S&WB has budgeted significant capital investment for the future, but this budget is unfunded and insufficient to meet the needs of New Orleans.

The total capital needs over the next 25 years are projected to be in the range of $5.7 billion. Because a 25-year horizon is difficult to address in today's terms, the 25-year costs are broken down into near-term

On Duty 24/7

Hurricane Katrina, the sixth-strongest Atlantic hurricane ever recorded and the third-strongest land-falling U.S. hurricane ever recorded, struck the Gulf Coast of the United States of America near New Orleans, Louisiana, on August 29, 2005. That morning, senior staff of the Sewerage & Water Board of New Orleans, maintaining radio contact with first responder employees located at stormwater drainage stations throughout the city, began receiving frantic calls from around 9 a.m. Trapped employees reported rapidly rising waters throughout the city.

A massive rescue effort began immediately after Hurricane Katrina. From the beginning, the S&WB was an integral part of this recovery. ***Though not widely known, it was the S&WB's drainage stations that dewatered the city.*** The total pumping capacity of these stations is 30 billion gallons per day, making them the largest in the United States. The S&WB also provides drinking water treatment and distribution and wastewater collection and treatment to the City of New Orleans.

(Continued on next page.)

TABLE 1: S&WB'S POST-KATRINA MILESTONES

Aug 28	First Responder employees remain on duty, prepared to drain city of hurricane's stormwater.
Aug 29	**Hurricane Katrina floods City of New Orleans. Employees safe but trapped at some locations.**
Aug 29--Sep 4	**Rescue employees from S&WB facilities.**
Aug 31	Issue emergency contract for assessment and repairs of drainage pumping stations and power plant. Establish executive offices and command center at Algiers Water Treatment Plant (WTP)
Sep 1	Establish Command Center at Baton Rouge Office of Emergency Preparedness
Sep 3	Locate additional personnel.
Sep 5	**Drain and restore operations at S&WB's power generator, thus restoring power to numerous drainage pump stations and Carrollton WTP on East Bank.**

(immediate), medium-term, and long-term needs in Table 2. These discreet timeframes provide a rational basis for 1) assessing essential, immediate and often urgent support needs, and 2) planning for medium- and long-term needs. Chapter 3 further divides costs into distinct and addressable projects.

The immediate and near-term needs are about $1.9 billion and include urgent projects that must be completed in order to ensure the continued functionality of the Sewerage & Water Board. A timeframe of 2006-2009 was selected because it covers these immediate needs as well as essential hurricane-related and storm mitigation repair and replacement.

Table 3 depicts the $1.9 billion in needs by asset category (a detailed project list for near-term funding needs is provided in Appendix B; Chapter 3 includes descriptions of each project in all three timeframes). In Figure 1, these same categories are used to compare needs to potential grant funding sources: Bars indicate potential funding sources for each category and the "gap." The gap—indicated by a blue bar—is the difference between

TABLE 2: FUNDING NEEDS BY YEAR (US$ 000s)

Year of Need	Cost
2006 – 2009 (Near Term)	**1,888,646**
2010 – 2014 (Medium Term)	1,401,000
2015 and Beyond (Long Term)	2,391,000
Total	**5,680,646**

TABLE 3: NEAR-TERM FUNDING NEEDS BY ASSET CATEGORY (US$ 000s)

Asset Category	Needs
Water Treatment	**81,076**
Water Distribution	**227,138**
Wastewater Collection	**454,170**
Wastewater Treatment	**86,541**
Drainage System	**855,240**
Power Generation	**129,703**
Admin, Emergency	**54,778**
Total	**1,888,646**

(Continued from page 1.)

The S&WB's initial post-hurricane priorities were to rescue employees trapped by the flood waters; provide power to and restore the drainage pumps that dewatered the city; and restore drinking water and wastewater services to areas housing relief workers. Many of the S&WB's employees, about 80% of whom lost their own homes, worked long hours and slept in makeshift quarters after the hurricane in order to meet the urgent needs of the City of New Orleans.

After the hurricane, power to the city was largely destroyed. Fortunately, the S&WB maintains its own 25-cycle power station. Minor flooding occurred at the station and it took 5 days to restore power. Once operational, the power station became critical to powering the drainage stations. It also served (and continues to serve) portions of the water and wastewater systems.

Sep 5	Establish computer center at S&WB's Administration Building.
Sep 6	**Restore fire protection to populated (unflooded) portions of the City.**
Sep 6	Implement 800 number to locate and communicate with employees.
Sep 7	Seek assistance for temporary housing, medical, food, water, and other provisions for employees.
Sep 8	Initiate site dewatering plan for East Bank Wastewater Treatment Plant (WWTP).
Sep 10	Establish administrative office in Baton Rouge.
Sep 19	**S&WB completes draining of City of New Orleans.**
Sep 24	Hurricane Rita—category 3—reaches land, reopening some levee breaks and re-flooding parts of the City.
Sep 28	East Bank WWTP dewatering completed.
Sep 05-Feb 06	**Deliver up to 75 truckloads per day of potable water.**
Sep-Oct '05	Secure emergency fuel and chemicals.
Oct 5	**Restore potable water to East Bank, west of Industrial Canal.**
Oct 16	**Reestablish primary treatment at East Bank STP.**
Nov 16	**Reestablish secondary treatment at East Bank STP.**
Nov '05	Develop new method of revenue forecasting and establish monthly meetings with bondholders/insurers.
Dec 8	**Restore potable water to East Bank, east of Industrial Canal.**
Feb 7, 2006	Receive EPA approval of *force majeure* claim.
March 2006	Resume monthly payments to debt service fund.
May 15, 2006	**Restore potable water to portion of Lower 9th Ward.**
Oct 9, 2006	**Restore potable water to remainder of Lower 9th Ward.**

identified potential funding sources and the total needs assessment. For instance, near-term Water Treatment needs are estimated to be $81,076,000. Of this amount, only a small portion may be covered by FEMA. The remainder is considered a gap in funding. Figure 1 illuminates grant funding deficiencies; specifically, that some asset categories are facing serious and immediate gaps in funding: Water treatment, water distribution, wastewater collection, and power generation.

FIGURE 1: 2006-2009 NEAR-TERM NEEDS BY CATEGORY AND FUNDING SOURCE

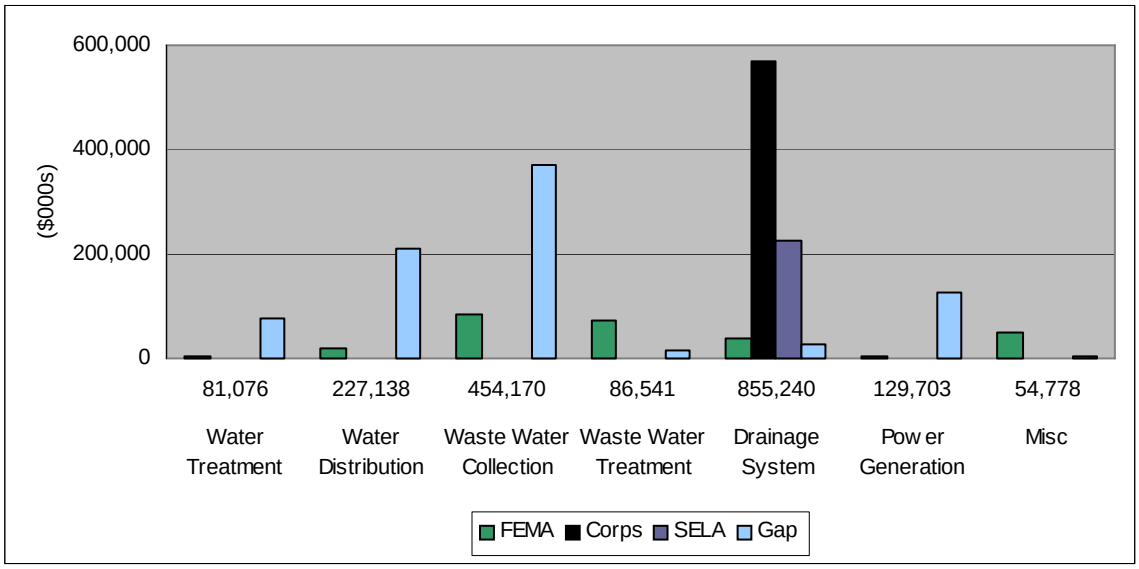
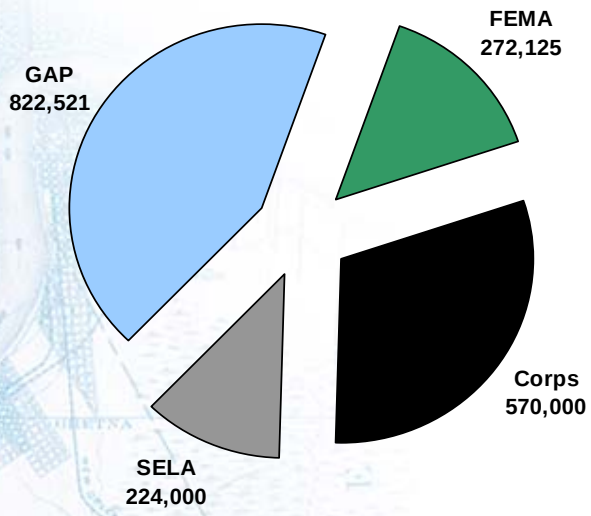


Figure 2 shows the near-term funding sources and gap in another format. Here, it is clear that significant funding is expected from grants; however, it is insufficient. It will be extremely difficult if not impossible for the S&WB to cover the remaining near-term gap of $823 million.

FIGURE 2: 2006-2009 NEAR-TERM NEEDS OF $1.9 BILLION—FUNDING SOURCES AND GAP (US$ 000s)



In addition to the near-term needs of $1.9 billion, the medium term capital investment needs are $1.4 billion and also will be difficult to fund through S&WB's revenues. The long-term needs (after Year 2014) are $2.4 billion. The S&WB hopes to be able to fund a significant portion of the $2.4 billion from its own revenues if the population in New Orleans returns to near pre-Katrina levels.

Table 4 summarizes potential grant funding sources and the gap in funding for near-, medium- and long-term needs. All grants are shown in the near-term needs category (2006-2009). While it is hoped that some

medium-term needs will be met through grants, the table provides information about known or assumed funding. No medium-to-long-term grant funding information is currently available.

TABLE 4: GRANT FUNDING SOURCES AND GAP
(US$ 000s)

	2006-2009	2010-2014	>>>2014	Total
FEMA (Potential)*	272,125	0	0	272,125
SELA Funding	224,000	0		224,000
Corps Funding	570,000	0	0	570,000
Potential Grant Funding	**1,066,125**	**0**	**0**	**1,066,125**
Funding Needs	**1,888,646**	**1,401,000**	**2,391,000**	**5,680,646**
Gap	**(822,521)**	**(1,401,000)**	**(2,391,000)**	**(4,614,521)**

**Does not include FEMA insurance deduction, currently estimated at $20 million.*

Supplemental Funding Sources

Known grant funding sources, described below, amounts to a potential of $1.1 billion. The proceeds from these grants are expected in the 2006-2009 timeframe. The S&WB's current estimate of needs over this same time period are about $1.9 billion. This leaves a gap of almost $800 million in funding needs for 2006-2009.

The funding gap for 2010-2014 is currently estimated to be $1.4 billion. The majority of funding needs for this medium-term timeframe are for the underground infrastructure, which will take years to assess and repair. Of concern is the fact that because the S&WB cannot reasonably and judiciously repair this infrastructure in the near-term, grant funding will not be available when it is most needed. The funding gap of $2.4 billion after 2014 is expected to be covered through normal S&WB revenues.

FEMA In Table 4, a total of $272 million in potential funding appears under the Federal Emergency Management Agency (FEMA). This represents 90% of the $302 million in hurricane damage costs that are identified as potential FEMA projects. In actuality, **FEMA has allowed less than $155 million in costs to be included on the project worksheets** and has only "obligated," or approved, $112 million. In addition, FEMA is disallowing $20 million for insurance deductions. Though under appeal, if the S&WB is unsuccessful in getting FEMA to reconsider the undervalued project worksheets and insurance deduction, the gap will increase significantly.

Though under appeal, if the S&WB is unsuccessful in getting FEMA to reconsider the undervalued project worksheets and insurance deduction, the gap will increase significantly.

Even if the entire amount were approved (which is unlikely but is shown here to avoid duplication of costs), FEMA would only cover about 90%.

LRA The LRA is the State of Louisiana's planning and coordinating body for the recovery and rebuilding of the state. The LRA's long-term recovery planning initiative, Louisiana Speaks, is leading an effort to provide support for and documentation of recovery needs throughout the state. Through this effort, Long-Term Community Recovery (LTCR) teams, supported by the Federal Emergency Management Agency and federal

partners, have worked in cooperation with local city and parish governments to provide technical assistance and/or to develop long-term community recovery plans. The National Response Plan—Emergency Support Function (ESF) #14: Long Term Community Recovery—is charged with the mission of organizing Federal support to communities faced with daunting recovery challenges arising from the long-term consequences of an Incident of National Significance such as Hurricane Katrina.[1]

One of the Board's Environmental and Flood Protection Projects is already published on the Louisiana Recovery Authority's (LRA) website. The Board's projects will be archived by the LRA in which they will be revisited by the LRA and FEMA at a later date and are considered long term recovery projects. It is hoped that the LRA and Federal government will provide additional opportunities for grant funding. LRA and ESF-14 representatives are working together on the *Louisiana Speaks* program to help affected communities in Louisiana develop Long-Term Community Recovery plans (LTCRs). These plans will be used to develop regional and statewide plans and to prioritize recovery efforts. Many of the S&WB's projects listed herein are not yet listed in the *Louisiana Speaks/*LRA database but could receive high priority under the terms of the *Louisiana Speaks* program. While this does not guarantee additional funding, it may help to ensure that S&WB projects are represented on the database as it provides the State of Louisiana and the U.S. Congress with an indication of total Katrina-related funding needs.[2]

NEW ORLEANS AFTER HURRICANE KATRINA

S&WB'S DRAINAGE PUMP STATION #5

SELA The Southeast Louisiana Urban Flood Control Program (SELA) program consists of several individual project components that are being designed and constructed throughout the tri-parish area. The Project Cooperation Agreement executed by the Sewerage and Water Board of New Orleans (S&WB) in January 1997 requires 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 recent years, the Federal funding level has not supported the start of projects that have been approved as SELA projects in Orleans Parish.

[1] Federal Emergency Management Agency, "The Long-Term Recovery Assessment Tool," Web site resource, http://www.fema.gov/rebuild/ltcr/assessment_tool.shtm (Accessed October 20, 2006).

[2] There are few water/wastewater utility projects currently listed on the Louisiana Speaks database as resource-constrained utilities have focused efforts on restoring essential services. For those utility projects that are listed, some have received the highest priority ranking.

1.0 EXECUTIVE SUMMARY

Following Hurricane Katrina, the Federal government acknowledged that the interior drainage of New Orleans by its many canals and pump stations is an integral part of the Federal hurricane and storm protection system for New Orleans. To this end, additional funding in the amount of $224 million has been appropriated by Congress for the completion of authorized SELA projects in the 3rd FY-06 Emergency Supplemental Appropriations Act. The SELA projects completed with this funding will be at 100% Federal expense. Subsequent projects may or may not be fully-funded by the Federal Government.

Corps The U.S. Corps of Engineers (Corps) has indicated that it will invest $530 million to install canal gates and the new pump stations that these gates will require, as well as an additional $40 million for drainage pump station repairs.

Additional Concerns Also of concern is the fact that the solutions proposed for flood protection are based on Congressional Appropriations which were made before a full assessment of the options could be completed. When the SELA and Corps funding is combined, there may be better uses for this funding. Additional studies on the drainage system may be warranted.

MOTOR FIRE

In addition to the above planning efforts, the S&WB has completed an internal review process that included state representatives and community leaders through the broad based community processes of the Bring Back New Orleans Commission and the City of New Orleans Neighborhood Rebuilding Planning Process. The internal review is a self-analysis that addresses immediate stabilization needs, intermediate recovery needs, long range planning and the identification of funding short falls. This report is a continuation of that process.

Underground Infrastructure—Hidden But Not Forgotten

FEMA has indicated an unwillingness to pay for hurricane damage to underground infrastructure that is not easily identifiable; that is, FEMA is willing to pay for visible damages but is having difficulty in accepting hidden damage to underground structures. While it is highly likely that hidden damage from Katrina exists, it is difficult and expensive to identify specific damages, much less prove to FEMA that the damage is related to Hurricane Katrina. With increased levels of scrutiny on FEMA grant funding, it is not surprising that FEMA investigators wish to observe each piece of damaged pipe before obligating funds to cover that damage. However, this is not a fair and reasonable approach to assess damage to underground infrastructure.

Further, damage from the hurricane cannot be regarded as damage caused by lack of maintenance. The S&WB spent $187 million on sewer rehabilitation over seven years and had made significant progress. It had detailed knowledge of this complex, hidden network of pipes. And while it had just begun a similar process to upgrade its potable water system, an independent contractor had deemed the system to be sufficient to supply the existing water demand, though in need of investment to reduce large water losses.

Aging underground infrastructure is commonplace across the nation. Reports from the U.S. Environmental Protection Agency (EPA), Water Infrastructure Network, U.S. Government Accounting Office, and others describe 20-year domestic funding gaps for water in the hundreds of billions to trillions of dollars. Cities

across the nation simply cannot afford to maintain like-new systems. It would be unreasonable to deny all funding to New Orleans for its underground infrastructure on the basis of the age of the system because, prior to Hurricane Katrina, it was meeting the needs of the city by providing adequate levels of potable water and wastewater treatment to meet all U.S. regulations. Hurricane Katrina crippled the system, accelerating its decline and making it extremely costly for the S&WB to meet its primary mission of protecting public health and safety. The S&WB will need significant grant funding to restore its systems to pre-Katrina functionality and capability.

Underground infrastructure is notoriously difficult to assess, particularly after an unprecedented event such as Hurricane Katrina. Corrosion, surge waves, and soil migration may have compromised the system in hundreds or thousands of locations; thus, cost to repair the water distribution and wastewater collection systems may exceed the estimates in this report. The drainage system may also have undetected damages that will add cost. Further, the solutions proposed for hurricane protection for portions of the drainage system are based on Congressional funding; alternative solutions may make more sense in the long-run but could cost another 500 million dollars or more.

Purpose of Report

This intent of this report is to summarize the Sewerage & Water Board of New Orleans' unfunded needs as of November 2006. Unfunded needs include urgent, near-term needs of $1.9 billion and medium-term needs of $1.4 billion. It is hoped that the long-term needs will be funded through normal revenues.

Some costs are hurricane related, some are necessary to mitigate for future hurricanes, and some are related to the age of the infrastructure. All costs are necessary to bring the water, wastewater, and drainage systems back to pre-hurricane functionality, and meet one or more of the following needs:

- **Protecting public health and safety**
- **Repairing hurricane-related damages**
- **Providing adequate reliability in systems**
- **Mitigating risk / providing appropriate levels of redundancy in the systems**
- **Meeting state and federal regulations and maintaining compliance with the Clean Water Act, the Safe Drinking Water Act, the Clean Air Act, and numerous other regulatory requirements**
- **Meeting the requirements of the Consent Decree**

This report provides a description of the complex network of assets owned and managed by the S&WB (Chapter 2), estimates of the damage assessments, mitigation, reconstruction, and unfunded capital requirements by project (Chapter 3), and the total funding necessary to bring the S&WB back to a sustainable position (Chapter 4).

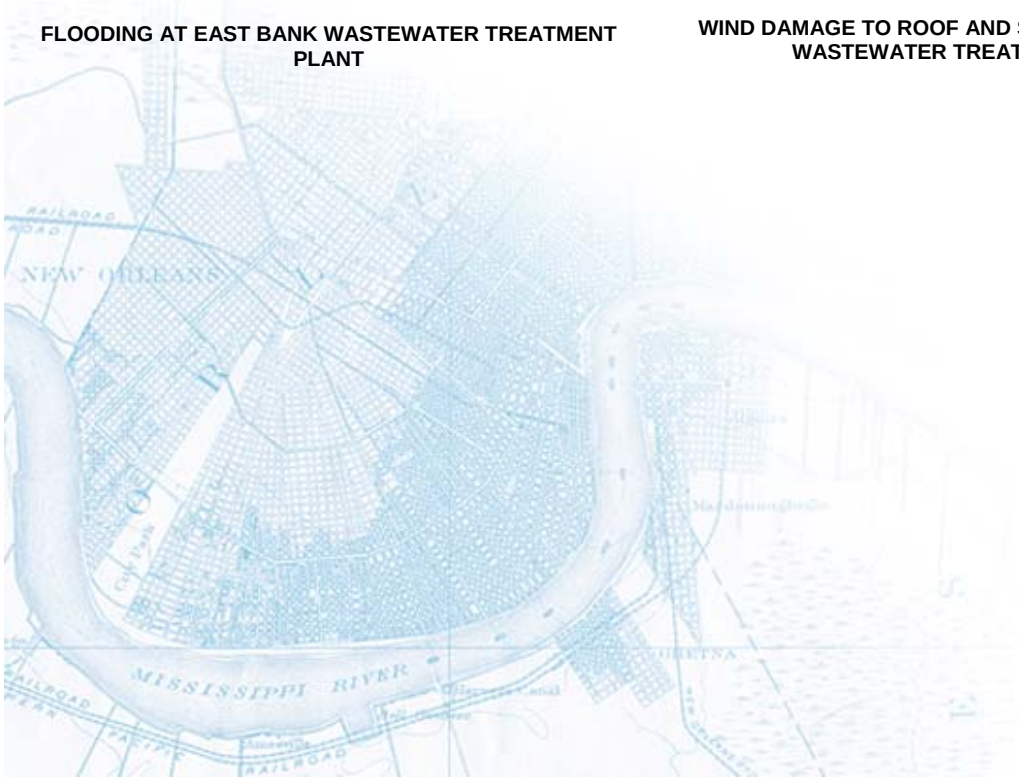
Needs and grant funding assessments are as of October 2006 and are based on information provided by the S&WB and/or its consultants. Some project needs assessments are based on already contracted projects, while others are fairly high level and subject to change as more information becomes known. **The information presented herein provides a conceptual level documentation of needs and should be used only for planning purposes, as actual numbers are subject to frequent updates.** Total needs are likely to be higher than what is indicated in this report. Much of the S&WB's infrastructure is underground, where it is difficult to detect damages. The water distribution system may have as much as an additional $1 billion in damages.

The drainage system may also have undetected damages that will add cost. Further, the solutions proposed for hurricane protection for portions of the drainage system are based on Congressional funding; alternative solutions may make more sense in the long-run but could cost significantly more.

The breakdown between FEMA, LRA, Corps, SELA and gap funding is changing daily. This report is an effort to summarize all of the unfunded needs of the Sewerage & Water Board of New Orleans in order to help these agencies and others gain a better understanding of total expected needs.

FLOODING AT EAST BANK WASTEWATER TREATMENT PLANT

WIND DAMAGE TO ROOF AND STACK AT EAST BANK WASTEWATER TREATMENT PLANT



History of the Sewerage & Water Board

The Sewerage and Water S&WB of New Orleans was created by Act No. 6 of the Louisiana Legislature in 1899 as a special board independent of city government to develop, operate, and maintain the water and sewerage systems in the City of New Orleans. In 1903, the Louisiana Legislature gave control of the city's drainage system to the S&WB. Since that time, growth of the service area and increased service requirements have expanded the magnitude and complexity of operations.

The S&WB's most important goal is to protect public health and safety through the provision of drinking water, wastewater, and drainage services. Its operations meet stringent federal and state regulations for drinking water quality and wastewater handling. In addition, the utility operates and maintains New Orleans' vast stormwater drainage system and a power station. These systems—water, wastewater, drainage, and power—represent billions of dollars of infrastructure, some of it over a century old. The S&WB must operate and maintain these systems while keeping user fees affordable for all. Like hundreds of other older cities with declining populations, this is a daunting challenge but one which the S&WB has managed for years.

A vast system of above ground treatment plants, pumping stations, underground pipes, drainage canals, power plants, control systems, and much more allow the S&WB to meet its responsibilities. These systems are now operational but cannot be regarded as fully reliable and sustainable. Significant additional resources are required to protect public health and safety for the citizens of New Orleans.

This chapter describes the water, wastewater, drainage, and power infrastructure operated and managed by the S&WB. It also gives perspective to the situation in New Orleans through discussion of the issues faced by many utilities across the United States in managing aging infrastructure with limited funds.

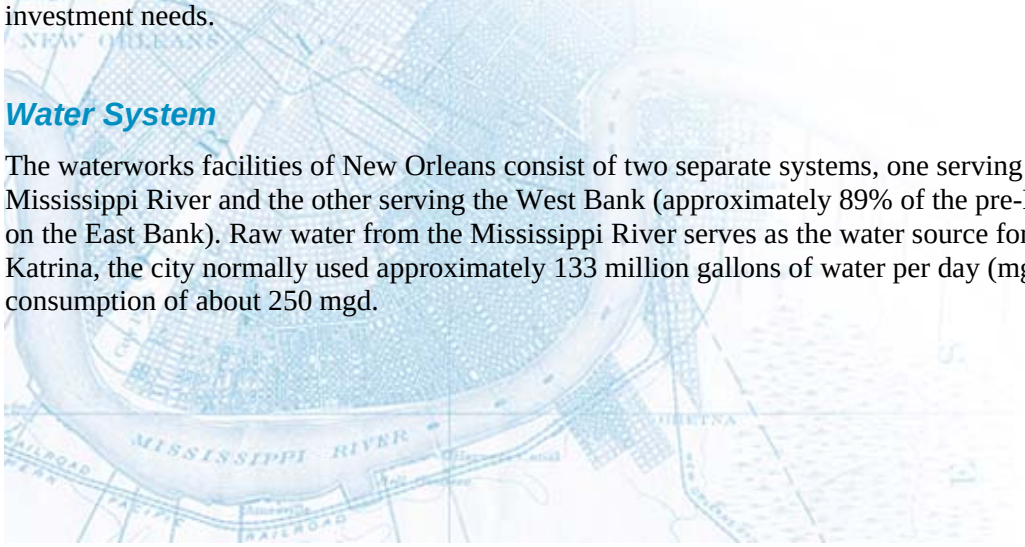
Sewerage & Water Board Assets

This section briefly describes the assets that are operated, maintained, and upgraded by the Sewerage & Water Board of New Orleans. Asset descriptions are based on pre-Katrina conditions, as annual audit information was not available at the time this report was prepared.

In Chapter 3, this report will characterize damages to these assets from Hurricane Katrina and known capital investment needs.

Water System

The waterworks facilities of New Orleans consist of two separate systems, one serving the East Bank of the Mississippi River and the other serving the West Bank (approximately 89% of the pre-Katrina population was on the East Bank). Raw water from the Mississippi River serves as the water source for both plants. Prior to Katrina, the city normally used approximately 133 million gallons of water per day (mgd), with a maximum consumption of about 250 mgd.



Water from the Mississippi to the East Bank's Carrollton Plant flows through two intake structures located one-third of a mile apart:

- The first intake structure is capable of delivering 20 mgd to the plant. It includes two 48-inch cast iron pipes, one 72-inch steel pipe and an adjacent pumping station containing four electrically driven pumps. At one time, this structure was capable of delivering 330 mgd.
- The second intake structure is currently capable of delivering an additional 140 mgd to the Carrollton Plant. It includes three 48-inch steel pipes and one 60-inch pipe, with a pumping station containing three electrically driven pumps. Prior to Katrina, this structure was capable of delivering 207 mgd.

The smaller Algiers Plant is similar. It is supplied by two raw water intakes and electrically driven pumping stations. The plant has a maximum capacity of approximately 40 mgd, with an average daily demand of 12 mgd (pre-Katrina). Standby capacity for fire and other emergencies is provided by a 2-million-gallon elevated storage tank and two 5-million-gallon ground storage tanks.

Both plants operate under a National Pollution Discharge Elimination System (NPDES) permit to discharge treatment residuals to the Mississippi River.

Water is distributed to homes and businesses on the East Bank of New Orleans through six main arteries (underground pipes) ranging from 30-50 inches in diameter and to the West Bank through 3 main arteries ranging from 20-36 inches in diameter. The entire drinking water distribution network comprises approximately 1,700 miles of mains, 15,000 gate valves, 17,500 fire hydrants, and about 160,000 service connections. High pressure must be maintained in the distribution system for disinfection purposes (per EPA regulations) and to provide sufficient fire protection.

Wastewater System

The wastewater system also operates separately on the East and West banks. Treatment capacity was 280 mgd before the storm, with average daily flows of 90 mgd during dry weather.

The sanitary sewer system is a primarily gravity driven collection system consisting of 1,350 miles of gravity lines and 100 miles of force mains, which convey wastewater from 83 pump and lift stations. Gravity lines are primarily constructed of vitrified clay. Lines in the force main system are mostly cast iron, cathodically protected steel and pre-stressed concrete. Lateral and trunk sewers range in size from six inches to seven feet in diameter.

The 83 pump and lift stations consist of above and below ground stations with vertical and horizontal type centrifugal pumps. Eighty (80) of these stations are unmanned, though the S&WB did have a Supervisory Control and Data Acquisition (SCADA)

S&WB Assets At-A-Glance

The drinking water system is comprised of two treatment plants and associated pumping stations and intake structures; 1,700 miles of mains; 15,000 gate valves; 17,500 fire hydrants; and about 160,000 service connections.

The wastewater system includes two treatment plants and a primarily gravity driven collection system consisting of 1,350 miles of gravity lines and 100 miles of force mains, which convey wastewater from 83 pump and lift stations.

Drainage system assets include 22 drainage pump stations; 13 underpass stations; 260 miles of open and covered canals; and 1,515 miles of subsurface pipes.

The S&WB also operates ***two power generating stations,*** *employs over 900 people* and performs many administrative services such as billing and collections.

Prior to Katrina, the S&WB relied on ***automated instrumentation and control systems*** to operate these assets. Massive damage to these systems occurred and some assets must now be managed manually.

system for the remote monitoring of pumping stations.

This wastewater collection system transports effluent to two wastewater treatment plants. The East Bank Sewage Treatment Plant had dry weather flow of 122 mgd with a peak weather flow of 239 mgd. The West Bank Sewer Treatment Plant had dry weather capacity of 20 mgd and a peak flow of 50 mgd. Both plants provided secondary treatment.

In addition, the S&WB signed a Consent Decree with the EPA in 1998. The Consent Decree is related to the wastewater collection system (also referred to as the sewerage system). More information on the Consent Decree is included later in this chapter and in Chapter 3.

Drainage System

The drainage system removes storm water from inside the levee system. The drainage system includes massive pumping stations and covered canals. It also includes both pressurized pipes, similar to the water distribution system, and gravity pipes, as in the wastewater collection system.

All rainwater is pumped out of the City into Lake Pontchartrain, the Industrial Canal, the Intracoastal Waterway, and Bayou Bienvenue. Dry weather flow is discharged into the Mississippi River, Lake Pontchartrain, and the Intracoastal Waterway. By agreement, approximately 2,250 acres of Jefferson Parish is served by the S&WB's drainage facilities.

Drainage system assets include:

- 23 drainage pump stations
- 13 underpass stations
- 260 miles of open and covered canals
- 1,515 miles of subsurface pipes

The system's pumping capacity is over 30.1 billion gallons per day, more than the flow rate of the Ohio River. It is the largest storm water removal system in the United States.

Power for the drainage system is provided by a combination of the S&WB's power plant (described below) and 60 cycle electrical power purchased from the local energy provider. Some pumps also have backup generators.

Power Generation

The S&WB maintains a 25 cycle power generator at the Carrollton Plant. The facilities include three steam turbines and one gas turbine for a total theoretical capacity of 61 megawatts. The steam required for the turbines is generated in five boilers with a total capacity of 650,000 pounds of steam per hour. Many facilities are served by this power generator, with backup power provided by local utility feeds or local emergency generators.

Another 60 cycle generating station serves the Algiers plant and one drainage pumping station.

Industry Standards for Water Distribution and Wastewater Collection

Adequate water, sewerage and stormwater drainage systems are not only essential for public health; they are the foundation upon which cities rely. Potable water is used not just for drinking, but also for fire protection and industrial uses. Wastewater removal and treatment protects the public from disease and also protects natural water bodies and the ecosystems they sustain. Because New Orleans lies within a levee system, drainage services provide stormwater conveyance and pumping that protects the city from flooding during wet weather events. These three services—drinking water, sewerage, and drainage—combined with power generation are essential for the economic recovery and sustainability of the City of New Orleans.

They are also the most expensive investments that most cities undertake. Water and wastewater infrastructure are the most capital intensive of all public utilities. In the United States, each large city has billions of dollars worth of investment in its under- and above-ground water-related infrastructure.

The nation's massive underground piping systems, designed to deliver safe drinking water to homes and businesses and remove wastewater and convey it to treatment plants, have been installed and financed over the last 200 years as cities expanded. Pipes have a design life-span of approximately 65-100 years, and pipe ruptures are common around the U.S.

Treatment plants have a design life-span of 25 years for the non-structural components. Most of the nation's above-ground water and wastewater treatment facilities were built or significantly upgraded in the late 1970s as a result of the Safe Drinking Water and Clean Water Acts. Federal funding was necessary to help construct this important infrastructure. Now, unfortunately, many of these plants are reaching the end of their useful lives.

Studies by the EPA, Water Infrastructure Network, U.S. General Accounting Office and others estimate funding gaps in the United States of $500 billion to $1 trillion over a twenty year time frame, *for capital investment alone*. When operating costs are included, this gap increases to $2 trillion.

As the nation's infrastructure ages, utilities must make many difficult decisions about which assets to replace and which to repair and maintain. These decisions are based on life cycle costs, regulatory requirements, capacity needs, and many other factors. Most cities also face daunting challenges in funding such replacements. Older cities with declining populations, including New Orleans, face the dual challenge of increasing costs to replace or repair aging infrastructure combined with reduced revenues from a declining customer base. Prior to Katrina, the S&WB carefully balanced the need to reinvest in its infrastructure while meeting its mission to provide quality, reliable, and cost effective services to its customers. While the system had aging components, it was meeting its mission.

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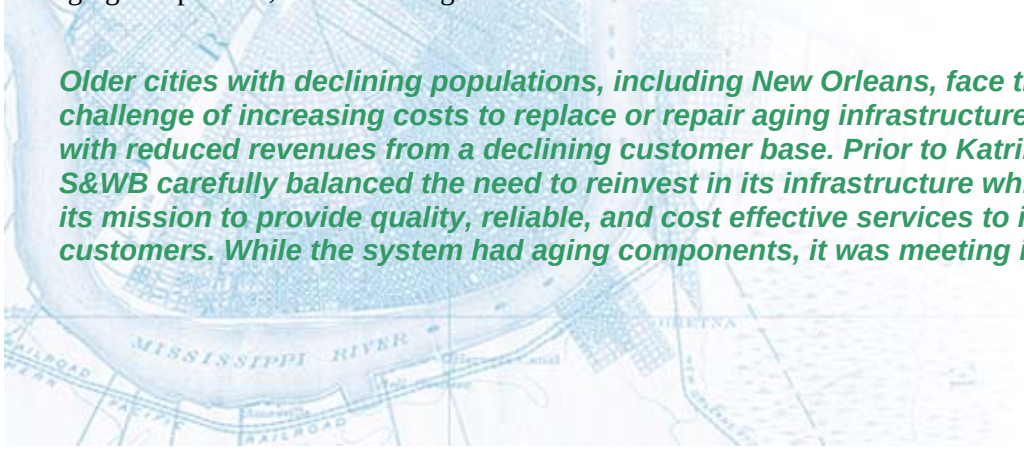

Katrina Magnifies S&WB's Challenges

Hurricane Katrina magnified all of the challenges associated with managing a complex system by significantly reducing the remaining useful life of New Orleans' infrastructure and greatly impacting the functionality and reliability of the systems. Compounding this physical damage, the S&WB is facing an economic challenge associated with losing approximately 35% of its monthly revenue due to the reduced population in New Orleans.[3]

The S&WB has been an integral part of the massive recovery efforts that have been underway for the past year. Its initial focus was to re-establish power to critical facilities, pump floodwater out of the city, and establish drinking and sewerage services to areas housing relief workers. Executive management and staff worked closely with the EPA to provide essential wastewater services without an operating treatment plant—the EPA quickly issued an Administrative Order that allowed the utility to temporarily bypass treatment while maintaining compliance with the Clean Water Act.

The S&WB also helped ensure that improperly trucked water was replaced with potable drinking water that met EPA standards. The Algiers Water Purification Plant on the West Bank only suffered minimal damage. To protect public health, the S&WB quickly commenced deliveries of 75 truckloads per day of potable water from the Algiers plant to FEMA. This water supplied FEMA, military base camps, commercial establishments, and surrounding parishes. To further ensure the safety of the water, an EPA team was on hand to test each tanker truck for sanitary conditions.

The S&WB was heavily supported by the dedicated people from the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Navy, National Guard, Federal Emergency Management Authority, local agencies, and numerous other private and public entities that provided support during this critical period. At the time of this report, the exhaustive efforts of S&WB personnel and these agencies and volunteers have reestablished essential services to all but the hardest hit areas of the city. The East Bank Wastewater Treatment Plant is meeting all permit requirements and the water treatment plants and their distribution systems are delivering safe drinking water to all parts of the city. Unfortunately, the pumping stations and underground infrastructure are not fully functional. Many pumps and their supporting infrastructure are out of service. The distribution and collection systems are severely damaged, putting the associated treatment plants under stress.

While successful in reestablishing service, the utility is not operating in a sustainable manner. In the long-term, significant investment is required to return the system to its pre-Katrina functionality, guaranteeing safe drinking water, effective wastewater treatment and collection, and adequate drainage and flood protection for the City of New Orleans. The financial solvency of the S&WB is also at risk.

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Consent Decree

Like many other cities across the nation, New Orleans' wastewater collection system has experienced sanitary sewer overflows (SSOs), where untreated wastewater is released to U.S. waters. These untreated or partially

[3] Comparison is January- June for 2005 and 2006. Water revenue is 70% of 2005, sewer is 61%, with a combined average of 65%.

treated discharges are commonly caused by capacity limitations, blockages, line breaks, power failures, and other sewer defects that allow excess storm water and groundwater to overload the system.

New Orleans is not alone. EPA estimates that as many as 75,000 SSOs may occur every year and has designated them as an environmental problem under the Clean Water Act. In June of 1998, the S&WB, the State of Louisiana, the City of New Orleans, plaintiff interveners, and the United States of America entered into an agreement (Consent Decree) to identify and address the deficiencies in the wastewater collection system. Under the terms of this agreement, the S&WB performed extensive evaluations of its wastewater system. As of May 2005, this review was completed for all nine basins of New Orleans and sewer rehabilitations were ongoing. Much of this work will now have to be redone.

The S&WB was in the early stages of a similar program for its distribution system. This is discussed in more detail in Chapter 3.

Disaster Recovery: Returning to Pre-Katrina Functionality

Disaster recovery typically progresses in stages. The S&WB must now focus on four areas:

(1) Continue to provide utility services in a safe manner on a day-to-day basis by implementing short-term improvements,

(2) Educate potential grant funding sources on the urgent needs of the S&WB and aggressively pursue funding for these needs,

(3) Commence planning and restoration to return the infrastructure to its pre-Katrina functionality, and

(4) Advance activities to comply with the Consent Decree.

Disaster recovery typically progresses in stages. The S&WB has now reestablished essential services to the entire City; however, the resource-constrained utility has been operating in emergency mode, addressing problems as they occur to provide vital services. This approach was essential in solving immediate problems, but can do little to sustain the system over the long-term. The S&WB must now focus on four areas: (1) Continue to provide utility services in a safe manner on a day-to-day basis by implementing short-term improvements, (2) Educate potential grant funding sources on the urgent needs of the S&WB and aggressively pursue funding for these needs, (3) Commence planning and restoration to return its infrastructure to long-term, sustainable, pre-Katrina functionality, and (4) Advance activities to comply with the Consent Decree.

The S&WB must do all this while preparing for the possibility of another major storm event. Improvements are urgently required to protect the infrastructure and, most importantly, to provide essential services for the critically needed economic revitalization of the City. This chapter provides an overview of the issues faced by each system and discussion of the major required capital investments needed to bring the systems and the utility back to a sustainable position.

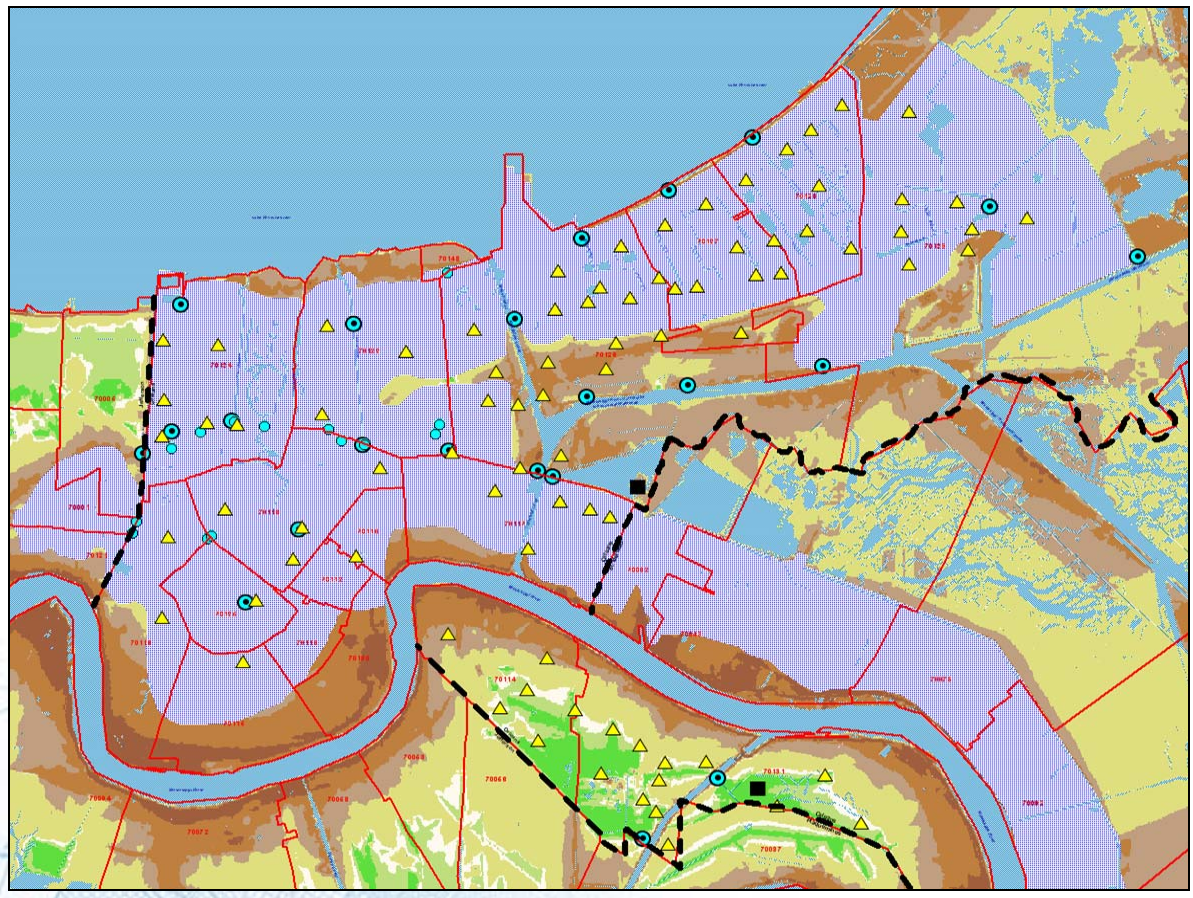
Short and Long Term Priorities

New Orleans' recovery is critically dependent upon the S&WB's ability to provide sufficient quantities of safe drinking water, effectively manage stormwater drainage, and treat and dispose of wastewater. The sections of New Orleans that are currently vacant will need adequate public utilities in place before residents and businesses return. All customers, commercial and residential alike, depend on water for fire protection and drainage services for flood protection during wet weather events. Water and wastewater services also generate the revenue required for the S&WB to operate, so clearly a sound public utility system is required to sustain the economic recovery of New Orleans.

Drinking Water System Losses Before the August 29, 2005 storm, New Orleans' 455,000 residents used about 120 million gallons of water per day (120 mgd), and about 30 percent of that was considered non-revenue. That means that 84 mgd was used by the city's pre-Katrina citizenry, while the rest was used to fight fires or for other public uses, or was lost through faulty pipes and joints in the distribution system. Now, with the population estimated at 221,000, the S&WB is pumping out even more than before the storm: about 135 mgd. Billing records show that only 50 mgd are needed for private use, so close to 85 mgd are unaccounted for and probably leaking out of the system. This represents added cost to the S&WB with no revenue offset.

Low Pressure in the Drinking Water System More importantly, however, maintaining adequate water pressure is extremely difficult and costly. This has interfered with the operation of some businesses, compromised fire protection, and could deter the return of residents and businesses to New Orleans. Water losses lead to low water pressure (with a concomitant increase in potential for contamination and a decrease in fire fighting ability) and threaten city streets and sewerage lines.

FIGURE 3: NEW ORLEANS ELEVATION AND FLOOD MAP



New Orleans lies within dotted black lines. Purple areas were flooded. Triangles and dots represent S&WB's lift and drainage stations, just a portion of its vast assets.

Sewage Collection System Damage The sewage collection system has also been damaged. While the population of New Orleans has decreased, the flows to the sewage treatment plants have not decreased proportionately. This is a clear indication that the sewage system has suffered damage from the hurricane and there are now more sources of infiltration and inflow into the pipes than before Katrina. At the time that Katrina struck, the S&WB was midway through its collection system improvements program in response to a Consent Decree with the EPA. The value of the improvements already implemented is now questionable. New studies are required to assure that collection system improvements will address the intent of the Consent Order.

Wastewater Treatment Plant The large East Bank Wastewater Treatment plant suffered massive damages. Veolia, the contract operator, commenced repairs immediately, but has suffered significant delays in payment for the repairs. Cash flow for the repairs is expected through FEMA, though insurance issues remain.

Power Supply Reliability Power supplied by Entergy is still unreliable. The S&WB is fortunate to have had standby power generation facilities to operate some water, wastewater, and drainage facilities, but its power generation plant is nearing the end of its useful life. Frequent power outages from the local power company continue to plague the day-to-day operations of the systems. Additionally, it is questionable if the S&WB has sufficient ability to operate during another significant storm event.

Drainage System The failure of the flood protection system (levees) has received widespread attention. The levees were not owned by the S&WB. However, S&WB does maintain the massive pumping stations, underground canals and pipes that protect the city during stormwater events. The pumping stations had severe damage to pumps, instrumentation and controls, and some structures. Damage to underground canals and pipes is undetermined at this time.

Corrosion Damage The corrosive effects of the flooding are affecting infrastructure in most parts of the system. Fire hydrants, pumps, motors, pipe and other equipment subjected to contaminated and salty floodwaters are now failing as a result of the corrosive effects of the brackish water. Repairing this equipment is an immediate priority and requires a significant amount of the S&WB's resources.

Hurricane Katrina, and the flooding in its wake, demonstrated the vulnerability of many S&WB facilities. Mitigation projects to improve the systems' ability to withstand another hurricane are needed to protect public health and safety and assure the sustainability of the S&WB.

The following sections discuss each of the major components of the S&WB's infrastructure—water treatment and distribution, wastewater collection and treatment, drainage, and power—characterizing immediate needs and potential damage repairs that will be required. In each section, damages that are being submitted to FEMA for reimbursement are characterized as "FEMA Projects." The S&WB is working closely with FEMA to characterize damage, produce FEMA-required grant applications (project worksheets), and determine appropriate bidding procedures to restore damaged systems and equipment. Many of the projects included in this category have not yet been "obligated" (approved) by FEMA. Some have been denied but are under appeal, some have been appealed and subsequently obligated. It is expected that FEMA will not cover all of the projects categorized herein as "FEMA Projects." However, this may be offset by other costs that may be designated in the future as FEMA Projects and added to the FEMA totals.

THE DAY AFTER HURRICANE KATRINA

Once costs are obligated, FEMA will only cover about 90%. The S&WB is hoping that the 10% match will be provided through the Louisiana Recovery Authority.

Water Treatment and Distribution

Within the water treatment and distribution system, damage to the distribution system was the most extreme. The water treatment plants suffered relatively minor damages, though ongoing issues related to the distribution system are affecting the Carrollton Water Treatment Plant. Fortunately, the Algiers Water Treatment Plant had only minor wind damage and damage to its intake structures, but no flooding. It remained functional and, as one of the few S&WB facilities which didn't flood, it became an emergency operations headquarters and housing center for some 300 employees who were on duty when the storm hit.

FLOODING AT CARROLLTON POWER PLANT

Carrollton Water Treatment Plant

Immediately after Hurricane Katrina, the Carrollton Plant experienced flooding of up to two feet of water lasting about five days. Flooding of the S&WB's power generator (situated contiguous to the Carrollton Plant) left the plant without power and inoperable for these first five days. The plant was quickly brought back into service. However, greater than normal water losses in the distribution system continue to require the plant to operate at capacity levels.

FEMA Projects ***$3,163,000***

The Carrollton Treatment Plant suffered damages to numerous warehouses, storage, and other buildings, substations, pump houses, the machine shop, lime and grit basins, and filter media. Some equipment throughout the plant was also damaged from flooding.

Filter Gallery Improvements ***$19,000,000***

Much of the filter gallery was flooded during Katrina. FEMA worksheets for replacement of the filter gallery, totaling $530,000, have been obligated and the hydraulic and pneumatic control systems have been restored to pre-Katrina conditions. Prior to the storm, however, the mechanical and physical infrastructure had deteriorated due to age and was therefore considered ineligible under public assistance.

The cost required to maintain the aging systems is excessive as many antiquated parts must be manufactured in-house. The current filter backwash system does not allow for proper cleaning of the filter media. Installation of a filter air scour system would improve the backwash process. It appears that without significant improvements and upgrades to the filter facilities, the S&WB may not be able to meet future water quality standards for a potable water system. This project is therefore critical for the health and safety of the people of New Orleans. Prior to implementing these improvements, the S&WB expects to evaluate the low pressure membrane filters versus an upgrade of the current dual media rapid sand filters. Current membrane technology is cost competitive and provides a superior physical barrier for removal of pathogens and other contaminants.

Ferric Sulfate Storage Capacity ***$300,000***

Ferric sulfate is a coagulant chemical used to clarify the water and is essential to the efficient operation of the water purification process. Hurricane Katrina revealed that there was insufficient storage capacity for ferric sulfate in the event delivery was disrupted. This project would increase the capacity to a minimum of a two week supply.

Ammonia/Chlorine Conversion ***$3,180,000***

Chlorine and gaseous ammonia are used to form chloramine and disinfect the water prior to distribution. Chlorine and gaseous ammonia are hazardous chemicals. Many utilities have opted to change from chlorine to hypochlorite solution (bleach) and from gaseous ammonia to anhydrous ammonia to provide greater safety in operations. In addition, rail delivery of chlorine after the storm was unreliable. Conversion to anhydrous ammonia and a hypochlorite system would reduce the risk to the operators and public, provide a more reliable system, and allow the plant to maintain required disinfection residuals in the distribution system.

Alternative Corrosion Control ***$2,000,000***

Concurrent with the conversion to hypochlorite is an updated corrosion control system. The cost of this change is estimated at $2,000,000, but further work is required to better estimate these costs.

Solids Removal at Water Treatment Plant ***$3,000,000***

With no redundancy, the current design promotes premature failure of the mechanical solids removal systems at the Carrollton plant. The common discharge piping limits the ability of the operators to clean basins and remove solids from the water purification system concurrently. Furthermore, any damage to this line—due to storms or age related deterioration—jeopardizes the S&WB's ability to provide potable water to the East Bank. At a minimum, two separate systems are needed to allow basin cleaning and the water purification process to run concurrently.

Old River Intake Pump Station Rehabilitation ***$40,000,000***

This project includes two raw water intakes located on the East Bank and is essential to ensuring a sufficient supply of raw water to the treatment plant. This project would replace and modernize the intake including automation and replacement of mechanical and electrical equipment that has exceeded its useful life. In a severe storm event, the ability to operate the intake remotely with reliable, modern equipment would help assure a supply of potable water.

Flow Monitoring Devices ***$300,000***

Flow monitoring devices are essential to the efficient operation of the water distribution systems, allowing for accurate estimates of production and losses. The necessity of this project was accelerated by Hurricane Katrina.

Communication System Replacement ***$5,830,000***

Major portions of the communication system were destroyed by Hurricane Katrina. The original system was installed in 1986 and the equipment is now damaged and obsolete. This project would replace the communication system with a new communications system using a cellular backbone. This kind of replacement is needed for reliability of the system.

Medium to Long-term Projects

Carrollton Flocculation & Sedimentation Capacity Increase ***$24,000,000***

There is insufficient redundancy for these treatment processes to allow equipment to be taken out of service for repair during high demand periods. This has become particularly evident since Katrina

because water demands have been very high due to increased water losses through leaks in the distribution system. This project will increase the flocculation and sedimentation redundancy by 100 mgd and increase the reliability of the plant.

Carrollton Flocculation & Sedimentation Rehabilitation ***$2,000,000***
This project would rehabilitate and modernize the existing flocculation and sedimentation basins. The project cannot be undertaken until redundant capacity is in place so that the basins can be taken out of service for an extended period of time.

Algiers Treatment Plant (West Bank)

The Algiers Plant suffered minor wind damage and damage to its intakes. In addition, insufficient redundancies in the diesel fuel supply were uncovered by Katrina; specifically, the utility only had one diesel supply location, which was destroyed by the Hurricane. Volunteers from utilities across state lines supplied emergency fuel after the hurricane; even these supplies were difficult to procure as cities across the impacted Gulf region were experiencing similar shortages.

FEMA Projects ***$458,000***
The Algiers Plant suffered damage to Intakes # 1 and #2.

Emergency Generator Fuel Storage ***$45,000***
Delivery of diesel fuel to the plant was disrupted by Hurricane Katrina. Additional storage capacity will provide approximately a 20 day supply to enable the plant to continue to deliver potable water in extreme circumstances.

Filter Valve Control System ***$3,800,000***
Filter valves are beginning to fail due to age. Control system needs total replacement.

Water Distribution System

The City of New Orleans has a vast system of underground infrastructure assets. These fall into three categories—drinking water distribution (distribution system), wastewater collection (collection system) and stormwater drainage (drainage system). Damage to these systems is difficult to assess. In the best of circumstances it can take years to evaluate underground infrastructure. While some types of damage would be similar for all three categories, the drinking water distribution system likely experienced unique damages due to the high pressure required to be maintained at all times in distribution systems.

TABLE 5: WATER SYSTEM WORK ORDERS GENERATED PRE- AND POST-KATRINA

	2005	2006	Increase
January	1,321	1,501	14%
February	1,024	1,170	14%
March	1,369	1,617	18%
April	1,158	1,362	18%
May	1,180	1,377	17%
June	1,070	1,281	20%
July	1,024	1,328	30%
August	1,093	1,356	24%
August 2006 YTD	**9,239**	**10,992**	**19%**

Note: All numbers in red are prior to Hurricane Katrina

One indication of damage to the distribution system lies with the increased number of water system work orders developed pre- and post-Katrina. As shown in Table 5, January-August 2006 work orders increased 19% over the same time period from 2005. Of concern is the fact that the percentage seems to be growing. This might indicate increased failures from corrosion.

Potential and observed impacts to the water distribution system include:

- Floodwaters damaged above ground portions of the systems, including drinking water and sewer connections at homes and businesses, meters, lift stations, pumping stations, isolation valves, etc.
- Fire protection was heavily impacted. Hydrants were damaged during flooding and subsequent debris removal. It took nearly a year to restore pressure in the distribution system to a sufficient level to provide fire protection through most of the city. Corrosive damage from the flooding continues to take its toll; it is believed that hydrants are failing at higher than normal rates.
- Tree roots commonly wrap around pipelines. Uprooting of trees during the storm likely caused a significant number of "point" breaks in the systems.
- While most pipes are designed for saturated soils, the degree and length of the flooding after Hurricane Katrina, combined with rapid flooding, may have caused a change in pipe restraining conditions that would result in moderate to severe damage.
- Soil around the pipe and restraining blocks at bends help keep the pipe in place. Soil migration has been observed in a number of locations—how much this may have impacted underground infrastructure is unknown but under investigation.
- In other areas, the sheer weight of the flood waters may have increased pressure around the pipe beyond design capacity. In particular, water and sewer pipes that travel under and through drainage canals need to be inspected. Water losses into the underground canals are difficult to detect at the drainage pumping stations.
- Pressure is normally maintained in the distribution system through pumps and storage reservoirs. If pumps stop suddenly—due to power failure for instance—this could trigger a potential surge within the pipes. If the surge wave is not mitigated, the system could experience catastrophic failure in portions of the pipe, particularly in weak joints or where saturated soils reduce pipe restraining conditions. A similar phenomenon can occur in surcharged sewer lines.
- The floodwaters were brackish (meaning a mixture of saltwater and freshwater). This brackish water is highly corrosive to many pipe materials.

Fire protection was heavily impacted by the storm. Fire hydrants were damaged during flooding and subsequent debris removal. It took nearly a year to restore pressure in the distribution system to a sufficient level to provide fire protection through most of the city. Corrosive damage from the flooding continues to take its toll; it is believed that hydrants are failing at higher than normal rates.

After Hurricane Katrina, the distribution system experienced a significant increase in water losses. This has a number of repercussions. Most importantly, large water losses make it difficult to maintain sufficient pressure in the pipes. This pressure is important to ensure proper disinfection and to provide sufficient water for potable and fire protection uses.

It took close to one year to bring this under control, and one section of the city still has no potable water.

Maintaining higher pressures to compensate for losses further compound the breaks in the distribution system. In addition, the water treatment plant serving the distribution network must treat significantly more water,

increasing chemical costs and wear and tear on the plant and associated pumping stations. The S&WB receives no compensating revenue for the leaking water.

The S&WB is working diligently to reduce water losses and has returned the distribution system to a working state of pressure throughout the system. However, water leakage is still very high; pressure is only maintained through delivery of higher than necessary quantities of water.

To date, the S&WB has not identified a single major source of the leakage. It is still unclear if the high water losses are due to a few major pipe ruptures or many small leaks. If the problem is numerous small leaks throughout the system, which is likely, this will raise a number of additional issues. First, it takes years to replace the hundreds of miles of distribution pipes buried in the city. Second, it will be extremely costly. Third, it is difficult to determine the location of specific leaks caused by Hurricane Katrina; thus, FEMA will likely need to be involved in the development of a reasonable methodology to distinguish and cost damage caused by the hurricane.

It is also estimated that a large portion of the cathodic protection system for steel pipes has been damaged. This will inevitably lead to increased corrosion in affected portions of the distribution system. Without a working corrosion-control system, the life of the pipes will be shortened. It therefore becomes important that sections of pipe subject to corrosion be investigated and a corrective action be implemented without delay.

In 2003, the S&WB received a Draft Capital Improvement Plan (the Plan) from Montgomery Watson Harza (MWH) for the water distribution system. The Plan focused on 20-year structural needs and the development of a prioritized 27-year program for improvements to the system. This report estimated that 30% of the mains were close to 100 years old and almost one third was less than 40 years old. It also noted that the "hydraulic capacity analysis suggested that the systems, in general, appear to have sufficient capacity to supply the existing water demand, therefore requiring no immediate or future upgrades to meet the planning horizon for the year 2025.[4]" The S&WB's goal was to reduce water leakage; thus the Plan further notes that "with the implementation of the structural rehabilitation recommendations included in the CIP, breaks and leaks should be reduced."

With the increased leakage due to Hurricane Katrina, this plan should be regarded as a minimal investment required to reduce water leakage. A study will be required to estimate the costs to bring the distribution system back to its pre-Katrina state; however, for the purposes of this report, the MWH report was used as a basis for cost (escalated 3 years at 5% inflation per annum to bring costs to 2007 estimates). Actual costs could vary considerably.

FEMA Projects ***$19,138,000***

FEMA project worksheets have been submitted for efforts underway to detect and repair leaks in certain portions of the system, but this program needs to be expanded, particularly into areas that were hardest hit by flooding. Increased pumping to offset this excessive leakage is not a viable solution over the long-term. Reducing leakage is essential to increasing the reliability of the water treatment and distribution system. The $19 million estimate in this category is likely to expand substantially as additional studies are completed and damages are identified. This category also includes repairs to fire hydrants.

[4] "Water Distribution System Assessment and Capital Improvement Plan," Executive Summary, prepared for the Sewerage and Water Board of New Orleans by MWH, June 2003, pp. 1-2

High Lift Pump Station / Backup 10 MW Diesel/Natural Gas Power Generator ***$25,000,000***

This generator would provide backup power to the Carrolton Plant. Also, a steam-operated high lift pump station is needed as a backup to provide water pressure during power outages. This would utilize the waste steam from backup power generator.

Distribution System Asset Management Plan ***$7,000,000***

A distribution system Asset Management Plan (AMP) is necessary to prove distribution system damages to FEMA in order to receive grant funding, prioritize or organize rehabilitation efforts such that they are reimbursable by FEMA, provide operational optimization for whole system, and incorporate data gathered during the current maintenance program. It will likely need to include some or all of the following:

- Intensive field studies using a mix of technologies to assess internal and external pipe conditions (technologies will vary based on type and size of pipe).
- Data generation and analysis based on current S&WB maintenance efforts.
- Development of hydraulic, structural, and water quality assessments to assess current and probable future condition of distribution system.
- Comparisons to 2003 MWH hydraulic study, other cities' distribution systems, and less affected portions of S&WB's assets.
- Leakage management program, including operational optimization and financial modelling to provide present value analysis of leak prevention vs. water production costs.
- Participation of objective university and/or professional organization to review damage assessment methodology.

Distribution System Rehabilitation Program ***$3,200,000,000***

The total cost of the distribution system rehabilitation is currently estimated at $3.2 billion (the Distribution System Asset Management Plan above would update this figure). This 20-year program (implemented over 25 years) was recommended by MWH in their study and has been used as the basis for this cost estimate. It is generally not possible to replace such large portions of the distribution system over a short time period because of cost impacts and disruption of traffic and neighborhood activities. Thus, costs are scheduled over 25 years. As the costs are large, they have been broken out into annual increments in the table below to help the reader understand the potential immediate, medium term, and long term needs associated with the system rehabilitation.

System Replacement Program, 2007-2009	$200,000,000
System Replacement Program, 2010-2014	$930,000,000
System Replacement Program, 2015-2032	$2,070,000,000
Total	$3,200,000,000

FIGURE 4: DISTRIBUTION SYSTEM NEEDS

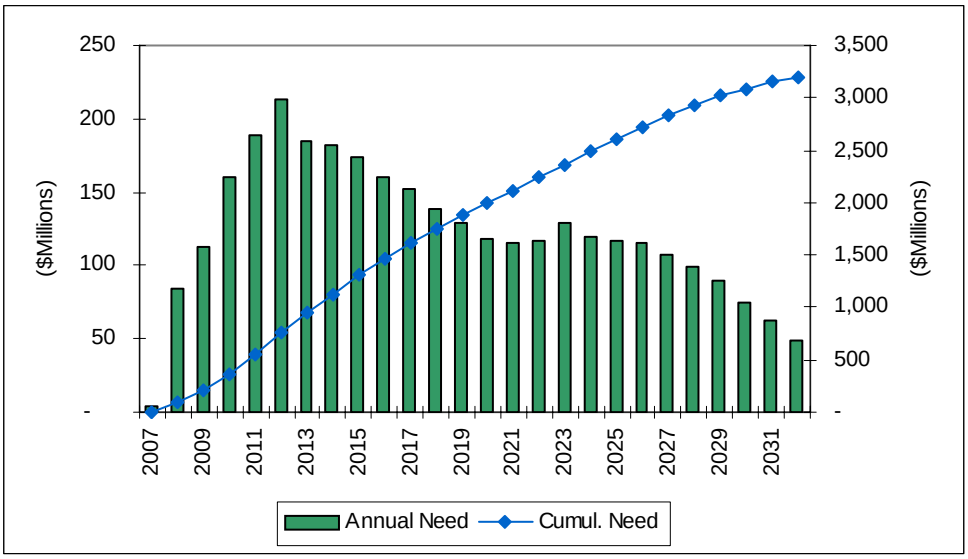


Figure 4 shows the annual and cumulative costs over the 25-year time frame. These figures for rehabilitation and repair are based on pre-Katrina analysis. Since Katrina, several factors are contributing to an accelerated deterioration of the distribution system. These include:

- Loss of cathodic protection of steel pipes resulting in a high rate of pipe corrosion,
- Widespread flooding causing pipe damage due to movement of soil and structures, and
- A significant increase in leakage from the pipes due to pipe movement and/or breakage.

These factors are manifested in the form of a higher leakage rate than when the MWH report was prepared and have likely increased the pipe failures in the system. The S&WB will have to spend additional capital dollars to repair and rehabilitate the system to protect the distribution system from catastrophic failure along with additional operations and maintenance costs to keep the system operating in the interim. A repair and replacement program should be initiated immediately, likely utilizing the following approach:

- Prioritize the components of the distribution system based on a criticality analysis (a product of the probability of failure and the consequences of failure),
- Analyze the condition of the most critical components first, using a variety of non-intrusive tools available, to determine the nature of the problem, the repair and replacement needed and the cost of such repairs or replacement, and
- Implement a systematic repair and replacement program that addresses the most critical needs first.

Though it is not possible to precisely estimate the cost of additional damage that Katrina caused to the distribution system without investigations outlined above, it is fair to say that the hurricane stressed the system further and reduced the life of the system, particularly in those parts that were already reaching the end of their useful life. Given that a third of the system is close to 100 years old and another third is more than 40 years old, it could be reasonably surmised that the damage caused by

Katrina could be as much as a third of the overall cost (about $1 billion) of the system repair and replacement estimated in the MWH report.

Wastewater Collection and Treatment

Both the East Bank Sewage Treatment Plant and the wastewater collection system were severely damaged and are discussed in detail in this section.

Wastewater Collection System

The wastewater collection system is gravity driven. Most of the system is not pressurized and therefore not as vulnerable as the distribution system. However, damage may have occurred in the form of flotation of pipe due to rapid changes in submerged conditions or from increased pressure on soils and pipe from the weight of the floodwaters. Damage to force mains, which are pressurized, has been noted. Changes in pipe restraining conditions/soil erosion and uprooting of trees also damaged the below ground portion of the system.

Severe damage occurred to aboveground elements of the system. For example, 65 lift stations were destroyed, and significant damage occurred to pump stations, instrumentation and control systems, supervisory control and data acquisition systems, etc. The system remains surcharged, as many pump stations are not operational and the temporary pumps do not adequately drain the sewers (temporary pumps are being utilized to keep the street free of wastewater).

Damage to the underground portion of the collection system has not been fully assessed. Influent flow to the East Bank Wastewater Treatment Plant is higher than would be expected, given the reduced population in New Orleans. It is probable that groundwater is entering through damaged joints and new breaks in the pipe. It is also possible that some of the increased flow is a result of the water distribution leaks mentioned earlier in this report.

The S&WB's actions to meet the Consent Decree amount to $187 million in upgrades, including a $32 million assessment of the sewerage system. Prior to Katrina, this assessment had provided the S&WB with detailed knowledge of the state of its sewerage system. Subsequent to Katrina, this study will need to be repeated. FEMA has indicated that it does not cover such studies.

The table below shows the significant progress made on this program.

TABLE 6: CONSENT DECREE MILESTONES FOR SEWER REHABILITATION

Basin	Begin Construction	End Construction	% Completed
Lakeview	12/15/1998	12/14/2001	**100%**
CBD	1/1/2001	12/31/2005	**97%**
Gentilly	1/1/2002	12/31/2004	**100%**
Uptown	1/1/2003	12/31/2005	**99%**
Mid-City	1/1/2004	12/31/2006	**49%**
Lower Ninth Ward	1/1/2005	12/31/2007	**4%**
Carrollton	1/1/2006	12/31/2008	**3%**
New Orleans East	1/1/2007	12/31/2009	
South Shore	1/1/2008	12/31/2010	

While Table 6 shows substantial completion for Lakeview, CBD, Gentilly, and Uptown, these neighborhoods likely sustained significant damage from Hurricane Katrina and the sewer rehabilitation program will need to be revisited and, most likely, redone. The S&WB is currently renegotiating the Consent Decree with the US EPA and working with consultants to perform an inspection of the system. This new inspection will be compared to the prior work to assess hurricane damages.

FEMA has indicated an unwillingness to pay for damages to underground infrastructure that are not an obvious result of Hurricane Katrina; that is, FEMA is willing to pay for visible damages but is having difficulty in accepting damages that can't be unequivocally proven to be caused by Katrina. While it is obvious that Katrina did considerable damage, it is difficult to prove that, for instance, a specific break in a pipe joint was caused by Katrina. It appears that FEMA investigators currently need to observe each piece of damage before obligating funds to cover that damage.

FEMA Projects ***$93,170,000***

The S&WB has submitted $28,000,000 in costs to clean and inspect the sewage system. This will allow the S&WB to determine the extent of damage from the storm and levee failures. To date, $14,000,000 has been incurred for inspection of gravity mains and another contract has been let for inspection of force mains. Bids for another gravity inspection contract have been accepted. In addition, $46,000,000 has been included in project worksheets for obvious sewer damage (from uprooted trees and damages near levee failures, for instance); $1,050,000 for manhole rehabilitation on sewer force mains; and $19,150,000 for repairs to sewer pump stations.

Sewer Pump Station Mitigation ***$28,000,000***

Twenty nine sewer pump stations are built below ground with limited above-ground access. The sewer pump station motors, electrical equipment, and enclosures need to be replaced with above ground facilities to ensure the ability of the S&WB to provide reliable and consistent sewer service and to comply with the EPA Administrative Order to prevent illegal discharge. FEMA mitigation requires that pump stations be elevated if they are to be covered under future disaster insurance.

(Current indications are that this cost may be covered by FEMA but it had not been submitted at the time of this report).

System-Wide Sewer Repairs—Hurricane Related (in addition to Consent Decree) ***$35,000,000***

Until the full system assessment is finalized, costs associated with hurricane damage and with the consent decree can only be estimated. The hurricane-related damage estimate of $35,000,000 is a conservative estimate and actual costs will vary. However, combining these repairs with Consent Decree related repairs may help control total costs.

System-Wide Sewer Repairs—Consent Decree ***$651,000,000***

The Consent Decree costs are based on the 2005 SSERP program schedule for 2005-2020. Repairs scheduled for 2005 have been used to estimate repair costs in 2007 (with escalation for inflation), 2006 for 2008, and so on. The S&WB was in year 11 of the SSERP, so much of the work was completed and remaining costs were near-term (unlike the distribution system program, which was still in the planning stages). The Consent Decree plan is under revision and these numbers will certainly change and possibly increase. The S&WB is recommending to the EPA that Consent Decree rehabilitation be reprioritized to focus on areas with the most hurricane damage, that is, areas that had already been completed under the terms of the consent decree but now need to be redone.

To better estimate near-term and medium-term needs, the funding schedule has been broken down into three categories (costs based on pre-Katrina Consent Decree projections):

Sewer System Replacement Program, 2007-2009	$298,000,000
Sewer System Replacement Program, 2010-2014	$333,000,000
Sewer System Replacement Program, 2015-2020	$20,000,000
Total	$651,000,000

FIGURE 5: WASTEWATER COLLECTION SYSTEM NEEDS

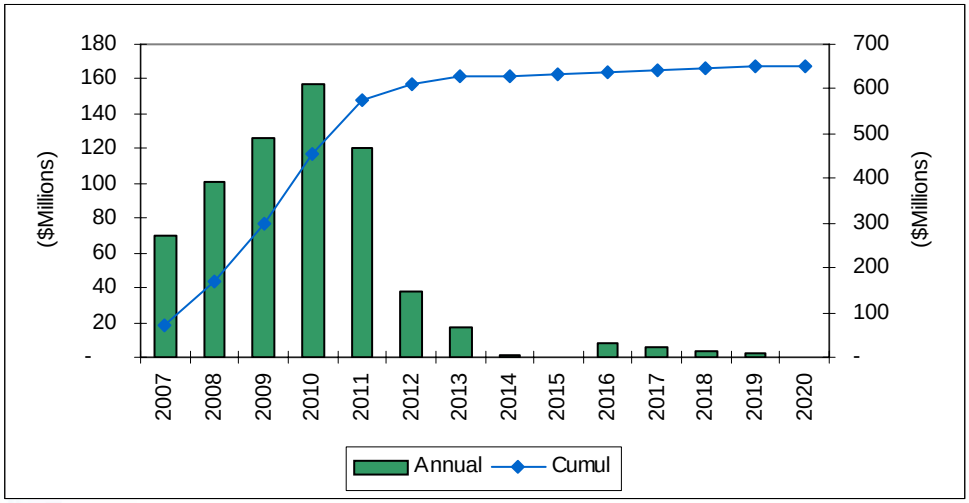


Figure 5 illustrates annual and cumulative costs. Note, however, that it will be difficult to quickly advance sewer system repairs and the 2007-2009 timeframe may be optimistic, given the long period required to assess damages. A full damage assessment cannot begin until the pump stations are repaired.

Wastewater Treatment

The East Bank Sewage Treatment Plant is a massive 122 mgd secondary treatment plant. It experienced significant damage from the levee failures. The 17-foot initial flood gave way to three weeks of a 3-foot flood. When the water finally receded, the concrete structures had barnacles on the outside. Fortunately, the enormous and expensive reinforced concrete basins remained mostly structurally intact, though some damage occurred due to soil migration. Metal structures, on the other hand, suffered severe damage, and most of the electrical, chemical, and power-related infrastructure was destroyed.

SUBMERGED PUMP MOTORS AND CIRCUIT PANELS AT EAST BANK WASTEWATER TREATMENT PLANT

The plant was brought back online on October 16th, 2005, with only primary treatment and at a fraction of its normal capacity. Secondary treatment processes were brought back on-line on November 16, 2005, albeit not at normal operating capacity.

FEMA Projects: East Bank Sewage Treatment Plant ***$76,604,000***

Damages to the East Bank Sewage Treatment Plant were severe:

- Electrical circuitry, controls and instrumentation, and electrical switchgear were destroyed, as were mechanical equipment inside the head works, the oxygen piping feed aeration, and the chlorine room.
- One oxygen reactor was severely damaged (ceiling cracked and motors flooded and damaged) and filled with sand. Buildings were heavily damaged and one was destroyed.
- All steelwork in the clarifiers was corroded and required replacement.
- The multiple hearth incinerator lost its blowers and the stack. In the fluidized bed incinerator, the sand bed, nozzles, brick flooring and brick mortar walls required replacement.
- 21,000-pound effluent pump motors (as well as other motors) were flooded and had to be disconnected, removed, transported across the Mississippi, dried, rebaked, moved back and reinstalled.
- Soil migration and flooding caused separation in the effluent channel wall; all joints in the channel had to be resealed.
- The control room, sedimentation basins, grease concentrators, sludge removal equipment and access roads were damaged.
- Facility cleanup and debris removal costs were substantial. Rolling stock was also destroyed (the cost of rolling stock is covered elsewhere in this report).
- The East Bank Plant had two separate power feeds from the local power provider; both were lost in the storm. Immediately after the storm, an emergency generator was installed, without which services would not have been restored for months. One year later, only one power feed from the local provider has been restored, and that power feed is highly unreliable. Plant personnel estimate 5-7 outages per month, lasting from a few minutes to hours. FEMA will not pay for the emergency generator because it did not replace existing equipment.

FEMA Projects: West Bank Sewage Treatment Plant ***$3,937,000***

The West Bank Sewage Treatment Plant did not flood, and damages were less severe. Major damage cost categories include trickling filter media and covers for sludge thickeners, the generator building, and a portion of the clarifier covers.

FEMA: Emergency Power Generator ***$6,000,000***

Currently, the plant has only one electrical power supply, which does not meet capacity needs, is still unreliable to the plant, and is highly vulnerable to storms. In addition, permit requirements and sound management practices require an emergency power supply. FEMA has indicated that this cost is ineligible—while the emergency generator is clearly necessary, it is not replacing an existing S&WB asset. It is replacing the functional capability of Entergy power and such costs were not envisioned by the Stafford Act that guides FEMA.

Medium to Long-term Projects

East Bank Levee Improvement ***$27,000,000***

Levees that protect the plant were severely damaged. Even undamaged portions only stand at 11 feet, while the plant was hit with a 17 foot surge, causing about $65,000,000 in damage. Levee repair and elevation will protect the plant from future flooding.

East Bank Plant Expansion and Upgrade ***$300,000,000***

Prior to Katrina, the S&WB was planning to upgrade the plant facilities to treat average and peak flows. These improvements were estimated to cost more than $300 million and were required as part of the Consent Decree. While population has decreased, flows are still high due to hurricane damage to the collection system. In addition, the population is expected to increase significantly over the next five years. Treatment plant capacity must be planned years in advance of needs. The ability of the plant to reliably treat the flows is expected to be compromised (structural condition of the aeration tanks, etc.). It is estimated that at least $300 million is needed to upgrade the facilities to a long-term sustainable condition. This figure may be adjusted slightly (up or down) as the S&WB renegotiates the Consent Decree with the EPA.

East Bank Wastewater Treatment Plant Wetlands Assimilation ***$40,000,000***

The East Bank Wastewater Treatment Plant is adjacent to wetlands that are in serious decline. Wetlands decay due to limited influx of nutrients and freshwater. The channelization of the Mississippi River ended the seasonal flooding that allowed the wetlands to receive nutrients. In addition, saltwater intrusion from the Mississippi Gulf River Outlet is a major contributor to the problem as the East Bank wetlands is populated with fresh water vegetation that is intolerant to salts. The saltwater surge from Hurricane Katrina exacerbated the problem (the plant and the wetlands are also located next to the Lower 9th Ward, one of the hardest hit areas of New Orleans) causing a further reduction of the wetland area.

Discharging treated wastewater effluent into wetlands can be an accepted form of wetlands restoration. Based on existing State regulations, the treated effluent from the East Bank Wastewater Treatment Plant could be discharged to the wetland area. The S&WB has been actively pursuing this avenue. If it is unsuccessful, significant additional investment in infrastructure will be required in order to meet pending regulations that limit nutrient discharges (due to take effect in 2010).

The S&WB has received preliminary approval for a $450,000 matching grant from the Delta Regional Authority to address feasibility issues and perform conceptual design for the project. In addition, New Orleans and Saint Bernard Parishes have applied for a $40 million Coastal Impact Assistance (CIA) program grant from the Louisiana Department of Natural Resources. These grants would likely be used to examine:

- The feasibility of using the wetland area for nutrient polishing,
- Development of a demonstration project,
- Permitting of the wetland system, and
- Full scale implementation, if proven viable, of the wetland approach.

The S&WB is also seeking alternative funding to supplement any gaps between construction cost and the CIA grant amount.

Drainage System

The drainage system includes assets managed by the S&WB and by the levee boards (canal levees, which breached and flooded the city, are neither owned nor maintained by the S&WB). Damage to these assets was severe and widespread. While the S&WB may not manage all of the assets, efforts to protect the canals will likely have a large impact on its operations and the viability of the system.

The U.S. Army Corps of Engineers (Corps) is developing a plan to protect the canal levees through installation of gates at the lake end of the canals. Should the gates ever need to be closed for an impending hurricane, this would preclude pumping rainwater out of the city and into the canals. Hence, the Corps is also considering installation of pumping stations to pump water over the gates and into Lake Pontchartrain. While the Corps would pay for the installation cost, the S&WB would be responsible for maintenance of these pumping stations (with neighboring Parishes contributing some minor share of costs). Expectations are that the gates would rarely need to be closed; however, the massive pumping stations would have to be maintained and in working order at all time to assure the protection of New Orleans (and neighboring Jefferson and St. Bernard Parishes).

The drainage system has been inspected but not in the detail required (which will take many months). Superficially, damages such as canal separation at Pump Station #4 have been observed. The water distribution and sewer collection system pipes cross under and through the canals at numerous points and may be leaking into the canals. The drainage system's pumps are so large that even significant leaks would be unlikely to be detected from additional flow at these pump stations. The S&WB is sampling waters for chlorine residuals, which would originate from the distribution system, to attempt to detect leaks.

The damage estimates contained herein do not include full restoration of the system; significant additional costs are likely.

FEMA Projects ***$40,410,000***

FEMA will cover some minor damage to the drainage system; primarily, the underpass pumping station repairs, as well as damages to pump stations that have already been completed or contracted by S&WB. It is thought that remaining damage repairs will be turned over to the Corps of Engineers.

SELA Projects ***$224,000,000***

Prompted by the severity of damages associated with rainfall flooding in May 1995, Orleans, Jefferson, and St. Tammany Parishes requested Federal assistance in developing and implementing improved flood prevention solutions. The United States Congress authorized the Southeast Louisiana Urban Flood Control Project (SELA) in 1997. The SELA program includes a number of projects that are currently under construction. Prior to Hurricane Katrina, the 2006 Fiscal year budget was $27 million, 25% of which was to be funded by local governments. Since the hurricane, that has been amended to $224 million to complete ongoing construction projects and to fund previously authorized projects. The 25% local match requirement is expected to be removed for this $224 million but not for funding in future years. New Orleans' projects to be constructed under the 2006 amendment (100% Federal) include:

Dwyer Road Drainage Pump Station (completion)	$ 6,000,000
Dwyer Road Intake Canal (Dwyer DPS to Lafon)	$39,000,000
Florida Ave. Canal Phase 1 (DPS 19 to Mazant)	$28,000,000
Florida Ave. Canal Phase 2 (Mazant to Piety)	$51,000,000

Corps Projects: Pump Station Hardening ***$40,000,000***

Soon after the storm, the Corps assessed the drainage pump stations for mechanical, electrical and structural damages. They estimated the costs to be $40,000,000, but this is an early estimate and is likely to change. In addition, mitigation projects currently under consideration by the Corps will add costs.

Corps Projects: Canal Gates and Pump Stations ***$530,000,000***

To prevent the potential for a storm surge to exceed the safe water elevation in the canals between Lake Pontchartrain and the drainage pump stations, the Corps of Engineers' response has been to install temporary closure structures and pump stations near the mouths of each of the three open canals. The temporary closure structures and pump stations are to be replaced by permanent structures at or near the same locations. When a storm surge is expected, the gates will be closed and the new pump stations operated to lift the discharge from the existing pump stations from the canals to the Lake. An option was considered to deepen the existing canals, bypass the existing pump stations, and replace them with a new permanent pump station at the Lake. This option would improve the canal hydraulics by lining the canal, and replace old pump stations with new modern equipment, reducing O&M costs. While this would produce significant benefits, it would require substantial additional federal funding.

Emergency Cooling Water Systems ***$6,000,000***

Katrina revealed a need for improved redundancy in cooling water for the drainage station pumps. Pre-Katrina, cooling water came from the potable water distribution system. Post-Katrina, the stations had to be quickly brought online to drain the city. S&WB staff plumbed the stations to use drainage water; however, this non-potable source severely damaged the bearings and other mechanical components at the stations. Mitigating this risk for the future will require drilling potable water wells at each of the drainage stations, installing a pump, generator and fuel storage tank, and plumbing the well pump into the station.

Station 13 Emergency Power Supply ***$8,000,000***

Station 13 is the only drainage station in Algiers and has a history of electrical outages. Current power supply issues have reduced the station to half of its capacity. Emergency generators are necessary to return the station to full capacity and meet minimal operational requirements.

Underpass Drainage Station Mitigation ***$6,500,000***

Certain underpasses require pumping to prevent flooding during storms. Pump station mitigation projects are expected to cost $6,000,000 to $7,000,000.

Emergency Power Supply ***$330,000***

45 kilowatt generators are needed to operate safety rooms in drainage pump stations for emergency personnel. The S&WB needs these generators to assure operator safety during emergency events.

Lining of Open Drainage Canals in New Orleans East ***$20,000,000***

The necessity of this work was accelerated by Katrina. The canals in New Orleans East are earthen and this reduces the amount of flow getting to the drainage stations. It also allows these canals to fill with debris and lose the capability to drain the intended volume of water to the pumping stations. A post-Katrina cleaning of debris from canals alerted the S&WB to unsatisfactory and dangerous conditions of the earthen slopes lining the canals. These canals are responsible for draining the city and are therefore essential to public health and safety. This cost estimate should be regarded as highly preliminary; actual cost may increase substantially.

Power Supply

A reliable power supply is necessary for the operation of all of the S&WB's major facilities. As prudent engineering design, the S&WB has planned redundancy—that is, multiple power supplies—throughout its system. In addition to power feeds from the city's main energy company, Entergy, the S&WB has a power generation plant. Essential facilities on the East Bank that serve the majority of New Orleans have multiple power feeds from Entergy. For instance, the East Bank Wastewater Treatment Plant had two separate power feeds before Katrina. The drainage pumps each have a power supply and a backup power supply from Entergy, the S&WB's power generator, and/or backup generators.

Even this high level of planned redundancy was not sufficient after Katrina decimated power lines. In the first week after the storm, the S&WB purchased an emergency power generator for its East Bank Wastewater Treatment Plant. This was used not just for the plant but also served some of the pump stations that pumped floodwaters from within the levee system. Emergency power installed immediately following Katrina is not covered by FEMA because it did not replace *existing* S&WB infrastructure (it replaced Entergy infrastructure).

FEMA Projects ***$4,703,000***

This cost covers Entergy power poles, underground feeder repairs, and overhead distribution lines located at the S&WB's facilities.

Power Plant ***$125,000,000***

The 25-cycle power plant supplies energy for water treatment, water distribution, drainage pumping stations, sewer pump stations A and C, and the Algiers Water Treatment Plant. The existing power plant was shut down for five days after Hurricane Katrina, but was restored as quickly as possible as it provided crucial power to drain the City of New Orleans after Hurricane Katrina. Fourteen months after the storm, Entergy's power supply remains fragile and is unreliable. The backup power plant has become the primary power source for some assets and is now in full operation in spite of damages from Hurricane Katrina. Given the vulnerability and unreliability of the Entergy power feeds, the S&WB must improve its power generation capability. Its power plant needs significant modifications to prevent flooding and to ensure drainage, sewerage, and water purification services when commercial power is not available.

Fourteen months after the storm, Entergy's power supply remains fragile and unreliable… Given the vulnerability this introduces, the S&WB must improve its power generation capability.

Miscellaneous

A number of other categories are covered by FEMA and are discussed briefly below.

FEMA Projects: Rolling Stock ***$16,619,000***

Over 500 vehicles and related equipment were damaged in the storm, including pickup trucks, front-end loaders, crane trucks, golf carts, employee vehicles (for emergency employees that were on duty during the storm), etc.

FEMA Projects: Staff Overtime ***$14,000,000***

This category covers staff overtime in the months after the Hurricane. Dedicated employees who lost their homes came to work as soon as possible and worked long, hard hours trying to restore the

systems. This was not an option. While they worked closely with the Corps, S&WB staff alone had the knowledge and experience with the drainage pumps that was essential to removing floodwaters after the Corps repaired the levees. In fact, a number of staff stayed at the drainage stations and treatment plants during the storm. At the same time, staff worked constantly to repair essential water and wastewater services to support the large number of relief workers in the city and to allow the displaced population to return. Even after these services were restored, much work had to be done to keep the system operational.

FEMA Projects: Emergency Operations ***$24,159,000***

This category covers a number of costs, many of which are related to emergency restoration efforts that occurred soon after the storm.

Financial Overview

While this report is limited to capital asset needs and does not assess the financial impact of a reduced population, the reduction in revenue may contribute to additional needs. Repopulation of the City of New Orleans is critical to the long-term financial stability of the S&WB. The cost of utility services is recovered through charges to S&WB customers—the citizens, businesses and industries that are served by the S&WB. These charges fund normal operations and maintenance and capital programs. While some rate increases are reasonably expected, the extent of the capital improvement needs that have been identified since Hurricane Katrina are far in excess of the funds that the S&WB can reasonably expect its customers to bear. Two significant factors are involved in this conclusion:

- The post-Katrina population of New Orleans is much lower than the pre-Katrina population so costs are spread over fewer customers.
- The magnitude of a rate increase that would be necessary to pay for the capital improvements would not be affordable to a large percentage of the populace.

The S&WB has been operating with 25% fewer staff than before the storm. However, resource needs have not decreased—repair and recovery efforts as well as grant application processes are demanding more of the employees' time. Many employees are working overtime.

The grant application process has taken enormous resources and has thus far not provided much funding, though numerous grants have been approved. As of October 13, 2006, $302 million in project costs had been identified, $154 million in project worksheets had been accepted by FEMA, $112 million had been obligated (approved by FEMA), but only $61 million in cash had been received.

FEMA has worked closely with the utility, but limitations in the Stafford Act that guides FEMA and other issues are likely to result in the S&WB not receiving FEMA grant funding sufficient to return the utility to pre-Katrina functionality. While significant grant funding is necessary to assure the viability of the utility in the long-term, much of the S&WB's activities have been and will continue to be funded by its stakeholders—the citizens and businesses of the City of New Orleans.

Overview

The interruption of water, wastewater, and drainage service and the limited return of the evacuated population caused the Sewerage and Water Board of New Orleans to experience an immediate reduction in revenues. Some long-term reduction of revenue is anticipated. This will have a material negative impact on the financial condition of the S&WB for several years.

In spite of this, the S&WB has budgeted capital investment for the future. This budget, however, is not sufficient to meet the needs of New Orleans. It is also unfunded and debt financing has become more difficult and expensive as the S&WB's credit rating was reduced after Hurricane Katrina.

Total projected capital investment needs for the Sewerage & Water Board of New Orleans are substantial. The needs stated in this report are in addition to the normal capital maintenance and investment that the S&WB funds from user fees and ad valorem revenues. Some costs are hurricane related, some are necessary to mitigate for future hurricanes, and some are related to the age of the infrastructure. All costs are necessary to bring the water, wastewater, and drainage systems back to pre-hurricane functionality, and meet one or more of the following needs:

- Protecting public health and safety
- Repairing hurricane-related damages
- Providing adequate reliability in systems
- Mitigating risk / provide appropriate levels of redundancy in the systems
- Meeting state and federal regulations
- Meeting the requirements of the Consent Decree

TABLE 7: FUNDING NEEDS BY YEAR (US$ 000s)

Year of Need	Cost
2006 - 2009	**1,888,646**
2010 - 2014	1,401,000
2015 and Beyond	2,391,000
Total	**5,680,646**

The total needs over the next 25 years are projected to be in the range of $5.7 billion. Table 7 provides additional information on the near-term, medium-term and long-term capital needs to better understand the difference between immediate needs that must be funded and long-term needs that will likely require some portion of support funding. The near-term needs are stated in terms of 2006-2009 and amount to almost $1.9 billion. These are considered urgent, critical needs that cannot be funded by the S&WB. The medium-term needs are $1.4 billion and it is likely that the S&WB will need support for some portion of this cost. The long-term needs are $2.4 billion for expected capital investment in the distribution system for years 2015-2032. It is expected that the S&WB will fund this investment out of normal revenues.

Table 8 indicates the costs by major asset category (project details are provided in Appendices A and B and

TABLE 8: 25 YEAR FUNDING NEEDS (US$000s)

Category	2006-2009	2010-2014	>>2014	Needs
Water Treatment Plants	81,076	26,000		107,076
Water Distribution System	227,138	955,000	2,071,000	3,253,138
Wastewater Collection	454,170	333,000	20,000	822,170
Wastewater Treatment	86,541	67,000	300,000	453,541
Drainage System	855,240	20,000		875,240
Power Generation	129,703			129,703
Misc Emergency, Admin, etc.	54,778			54,778
TOTAL FUNDING NEEDS	**1,888,646**	**1,401,000**	**2,391,000**	**5,680,646**

project descriptions are provided in Chapter 3). While significant needs exist across all categories, the largest needs are for underground infrastructure—the potable water distribution and wastewater collection networks—and the drainage system. The wastewater treatment plant needs are also high due to major flooding that occurred at the East Bank Wastewater Treatment Plant and to Consent Decree requirements to increase capacity.

Table 9 shows the potential grant funding for these needs, with $272 million from FEMA, 224 million from SELA and $570 million from the Corps of Engineers. The total identified potential grant funding is $1.066, a large figure. Unfortunately, it is not enough. The $1.9 billion in capital needs for the near term exceed grant funding by $822.5 million.

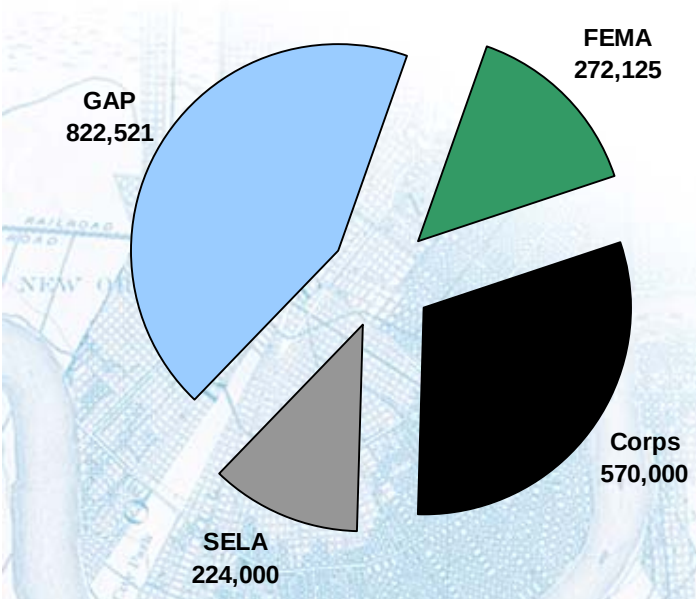
TABLE 9: FUNDING SOURCES AND GAP (US$ 000s)

	2006-2009	2010-2014	>>>2014	Total
FEMA (Potential)*	272,125	0	0	272,125
SELA Funding	224,000	0		224,000
Corps Funding	570,000	0	0	570,000
Potential Grant Funding	**1,066,125**	**0**	**0**	**1,066,125**
Funding Needs	**1,888,646**	**1,401,000**	**2,391,000**	**5,680,646**
Gap	**(822,521)**	**(1,401,000)**	**(2,391,000)**	**(4,614,521)**

**Does not include FEMA insurance deduction, currently estimated at $20 million.*

There is no identified grant funding for the medium term of 2010-2014 or in the long-term (after 2014). It is likely that the S&WB will be need some support to fund the medium term needs, but will be able to fund long term needs from its own revenues. It is expected that the S&WB will be able to fund long term needs from its own revenues.

FIGURE 6: NEAR-TERM SOURCES AND GAP (US$ 000S)



2006-2009 funding sources and gaps are depicted in Figure 6. Significant funding is shown from FEMA, SELA, and the Corps. As indicated by the large Gap in blue, however, current funding sources are not sufficient to cover the S&WB's near-term needs.

Short-term needs are further broken down by category in Figure 7 below. This graphic depiction shows the large impact that the water distribution, wastewater collection, and drainage systems have on total needs. Most of the Congressional funding received by the S&WB is expected to come through the Corps and SELA for the drainage system, leaving large gaps in funding for underground infrastructure.

Figure 7 can be misleading however, as it only includes near-term needs. Much of the cost of the distribution system is projected to be in the medium to long-term. Figure 8 presents the long-term costs and a better depiction of the relative needs of each system.

FIGURE 7: NEAR-TERM NEEDS BY CATEGORY AND FUNDING SOURCE

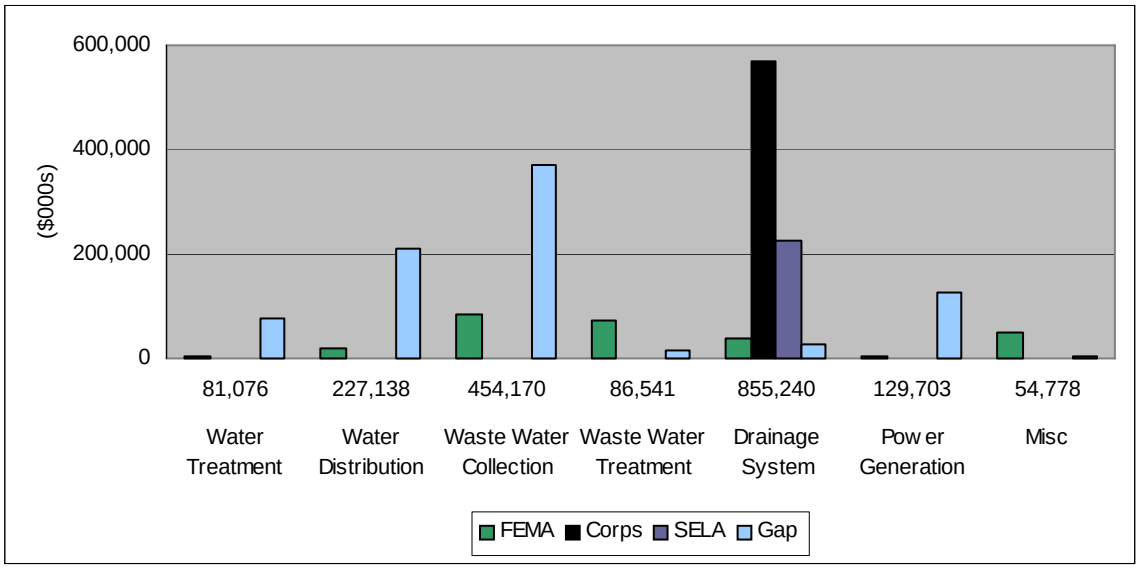
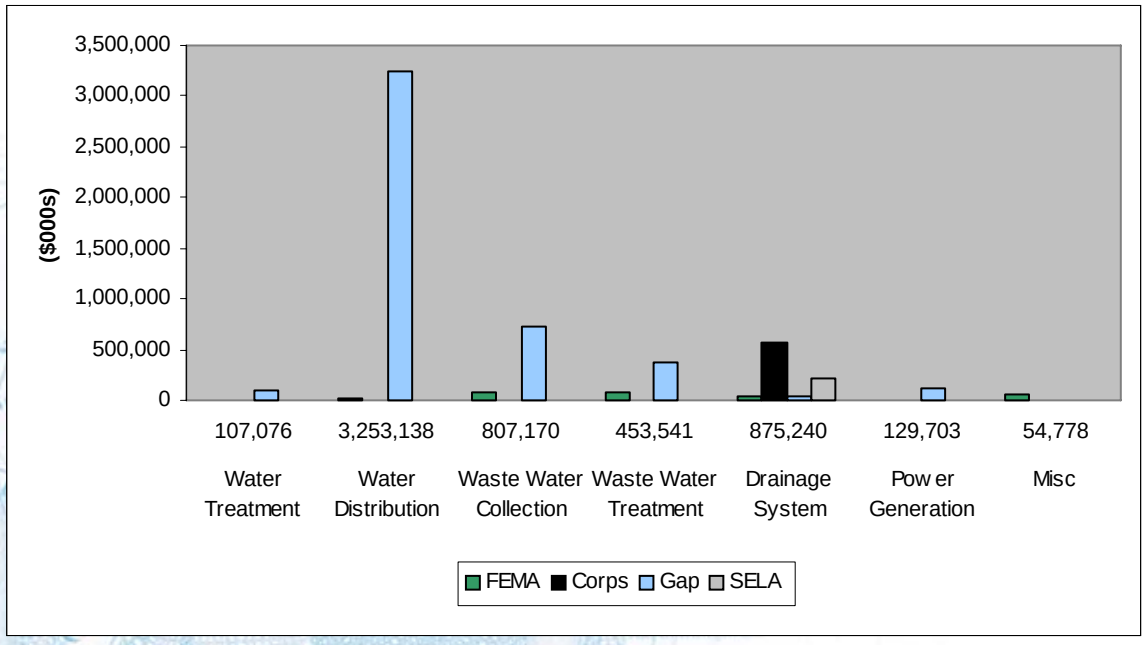


FIGURE 8: TOTAL NEEDS BY CATEGORY AND FUNDING SOURCE



Notice: Some costs stated in this report are based on actual contractor bids to do the work; other costs are preliminary, as discussed in the prior Chapter. Further, many of the cost assessments are for "invisible" infrastructure and scheduled far in the future; thus it is difficult to project actual needs and how much might be covered by the S&WB. **The information presented herein provides a conceptual level documentation of needs and should be used only for planning purposes, as actual numbers are subject to weekly and even daily updates.**

FEMA Funding

The FEMA funding deserves further clarification. The S&WB has spent considerable time working with the Federal Emergency Management Agency (FEMA) to develop detailed project worksheets. Each worksheet may in fact include many pages of description, audit information, contracts, etc. Over 400 worksheets are in various stages of completion. Once FEMA approves a worksheet (or a portion thereof), the costs are "obligated" by FEMA. Many costs have been denied, appealed by the S&WB, and then obligated. Many more costs are still under appeal.

Worksheets in process total about $154 million for $302 million of costs. Thus far, FEMA has obligated, or approved, $112 million in costs and the S&WB is appealing the difference of $190 million. Even if FEMA were to approve worksheets for the entire $302 million, it would only cover about 90% or $272 million.

FIGURE 9: FEMA SUMMARY, EFFECTIVE 10/13/06 (US$ 000S)

Project Costs	$302,361
90% of Project Costs	$272,125
Worksheet Project Value	$154,596
Adj. Obligated	$111,750
Ineligible/Appealing/Insurance	$190,611
Cash Received	$60,644

The S&WB has received $60 million of the $112 million that has been obligated. Significant delays have occurred in the receipt of cash for obligated worksheets. These delays are a result of a highly bureaucratic process on the part of FEMA and a repetitive process requirement of the State. FEMA considers the state to be the grantee and requires that the state audit the worksheets. This adds another level of bureaucracy to an already overburdened system.

Delays in funding are a significant problem for the S&WB, which has had to tap into its reserves, delay payments to subcontractors, and borrow against future grant funding. Some essential work has been delayed due to lack of funding.

For most cost categories, FEMA deducts certain amounts for assumed insurance deductibles and then covers 90% of costs. The insurance deductibles are under consideration and are currently estimated at about $20 million.

Coordination with City and State-wide Planning Efforts

The Sewerage & Water Board is working with a host of agencies to help those agencies better understand its needs and to complement recovery work in the region. This section provides a brief description of the LRA and ESF 14 agency activities.

LRA's Louisiana Speaks

The State of Louisiana's planning and coordinating body for the recovery and rebuilding of the state is the Louisiana Recovery Authority. The LRA's long-term planning initiative, Louisiana Speaks, is leading an effort to provide support for and documentation of recovery needs throughout the state. Through this effort, Long-Term Community Recovery (LTCR) teams, supported by FEMA and other federal partners (ESF-14), have worked in cooperation with local city and parish governments to provide technical assistance and/or to develop LTCR plans in the Southern Louisiana parishes most severely impacted by Hurricanes Katrina and Rita.

Parish plans include each parish's recovery vision, needs, goals and potential recovery projects as defined by local stakeholders and residents. The parish-level LTCR plans provide a framework for evaluating, coordinating and prioritizing recovery efforts in areas such as housing, infrastructure, and economic development. Higher recovery value projects are consistent with community recovery visioning and goals, focus on overall community recovery and can achieve multiple recovery benefits. The projects are reflected in the LRA's recovery planning tool (RPT), a dynamic tool that is intended to showcase, update, and add recovery projects, as needed.

The City of New Orleans has participated and continues to participate in the Louisiana Speaks LTCR planning initiative. Recognizing that community recovery from a disaster of this magnitude is an ongoing effort involving a wide spectrum of stakeholders, needs, and visions, the LTCR process naturally evolves as the communities re-examine their needs and objectives. The RPT is a means for identifying and updating communities' long-term recovery projects.

LTCR's current list of recovery projects includes the S&WB's Wetlands Mitigation project with a Recovery Value of "Medium." The City of New Orleans' Regional Plan includes water and wastewater treatment restoration in its vision. Few other parishes have utility needs listed, but of those that do, some utility projects have been deemed of "High" Recovery Value. Consistent with other parishes and the City of New Orleans' Recovery Vision, many of the S&WB's projects could qualify as "High" Recovery Value. As the S&WB moves into the next phase of recovery efforts, it will be important to ensure that these projects be included in the New Orleans Regional Plan, and ultimately, in the Louisiana Speaks recovery plans.

In addition, Louisiana's Coastal Protection and Restoration Authority (CPRA) has been charged with creating a master plan to fully integrate coastal restoration with hurricane recovery efforts. Louisiana Speaks is supporting the CPRA's efforts by sharing data, computer modelling results and public feedback that is collected from stakeholders, elected officials and citizens through various outreach initiatives.

Outreach meetings found "overwhelming support for a combination of aggressive coastal restoration and strategic levee protection. A majority of participants supported regional coastal wetland restoration strategies that combine slower, more sustainable natural river diversions and water management with faster-acting pipeline conveyance of sediment to create new wetlands and barrier islands.[5]"

The outreach workshops resulted in more than 80 workshop table maps consisting of preferences for coastal restoration and levee protection, land use patterns, transportation investments, economic development actions and outcomes. These scenarios are expected to be introduced to the public in January 2007, though release of a draft of the Louisiana Comprehensive Coastal Protection Master Plan may occur as early as November 2006. The S&WB's efforts on its Wetlands Project should continue in order to ensure that the project is adequately represented and appropriately prioritized. Converting its wastewater permit to a wetlands permit is highly cost-effective for the heavily burdened utility; thus, this project would likely be considered a high priority in integrating coastal recovery with hurricane recovery.

[5] Louisiana Speaks, "Stakeholder Workshops Executive Summary," *based on workshops held in July-August 2006*, Web site, What's New, http://www.louisianaspeaks.org/static.html?id=53 (accessed October 17, 2006).

FEMA's ESF-14

FEMA Emergency Support Function #14 (ESF-14): Long-Term Community Recovery provides technical assistance and coordination support to local and state government in the development of long-term recovery plans. In Louisiana, Long-Term Community Recovery plans were developed in the most highly impacted parishes. Each recovery plan contains the following components:

- Broad-based and open public involvement
- Identification of high recovery value projects and programs
- Strategies, tools and recommendations for implementation

The Recovery Value Tool was used by ESF-14 to provide technical assistance to communities during long-term recovery planning. The spreadsheet-based Recovery Value Tool was used to provide FEMA, other federal and state agencies, and the local community with an assessment of a project's potential impact on the long-term recovery of a community. The tool includes criteria and measurement of a project's value to the long-term recovery effort, a summary of the recovery value concept that can be used in LTCR plans and documents, and a graphic and visual means of conveying each project's recovery value.

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Project Costs, Potential Grants, and Unfunded Needs: Water Treatment and Distribution ($000s)

Project Date	Project Description	Total Project	Potential Grant Funding			GAP (Unfunded
			FEMA	COE	SELA	
	Water Treatment Plants	**$107,076**	**$1,765**	**$0**		**$103,455**
	Carrollton Plant:					
2006-09	FEMA: Misc	$3,163	$1,738			
2006-09	Filter Gallery Improvements	$19,000				$19,000
2006-09	Ferric Sulfate Storage Capacity	$300				$300
2006-09	Ammonia/Chlorine Conversion	$3,180				$3,180
2006-09	Alternative Corrosion Control	$2,000				$2,000
2006-09	Solids Removal in Water Purification Plant	$3,000				$3,000
2006-09	Old River Intake Pump Station Rehabilitation	$40,000				$40,000
2006-09	Flow Monitoring Devices	$300				$300
2006-09	Communication System Replacement	$5,830				$5,830
2010-14	Flocculation and Sedimentation Capacity Increase	$24,000				$24,000
2010-14	Flocculation and Sedimentation Rehabilitation	$2,000				$2,000
	Algiers Plant:					
2006-09	FEMA: Misc	$458	$27			
2006-09	Algiers Emergency Generator Fuel Storage	$45				$45
2006-09	Filter Valve Control System	$3,800				$3,800
	Water Distribution System	**$3,253,138**	**$19,138**			**$3,234,000**
2006-09	FEMA: Misc	$19,138	$19,138			
2010-14	High Lift Facility	$25,000				$25,000
2006-09	Distribution System Asset Management Plan	$7,000				$7,000
2006-09	System Replacement Program, 2007-2009	$201,000				$201,000
2010-14	System Replacement Program, 2010-2014	$930,000				$930,000
After 2014	System Replacement Program, 2015-2032	$2,071,000				$2,071,000

Note: FEMA amounts shown here represent figures allowed on project worksheets, which are often undervalued and are under consideration by FEMA. The FEMA amounts listed here are significantly below the $272 million potential FEMA grant funding discussed in this report; thus, the gap could increase substantially.

Project Costs, Potential Grants, and Unfunded Needs: Wastewater and Drainage ($000s)

Project Date	Project Description	Total Project Cost (est.)	Potential Grant Funding			GAP (Unfunded Needs)
			FEMA Worksheets	COE	SELA	
	Wastewater Collection System	**$807,170**	**$36,276**			**$714,000**
2006-09	FEMA: Pump Station Electrical/Mechanical	$19,154	$11,067			
2006-09	FEMA: Damage Assessment/Study	$28,000	$13,958			
2006-09	FEMA: Sewer Rehab	$46,016	$11,251			
2006-09	Pump Station Mitigation	$28,000				$28,000
2006-09	S&WB: Incremental Sewer Rehab	$35,000				$35,000
2006-09	Sewer Rehab--Consent Decree, 2007-2009	$298,000				$298,000
2010-14	Sewer Rehab--Consent Decree, 2010-2014	$333,000				$333,000
After 2014	Sewer Rehab--Consent Decree, 2014-2015	$20,000				$20,000
	Wastewater Treatment Plants	**$453,541**	**$47,984**			**$367,000**
2006-09	FEMA: East Bank Sewage Treatment Plant	$76,604	$44,794			
2006-09	FEMA: West Bank Sewage Treatment Plant	$3,937	$2,794			
2006-09	FEMA (ineligible): Emergency Power Generator	$6,000	$396			
2010-14	Mitigation--EBSTP Levee Improvement	$27,000				$27,000
After 2014	Long-Term--Expansion to meet consent decree	$300,000				$300,000
2010-14	Long-Term--Wetlands Project (2010)	$40,000				$40,000
	Drainage System	**$875,240**	**$28,569**	**$570,000**	**$224,000**	**$40,830**
2006-09	FEMA: Misc	$40,410	$28,569			
2006-09	SELA: Urban Flood Control	$224,000			$224,000	
2006-09	Corps: Pump Station Hardening	$40,000		$40,000		
2006-09	Corps: Canal Gates and Pump Stations	$530,000		$530,000		
2006-09	Emergency Cooling Water Systems	$6,000				$6,000
2006-09	Station 13 Emergency Power Supply	$8,000				$8,000
2006-09	Underpass Drainage Mitigation	$6,500				$6,500
2006-09	Safety Room Power Supply	$330				$330
2010-14	Lining of Open Drain Canals in NO East	$20,000				$20,000
	Power Generation	**$129,703**	**$3,356**	**$0**		**$125,000**
2006-09	FEMA: Misc	$4,703	$3,356			
2006-09	Power Plant Rehabilitation	$125,000				$125,000
	FEMA: Admin, Emerg, Misc	**$54,778**	**$17,507**	**$0**		**$0**
2006-09	Vehicles	$16,619	$6,462			
2006-09	Overtime	$14,000	$2,976			
2006-09	Emergency Operations	$24,159	$8,069			
	TOTAL ALL PROJECTS	**$5,680,646**	**$154,596**	**$570,000**	**$224,000**	**$4,584,285**

Unfunded Projects	Cost
Water Treatment	**$77,455**
Filter Gallery Improvements	19,000
Ferric Sulfate Storage Capacity	300
Ammonia/Chlorine Conversion	3,180
Alternative Corrosion Control	2,000
Solids Removal in Water Purification Plant	3,000
Old River Intake Pump Station Rehabilitation	40,000
Flow Monitoring Devices	300
Communication System Replacement	5,830
Algiers Emergency Generator Fuel Storage	45
Filter Valve Control System	3,800
Water Distribution System	**208,000**
Distribution System Asset Management Plan	7,000
System Replacement Program, 2007-2009	201,000
Wastewater Collection System	**361,000**
Pump Station Mitigation	28,000
S&WB: Incremental Sewer Rehab	35,000
Sewer Rehab--Consent Decree, 2007-2009	298,000
Drainage System	**20,830**
Emergency Cooling Water Systems	6,000
Station 13 Emergency Power Supply	8,000
Underpass Drainage Mitigation	6,500
Safety Room Power Supply	330
Power Generation	**125,000**
Power Plant Rehabilitation	125,000
FEMA Match 10%	**30,236**
TOTAL 2006-2009	**822,521**

(Next 4 pages are actual LRA Supplemental Funding Request)

Serving New Orleans Since 1899

Sewerage & Water Board of New Orleans

Supplemental Funding Request

Presented to the Louisiana Recovery Authority

Prepared for the Sewerage & Water Board of New Orleans
by
Black & Veatch

BLACK & VEATCH
Building a world of difference.

Information contained herein is based on the Sewerage & Water Board of New Orleans' 2006 Report on Current and Future Needs (Needs Report). The reader is referred to this report for a more detailed description of projects and needs. Please note that this Supplemental Funding Request and the Needs Report provide a conceptual level documentation of needs and should be used only for planning purposes, as actual numbers are subject to weekly and even daily updates. B&V makes no warranty, express or implied, regarding the reasonableness of any information, recommendation, or forecast set forth herein. Anyone using this information assumes all liability arising from such use, including but not limited to infringement of any patent or patents, or any other intellectual property.

December 2006

Primary Responsibilities

The primary responsibilities of the Sewerage & Water Board of New Orleans (S&WB) are to provide drinking water, wastewater, and drainage services to the City of New Orleans. Drinking water and wastewater services protect public health through disease prevention, and the drinking water system provides essential water for fire protection. Drainage removes stormwater from within the levee system. The S&WB also maintains a power plant, which provides electricity to much of its equipment and was essential in dewatering the city after Hurricane Katrina.

These four systems—drinking water, wastewater, drainage, and power—are essential to the economic recovery and sustainability of New Orleans. They comprise billions of dollars of assets, including treatment plants, pumps, underground pipes, canals, generation plants, electrical circuitry, controls and instrumentation, etc. Some but not all of the assets have been returned to operational status; however, as a result of Hurricane Katrina, many of these assets are neither reliable nor sustainable. It is imperative to restore the systems to pre-disaster functionality to continue to provide critical quality-of-life services to New Orleans.

It is imperative to restore the systems to pre-disaster functionality to continue to provide critical quality-of-life services to New Orleans.

The Sewerage & Water Board of New Orleans will need additional funding of $822.5 million to meet immediate and urgent needs. This report provides a summary of the basis for this figure. The S&WB's 2006 Report on Current and Future Capital Needs provides further detail on the projects that make up the $822.5 million, as well as the medium and long term needs of the system.

The Cost of Recovery

Hurricane Katrina devastated the S&WB's assets. The interruption of water, sewer, and drainage services and the limited return of the evacuated population further impact the utility by significantly reducing its revenues. Cash flow and current grant funding levels are not sufficient for the S&WB to repair and maintain its infrastructure. If not resolved soon, this could threaten public health and welfare and, ultimately, the recovery of New Orleans.

The capital needs of the S&WB are large. The immediate funding needs are estimated at $1.9 billion. These needs represent projects necessary to ensure continued provision of safe drinking water, wastewater, and drainage services and to meet one of more of the following basic utility responsibilities:

- Protect public health and safety.
- Repair hurricane-related damages.
- Provide adequate reliability in systems.
- Mitigate risk / provide appropriate levels of redundancy in the systems.
- Meet state and federal regulations and maintain compliance with the Clean Water Act, the Safe Drinking Water Act, the Clean Air Act, and numerous other regulations.
- Meet the requirements of the Consent Decree.

The legislation that governs the Federal Emergency Management Agency (FEMA) did not envision the damages caused to the S&WB from a disaster the magnitude of Hurricane Katrina. Many legitimate needs are

ineligible under FEMA guidelines. **The current estimate of the funding gap between needs and potential sources of grant funds is about $822.5 million *for immediate funding needs.*** This excludes needs that are likely to occur after 2010 (replacement of utility infrastructure takes many years even under optimistic scenarios).

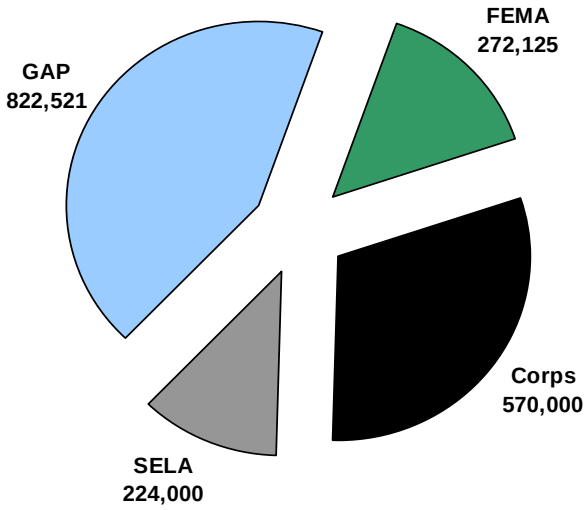
Table 4 outlines this gap. Potential funding from FEMA is $272 million. This represents 90% (the Federal share) of the $302 million in hurricane damage costs that are identified as potential FEMA projects. (In actuality, FEMA has allowed less than $155 million in costs to be entered on the project worksheets and may deduct an additional $20 million for insurance. FEMA has agreed to reassess these undervalued project worksheets; without favorable dispensation, however, the gap could increase by over $135 million.)

TABLE 10: GRANT FUNDING SOURCES AND GAP (THOUSANDS)

	2006-2009
FEMA (Potential)*	272,125
SELA Funding	224,000
Corps Funding	570,000
Potential Grant Funding	**1,066,125**
Funding Needs	**1,888,646**
Gap	**(822,521)**

**Does not include FEMA insurance deduction*

FIGURE 10: FUNDING SOURCES AND GAP FOR $1.9 BILLION IN IMMEDIATE NEEDS



The Southeast Louisiana Urban Flood Control Program (SELA) and U.S. Army Corps of Engineers (Corps) funding add another $794 million in grant funding, bringing the total projected grant potential to $1.066 billion. Unfortunately, near-term needs are estimated at almost $1.9 billion, leaving a gap in necessary immediate funding of $822.5 million.

Figure 10 shows the funding sources and gap in another

On Duty 24/7 Hurricane Katrina struck the Gulf Coast of the United States of America near New Orleans, Louisiana, on August 29, 2005. That morning, senior staff of the Sewerage & Water Board of New Orleans, maintaining radio contact with first responder employees located at facilities throughout the city, began receiving frantic calls from employees reporting rapidly rising waters.

A massive rescue effort began immediately after Hurricane Katrina. From the beginning, the S&WB was an integral part of this recovery. ***Though not widely known, it was the S&WB's drainage stations that dewatered the city.*** The S&WB's initial post-hurricane priorities were to rescue employees trapped by the flood waters; provide power to and restore the drainage pumps that dewatered the city; and restore drinking water and wastewater services to areas housing relief workers.

format. Here, it is clear that significant funding of total needs may be made available through grants; however, a large gap still exists. Without support, the S&WB cannot cover this gap of $822.5 million and will not be able to sustain the systems that are essential to the public health and continued recovery of the City of New Orleans.

The Sewerage & Water Board of New Orleans urgently requests $822.5 million in support from the LRA to meet these needs. The $822.5 million, detailed in Table 11, will cover the 10% FEMA match of $30.2 million and the remaining gap of $792.3 million.

Table 12 lists all the projects included in the immediate funding gap portion of this request. Medium-to-long-term funding needs are provided in the *2006 Report on Current and Future Capital Needs.*

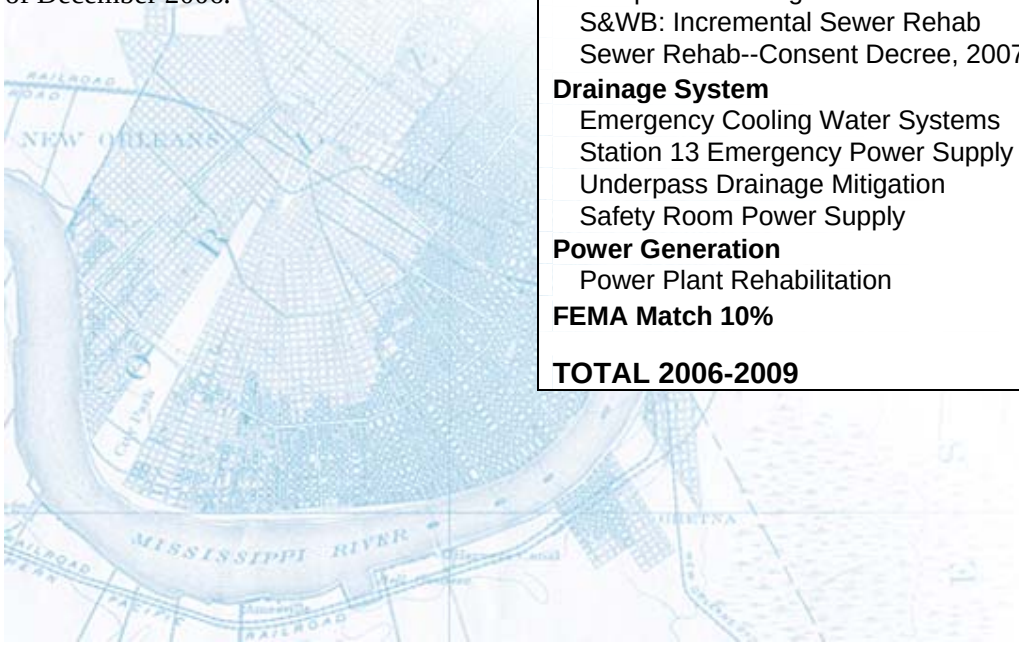
TABLE 11: SUPPLEMENTAL FUNDING REQUEST

LRA Supplemental Funding Request	
10% FEMA Match	30,236
Remaining Funding Gap	792,285
Total Funding Request	**822,521**

It is important to note that the S&WB's funding needs are changing as more becomes known about the effects of Hurricane Katrina and its damage to underground infrastructure. This Supplemental Request reflects the best estimate of essential needs and costs as of December 2006.

TABLE 12: SUPPLEMENT FUNDING PROJECT DETAIL

Unfunded Projects	Cost
Water Treatment	**$77,455**
Filter Gallery Improvements	19,000
Ferric Sulfate Storage Capacity	300
Ammonia/Chlorine Conversion	3,180
Alternative Corrosion Control	2,000
Solids Removal in Water Purification Plant	3,000
Old River Intake Pump Station Rehabilitation	40,000
Flow Monitoring Devices	300
Communication System Replacement	5,830
Algiers Emergency Generator Fuel Storage	45
Filter Valve Control System	3,800
Water Distribution System	**208,000**
Distribution System Asset Management Plan	7,000
System Replacement Program, 2007-2009	201,000
Wastewater Collection System	**361,000**
Pump Station Mitigation	28,000
S&WB: Incremental Sewer Rehab	35,000
Sewer Rehab--Consent Decree, 2007-2009	298,000
Drainage System	**20,830**
Emergency Cooling Water Systems	6,000
Station 13 Emergency Power Supply	8,000
Underpass Drainage Mitigation	6,500
Safety Room Power Supply	330
Power Generation	**125,000**
Power Plant Rehabilitation	125,000
FEMA Match 10%	**30,236**
TOTAL 2006-2009	**822,521**



Project Costs, Potential Grants, and Unfunded Needs with LRA Request: Water Treatment and Distribution ($000s)

Project Date	Project Description	Total Project	Potential Grant Funding			GAP (Unfunded	Unfunded Near-Term (LRA Request)
			FEMA	COE	SELA		
	Water Treatment Plants	**$107,076**	**$1,765**	**$0**		**$103,455**	**$77,455**
	Carrollton Plant:						
2006-09	FEMA: Misc	$3,163	$1,738				
2006-09	Filter Gallery Improvements	$19,000				$19,000	$19,000
2006-09	Ferric Sulfate Storage Capacity	$300				$300	$300
2006-09	Ammonia/Chlorine Conversion	$3,180				$3,180	$3,180
2006-09	Alternative Corrosion Control	$2,000				$2,000	$2,000
2006-09	Solids Removal in Water Purification Plant	$3,000				$3,000	$3,000
2006-09	Old River Intake Pump Station Rehabilitation	$40,000				$40,000	$40,000
2006-09	Flow Monitoring Devices	$300				$300	$300
2006-09	Communication System Replacement	$5,830				$5,830	$5,830
2010-14	Flocculation and Sedimentation Capacity Increase	$24,000				$24,000	
2010-14	Flocculation and Sedimentation Rehabilitation	$2,000				$2,000	
	Algiers Plant:						
2006-09	FEMA: Misc	$458	$27				
2006-09	Algiers Emergency Generator Fuel Storage	$45				$45	$45
2006-09	Filter Valve Control System	$3,800				$3,800	$3,800
	Water Distribution System	**$3,253,138**	**$19,138**			**$3,234,000**	**$208,000**
2006-09	FEMA: Misc	$19,138	$19,138				
2010-14	High Lift Facility	$25,000				$25,000	
2006-09	Distribution System Asset Management Plan	$7,000				$7,000	$7,000
2006-09	System Replacement Program, 2007-2009	$201,000				$201,000	$201,000
2010-14	System Replacement Program, 2010-2014	$930,000				$930,000	
After 2014	System Replacement Program, 2015-2032	$2,071,000				$2,071,000	

Project Costs, Potential Grants, and Unfunded Needs with LRA Request: Wastewater and Drainage ($000s)

Project Date	Project Description	Total Project	Potential Grant Funding			GAP (Unfunded	Unfunded Near-Term (LRA Request)
			FEMA	COE	SELA		
	Wastewater Collection System	**$807,170**	**$36,276**			**$714,000**	**$361,000**
2006-09	FEMA: Pump Station Electrical/Mechanical	$19,154	$11,067				
2006-09	FEMA: Damage Assessment/Study	$28,000	$13,958				
2006-09	FEMA: Sewer Rehab	$46,016	$11,251				
2006-09	Pump Station Mitigation	$28,000				$28,000	$28,000
2006-09	S&WB: Incremental Sewer Rehab	$35,000				$35,000	$35,000
2006-09	Sewer Rehab--Consent Decree, 2007-2009	$298,000				$298,000	$298,000
2010-14	Sewer Rehab--Consent Decree, 2010-2014	$333,000				$333,000	
After 2014	Sewer Rehab--Consent Decree, 2014-2015	$20,000				$20,000	
	Wastewater Treatment Plants	**$453,541**	**$47,984**			**$367,000**	
2006-09	FEMA: East Bank Sewage Treatment Plant	$76,604	$44,794				
2006-09	FEMA: West Bank Sewage Treatment Plant	$3,937	$2,794				
2006-09	FEMA (ineligible): Emergency Power Generator	$6,000	$396				
2010-14	Mitigation--EBSTP Levee Improvement	$27,000				$27,000	
After 2014	Long-Term--Expansion to meet consent decree	$300,000				$300,000	
2010-14	Long-Term--Wetlands Project (2010)	$40,000				$40,000	
	Drainage System	**$875,240**	**$28,569**	**$570,000**	**$224,000**	**$40,830**	**$20,830**
2006-09	FEMA: Misc	$40,410	$28,569				
2006-09	SELA: Urban Flood Control	$224,000			$224,000		
2006-09	Corps: Pump Station Hardening	$40,000		$40,000			
2006-09	Corps: Canal Gates and Pump Stations	$530,000		$530,000			
2006-09	Emergency Cooling Water Systems	$6,000				$6,000	$6,000
2006-09	Station 13 Emergency Power Supply	$8,000				$8,000	$8,000
2006-09	Underpass Drainage Mitigation	$6,500				$6,500	$6,500
2006-09	Safety Room Power Supply	$330				$330	$330
2010-14	Lining of Open Drain Canals in NO East	$20,000				$20,000	
	Power Generation	**$129,703**	**$3,356**	**$0**		**$125,000**	**$125,000**
2006-09	FEMA: Misc	$4,703	$3,356				
2006-09	Power Plant Rehabilitation	$125,000				$125,000	$125,000
	FEMA: Admin, Emerg, Misc	**$54,778**	**$17,507**	**$0**		**$0**	**$30,236**
2006-09	Vehicles	$16,619	$6,462				
2006-09	Overtime	$14,000	$2,976				
2006-09	Emergency Operations	$24,159	$8,069				
	FEMA 10% Match						$30,236
	TOTAL ALL PROJECTS	**$5,680,646**	**$154,596**	**$570,000**	**$224,000**	**$4,584,285**	**$822,521**

Filter Gallery Improvements, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 S. Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost:$19,000,000

DESCRIPTION: Much of the filter gallery was flooded during Katrina. FEMA worksheets for replacement of the filter gallery, totaling $530,000, have been obligated and the hydraulic and pneumatic control systems have been restored to pre-Katrina conditions. However, the mechanical and physical infrastructure has deteriorated due to age and S&WB revenues under the reduced population make it impossible to meet all needs. The Filter Gallery needs to address: replacing the rate of flow control system, media replacement, cleaning of under drains, and addition of air scour to backwash.

Without these upgrades SWB will be unable to meet future water quality standards which permit the distribution of potable water. The maintenance and cost required to maintain these systems are excessive as many parts must be manufactured by SWB due to the antiquated technology. Current backwash hydraulics do not allow for proper washing flows, and the installation of a filter air scour system would improve the backwash.

Part of this project would be to implement a pilot program to evaluate membrane filtration versus the current dual media rapid sand filtration. Parts of the dual media rapid sand filtration infrastructure system are over 100 years old. While rapid sand filtration remains a valid process, the sizing of the old filter chambers do not allow for optimal media depth for meeting current regulatory requirements. The ever present challenges of treating a surface water supply open the door to brief, but definable, periods of risk to the public from water-borne pathogens. Meeting current and future turbidity and particulate regulations will only become more difficult. Current membrane technology has reached the point that an evaluation of this process may prove to be both efficient and cost effective. The absolute reliability of the removal of pathogens by membranes for little cost is a strong incentive to investigate this option. While current thinking is that membranes would be used as a 'polishing' final step, these same systems will provide short-term protection against severe treatment outages, such as during the Hurricane Katrina event. In short, these membranes could clean the raw river water, for brief periods, by itself, when conventional treatment is unavailable.

This would be a phased project beginning with the necessary repairs, followed by the pilot program, and implementation of the pilot program if the pilot program is deemed viable and cost effective.

COMMUNITY WIDE IMPACT: This project is critical to the health and safety of the people of New Orleans by enabling the S&WB to remove pathogens and other contaminants and thus meet water quality standards and regulations for a potable water system.

PRIMARY GOAL ADDRESSED BY PARISH: Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

Filter Gallery Improvements, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project

d) Describe the projects consistency with regional plans and requirements.

Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Ferric Sulfate Storage Capacity, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 S. Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $300,000

DESCRIPTION: Ferric sulfate is a coagulant chemical used to clarify the water and is essential to the efficient operation of the water purification process. Hurricane Katrina revealed that there was insufficient storage capacity for ferric sulfate in the event delivery was disrupted. This project would increase the capacity to a minimum of a two week supply.

COMMUNITY WIDE IMPACT: This increase in ferric sulfate storage capacity would enable the water treatment plant to continue providing treated potable water to the City of New Orleans under adverse storm or hurricane conditions and be less vulnerable to interrupted delivery schedules.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Ferric Sulfate Storage Capacity, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Ammonia/Chlorine Conversion, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost:$3,180,000

DESCRIPTION: Chlorine and gaseous ammonia are used to form chloramines and disinfect the water prior to distribution. Chlorine and gaseous ammonia are hazardous chemicals. Many utilities have opted to change from chlorine to hypochlorite solution (bleach) and from gaseous ammonia to anhydrous ammonia to provide greater safety in operations. In addition, rail delivery of chlorine after the storm was unreliable.

COMMUNITY WIDE IMPACT: Conversion to anhydrous ammonia and a hypochlorite system would reduce the risk to the operators and public, provide a more reliable system, and allow the plant to maintain required disinfection residuals in the distribution system.

PRIMARY GOAL ADDRESSED BY PARISH:
Provide potable water to the East Bank Orleans Parish

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance
Alternative Corrosion Control	Storage and Chemical Feed System	High

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Ammonia/Chlorine Conversion, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	**Hazard Mitigation**	Repair ex. facility	N	**Drainage**	
N	**Insurability**		N	**Environmental Remediation**	
N	**Debris Removal**		Y	**Utilities**	
N	**Clearing**		N	**Road & Infrastructure**	
N	**Demolition**		Y	**Water**	
Y	**Rebuilding**		N	**Sewer**	
N	**Filling**		N	**Flood Mitigation**	
N	**Elevation**		N	**Historic Considerations**	
			N	**Other**	

OTHER CONSTRAINTS:

PROJECT PROPONENT: **Sewerage & Water Board of New Orleans**

PARTNERS:

STAKEHOLDERS:

Orleans Parish Residents

LOCAL CHAMPIONS:

Alternative Corrosion Control, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost:$2,000,000

DESCRIPTION: Corrosion Control is a vital aspect to protection of our water distribution system. The age of the pipes make the water distribution vulnerable to damage. Currently the plant uses lime. An alternate corrosion control substance would eliminate dependence on the rail system which proved to jeopardize the ability to provide potable water to the Parish after the storm. Rail delivery of chemicals was unavailable after the storm and continues to be a problem for the SWB. The project requires a storage and chemical feed system. The new system would require a limited amount of maintenance hours and personnel. SWB has identified that an important aspect to long term planning is the ability to decrease staffing requirements. SWB experienced a significant decrease in personnel after the storm. Finding adequately trained personnel is a challenge. It would allow SWB to focus limited personnel to other critical needs, eliminate dependence on the rail system, and provide potable water to the East Bank Orleans Parish. Approximate cost is 2 million for design and implementation.

COMMUNITY WIDE IMPACT: Decrease staffing requirements as finding adequately trained and certified personnel is extremely difficult with civil service pay limitations.

PRIMARY GOAL ADDRESSED BY PARISH:
Provide potable water to the East Bank Orleans Parish

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance
Hypochlorite Project	Producing on-site hypochlorite to eliminate dependency on rail system and reduce terrorist and hurricane risk/liabilities associated with liquid chlorine.	High
Ammonia Project	Change use of gaseous ammonia to use of anhydrous ammonia; this is safer for operations.	High

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Alternative Corrosion Control, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL / ACTION:

III A. Governmental Approval / Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	**Hazard Mitigation**	Repair ex. facility	N	**Drainage**	
Y	**Insurability**		N	**Environmental Remediation**	
N	**Debris Removal**		Y	**Utilities**	
N	**Clearing**		N	**Road & Infrastructure**	
N	**Demolition**		Y	**Water**	
Y	**Rebuilding**		N	**Sewer**	
N	**Filling**		N	**Flood Mitigation**	
N	**Elevation**		N	**Historic Considerations**	
			N	**Other**	

OTHER CONSTRAINTS:

PROJECT PROPONENT: **Sewerage & Water Board of New Orleans**

PARTNERS:

STAKEHOLDERS:

Orleans Parish Residents

LOCAL CHAMPIONS:

Solids Removal at Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUSTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH PROTECTION

STRATEGIC RECOVERY GOAL: Re-establish the platform for provision of drinking water services to the City of New Orleans

ADDRESS: 8800 Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $3,000,000

DESCRIPTION: Four different solids pumping systems pump into a common discharge piping. One of the three operates at a significantly higher pressure and volume which limits the ability to clean basins and remove solids from the water purification system concurrently. Therefore when solids are being removed from one process they are significantly increasing in another process. The current design promotes premature failure of the mechanical solids removal systems in the water purification process. An additional issue is that there is only one line. Any damage to this line--which could occur in future storms or due to age--jeopardizes the ability to provide potable water to the East Bank of New Orleans. Two separate systems are needed to allow basin cleaning and the water purification process to run concurrently. It is currently under design and funding is required to implement construction.

COMMUNITY WIDE IMPACT: Ensures availability of potable water to the people of New Orleans.

PRIMARY GOAL ADDRESSED BY PARISH:
Ensure the safe production of potable water for East Bank Orleans Parish.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Solids Removal at Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUSTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH PROTECTION

STRATEGIC RECOVERY GOAL: Re-establish the platform for provision of drinking water services to the City of New Orleans

GOVERNMENTAL APPROVAL / ACTION:

III A. Governmental Approval / Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	**Hazard Mitigation**	Repair Ex. Facility	Y	**Drainage**	
N	**Insurability**		N	**Environmental Remediation**	
N	**Debris Removal**		Y	**Utilities**	
N	**Clearing**		N	**Road & Infrastructure**	
N	**Demolition**		Y	**Water**	
N	**Rebuilding**		N	**Sewer**	
N	**Filling**		N	**Flood Mitigation**	
N	**Elevation**		N	**Historic Considerations**	
			N	**Other**	

OTHER CONSTRAINTS:

PROJECT PROPONENT: **Sewerage & Water Board of New Orleans**

PARTNERS:

STAKEHOLDERS:

LOCAL CHAMPIONS:

River Intake Pump Station Rehabilitation, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH PROTECTION

STRATEGIC RECOVERY GOAL: Re-establish the platform for provision of drinking water services too the City of New Orleans

ADDRESS: 8800 S. Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $40,000,000

DESCRIPTION: The Oak St. intake is over seventy years in age and is the larger capacity intake of the two stations that feed raw river water into the water purification plant for the East Bank Orleans Parish. The station is physically and mechanically deteriorated to the point that is inefficient and unreliable. The electrical systems are antiquated, dangerous, and difficult to repair. The station needs a complete rehabilitation and upgrade to a more modern system that can be operated remotely from within the plant. With the proper rehabilitation, the facility has the ability to provide the total needed raw water to provide potable water for all of the East Bank Orleans Parish. In addition the plant has the ability to operate on 25-cycle energy which is produced within the Sewerage and Water Board facility; this allows for the production of potable water in the event of an emergency when commercial power is not available. Remote operation would allow the station to be operated by essential staff located within the Carrollton Purification Plant in the event of an emergency.

This project would be implemented in phases beginning with preliminary engineering. The preliminary phase would address the cost benefit analysis of rehab versus building a completely new intake pump station with associated appurtenances such as piping, cribbing, etc.

COMMUNITY WIDE IMPACT: Dependable intake facilities are crucial to providing an adequate supply of potable water and fire protection for the City of New Orleans.

PRIMARY GOAL ADDRESSED BY PARISH:

Ensure the production of potable water for East Bank Orleans Parish.

Additional Goal

Decrease staffing requirements.

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with City of New Orleans vision for water and wastewater restoration.

River Intake Pump Station Rehabilitation, Carrollton WTP

ORLEANS PARISH | SECTOR: RESTORATION OF CRITICAL INFRASTRUCTURE, HURRICANE PROTECTION, AND PUBLIC HEALTH PROTECTION

STRATEGIC RECOVERY GOAL: Re-establish the platform for provision of drinking water services too the City of New Orleans

GOVERNMENTAL APPROVAL / ACTION:

III A. Governmental Approval / Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	**Hazard Mitigation**	Repair Ex. Facility	N	**Drainage**	
N	**Insurability**		N	**Environmental Remediation**	
N	**Debris Removal**		Y	**Utilities**	
N	**Clearing**		N	**Road & Infrastructure**	
N	**Demolition**		Y	**Water**	
N	**Rebuilding**		N	**Sewer**	
N	**Filling**		N	**Flood Mitigation**	
N	**Elevation**		N	**Historic Considerations**	
			N	**Other**	

OTHER CONSTRAINTS:

PROJECT PROPONENT: **Sewerage & Water Board of New Orleans**

PARTNERS:

STAKEHOLDERS:

LOCAL CHAMPIONS:

Flow Monitoring Devices, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 S. Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost:$300,000

DESCRIPTION: Flow monitoring devices are essential to the efficient operation of the water distribution systems, allowing for accurate estimates of production and losses. The necessity of this project was accelerated by Hurricane Katrina.

COMMUNITY WIDE IMPACT: This project is important to the health and welfare of the people of New Orleans by providing accurate controls for measuring potable water availability. Understanding flow is a critical element in operational assessment and optimization.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of drinking water services to City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Flow Monitoring Devices, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Communication System Replacement, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 8800 S. Claiborne Ave, New Orleans, Louisiana 70118 **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $5,830,000

DESCRIPTION: Major portions of the communication system were destroyed by Hurricane Katrina. The original system was installed in 1986 and the equipment is now damaged and obsolete. This project would replace the communication system with a new communications system using a cellular backbone. This replacement is needed to ensure reliability of the system.

COMMUNITY WIDE IMPACT: The communications system synchronizes the various components of the water treatment plant to interact efficiently and appropriately, thus keeping the water supply adequate in both quantity and quality for the needs of the citizens of the City of New Orleans.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Communication System Replacement, Carrollton WTP

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Algiers Treatment Plant Emergency Generator Fuel Storage

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 625 St. Joseph St, Room B-47, New Orleans, Louisiana 70165 **AREA:** West Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $45,000

DESCRIPTION: Delivery of diesel fuel to the plant was disrupted by Hurricane Katrina. Additional storage capacity will provide approximately a 20 day supply for continued operations.

COMMUNITY WIDE IMPACT: Additional fuel storage capacity will allow the plant to continue delivering potable water to residents even under extreme circumstances.

PRIMARY GOAL ADDRESSED BY PARISH: Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Algiers Treatment Plant Emergency Generator Fuel Storage

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Algiers Treatment Plant Filter Valve Control System

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: 625 St. Joseph St, Room B-47, New Orleans, Louisiana 70165 **AREA:** West Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $3,800,000

DESCRIPTION: Algiers was not flooded from Hurricane Katrina a provided the only source of potable water to the city after the storm. In addition to providing water to the West Bank, it is a valuable backup to the East Bank system. However, plant filter valves are beginning to fail due to age, and the control system needs total replacement.

COMMUNITY WIDE IMPACT: Replacement of these valves and the control system will ensure that the citizens of the West Bank will continue to be provided a dependable supply of potable water, both for daily use and acute situations.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Algiers Treatment Plant Filter Valve Control System

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

High Lift Pump Station

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for the City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East and West Banks

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $25,000,000

DESCRIPTION: A steam-operated high lift pump station is needed as a backup to provide water pressure during power outages. The excess steam from the steam turbine would be utilized at the power generator.

COMMUNITY WIDE IMPACT: A backup source of water pressure during power outages will ensure uninterrupted fire protection and provision of potable water to the residents and businesses of the City of New Orleans. Utilization of the excess steam at the power generator provides the added advantage of being cost-effective.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drinking water services to the City of New Orleans

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in the City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

High Lift Pump Station

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for the City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Water Distribution System Asset Management Plan

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East and West Bank

TARGET START DATE: 2006-2009 **DURATION: Years**

Estimated Cost: $7,000,000

DESCRIPTION: A distribution system Asset Management Plan (AMP) is necessary to prove distribution system damages to FEMA in order to receive grant funding, prioritize rehabilitation efforts such that they are reimbursable by FEMA, provide system operational optimization, and incorporate data gathered during current maintenance program. It will likely need to include some or all of the following:

- Intensive field studies using a mix of technologies to assess internal and external pipe conditions (technologies will vary based on type and size of pipe).
- Data generation and analysis based on current S&WB maintenance efforts.
- Development of hydraulic, structural, and water quality assessments to assess current and probable future condition of distribution system.
- Comparisons to 2003 MWH hydraulic study, other cities' distribution systems, and less affected portions of S&WB's assets.
- Leakage management program, including operational optimization and financial modelling to provide present value analysis of leak prevention vs. water production costs.
- Participation of objective university and/or professional organization to review damage assessment methodology.

COMMUNITY WIDE IMPACT: This will provide operation optimization and efficiency in providing dependable potable water for the City of New Orleans and allow them to apply for grant funding.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN:

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Water Distribution System Asset Management Plan

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Water Distribution System Rehabilitation Program—2007-2009

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East and West Bank

TARGET START DATE: 2006-2009 **DURATION: Years**

Estimated Cost: $201,000,000

DESCRIPTION: After hurricane Katrina, distribution system leakage rates increased dramatically. The total cost of a distribution system rehabilitation is currently estimated at $3.2 billion (the Distribution System Asset Management Plan above would update this figure). It is generally not possible to replace such large portions of the distribution system over a short time period because of cost impacts and disruption of traffic and neighborhood activities. This estimate is for the first phase only.

COMMUNITY WIDE IMPACT: This will provide dependable potable water for the City of New Orleans.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drinking water services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Water Distribution System Rehabilitation Program—2007-2009

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		N	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Sewer Pump Station Mitigation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $28,000,000

DESCRIPTION: Twenty nine sewer pump stations are built below ground with limited above-ground access. Several of the stations continue to flood regularly after Katrina. The sewer pump station motors, electrical equipment, and enclosures need to be replaced with above ground facilities. In addition, FEMA mitigation requires that pump stations be elevated if they are to be covered under future disaster insurance.

COMMUNITY WIDE IMPACT:

This will ensure the ability of the S&WB to provide reliable and consistent sewer service to the citizens of New Orleans, and prevent illegal discharge

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of wastewater services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with City of New Orleans vision for water and wastewater restoration.

Sewer Pump Station Mitigation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		Y	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

System-Wide Sewer Repairs, Hurricane Related (in addition to Consent Decree)

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East Bank

TARGET START DATE: 2006-2009 **DURATION: Years**

$35,000,000

DESCRIPTION: System-wide sewer repairs in addition to those required under the Consent Decreee. (Until the full system assessment is finalized, costs associated with hurricane damage and with the consent decree can only be estimated. The hurricane-related damage estimate of $35,000,000 is a conservative estimate and actual costs will vary. However, combining these repairs with Consent Decree related repairs may help control total costs.)

COMMUNITY WIDE IMPACT: This project is critical to the health and safety of the people of New Orleans by ensuring sewerage and wastewater treatment.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of wastewater services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with City of New Orleans' vision for water and wastewater restoration.

System-Wide Sewer Repairs, Hurricane Related (in addition to Consent Decree)

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

GOVERNMENTAL APPROVAL / ACTION:

III A. Governmental Approval / Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		Y	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

System-Wide Sewer Repairs—Consent Decree—2006-2009

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

ADDRESS: New Orleans, Louisiana **AREA:** East and West Bank

TARGET START DATE: 2006-2009 **DURATION: Years**

$298,000,000

DESCRIPTION: In June of 1998, the S&WB, the State of Louisiana, the City of New Orleans, plaintiff interveners, and the United States of America entered into an agreement (Consent Decree) to identify and address certain deficiencies in the wastewater collection system. Under the terms of this agreement, the S&WB performed extensive evaluations of its wastewater system. As of May 2005, this review was completed for all nine basins of New Orleans and sewer rehabilitations were ongoing. The S&WB's actions to meet the Consent Decree included $187 million in upgrades, including a $32 million assessment of the sewerage system. It is envisioned that much of the sewer work will have to be redone, including the sewerage study. FEMA has indicated that it will not cover such work.

COMMUNITY WIDE IMPACT: This project is critical to the health and safety of the people of New Orleans by ensuring sewerage and wastewater treatment.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of wastewater services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with City of New Orleans' vision for water and wastewater restoration.

System-Wide Sewer Repairs—Consent Decree—2006-2009

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for wastewater services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
N	Hazard Mitigation		N	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		Y	Sewer	
N	Filling		N	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Emergency Cooling Water Systems

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

ADDRESS: New Orleans, LA **AREA:** East and West Banks

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $6,000,000

DESCRIPTION: Katrina revealed a need for improved redundancy in cooling water for the drainage station pumps. Pre-Katrina, cooling water came from the potable water distribution system. Post-Katrina, the stations had to be quickly brought online to drain the city. S&WB staff plumbed the stations to use drainage water; however, this non-potable source severely damaged the bearings and other mechanical components at the stations. Mitigating this risk for the future will require drilling potable water wells at each of the drainage stations, installing a pump, generator and fuel storage tank, and plumbing the well pump into the station.

COMMUNITY WIDE IMPACT: The availability of adequate cooling water to the drainage station pumps will ensure that the pumps will continue to function in the event of hurricanes and storms, thus protecting the residents of New Orleans from future flooding.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drainage services to the City of New Orleans

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts.

Emergency Cooling Water Systems

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		Y	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		N	Sewer	
N	Filling		Y	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Station 13 Emergency Power Supply

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for City of New Orleans

ADDRESS: New Orleans, LA **AREA:** West Bank

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $8,000,000

DESCRIPTION: Station 13 is the only drainage station in Algiers and has a history of electrical outages. Current power supply issues have reduced the station to half of its capacity. Emergency generators are necessary to return the station to full capacity and meet minimal operational requirements.

COMMUNITY WIDE IMPACT: This project will ensure that the S&WB will have power to operate the drainage station at a sufficient level to protect the residents of the City of New Orleans in the event of flooding or tidal surges caused by natural or man-made events.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drainage services to the City of New Orleans

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts.

Station 13 Emergency Power Supply

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		Y	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		N	Sewer	
N	Filling		Y	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Underpass Drainage Mitigation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

ADDRESS: New Orleans, LA **AREA:** East and West Banks

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $6,500,000

DESCRIPTION: Certain underpasses require pumping to prevent flooding during storms. Pump station mitigation projects are expected to cost $6,000,000 to $7,000,000.

COMMUNITY WIDE IMPACT: Protects public safety, transportation, and evacuation routes during storms.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of drainage services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts.

Underpass Drainage Mitigation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		Y	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		N	Water	
N	Rebuilding		N	Sewer	
N	Filling		Y	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Safety Room Power Supply

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

ADDRESS: New Orleans, LA **AREA:** East and West Banks

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $330,000

DESCRIPTION: 45 kilowatt generators are needed to operate safety rooms in drainage pump stations for emergency personnel. The S&WB needs these generators to ensure operator safety during emergency events.
COMMUNITY WIDE IMPACT: Ensuring the safety of the operators will enable the drainage pump stations to operate even under adverse conditions when the City of New Orleans is most in need of their services.

PRIMARY GOAL ADDRESSED BY PARISH:

Re-establish the platform for provision of drainage services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.

There is no known opposition to this project.

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts.

Safety Room Power Supply

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for drainage services for the City of New Orleans

GOVERNMENTAL APPROVAL/ACTION:

III A. Governmental Approval/Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
Environmental Clearance(s)	Not Completed		
Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
Inspections	Not Completed		
Permitting	Not Completed		
Contracting	Not Completed		
Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y`	Hazard Mitigation		Y	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		Y	Sewer	
N	Filling		Y	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS:

Power Plant Rehabilitation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water, wastewater, and drainage services for the City of New Orleans

ADDRESS: New Orleans, LA **AREA:** East and West Banks

TARGET START DATE: 2006-2009 **DURATION: Months**

Estimated Cost: $125,000,000

DESCRIPTION: The 25-cycle power plant supplies energy for water treatment, water distribution, drainage pumping stations, sewer pump stations A and C, and the Algiers Water Treatment Plant. The existing power plant was shut down for 5 days after Hurricane Katrina, but was restored as quickly as possible as it provided crucial power to drain the City of New Orleans after Hurricane Katrina. Fourteen months after the storm, Entergy's power supply remains fragile and is unreliable. The backup power plant has become the primary power source for some assets and is now in full operation in spite of damages from Hurricane Katrina. Given the vulnerability and unreliability of the Entergy power feeds, the S&WB must improve its power generation capability. Its power plant needs significant modifications to prevent flooding and to ensure drainage, sewerage, and water purification services when commercial power is not available.

COMMUNITY WIDE IMPACT: A reliable power supply is critical to ensure uninterrupted water treatment and purification, water distribution, drainage pumping, and sewer pumping for the City of New Orleans, meeting both daily needs and emergency situations such as flooding or fire protection.

PRIMARY GOAL ADDRESSED BY PARISH:
Re-establish the platform for provision of water, wastewater, and drainage services to the City of New Orleans.

Additional Goal

PART OF EXISTING PLAN

RELATED PROJECTS:

Project Name	Description	Level of Importance

DEPENDENCY OF OTHER PROJECTS:

Project Name	Description	Level of Importance

REGIONAL CONSIDERATIONS

a) What is the expected regional impact of the project?

b) If the project benefits more than one parish, please explain

c) If there is regional support for and/or opposition to the project, please explain.
There is no known opposition to this project

d) Describe the projects consistency with regional plans and requirements. Project is included in City-wide planning efforts and consistent with the City of New Orleans' vision for water and wastewater restoration.

Power Plant Rehabilitation

ORLEANS PARISH | SECTOR: TRANSPORTATION AND INFRASTRUCTURE

STRATEGIC RECOVERY GOAL: Provide platform for water, wastewater, and drainage services for the City of New Orleans

GOVERNMENTAL APPROVAL / ACTION:

III A. Governmental Approval / Action	Status	Target Date	Govt. Capacity
Land Use and Zoning Changes	Not Applicable		
Plan Approvals	Not Completed		
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Flood Zone and Elevation	Not Completed		
Determinations	Not Completed		
Acquisitions	Not Applicable		
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Other	Not Applicable		

OTHER RELEVANT CONDITIONS:

Relevant?(Y or N)	Condition	Description	Relevant?(Y or N)	Condition	Description
Y	Hazard Mitigation		Y	Drainage	
N	Insurability		N	Environmental Remediation	
N	Debris Removal		Y	Utilities	
N	Clearing		N	Road & Infrastructure	
N	Demolition		Y	Water	
N	Rebuilding		Y	Sewer	
N	Filling		Y	Flood Mitigation	
N	Elevation		N	Historic Considerations	
			N	Other	

OTHER CONSTRAINTS:

PROJECT PROPONENT: Sewerage & Water Board of New Orleans

PARTNERS:

STAKEHOLDERS: Citizens, Businesses, and Visitors of New Orleans

LOCAL CHAMPIONS: