

# REPORT ON OPERATIONS FOR 2018

B&V PROJECT NO. 402592

PREPARED FOR

Sewerage and Water Board of New Orleans

9 MARCH 2020





## **MISSION STATEMENT**

We serve the people of New Orleans and improve their quality of life by providing safe drinking water, removing waste water for safe return to the environment and draining storm water to protect our community. Our team of experts do this reliably, continuously, and at a reasonable cost.

## **VISION STATEMENT**

Our vision is to earn and hold the trust and confidence of our customers and community for reliable and sustainable water services and to be a model utility in the water industry.

## **OUR GUIDING PRINCIPLES**

Team Work  
Customer Focus  
Honesty & Integrity  
Service Excellence  
Safety  
Workplace Climate  
Accountability





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March 9, 2020

Sewerage & Water Board of New Orleans  
625 St. Joseph Street  
New Orleans, LA 70165

Dear Board Members:

In accordance with our agreement, we are submitting this Report on Operations of the Water, Sewerage, and Drainage Departments for the year 2018. The report presents the findings of our analysis to confirm compliance with the covenants of the General Water Revenue Bond Resolution and the General Sewerage Revenue Bond Resolution.

We wish to acknowledge the cooperation and assistance of utility staff in providing guidance and information for the study.

We appreciate the opportunity to be of service to the Sewerage and Water Board.

Very truly yours,  
BLACK & VEATCH MANAGEMENT CONSULTING, LLC

A handwritten signature in blue ink that reads "Anna White".

Anna White  
Principal Consultant

Enclosure





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## Introduction

### PURPOSE AND SCOPE

This report covers operations of the Sewerage and Water Board of New Orleans for the year ending December 31, 2018. This report presents findings of studies made in compliance with covenants of the General Water Revenue Bond Resolution and the General Sewerage Service Revenue Bond Resolution. Subjects covered include the following:

1. Adherence to covenants of the General Water Revenue Bond Resolution and the General Sewerage Service Revenue Bond Resolution.
2. Ability to finance projected revenue requirements including proposed capital improvements.
3. Operations of the water, sewerage, and drainage systems.

### DEFINITIONS

In this report, “Sewerage and Water Board of New Orleans,” “Sewerage and Water Board,” and “Board” are used synonymously. “General Resolution” refers to either the General Water Revenue Bond Resolution adopted on May 21, 2014 by the Board or the General Sewerage Service Revenue Bond Resolution adopted on May 21, 2014 by the Board.

“Water Department” is the Sewerage and Water Board organization providing domestic water service to residents of the City of New Orleans. “Sewerage Department” is the organization providing wastewater service, and “Drainage Department” is the organization providing stormwater conveyance and pumping. The Board organization includes some groups who participate in two or more operational activities.

### HISTORY

The Sewerage and Water Board 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 Board. Since that time, growth of the service area and increased service requirements have expanded the magnitude and complexity of operations.

Available sources of funds prior to 1958 for financing utility operations and improvements included ad valorem taxes, contributions-in-aid-of-construction, general obligation bonds of the City of New Orleans, and water revenues.

In 1974, the American Institute of Certified Public Accountants expanded their reporting guidelines for government operated utilities to include depreciation accounting. As a result, the Board initiated a preliminary system of accounting recognizing estimated historical investment as a basis for annual depreciation accruals. Implementation of the detailed plant accounting and record keeping required was started in 1979.

The Board’s computer based budget code system provides a method of identification of operation and maintenance expenses for the Water, Sewerage, and Drainage Departments. Allocation of expenses is based upon actual or direct expenses of each Department together with an apportionment of joint

expenses. accounting for debt service, interest is charged to current year's income and principal and debt service reserve payments are charged to the respective account balances. Historical operating costs, discussed later in this report, reflect the functional classifications.

### Water Department

Act No. 541 increased the Board's ability to finance needed water system improvements by authorizing the Board to issue water revenue bonds. In 2014, the Board issued Water Revenue and Refunding Bonds in the amount of \$103,525,000 and established the existing General Bond Resolution under which all debt is issued. A portion of the proceeds were used to defease all outstanding bonds. In 2015, the Board issued Water Revenue Bonds in the amount of \$100,000,000. Principal payments will begin in 2018. As of December 31, 2018, total outstanding debt service on all outstanding revenue bonds totaled \$197,300,000.

Act No. 566 reauthorized the Board to fix and administer a schedule of water rates to meet the operational and capital costs of the public water system, to issue water revenue bonds, and to discontinue the free water allowance for sewerage purposes effective November 9, 1966.

### Sewerage Department

Act No. 567 gave the Board authority to set and collect sewerage service charges to be used for operational and capital costs of the Sewerage Department, and to issue sewerage service revenue bonds. This Act permitted the Board, for the first time in its history, to charge users of the sewerage system directly for related costs. Under the authority of Act No. 567, sewerage service charges were implemented May 1, 1967 and subsequently, sewerage service revenue bonds were sold. In 2014, the Board issued Sewerage Service Revenue and Refunding Bonds in the amount of \$158,990,000 and established the existing General Bond Resolution under which all debt is issued. A portion of the proceeds were used to defease all outstanding bonds with the exception of the Series 2011 bonds.

In November 2011, the Board and Louisiana Department of Environmental Quality (LADEQ) entered into a loan agreement whereby \$9,000,000 of proceeds from the Revolving Loan Fund were borrowed through the issuance of Sewerage Service Subordinate Revenue Bonds, Series 2011. Debt service payments assume a 20-year term with a 0.45 percent interest rate plus an administrative fee of 0.5 percent. The Board began drawing down the funds during the first quarter of 2012 and as of December 31, 2014, had received a total of \$9,000,000 in disbursements. Principal payments began in November of 2013. With the issuance of the Series 2014 bonds, the Series 2011 bonds became Senior Parity Debt under the General Bond Resolution and entitled to the provisions of the General Sewerage Service Revenue Bond Resolution. Principal payments will begin in 2021. In 2015, the Board issued Sewerage Service Revenue Bonds in the amount of \$100,000,000. In 2019, the Board issued the Series 2019 LADEQ loan in the amount of \$10,000,000 with principal payments beginning in 2021. Outstanding principal on all revenue bonds totaled \$226,915,000 as of December 31, 2018.

### Drainage Department

In 1966 three constitutional amendments, Acts No. 565, 566, and 567 were enacted by the Louisiana Legislature and subsequently approved by the State's voters. Act No. 565 authorized the City of New Orleans to levy a three-mill ad valorem tax, effective January 1, 1967, to be used solely for operations and

capital costs of the drainage system. Provision for issuance of bonds repayable solely from the three-mill tax was also included in the Act.

Under the Louisiana State Constitution, all assessments beginning in 1978 were equalized, with residential property assessed at 10 percent of its market value and commercial and personal property assessed at 15 percent of market value. The constitution also provides that no tax revenues shall be lost by reassessments; thus, it has been necessary to revise the millage rates in effect at various times. If reassessment results in a lower tax base, the millage rate may be adjusted upward. If a larger tax base results, the millage rates must be rolled back. However, by state law, the City Council, upon request and after a public hearing, may increase the millage rates to the prior year's level. The three-mill tax rate, 6.01 mills since 1988, was increased to 6.40 mills in 1992 due to reassessment and remained at that level through 2007. In 2007, it was reduced to 4.544 and in 2010 it was increased to the current rate of 4.66 mills.

Passage of a referendum in April 1977, authorized the collection of an additional six-mill, ad valorem tax for drainage purposes, effective January 1, 1978. The six-mill ad valorem tax was increased to 6.09 mills in 1988 and to 6.48 mills in 1992 due to reassessment and remained at that level through 2007. In 2007, it was reduced to 4.60 and in 2010 it was increased to the current rate of 4.71 mills.

In 1981, a nine-mill ad valorem tax was approved and became effective January 1, 1982. It was reauthorized in December 2016. The purpose of the nine-mill tax levy is to provide funds for the operation, maintenance, and construction of the drainage system. In 1998 nine-mill bonds in the amount of \$10,000,000 were issued and additional nine-mill bonds in the amount of \$20,000,000 were issued in 2002. In 2014, the Board issued Drainage System Refunding Bonds in the amount of \$14,900,000 for the purpose of refunding Series 1998 and Series 2002. The total nine-mill Drainage System Bonds outstanding as of December 31, 2018 was \$7,665,000.

In 1988, reassessment caused the nine-mill ad valorem tax to be increased to 9.13 mills. It was increased due to reassessment again in 1992 to 9.71 mills and remained at this level through 2007. In 2007, it was reduced to 6.89 and in 2010 it was increased to the current rate of 7.06 mills.

Collection of the three-mill ad valorem tax levy is authorized through 2046; six-mill tax through 2026; and nine-mill tax through 2031. At the expiration date of the millages draws closer, the Board will need to consider identification of other possible sources of revenue to maintain the future sustainability of the Drainage system in the event that the millages are not renewed.

## General

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed \$77,465,247, which was the total amount available to the Board. Of that amount, \$31,500,000 was used to make a partial payment on the Sewerage Service Refunding BANs Series 2005A that matured on July 26, 2006. The remainder was used to make debt service payments on the Drainage System special tax bonds, the Sewerage Service revenue bonds, and the Water revenue bonds that were due on December 1, 2006; June 1, 2007;

December 1, 2007; and June 1, 2008. Principal payments on the bonds began in July 2012 and continue through July 2026. As of December 31, 2018, the amount outstanding was \$47,762,154.

The Board is currently receiving funds from the U.S. Army Corps of Engineers (COE) sponsored and congressionally authorized Southeast Louisiana Urban Flood Control (SELA) Project. This funding will allow additional construction projects which were identified in the 1970s, but which have not been completed because of funding limitations. The identified projects are to be funded either 100 percent from federal funds or 65 percent from federal funds and 35 percent from local funds.

The Board provides water and sewer for public services to the City of New Orleans and its public institutions as mandated by state law in accordance with R.S. 33:4096 and R.S. 33:4121, respectively. The Sewerage and Water Board and the Orleans Parish School Board (OPSB) reached an agreement effective July 1, 1992, whereby the schools would be charged for any water exceeding an allowance of six gallons per day, for 365 days per year, for each student enrolled and any other person regularly assigned to that campus or facility. The allowance was lowered to four gallons per day effective July 1, 1993.

## **SOURCES OF FINANCIAL DATA**

Financial information included in this report is obtained from audited financial reports provided by the Board.

## **SUMMARY OF FINDINGS**

This section contains a summary of the financial operations of the Water, Sewerage, and Drainage Departments for the year 2018. Projections of future operations are also presented as a basis for determining the adequacy of present revenue sources to finance projected operating expenses and proposed capital program costs of the respective departments.

The statistical data maintained by the Board includes the compilation of detailed information on water sales and revenues. Operation and maintenance expenses are summarized by supplemental accounts that are used for internal purposes to identify the cost in each functional category that is incurred for personal services, services and utilities, material and supplies, replacement and maintenance, and other special charges.

### **Water Department**

#### **Water Revenue Bond Resolution Requirements**

Sewerage and Water Board financial operations for 2018 have complied with the requirements set forth in the General Water Revenue Bond Resolution.

#### **Summary of 2018 Operations**

The total revenue from water sales, delinquent fees, interest income and other income decreased from \$94,656,734 in 2017 to \$94,507,453 in 2018. Operation and maintenance expenses (excluding claims paid) increased from \$76,415,700 in 2017 to \$85,996,300 in 2018. After deducting claims of \$484,441 and debt service payments of \$13,333,550, the balance available for capital related expenditures in 2018 was a deficit of \$5,306,838.

### Ability to Finance Future Operations and Proposed Improvements

A summary of projected financial operations of the Water Department for the period 2019 through 2023 is shown in Table 10 of the report. Revenues under existing rates effective January 1, 2019 and adopted rates effective January 1, 2020 are shown on Line 1 of Table 10. Revenue from future proposed annual revenue increases of 6.0 percent effective January 1, 2021, and 3.0 percent effective January 1, 2022 and January 1, 2023 are shown on Lines 2 through 6 of Table 10.

It is anticipated that a total of \$78,000,000 in Revenue bonds will be issued through 2023 to fund the proposed capital improvement program. Included in this amount is a \$60,000,000 DHH loan that is anticipated to be issued in 2020.

It is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Water Department during the 2019-2023 study period examined herein.

### Sewerage Department

#### Sewerage Service Revenue Bond Resolution Requirements

Sewerage and Water Board financial operations for 2018 have complied with the requirements set forth in the General Sewerage Service Revenue Bond Resolution.

#### Summary of 2018 Operations

The total revenue from sewer charges, delinquent fees, interest income and other income increased from \$114,321,779 in 2017 to \$118,029,792 in 2018. Operation and maintenance expenses increased from \$64,597,617 in 2017 to \$80,212,900 in 2018. After deducting claims of 1,969,339 and debt service payments of \$23,139,113, a balance of \$12,708,440 was available for capital related expenditures in 2018.

### Ability to Finance Future Operations and Proposed Improvements

A summary of projected financial operations of the Sewerage Department for the period 2019 through 2023 is shown in Table 20 of the report. Revenues under existing rates, effective January 1, 2019 and adopted January 1, 2020 are shown on Line 1 of Table 20. Revenue from a future proposed annual revenue increase of 3 percent effective January 1, 2021 is shown on Line 4 of Table 20.

It is anticipated that a total of \$75,400,000 in future long-term debt financing will be issued in 2020. In addition, the Board has applied for a \$100,000,000 Water Infrastructure Finance and Innovation Act (WIFIA) loan to be received in 2020.

It is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Sewerage Department during the 2019-2023 study period examined herein.

### Drainage Department

#### Summary of 2018 Operations

Total revenues received from all sources including interest income totaled 57,734,583 in 2018, an increase of approximately 1.5 percent from \$56,882,973 reported for the same sources in 2017. Total operation

and maintenance expenses decreased about 6.4 percent, from \$54,848,500 in 2017 to \$51,347,300 in 2018. After adding a net receipt for claims of \$9,656,464 and deducting debt service payments of \$2,028,550, a balance of \$14,015,197 was available for capital related expenditures in 2018.

### **Ability to Finance Future Operations and Proposed Improvements**

An analysis of financial operations projected for the Drainage Department for the period 2019 through 2023 is summarized in Table 29 of the report. Revenue from the three-mill, six-mill, and nine-mill ad valorem taxes may be used for operating expenses, debt service, and capital expenditures.

The analysis indicates that the current revenue sources are not adequate to meet operation and maintenance expenses and total debt service on existing bond issues beginning in 2020. In addition, the Drainage Department will not have the debt capacity to fund all of the capital requirements during the 2019-2023 period. Due to constraints on revenue, it is anticipated that capital projects during the 5-year period will exceed the amount of funding available from the Drainage Department. It is recommended that the Board defer capital projects until an additional source of operating revenue has been identified and the SWBNO has the capacity to debt finance more projects. This deferment is shown on Line 9 of Table 28.

### **Other Findings**

The Board operates a power plant at the Carrollton Water Purification Plant which provides power for the water purification process as well backup power in the event that commercial power fails or becomes unavailable. The Board's analysis of power purchased and produced is shown in the supplemental section of the 2018 Comprehensive Annual Financial Report. In 2018, approximately 70.7 million kilowatt hour (kWh) of power was purchased and 32.5 million kWh of power was generated.

On a unit cost basis, the average cost of purchased power has increased over the past five years from about 9.9¢ per kWh in 2013 to about 11.3¢ per kWh in 2018. During the same period, the Board's unit cost for generated power has decreased from about 33.3¢ per kWh to about 31.3¢ per kWh. In 2018, the cost of Board generated power was 2.8 times higher than that of purchased power; however, this higher cost is offset by the fact that the Board generated power is much more reliable than the purchased power from the local utility company.

In conducting our analyses and in forming an opinion of the projection of future operations summarized in this report, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the analysis follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are reasonable and appropriate for the purpose for which they are used. While Black & Veatch believes the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur.

## Facilities Evaluation – Operation, Maintenance, and Reconstruction

This evaluation summarizes the onsite assessment findings of the Sewerage and Water Board of New Orleans (SWBNO) facilities conducted by Black & Veatch from August 5 to August 9 of 2019. Site visits were conducted at the water and wastewater treatment plants, Carrollton Power Plant facilities, and Central Yard facilities to evaluate their condition and operational capabilities. In addition, the sewage and drainage pump stations (DPSs) were inspected to evaluate their condition. Interviews were conducted with SWBNO management and supervisors during the site visit to assess the current operations status of the various facilities.

### INTRODUCTION

The Operations Department of the SWBNO is comprised of four units: (1) Water Purification, (2) Sewage Treatment, (3) Water Pumping and Power, and (4) Sewage and Drainage Pumping. The SWBNO operates the Carrollton and Algiers Water Purification Plants (WPPs), which purify raw water from the Mississippi River and supply potable water to New Orleans residents. The Carrollton Plant currently purifies approximately 135 million gallons per day (mgd) of water for the east bank of the Orleans Parish. The Algiers Plant, which serves the predominantly residential west bank portion of the parish, purifies roughly 10 mgd of water. The treated water from the two plants is pumped through approximately 1,800 miles of mains to the service connections within the city and to several customers in adjacent parishes.

The sewerage collection system includes several miles of lateral sewers, trunk sewers, and 83 electrically-operated pump stations. Raw sewage is conveyed through a force main system. Sewage Pumping Stations (SPS) A and D on the east bank and SPS C on the west bank are attended stations. SPS A houses a supervisory control and data acquisition (SCADA) system, which monitors operation of all other sewage stations 24 hours a day.

The SWBNO operates two sewage treatment plants, one on the east bank and one on the west bank. The East Bank Sewage Treatment Plant has a treatment capacity of 122 mgd (dry weather) and treats sewage from the east bank community. The West Bank Sewage Treatment Plant has a treatment capacity of 20 mgd (dry weather) and serves the west bank community, as well as a few customers in Plaquemine Parish. Both plants were built or expanded in the 1970s and have been upgraded or expanded to increase reliability and capacity. The contract operator, Veolia Water, currently operates and maintains the plants for SWBNO.

In addition, the SWBNO is responsible for operating and maintaining the 24 major drainage pumping stations in New Orleans and 11 smaller (automatic) underpass stations. The majority of those stations are manned 24 hours per day, 7 days per week. Each station is equipped with multiple pumps, which are activated in response to increasing water levels. Personnel routinely monitor these pumps and the numerous miles of drainage canals to ensure proper drainage in the area.

The 25 cycle power plants operated by the SWBNO provide power to portions of the WPPs and approximately 60 percent of the drainage pumps. Two large vertical sewage pumping units at Station A are also run on 25 cycle power. The following sections summarize key issues within several departments of the SWBNO.

## STAFFING

At December 31, 2018, the total number of SWBNO employees was 13,211, 122 more than the previous year; while the number of employees related to operations and maintenance decreased from 172 to 171 over that same period. Adequate staffing continues to be an issue for most departments at the SWBNO. Additional maintenance is required for the SWBNO facilities as equipment ages and more equipment is added. Vacancies still exist in several departments, especially the ones that require highly educated and skilled personnel. These shortages are reflected within the more technical disciplines, such as mechanical maintenance, electrical maintenance, plant maintenance, welding and fabrication, and operations.

The SWBNO has a domicile policy which requires employees to live in New Orleans. Departments within the SWBNO are currently actively recruiting from local college campuses, career fairs, and trade schools to fill vacancies.

In addition to those highly skilled positions, a significant portion of the SWBNO's leadership will retire within the next five years. Very few successors have been identified to assume the leadership positions of the departing personnel.

Most departments have staffing issues related to inadequate personnel to fulfill the current needs of the SWBNO. Table 1 summarizes the staff on the payroll for each department related to operations and maintenance and the percentage of staff eligible for retirement within five years of December 31, 2018. These conditions demonstrate the need for an effective succession plan for the department heads and supervisors.

Table 1 - Current Number of Board Employees and Employees Eligible for Retirement

DEPARTMENT	EMPLOYEES ON PAYROLL	ELIGIBLE FOR RETIREMENT	% ELIGIBLE FOR RETIREMENT
Operations – WPPs	69	15	21.7%
Operations - Water Quality Laboratory at Carrollton Plant	10	2	20.0%
Operations - Water Pumping and Power	89	18	20.2%
Operations - Sewage and Drainage Pumping Stations	127	31	24.4%
Facility Maintenance	83	18	21.7%
Engineering	53	11	20.8%
Networks	332	48	14.5%
Support Services	114	23	20.2%
Environmental Affairs	19	5	26.3
<b>Total</b>	<b>898</b>	<b>172</b>	<b>19.2%</b>

## WATER PURIFICATION PLANTS

The Black & Veatch representative accompanied the WWP's superintendent on facility tours of the Carrollton and Algiers WPPs. The Carrollton and Algiers WPPs were operational and producing water that meets or exceeds federal drinking water standards. Treatment systems at both plants function well and continue to produce potable water for the east bank and west bank.

The staffing levels at the Carrollton and Algiers WPPs have been able to consistently produce finished water that complies with federal and state regulations and meets the capacity of the service population. Due to retirements in 2018, the department lost various management personnel and their internal water treatment plant knowledge; however, the department has continued to hire more entry level staff. The department would like to hire experienced operators, ideally with certifications in hand, but has difficulty due to the residency requirements and pay rates. Staff feel that there is not an incentive to become certified, and there is a lack of certified operators state-wide. No management staff was hired in 2018.

The SWBNO internal operator training program stopped in 2017 due to a retirement within the department. No internal training program was re-established in 2018. This internal training program assisted operations staff with passing state certification exams and with job training. Instead of the internal training program, the SWBNO uses Delgado Community College operator certification classes, paying for staff to take the class to obtain a license. The SWBNO will pay for additional classes as part of ongoing training and it assigns operations staff higher level certifications once training has been completed. These training strategies are implemented to mitigate the number of senior operators that have already retired or will be retiring within the next few years who need to be replaced to maintain compliance.

At the time of the visit, a total of 18 operators hold a Water Treatment 4 license. Out of those operators, five are eligible for retirement, one is retired and works part time in the filter gallery, and four are currently in the DROP Program (fully retired in the next five years). Within those indicated for retirement are key staff in the chemical house and filter gallery as well as one senior operator at the Algiers WPP. Their replacements are already in the deferred retirement option plan (DROP) program and will be retired within 5 years with few candidates to promote within the department. At the time of the visit, there were not enough certified water plant operators to cover all the shifts, and the department was using overtime to ensure compliance is maintained.

As stated previously in the 2017 report, the Louisiana Department of Health's (LDH) plant inspection conducted in 2018 of both plants noted again that a lack of managers and certified operators at both WPP was a major deficiency that needed to be addressed by the SWB. It was noted that attracting experienced staff is still a challenge due to pay compared to surrounding utilities and the residency requirement.

### Carrollton Water Purification Plant

The Carrollton WPP has a design capacity of 210 mgd. The water treatment processes at the plant consist of flocculation with a polymer and ferric sulfate followed by pH adjustment with lime. The flocculated particles are allowed to settle in sedimentation basins and traveling mechanical rakes remove the settled solids from the sedimentation basins for discharge to the Mississippi River.

Chlorine in the form of sodium hypochlorite is used to disinfect the clarified water. Anhydrous ammonia is then added to form chloramines for residual disinfection. Additional settling time and disinfection contact time occur in the secondary settling basins. The clarified water is also treated with sodium hexametaphosphate for calcium sequestration and hydrofluorosilicic acid for fluoride addition. The SWBNO is feeding all chemicals at appropriate dosages and maintains adequate chemical storage at each site.

Filtration is the final step in the treatment process: the water is filtered through rapid sand filters. Finished water is then pumped to the populace through the distribution network.

The Carrollton WPP treated an average of approximately 137 mgd of water for the east bank of the Orleans Parish in 2018. Leaks in the distribution network are still a persistent problem. These leaks are currently being addressed under the water main replacement program funded by the Federal Emergency Management Agency (FEMA). The water delivery pressure at the WPP was between 65 and 70 pounds per square inch (psi) during the inspection, which was consistent throughout the last year.



**Second Water Tower nearing completion**



**Leak in L4 Basin**

**Figure 1 Carrollton Water Purification Plant**

Improvements initiated and/or completed at the Carrollton WPP during 2018 include:

- As stated in 2017 report, LDH communicated that leaks in the G and L basins must be fixed and was noted as a major deficiency in its 2017 inspection. At the time of the visit, G3 is in service and G4 is out of service for routine maintenance. L4 was out of service due to leaks in 2018. The basin was cleaned out and a contract was put out for L4 repairs. The contract will go out for rebid and work towards the repairs in 2019.

- As part of the water hammer project, construction of two elevated storage tanks began in late 2016 to assist with maintaining adequate distribution pressure in case of a line break. Construction of both of the elevated water tanks was ongoing in 2018. The water tower in front of the WPP was finished and placed into service in November of 2018. The second tank was under construction in 2018 and will be completed in 2019. The third water tower, Michoud, located in New Orleans East/Venetian isles area, was out of service for 14 years and was rehabbed in 2018.

The following maintenance and/or improvement projects for existing facilities at the SWBNO are planned or ongoing:

- A filter rehabilitation program is in progress for the Sycamore filter galleries and planned for Claiborne filter galleries. Valves, actuators, corroded piping supports, and leaking pipes associated with the filters need to be repaired or replaced. In 2017, an emergency contract was issued to repair 4 filters. In 2018, 4 filters in Sycamore galleries were repaired (the contract is for 8 total filters). No repairs on Claiborne filter galleries were conducted in 2018.
- In 2017, a temporary Sycamore filter backwash pumping system was installed and used during 2018 while the new station was being constructed. The new filter backwash station started construction in 2018 and was completed at the time of the visit.
- A new chemical storage and feed facility is currently under design, with the 90 percent design phase completed in 2018. This project was scheduled to start construction but is awaiting funding.
- The Oak Street pump station is being replaced, including complete pump replacement and other improvements. Those improvements were ongoing in 2018.
- In 2018, some valves, actuators, and steel pipe supports in Sycamore filter galleries were replaced.
- It was noted during the visit that repairs were conducted in 2018 to the effluent lines leading to the plant due to cracks in the lines causing leaks.

It was noted a long-term project was in the design stage (90%) for installation of second sludge line to the river to add redundancy. In 2018, the line broke during Oak Street construction, but was able to be fixed. In terms of compliance, the Carrollton WPP had no compliance issues in 2018.

### Algiers Water Purification Plant

The Algiers WPP has a capacity of 24 mgd. The treatment process at the plant is similar to the Carrollton WPP and uses the same chemicals with a slightly modified application scheme in the upflow clarifiers. The plant treated approximately 9.4 mgd of water and is serving the predominantly residential west bank portion of the parish.

Improvements that are needed or ongoing at the plant include the following:

- A large CIP project, including SCADA upgrade, rehab of clarifiers 2, 3 and 4, a complete replacement of Clarifier 1 (including adding flash mixing to assist with total organic carbon (TOC) removal) and upgrading the fluoride chemical feed system, is in the near future. The contract was awarded in 2017 and construction started in 2018. At the time of the visit, Clarifier 1 was under construction.
- Filter rehab (valves, filter media, air scour system) is still needed on all filters and should be scheduled in 2020. The Engineering department is still working on specs, which should go out to bid in late 2020.

- EIMCO clarifiers 3 and 4 are under contract for the replacement of the launder troughs. The troughs and steel structures have significant corrosion and required rehab. The contract went out in 2018, and rehab started in 2019. At the time of the visit, Clarifier 3 was being rehabbed and scheduled to be put online in 2019. Clarifier 4 will be placed out of service and rehabbed once Clarifier 3 is back into service.
- In addition to the rehab and painting the EIMCO clarifiers, flash mixing will be added to assist with better TOC removal in the clarifiers. The existing clarifiers will be modified to include an additional mixer near the chemical injection point.
- The fluoride storage and feed system need to be upgraded to meet state requirements. The fluoride system will consist of a bulk storage tank, a day tank, and metering pumps, and it will be in an existing sodium hypochlorite generating process room. The removal of the old onsite sodium hypochlorite generation equipment started in late 2018 and is ongoing. At the time of the visit, most of the old sodium hypochlorite generation equipment was removed from the room and the new bulk tank was onsite.
- Lime is currently slaked at the WPP. SWBNO is considering replacing the lime equipment pending a decision to change the process (different type of lime) or replace the existing slaking equipment. A study must be conducted to establish which option will be selected. No work was completed on this process in 2018.
- The raw water pumping and piping systems need to be improved in order to provide redundancy to the intake system. No work in 2018 was conducted to address this concern. The SWB Engineering Department is specifying new pumps at Old River Intake at Algiers.



**Clarifier 3 under rehab**



**Clarifier 1 under construction**

**Figure 2 Algiers Water Purification Plant**

In terms of compliance, the Algiers WPP had two compliance issues in 2018. It was noted that two notice of violations were issued by LDEQ for TOC. Those violations are in the process of being rescinded due to errors by contract lab.

## **WATER QUALITY LABORATORY**

The water quality laboratory located at the Carrollton WPP conducts daily analyses of river water quality and purified water for both WPPs. Water samples from the distribution network are also analyzed at the laboratory facility. The lab continues to meet the state and federally mandated analytical requirements of the water plants, and it is certified by the Louisiana Department of Health and Hospitals for analysis of coliform bacteria.

The laboratory collects samples for protozoan analysis in addition to coliform analysis. Other regular analyses include hardness, turbidity, fluoride, ammonia, pH, alkalinity, TOC, dissolved organic carbon, phosphorus, corrosion monitoring, and chlorine residual at different stages of treatment. The solids are analyzed for total suspended solids (TSS) and total dissolved solids concentrations. The laboratory also analyzes river water and finished water samples for volatile organic compounds.

The laboratory continues to maintain its involvement in the Early Warning Organics Contamination Detection System (EWOCDS), run by the State Department of Environmental Quality (LDEQ). The EWOCDS program has been previously underfunded and understaffed by Louisiana but has changed recently and is now more active and stable. SWBNO is actively involved this program.

The remaining reliable monitoring stations are connected by telecommunications to notify LDEQ if any of the 60 Environmental Protection Agency (EPA)-listed pollutants are detected in the river water samples. The LDEQ disseminates the information to the program participants, allowing early warning of possible problems. The LDEQ maintains EWOCDS equipment at all participating locations while the program participants provide the manpower to collect and analyze the samples.

At the time of the inspections, the laboratory was understaffed. Needed staff include additional sample collectors and lab technicians due to increased water line testing per FEMA waterline replacement program. In 2018, the lab hired four entry level chemists and 1 microbiologist because of the pay increases in 2017. During the visit, there were two microbiologists, five chemists, and three technicians. The lab supervisor position is still vacant; the head of the WPPs are currently filling the role. The laboratory staff had obtained certification to analyze TOC at the SWBNO facility in the past; however, the certification has lapsed due to a lack of lab staff (mainly chemists) to maintain the QA/QC requirements for TOC analysis and was not reestablished in 2018. Due to increased staffing, the lab is currently working on reestablishing this certification.

Some of the lab instrumentation and equipment is reaching or has reached the end of its service life and should be replaced. Newer analytical instruments and equipment are needed, such as a new gas chromatograph/mass spectrometer (GC/MS) and fume hoods in the chemistry lab. A GC/MS was ordered in 2018. No other major purchases are planned for 2019.

## WATER PUMPING AND POWER

The primary function of the water pumping and power unit of the operations department is to produce steam for the generation of 25 hertz (Hz) power in addition to pumping potable water to the City of New Orleans. The facilities at the Carrollton Power Plant include 3 pumping steam turbines and 1 gas turbine for a total theoretical capacity of 61 megawatts (MW of 25 cycle power). The steam required for the turbines is generated in the 6 boilers at a total capacity of 650,000 pounds of steam per hour. In addition to the 25 Hz turbine, the newly-installed Turbine 6 produces 15 MW of 60 Hz power and was made operational in early 2014. The turbine only serves as backup, but it is run weekly to ensure it is working properly.

The generating station at the Algiers Plant is capable of producing 60 cycle power using a diesel generator. The power generation facility can generate enough power to support operations at the Algiers Plant. This station is also capable of performing a frequency change from 25 Hz power, supplied from the Carrollton Plant, to 60 Hz power.

At the time of the inspections, the capacity of the Carrollton Power Plant was 73.5 MW (design capacity). Turbine 3 is limited to 8 MW (out of 15 MW) and for emergency use only. Repairs to Turbine 4 were ongoing in 2017 and the turbine was undergoing testing at the time of site visit. Turbine 4 was placed online in 2018. The rehab on Turbine 3 was suspended and will be retired from service, as well as Turbine 1. Currently, a power master plan is being created, proposing Turbines 1 and 3 replacement with a 20 MW static frequency converter, Turbine 6 upgrade to 25 MW and adding substation as a long term item to access power from the power utility making operations more reliable. At the time of the inspections, Turbine 3 was offline, Turbine 1 and 4 were online, and Turbine 5 was being used as needed. The department was made aware of a cross connection to the cooling systems for Turbine 1 and 3 and the Carrollton WPP clearwell. To address this issue, the department is planning to retire Turbine 1 and 3 as soon as possible. Steam Pumps A and B also contribute to the cross connection, but recent conversion of the drive to electric on Pump A has eliminated that contribution to the cross connection. Pump B will convert in 2019 and will no longer be a contributor. The department is trying to determine how to eliminate the contribution from Turbine 4. Additional boiler piping is scheduled for repair and replacement and will occur once all the boilers are rehabbed and operational. The bid for boiler rehab was placed on hold in 2018 due to the power master plan.

A 200 psi high pressure natural gas line supplies fuel for the 15 MW 60 cycle, dual fuel generator turbine package (Turbine 6) and the existing Turbine 5. The 15 MW, 60 Hz generator facility supplements the commercial power available from Entergy to provide power redundancy and continued service in the event of a commercial power loss from storms, hurricanes, etc. The generator serves the majority of the plant and raw water intake stations and provides additional drainage station capacity.

Two steam-driven distribution pumps (Pump A and B) are located at the power plant. During late 2018, the Pump A gear box failed, and the department decided to change it to a electric drive, The drive work was complete at the time of the visit. Pump B will also be converted, and that work is scheduled for 2019. The Claiborne Pumping Station, which consists of 4 water distribution pumps (2, 60 Hz drive and 2, 25 Hz drive), and the Panola Station, which consists of two pumping units (each with a 25 and 60 Hz motor), are usually adequate (with 100 percent redundancy) for pumping finished water to the distribution network. The 25 Hz pump at Panola Station has been converted to operate on both 25 and 60 Hz power for more

pumping operation redundancy. Future work for the pump stations is part of the water hammer program, which will include replacing equipment and associated valves at the Panola A and B pump room and Claiborne pumping stations. These projects were currently in construction at the time of the visit, but project completion is holding on the Claiborne project is being held up, largely due to road work. Both elevated water towers at the Carrollton WPP were under construction at the time of the visit last year and were placed online in 2019.

Generator 5 underwent major repairs in 2017 and was placed back into service in early 2018. Generator 4 rehab is complete, and the generator is in service. Five additional diesel generators (2.5 MW each) have been added and five of the five were in service at the time of the inspections. These additional generators add 12.5 MW of power.

Storm-proofing projects for critical SWBNO facilities, including the power buildings, were completed by USACE in 2017. Improvements for the power buildings included reinforcing the walls, roofing, doors, and windows. Additional damage-related work from Hurricane Katrina includes valve replacement and repair to electrical components and controls. Related items for the water pumping and power unit are in various stages of design or construction. Additional projects, which include replacing the diesel storage tank with 2 new above-ground tanks that have a total capacity of 250,000 gallons, are scheduled to finish in 2019. This project was under construction in 2017 and was still ongoing in 2018.

At the time of the visit, the water pumping and power unit had 87 employees, which provides for continued operations of the water, sewerage, and drainage systems that require staffing 24 hours per day, 7 days a week. Given the current levels of staffing, overtime is still required to cover all the necessary areas within the pumping/power unit and for emergency response. The department is continuously trying to improve on reducing overtime by focusing on training operators and using overtime to bridge the gap in knowledge. That effort was still ongoing in 2018. Approximately 11 senior operators or supervisors are set to retire in 5 years or less. In 2018, 5 senior operators have left and took voluntary retirement. Retirement was mentioned as a continuous staffing problem in this department, especially at higher pay levels, such as turbine and boiler operations positions. Additionally, it was also noted that the Chief of Operations will be retiring in September 2020 and a successor is currently not in place to take over. It is anticipated that additional staff will be hired and trained to fill the vacancies due to retirement.

It was noted again that more technically-advanced staff was needed to operate and maintain Turbine 4 and oversee future upgrades to the powerhouse, but the level of pay currently being offered does not allow the station to hire the necessary skillset for the job. Retirements also make conducting training to bring staff up to speed problematic. Due to this situation, the department is using maintenance contacts on equipment to help train staff with the help of vendors and manufacturers until staff is up to speed and can conduct the maintenance and troubleshooting in house. The department purchased portable generators in 2018 for critical facilities to ensure those stations would stay online if power loss occurred.

### Central Control

The Central Control Power Dispatching Department (Central Control) is primarily responsible for the delivery of an adequate supply of board-generated electrical power, the continuous monitoring of the operational status of all electrical switchgear, and the testing of related electrical feeders and equipment. This department is also responsible for verifying and enforcing the SWBNO's safety clearance procedures

and associated clearances within the power distribution system. Additionally, this department monitors local and regional weather to provide advance warning of storms, which could affect power generation requirements for the drainage and sewerage systems. Coordination of various power supplies, including alternative backup power supplies such as diesel generators and frequency changers, also comprise part of this department's responsibilities. The Central Control plays a vital role in many emergency operational situations. Serving as a hub of communications, Central Control informs the SWBNO's management and senior level staff of changes in conditions that will affect the SWBNO's ability to provide adequate sewerage, water, and drainage services. Central Control provides valuable information during emergencies, such as hurricanes, floods, freezes, etc., to the Office of Emergency Preparedness through established SWBNO protocols.

During the inspections, it was noted that Central Control still did not have enough trained and experience staff. This staffing situation was cited as the Center's largest issue. As a result, the department has made training a focus. It was noted that 2 of the 3 most senior staff members are in DROP. Therefore, training new staff members is very critical. Additionally, one experienced staff person retired in 2018, adding to the experienced drain in the department. Additionally, it was noted that the department's responsibility has expanded. A new platform was implemented and becoming familiar with that platform, as well as work related to Generator 4, has created a learning curve for the department. It was noted that more technically-savvy staff and I&C technicians are needed to work with the new technology.

## **SEWAGE TREATMENT PLANTS**

Operations and maintenance activities of both plants have been contracted to Veolia Water. A representative of the SWBNO oversees the contract operator. This representative works for the Operations department, which is within the SWBNO. Both treatment plants were operational at the time of the site visits and met the discharge limits according to treatment plant personnel. Veolia will continue to be the contract operator for the next five years.

### **East Bank Sewage Treatment Plant**

The East Bank Plant has a treatment capacity of 122 mgd (dry weather). At the time of the inspections, the plant was receiving approximately 90 mgd of flow. The treatment facilities at the plant include bar screens, grit removal, a pure oxygen activated sludge system, final clarification, and disinfection. The solids generated during sewage treatment are thickened, dewatered (using belt filter presses), and incinerated. A new sludge dryer is under design as an alternative sludge treatment system to supplement the existing fluid bed incinerator (FBI).



**New Mixers in Reactor 1**



**New High Efficiency Motor on RAS Pump**

**Figure 3 East Bank Sewage Treatment Plant**

The following items summarize the improvements that will be or have recently been performed at the East Bank Plant:

- Reactor 1 was not placed online in 2017 because of issues with the mixers. New mixers were installed in Reactor 1 and was placed back online by end of 2018. Reactor 4 was cleaned out in 2018 and is waiting mixer installation when for available funds are in place.
- VFDs were added to bar screen rakes drives in 2018, but currently still run on timers.
- Clarifier 8 was rehabbed in 2018 and was placed online in 2018. Clarifier 6 is scheduled to be rehabbed in 2020.
- A 2400 V effluent pump electrical distribution system, a switchgear, and effluent pump variable frequency drives (VFDs) finished construction in 2018 and was placed online in mid-2018.
- A heated air lance was added to the FBI wet scrubber in 2018.
- Replacing the vacuum swing absorption (VSA) oxygen system equipment (blowers, motors) is being solicited for quotes by the contract operator. All equipment was obtained in 2018 and waiting installation in 2019.
- All gas chlorine equipment was removed from the building in 2018.
- The North RAS line was replaced in 2018.
- Two RAS pump motors were upgraded to high-efficiency motors in 2018.

- 3,500 trees and 4,000 bushes were planted in demonstration cell in early 2018.
- The electrical phase 2 project, which includes a new 480-volt MCC in the solids building, was under construction during late 2018 and is scheduled for completion in 2019.
- The sludge dryer project went out to bid in 2017 and is expected to be constructed in 2020.
- Effluent Pump 6 project is in design and ready for bid. Project construction will be 2021 when funds are available.

In 2018, average flow for the plant was 103.51 mgd, which was greater than the 2017 average of 100.5 mgd. Effluent quality has been adequate over the last year, with an average effluent TSS concentration of 10 mg/L and an average effluent BOD concentration of 12 mg/L. One exceedance was noted in February 2018 for fecal coliform.

### West Bank Sewage Treatment Plant

The West Bank Plant has a treatment capacity of 20 mgd (dry weather). At the time of the inspections, the plant was receiving approximately 9 mgd of flow. The West Bank Treatment Facility consists of bar screens, primary clarifiers, trickling filters, final clarifiers, and chlorine disinfection. Primary and secondary solids are co-thickened in a gravity thickener and hauled to the East Bank Facility for incineration.



**New Bar Screen No. 2**



**Re-coated Grit Chamber 1**

**Figure 4 West Bank Sewage Treatment Plant**

The following items summarize the improvements that will be made or were recently made at the West Bank Plant:

- Bar Screen 2 was completely replaced in 2018 and was operational at the time of the inspections. It is anticipated that Bar Screen 3 and 4 will be replaced in 2021 or when funds become available.

- In 2018, of Grit Basin 1 and 2 pumped down and were recoated due to issues with the old coating falling off and clogging the grit pumps. Replacing all eight gear boxes on the influent side sluice gates is planned as an additional future job.
- Clarifier number 2 was rehabbed (steel work) in 2018. Primary Clarifier 1 was off line at the time of the visit and ready for-rehab. Final Clarifier 1 is scheduled to have the drive unit replaced in 2019.
- Main collection basin Pumps 1 and 2 rehab was not completed in 2018, but is anticipated to occur in 2019. Pump 1 was removed from site in 2018 and is awaiting repairs. Pump 2 is still onsite and awaiting assessment.
- The operator noted during the field visit that the effluent flowmeter stopped communicating to SCADA in 2017 and flow was estimated. In 2018, this issue was corrected, and active monitoring of the meter is ongoing.
- The operator noted that changing the SCADA system to a different platform is anticipated to occur in 2018. This upgrade did not happen and is awaiting a whole system update at both treatment plants. Documentation of the existing SCADA system platform was conducted in 2018 to prepare for the upgrade when funds are available.

The monthly average effluent TSS and BOD concentrations for 2018 were approximately 13.0 and 10.0 mg/L, respectively. The average flow for 2018 was 10.04 mgd, which was slightly less than in 2017 (which was 10.9 mgd). For 2019, this plant met or exceeded all permitted effluent limits.

## SEWERAGE AND DRAINAGE PUMPING STATIONS

Site assessments of the drainage pump stations (DPS) and sanitary sewer lift stations (SLS) of both the East and West banks of New Orleans were conducted starting August 8, 2019 and concluded on August 30, 2019. A representative from Black & Veatch attended the site visits of Drainage Stations 4, 5 and 9 on August 8, 2019. This section and tables at the end of the report details the operational status of each SLS and DPS across the city of New Orleans. Pumps that were not running at the time of the observations were deemed to be either “in service” or “out of service” based on direction from Sewerage and Water Board supervisors or pump station operators.

Many SLSs are slated to be demolished and re-built, including Station 1, Shorewood station, Weber station, and more. Within the last year, the only SLS that was re-built was Station 8 at the corner of Toulouse and N. Broad. This station was re-built entirely with new pumps, a new structure, transformer, site paving, etc. The Sewerage and Water Board has installed nearly all required Emergency Discharge Connections (EDC) to older above ground stations where they deemed necessary (at some stations, an EDC is not required if it is a gravity-flow station).

Some of the most frequently occurring issues at the SLS are things such as damaged flaps or valves, leaking, motor being burned out, etc. In almost all cases, the S&WB are aware of the issue and know how to make the repair. The main hurdle they must make regarding the actual repairs is either funding or a lack of skilled workers to make the necessary repair. One of the most mysterious and concerning issues, however, was observed at the Michoud Station. The station has a large sinkhole right behind the station that has resulted in the S&WB taking one of the pumps out of service because it was not pumping properly. They have

attempted to fill the sinkhole with asphalt to no avail; the sinkhole continues to get deeper and larger. There is concern that if the sinkhole continues to get larger that it will affect both the pumps, then the entire station itself.

Of the 82 SLS across the city, there are 18 stations not operating at full capacity due to a pump being out of service. Most of these stations are able to operate with one pump or have a portable pump on site to assist the station. Of the 25 DPS across the city, there are only 3 not operating at full capacity due to pumps being out of service at the time of inspection.

There does not appear to be any planned construction projects at any of the DPS other than Station 17, where they are remodeling the bathroom on the inside and doing some major repair work to the exterior wall of the entire facility. This station is shared with S&WB employee offices and should have no impact on the pumps or equipment. As always, the maintenance and repair of pumps, screens, and generators is an on-going daily task. Our last report did not show any pumps out for over a year. Most issues at the pumps were new issues, and most should be repaired in the coming months. At each station, the required repairs do not appear to be critical and the pump stations should all be able to run close to full strength from the adequate capacity provided by other pumps at the stations.

## **FACILITY MAINTENANCE**

The Facility Maintenance department has four units: (1) plant maintenance, (2) welding & fabrication, (3) electrical maintenance, and (4) mechanical maintenance and meter shop. These units provide meter repairs, removals and installations, major electrical, welding, and fabrication, and mechanical maintenance for all SWBNO facilities throughout the system, with the exception of Veolia Water-operated sewage treatment plants. The department has the specialized equipment and technology necessary to maintain the plant process equipment, drainage pump stations, sewage pump stations, power generation equipment, and water meter servicing. Automated lathes and mills are located in the machine shop and break press, as well as shear and other specialized repair equipment that is located in the welding and fabrication shop, which provide the ability to fabricate parts when replacement parts are excessively expensive or no longer available due to equipment vintage, such as gears and parts for older valves. Additionally, new facilities, such as Turbine 6, have been built within the SWBNO system, which requires additional staff to operate and maintain it though no additional increase in workload since last inspection was noted. Finding knowledgeable, qualified staff to troubleshoot issues for complex equipment, such as Turbine 6, has been hard and results in dependence on vendors and suppliers. In 2017, the underpass stations had backup generators added, so more maintenance and upkeep for those facilities is required by the Maintenance department. This additional work continued in 2018: the department utilized a diesel mechanic and four helpers for all the drainage stations and existing generators at other facilities. It was noted that future generators will be added to all the sewerage stations (currently over 100 diesel generators are under design). When that happens, maintenance will not be able to provide the same level of service with current staff at the time of the visit.

These additional assets prevent in-house rehabilitation and preventative maintenance from being completed, which creates a large backlog of work for this department. Additional project delays, such as needed repairs to various issues with Drainage Pump Station 6 pumps, add to the maintenance back log.

One pump was restored in 2018, but another pump is currently under repairs due to a failed bearing. It is scheduled to be returned to service in late August 2019.

The department completed the G3 basin rehab in 2018, and the basin was placed into service. Currently, maintenance is working on the G4 basin. The basin is offline and requires significant sediment removal due to sediment buildup (100 dump trucks completed at the time of the visit) at the end of the basin due to bridge issues. It was noted that cleanup will continue in 2019. Previous basins were contracted out; however, it was noted that many times the contracted work required the department to inspect and occasionally redo the work to keep the system online. Other times, items were left out of the initial work order, creating additional change orders. Additional rehab work completed in 2018 included bearing work on DPS 11 (screen gearbox failure) and is awaiting new screen placement. This replacement design is currently with Engineering. Once screens are removed, they will be stripped for spare parts.

The department continues to assist engineering with pulling together and reviewing contracts due to new hires in engineering. It was noted in last report that feedback from maintenance was not being carried over into engineering and construction projects. This situation has improved since last visit due to new staffing in Engineering on the IT side. The IT workers are helping better monitor the equipment and selection of common equipment to make spare parts more common at all facilities.

At the time of the inspections, the department had 16 authorized positions. Human Resources closed all vacant positions in 2018, leaving a few vacant positions left (mostly highly skilled experienced labor). Most of the highly skilled positions (welding and fabrication, electrical, mechanical maintenance) remained vacant. As stated previously, the current vacancies have been opened through Civil Service, but finding qualified candidates is still a challenge for the department. The residency requirement and pay scales are still site as a major problem for hiring and retaining more experienced, permanent staff, especially higher-level skill crafts. It was also mentioned that harder, more skilled positions were often paid the same or similar as less skilled positions, which does not assist in keeping higher skilled staff. This pay situation continued into 2018. It was noted in 2018 that no additional experienced staff has retired, but in the next 5 years almost all senior staff members will retire and will no longer be a resource. In 2018, the head of the machine shop entered the DROP program, joining heads of the instrument shop and the welding shop (who are all currently in DROP and will be retired in 1.5 years). To combat this situation, people were hired previously and are positioned for succession, especially in the instrument shop. At the time of the visit, it was noted that several electrical staff were in progress to be promoted. These promotions will result in less experienced staff in the field.

It was noted that overtime is necessary to compensate for the limited workforce. The amount of overtime for each department cannot exceed 750 hours or it must request a waiver. Despite this limitation, the department did not exceed its overtime limit in 2018. This department does use a Labor contract, and those contract staff do take the same performance test. It was, however, noted those workers make more than SWB employees, but when contract runs out many of those staff opt to become full time SWB employees.

During last year's visit, the department noted that it is facing a lack of qualified personnel to adequately supervise or oversee subcontractors. It was noted that during 2018, and into 2019, that situation has improved slightly due to promotions and hiring. At the time of the inspections, approximately 22 percent

of the maintenance employees were eligible for retirement or will be eligible to retire within 5 years. Thirteen positions (mostly high-level senior supervisors in the machine shop) are in DROP and could leave in the next five years. In 2018, maintenance was able to hire/promote staff to fill the vacant supervisor positions in the machine shop. Maintenance has tried unsuccessfully to rehire recent retirees. Currently, the rehire must be hired back into his or her original position or a position he or she held previously; however, if those positions are filled, then the retiree cannot be rehired. Because of the lack of experienced people left to assist with training, training of lower level staff is very limited due to lack of trained staff and is done on the job. It was noted by the department head promoting many senior level staff up the ranks leaves a void for skilled staff to work in the field. The department stopped recruiting at job fairs and trade schools due to lack of finding qualified entry level candidates. SWBNO still tries to hire from the community college but have found most students do not received training or have the capacity to become full time SWB employees. The department no longer offering internships at the time of the visit due to not being able to attract compete workforce from the college.

It was noted that Maintenance had sufficient equipment to maintain the system and do repairs. In 2018, the department did purchase a new bucket truck. It was noted that getting enough functional vehicles was an issue to lack of funding.

Lastly, due to the flooding in August 2017, it was noted that Maintenance has become more proactive on documenting repairs. In 2018, Operations and other departments have improved at writing their own work orders and understand the importance of documentation. Maintenance mentioned no upgrades to the current work order system have been done in 2018 though it is very needed. Having the new software accessible on laptops or at the station computers would help make sure work orders are closed out and documented correctly. Lastly, additional changes to purchasing policies have made it more difficult for maintenance to buy supplies. The new policy requires going out to public bid rather than adding additional funds to existing Pos, which has caused delays in repairing critical equipment. This requires management of more contracts, which the department does not current have staff to do. It was also noted that not enough of a grace period is given between starting new policies.

## ENGINEERING

The Engineering department includes mechanical engineering, electrical engineering, civil engineering, construction administration and inspection, and networks engineering. The Engineering department administrators typically contract throughout the SWBNO facilities and coordinate with other agencies for the design and construction activities impacting SWBNO-maintained facilities. At the time of the inspections, the department was managing 217 project contracts for FEMA and capital improvement projects.

The status of major contracts administered through the Engineering department is itemized in the following list:

- New sludge line from the Carrollton WPP to the river is at 90 percent design; however, it is currently on hold due to permitting issues and a lack of available funding. This project status was in the same in 2018.
- Sycamore filter has two emergency contracts opened recently to repair the offline filters (5 Phase Project). Phase 1-2 was completed in 2018, including the rehab of four filters (adding actuators, valves,

and much needed pipe supports). A Pilot program will be part of the phased work to pilot membrane filters as a possible technology for the future filter gallery upgrade. Additional phases (3-5) are dependent on funding dependent. The Complete rehab will be completed within the next 5 to 10 years.

- Chemical feed storage improvements to add additional chemical storage at the Carrollton WPP are in 95 percent design phase; however, this project was on hold at the time of inspections due to lack of funding. This project is scheduled to start in 2020.
- The filter backwash pump was under construction in 2018 and scheduled to be placed online in 2019.
- The fuel tanks at Carrollton WPP are being replaced with a 250,000 gallon above-ground storage tank. Construction started in 2018. This project is ongoing and scheduled to be completed in late 2019.
- The water hammer project, which includes installing two new elevated tanks at Carrollton WPP, is currently under construction in 2018 and is scheduled for completion in 2019.
- Filter media rehab at Algiers WPP is currently scheduled but has not yet begun due to funding. This work is part of a larger project mentioned in the Algiers WPP section update.
- A contract was issued to rehab one of the clarifiers at Algiers WPP and rehab started in 2018. Clarifier 3 is currently being rehabbed and is scheduled to be complete in 2019. Once complete, it will be placed back in line. Clarifier 4 rehab is scheduled to start in late 2019.
- Two major uptown roadway drainage projects were ongoing at the time of the inspections: Jefferson Ave. Phase 1 and Louisiana Ave. Both projects were ongoing during 2018 and are scheduled to finish in 2019.
- Contracts for the water line replacement program with the City of New Orleans were awarded in 2016 / 2017 and the program was ongoing in 2018.
- Flood mitigation contracts for nine sewage pump stations were awarded and the Engineering department is supervising these contracts. Eight station construction projects were completed in 2016. Most were complete by 2018. Sewerage Pump Station 8, which started construction in 2017, was approximately 90 percent completed in 2019.
- Ten major underground 25-cycle electrical feeders are being replaced throughout the SWBNO facilities. The project is still under construction but is scheduled to be online in 2019. This project is the first design-build project for the SWBNO.
- The Old River Intake Station rehabilitation project remained in construction during 2018 because of delays related to high river water levels. It is scheduled to be complete in 2019.
- Florida Ave. Phase 4 project is still in construction in 2018 with a scheduled complete date in 2022. Phase 2 and 3 were also ongoing and scheduled to be complete in 2019.
- The SWBNO plans to add a sludge dryer, including a new air emission system, to the East Bank Plant. The equipment is onsite and in storage. The dryer was purchased in 2018, and installation is scheduled to start in 2019.
- East Bank WWTP effluent pump motors and VFDs replacement was completed in 2017/2018, hitting substantial completion in July 2018.

- Phase 2 of electrical improvements at the East Bank plant began in 2018, and contract close out will happen in 2019.
- The West substation project includes a new substation to power the plant using power from the local electric company. Site work design is 100 percent design, but detail design is on hold due to funding.

Additional projects planned by the Engineering department include the following:

- There will be new lime storage and feed facilities at both WPPs. This project is still on hold due to lack of funding.
- Construction will start on a new chemical storage and feed facility at Carrollton WPP. This project is still on hold due to lack of funding.
- A new filter gallery addition at the Carrollton WPP will be designed. SWB will be piloting membranes to determine if that is the best technology for the upgrade. This is a long-term design and construction project (next 10 years).
- Rehab of the head house building is planned to convert the building into the SWBNO's new resiliency complex. As part of the resiliency complex project, a new infield building is being planned for additional office space at Carrollton WPP. Both the infield and the resiliency complex will meet FEMA's safe house requirements for a hurricane shelter. The engineering building will be rehabilitated to replace the roof, windows, and doors to make them withstand a higher wind rating. This project is still on hold due to lack of funding.

In addition to contract administration, the Engineering department added geographical information system (GIS) technology to enhance the ability to track the water distribution and sewer pipes in 2018. The FEMA-funded water main replacement and emergency sewer system assessment requires GIS identify and fix broken or leaking pipes in the water distribution and collection system. It was noted during the interview that funding for drainage improvements projects is needed. Additionally, it was noted that the department needs to hire more electrical engineers due to upcoming retirements to manage electrical contracts and review electrical design work. The department was able to hire a new electrical engineering intern in 2018, but still lacks mid to senior level electrical engineers. It was noted during the visit that staffing has improved, and the department was able to hire more senior level Civil and Mechanical engineering managers to assist in developing their younger staff. It was noted they were retired from the private industry. Lastly, the department still needs a Department Head of Civil Engineering and more experience staff.

## NETWORKS

The Networks department is charged with maintaining the sanitary sewer system and the potable water distribution system. The capital replacement to portions of the water distribution network funded by FEMA in response to damage associated with Hurricane Katrina remains ongoing.

The Networks department is divided into nine operational units. Field Services coordinates Networks' first response to service requests and manages the data entry for closing work orders. Zones 1, 3, 4, 5, and 6 are responsible for sewer and water infrastructure maintenance in assigned geographical areas in New Orleans. Zone 2 operates the barricade unit that provides safe lane closures and visibility for Networks' work areas. Zone 2 also performs preventive maintenance activities, including exercising and inspecting

valves and fire hydrants as well as sewer smoke testing required to maintain EPA consent decree compliance. Zone 7 provides limited surface restorations following repair excavations by Networks' crews, conducts sewer video and manhole inspections, and provides staff for after-hours crews that respond to emergency calls for service. Each zone has a staff of approximately 35 to 45 people who are responsible for repairs within the designated areas and/or other assigned responsibilities. Technical Services manages Networks' contracts including leak detection, sewer video inspection, operations and maintenance repair contracts, and contracts to perform capital rehabilitation, replacement, and modifications required to improve system performance.

A new chief of networks started in late 2018. During late 2018, Networks shifted from using contractors to do routine activities such, as repairs and general maintenance, to using in house staff, but it still utilizes contractors to assist with larger replacement work. From late 2018 until the time of the visit, it was noted that Networks' overall backlog was reduced in half using in house staff. It was noted that staff were empowered, allowing them to work more effectively.

According to department personnel, the biggest challenge is keeping up with aging infrastructure in the distribution and collection systems, as well as lack of equipment to do repairs and proactive maintenance (including backhoes, dump trucks, and rigs). It was stated that there is lack of funds at the current time to purchase new equipment. It was noted by the department that maintaining the same level of service was a concern if this situation does not change soon.

It was noted in 2017 report that the additional city events, as well as new developments, were adding to Network's workload. In 2018, Networks started using insertion valves and other methods to ensure less impact to the Central Business District (CBD) of New Orleans when doing repairs and replacement work. This approach has allowed the department to stay on top of the additional work load without impacting a larger portion of the CBD.

The SWBNO has conducted an evaluation of the piping system to detect leaks, and this effort is still on going. The department is trying to extend the serviceable life of the infrastructure by performing more capital upgrades, such as lining and full-line replacement in addition to point repairs in both the water distribution system and sewer collection system. The department has conducted several large-diameter pipe lining projects on critical large diameter lines that have experienced cracking and failure from excessive corrosion. There was an increased focus in 2018 on rehabilitating and replacing valves on transmission lines in the water distribution system. This continues as an effort to improve system performance and minimize community impact during anticipated water main tie-ins associated with a major increase in coordinated capital projects city-wide. In 2018, the department started valve data collection programs, increasing valve exercising, and identifying large valves that need replacement. This is currently being done with in house employees. Additionally, it was noted that from late 2018 to the time of the visit, the paving work order projects backlog has decreased dramatically and the SWBNO is making huge progress to keep the backlog within reasonable.

Emergency response times in 2018 were also improved. Currently, average response time for emergency inspectors to get on site is one hour (compared to 3-4 hours previously). The number of complaints received by SWB has gone down as well.

It was noted the pay raises in 2017 have helped retain current staff, but have not assisted in attracting new staff, especially in engineering. The specialized set of knowledge and skills required by the department necessitates a significant investment in on-the-job training and formal instruction in a variety of subjects, such as safe handling of materials containing asbestos, safe excavation and shoring, confined space entry, etc. The department noted that certification testing and certification classes for distribution and collection operators are offered at Delgado Community College for any staff requiring operator licenses and particularly those struggling to pass the required tests. This additional resource will greatly supplement departmental test preparation and help the department ensure its staff obtains sufficient operator licenses to remain in compliance. As stated in previous report, pay is still a factor in attracting new staff to Networks.

No major changes to engineering staff occurred in 2018. It was noted in the 2017 report that productivity in engineering has continued to improve due to lower level staff continuing to build on their experience and eligible staff achieving PE licensure. This situation was still true in 2018. It was noted that Networks did lose three Zone manager positions in 2018 and were not able to hire replacements for those key staff positions. This inability to hire replacements was attributed to not having any qualified candidates in the register. It was stated that job requirements for these positions need to be revised but Civil service will not revise the minimum qualifications for these positions (currently requiring a bachelor's degree). Additionally, Networks is not able to transfer staff within different departments due to Civil Service requirements, making it hard for the department to move staff where needed. It was also noted that the lack of response from Civil service for promotes and hiring was still an issue. It was noted that Networks did, however, receive support and budgeting to hire entry level technicians in 2018. The department noted that it does use overtime when needed but have either stayed within the allotted time or have requested a wavier when needed.

Approximately 1,223 water mains were repaired in 2018. Identifying leaks is an ongoing process, and SWBNO will continue to incorporate identified leaks into the water main replacement program funded by FEMA. As part of the ESSA program, manholes are also being inspected as a part of the ongoing inspection of the sewer system. Approximately 1,256 sewer repairs were completed in 2018. In addition to the FEMA-funded projects, the Networks department also responds to requests for valve closures by contractors and the City.

The Networks department works in conjunction with the New Orleans Fire Department to monitor and maintain all fire hydrants located in SWBNO's service area. The Networks Department inspects all fire hydrants within the system. All city hydrants have been mapped and assigned an identification number. The fire hydrants program requires fire hydrants in the database to be inspected. In 2018, the department inspected 5,171 hydrants. The Networks department is assisting the city with hydrant capacity color coding to comply with the new hydrant rating standards required for the city's insurance rating. It also conducted flow testing on critical hydrants to find leaks, ensure they meet the rating, and are operational.

The Networks Department completed 6,083 paving project work orders in 2018, both in-house and in cooperation with contractors. This department has several contracts to assist with maintenance of the water distribution, wastewater collection, and drainage stations. These contracts have increased the amount of work accomplished within the division.

## SUPPORT SERVICES

The Support Services department has ten divisions:

1. Support Services Administration division
2. Support Services CDL division:
  - a. Trains not only S&WB employees but also the following political subdivisions:
    - i. Regional Transit Authority
    - ii. Orleans Levee District
    - iii. Orleans Civil & Criminal Sheriffs
    - iv. New Orleans Police Department
    - v. City Department of Public Works
    - vi. Park & Parkways Department
    - vii. Lewis Armstrong International Airport
3. Support Services Plant Engineering division:
  - a. Performs most all-ground maintenance functions.
  - b. Operates the St. Joseph and Julia Streets Administration Buildings and the Algiers Bill Collection Facility
4. Support Services Building Maintenance division:
  - a. Maintains the Central Yard Complex and all Pumping Stations Buildings
5. Support Services Grounds Maintenance division:
  - a. Maintains all open canals within Orleans Parish
6. Support Services Warehouse division:
  - a. Stores valves, pipes, hydrants, tools, etc., required by the Networks department for repair of existing water distribution and sewer pipelines
7. Support Services Equipment Maintenance Information System (EMIS) Division:
  - a. Maintains the Cyndrus software that tracs fleet purchases, maintenance work orders, and billing transactions
8. Garage I:
  - a. Maintains the small and medium size fleet
9. Garage II:
  - a. Maintains large and heavy-duty fleet
10. Garage III:
  - a. Performs body work on the entire fleet

The SWBNO owns approximately 954 pieces of rolling stock, which include trucks, backhoes, and sewer cleaning equipment. The available equipment is being assigned to the various divisions based on the needs of the departments. Approximately 10 pieces of new stock were obtained in 2018.

At the time of the inspections, Garage II has been completely rehabbed and is occupied by mechanics, along with diagnostic equipment by late 2018. Office furniture, shelving, and items for Garage II have been installed. The Support Services Administrative staff and EMIS staff will move its offices on the second floor of Garage II when the fiber optics are completed in 2019. A new Site Relocation building (Garage III/new

body shop) was constructed in 2014 to house personnel until the garage renovations are completed. Staff and materials from Garage II were stored in the Site Relocation building. Ultimately, the Site Relocation building will be used to house the body repair shop, which is now a separate entity from Garage II due to organizational restructuring. Staff is scheduled to move into Garage II in 2019. The old body shop will be converted into the tire shop.

FEMA continues to reimburse equipment and tools for each garage lost to the hurricane, in addition to replacing some of the buildings. One of the buildings set to be replaced is the Annex building, which is used to house locker rooms, shower facilities, training rooms, CDL training unit, etc. It was noted that Support Services has been able to purchase and use diagnostic equipment in-house, reducing the dependency on vendor services. Projects being completed or conducted within Support Services include the following:

- Take home vehicles were reduced to 48 as of 2018.
- The contractor assigned to mitigate problematic vegetation (lilies) in the canal systems since 2015 is no longer affiliated with the SWBNO. This function went out to bid and the contract was awarded in late 2018. Support Services will be exploring the possibility of using a non-chemical option to help reduce invasive species in canals and lagoons in the near future.
- A major change to the janitorial services contract occurred in 2016 to include all Board facilities. This service will go out to bid in 2019.
- In 2017, new employees were hired in all areas of support services, including mechanics, laborers, and public utility workers etc., to help support all departments within SWBNO. At the same time, three upper/middle management staff retired. Their successors have been determined. Promoting those staff into those positions was ongoing at the time of the inspections and is still ongoing in 2018. If internal candidates are not promoted, the department will look at outside options.
- Additional staffing changes that occurred in 2017 include the ability to rehire retirees part time. Support Services utilized this option for one position to assist with maintaining the level of service and training of existing employees. It was noted during the interview with Support Services that merit raises were finally awarded to all its staff in 2018. The department feels it continues to lose staff to other departments because it cannot compete with pay and pay increases, especially for lower level staff.
- The department noted that most of the staff is approaching retirement age, including the director of the department. As a result, it will be short-staffed. Many senior level staff, including several successors, are in DROP or retiring within the next five years. The department continues to actively identify candidates to replace staff close to retirement. Ground maintenance continues to have high labor turnover because of the nature of the work, lack of pay increases, and ability to promote competent staff to supervisory roles. The Head of Support Services is scheduled to retire in 2019, but succession planning has been a focus for the department and a successor has been identified. The department is focused on filling vacancies and getting promotions awarded through Human Resources. Additionally, the department is working on creating a position under Support Services that interfaces with Networks to better serve that department and better control services to that department. Currently, Networks has staff members in its department that interface with Support Services about their needs. In 2018, a CDL trainer was identified as that staff interface between Networks and support services and will be brought on board under Support services in 2019.

- To comply with the reduced overtime requirement, the department has continued using its established procedures for vetting overtime requests by department employees. Staff must fill out an overtime authorization form, including projected overtime for the task, and submit the form a week ahead of time. The forms are reviewed every week, and then updated based on the actual work done. It was noted in 2018 that overtime was still being accounted for and monitored.
- In 2017, Support Services internally revamped the department's policy and procedures. These procedures were worked on in 2018 and are still in progress.

Future projects/concerns:

- One elevator in the St. Joseph building is inoperable, and repair or replacement is needed. The Engineering department has worked on bid documents, but the project is on hold due to the Board's financial status. The Peoples Avenue building elevator design is on hold and will be completed when funds are available.
- A new whole house building generator for the St. Joseph Street Administration building is on hold due to funding.
- The Central Yard facility plans to add two additional parking lots and replace the parameter fence around the entire Central yard. The fence project is on hold due to planned street work for the Florida Avenue Canal SELA activity which was ongoing in 2018.
- Support Services Department phone system started in 2018 and will be on going into 2019.
- Modular units that act as temporary offices will be moved off site once Garage 2 is done. Those units were used during 2018 and will be removed from site in 2019.
- It was noted that in 2018 there was a leadership change and the department of logistics was dismantled. Support services now reports to the general superintendent. The department noted the leadership shift was helpful and has provided stability.
- It was noted that the Engineering department and support services are working on an application (survey 123) that ground maintenance staff can access on their cellphones to document the condition of canals during inspections. The app will be GIS based and will be rolled out to staff in 2019.
- The department noted that, due to lack of funds, they were not able to purchase much rolling stock in 2018 despite the need for vehicles.

## **ENVIRONMENTAL AFFAIRS**

The Environmental Affairs department oversees the consent decree and all administrative orders. The department reports sewer bypasses and overflow to the Region 6 EPA. Some activities being undertaken by the department include the following:

- Continuing to monitor industrial users through the pretreatment program and the fats, oil, and grease (FOG) program.
- Permit compliance in air, water, wastewater, storm water management, solid waste, and underground fuel storage tanks.

- Community outreach programs that focus on environmental education in the areas of water, wastewater, and drainage.

The construction of the piping for the East Bank Sewage Treatment Plant wetlands assimilation has been completed. The piping allows treated effluent to be discharged to the demonstration and expansion cells. SWBNO has a permit from LDEQ to discharge to the demonstration cells, but no permit has been issued to discharge into the expansion cells. It was noted that 3,500 trees and 4,000 bushes were planted in the demonstration cell by wastewater plant contract operator. The current EBSTP permit expired on May 31, 2014, but the permit has been administratively extended until the final permit is issued. LDEQ is in the process of addressing public comments received during the comment period and at the public meeting. It is likely the final permit will be issued by the end of this year, 2019. Until LDEQ issues the final permit for the East Bank WWTP, there can be no discharge into the expansion cells. Tree planting cannot start until the final permit is issued and the effluent can be discharged to the cells.

On February 25, 2018, the East Bank Sewage Treatment Plant exceeded the daily maximum limit for Fecal Coliform Bacteria, 400 colonies/100 ml. The result was 500 colonies/100 ml, the only permitted parameter which was exceeded in 2018.

On May 1, 2018, a customer complaint reported a Sanitary Sewer Overflow, SSO, to LDEQ. The SSO was associated with the operation of a local restaurant in the Orpheus Court area. On November 1, 2018, LDEQ issued a warning letter for the incident. On March 15, 2019, the Board filed a response to LDEQ. This warning letter was associated with the Agency No. 4859, East Bank Sewer Treatment Plant, which is the reason for listing this enforcement action in this section.

On August 17-21, 2018, LDEQ performed a compliance inspection of the East Bank WWTP Title V Air Permit. On January 2, 2019, LDEQ issued a warning letter for failure to comply with Specific Conditions No. 97 and 112 of the facility's air permit. Condition 97 and 112 require maintenance to be performed i.e. change engine oil and filter after every 500 hours of operation, or annually (whichever comes first). Veolia Water was following the recommendation of the manufacturer which states, "change engine oil and filter after the first 100 hours and every 250 hours thereafter. Since the 98 HP diesel generator and the 450 HP diesel generator did not meet this condition, the oil in these two generators were not changed in 2017. Work orders are now being generated so this task is performed on an annual basis. Due to this interpretation of the regulation, the deviation was not reported on the 2017 Annual Compliance Report filed in 2018. A corrected report has been filed.

The East Bank WWTP Title V Air Permit is current and will not expire until January 23, 2020. This permit regulates emissions from the FBI and the use of the emergency generator during times when power is not available from Entergy. Title V Air Permit Condition 70 requires a semi-annual report to be filed on February 19<sup>th</sup> each year for the reporting period of July 2018 to December 2018. Due to an oversight by the Board's contractor, Veolia, the report was filed on March 28, 2019. MACT 129 requires annual stack testing to demonstrate all emission standards are met. In 2018, the East Bank WWTP did have an exceedance in mercury. A retest in 2018 showed all emission standards were met.

The permit for the West Bank WWTP expired on May 31, 2019. The permit renewal application was filed on November 16, 2018. A draft permit was issued on June 11, 2019 with a public comment period ending July

31, 2019. No comments were received by LDEQ. According to LDEQ, the anticipated date for the final permit to be issued is on or before September 30, 2019.

On March 16, 2018, a warning letter was issued by LDEQ for sanitary sewer overflows in the West Bank Sewer Collection System. A response was filed on May 15, 2018.

The components of the pretreatment program include monitoring the discharge of the East and West Bank Sewage Treatment Plants in addition to other significant industrial users during the year. No additional users were permitted in 2018. An annual report was submitted to LDEQ to demonstrate pretreatment performance. Additionally, yearly revenue has been received from the following sources associated with the pretreatment program:

- Industrial users billed monthly for excess strength surcharges: \$147,426.89
- Sanitary sewerage discharged to the wastewater plant from special events: \$42,895.43
- Septage disposal program: \$249,535.00 (total). Board's share, 50% of the total: \$124,767.50
- Food service establishments billed for permit fees for the FOG program: \$85,616.90

The total for all the above revenue sources is \$400,706.72

The Power Plant located at the Main Water Purification Plant uses diesel and natural gas-powered units to provide power to DPSs and other SWBNO facilities. The Power Plant is required to meet air quality regulations found in the facility's Title V Air Permit. Emergency back-up generators are also located at DPSs and other SWBNO facilities. These units are permitted by emergency engine permits. The permit renewal of the power plant was submitted in 2016. LDEQ reviewed the application in 2017 and issued the permit in February 2018. SWBNO continues to utilize compliance software for air quality programs at the Carrollton WPP.

The following items were noted as deviations on the 2018 Title V Air Permit Annual Compliance Report for GRP 003 1-96 Emission Cap for Boilers 1, 3, 4, 5, 6 & Turbine No. 5. The natural gas totalizer on Turbine No. 5, which is used to record natural gas usage for the unit, was broken. To repair or replace, Turbine No. 5 had to be taken out of service; however, the operating hours and the permitted firing rate for Turbine No. 5 were used to calculate monthly emissions for Turbine No. 5, as required by Specific Requirement No. 93. Taking Turbine No. 5 out of service to make the repair is difficult to schedule due to the unit being used to pump potable water throughout the East Bank of Orleans Parish. Turbine No. 5 is also used to operate drainage pumps in Orleans Parish. The Boiler No. 1 natural gas meter was out of service from July 29, 2018 to January 8, 2019. The Boiler No. 3 natural gas meter was out of service from October 1, 2018 to January 8, 2019. The replacement of the natural gas totalizer for Turbine No. 5 was completed on December 31, 2018. The repair of the natural gas totalizer for Boilers No. 1 and No. 3 were completed on January 8, 2019.

Emissions from the Boiler CAP were calculated monthly on a 12-consecutive month basis. Formaldehyde exceeded the permitted limit of 0.17 tons. The emission for the 12-month period, beginning January 1, 2018 to December 31, 2018, was 0.22 tons. With the replacement of Turbine No. 5 gas meter emissions will be calculated on gas usage rather than hours of operation. This improvement will result in lower emissions, which will be based on gas consumption and more truly reflect emissions.

The Municipal Separate Storm Sewer System (MS4) Permit for the Orleans Parish is managed by the SWBNO. The SWBNO, along with co-permittees, met the requirements found in the permit and it was documented in the annual report, filed on May 1, 2019, for the reporting year 2018. The MS4 permit renewal application was filed on June 15, 2018. At this time, the draft permit has not been issued by LDEQ.

Prior to 2015, the Environmental Affairs department used a contractor for stormwater sampling required for the M4 permit. In 2017, stormwater sampling was still done completely in-house by the department's staff and continued into 2018. All required samples were successfully collected by the department's staff to meet 2018 permit requirements. The department continued to sample in house, including testing for TMDLs, water quality, and all NPDES sites.

The department has implemented a comprehensive FOG monitoring and permitting program. The program has identified approximately 3,000 food service facilities, such as schools, restaurants, daycare centers, hospitals, convenience stores, and other facilities that prepare food. Each facility, which has a food permit from the department of Health and Hospitals, is required to have a grease trap/grease interceptor. The department tracks all permits, trap pumping records, and applications using a database, and it proactively works with facilities to prevent improper disposal of grease to the collection system. The department held meetings and community outreach events in 2018 to assist the public and businesses in being more aware of the impacts of FOG on the collection system.

The department has provided training and certification to grease trap pumping companies to make sure their staff are consistently cleaning the traps properly. Training was also provided for the inspection of grease traps, which is required to be submitted with the FOG permit application. Certified technicians from the grease trap cleaning companies or licensed plumbers can inspect grease trap/interceptor. There were 473 FOG permits issued in 2018. Department staff use database software to manage the permitting process and are able to track noncompliance, permit applications, and grease trap pumping records.

In 2018, the SWBNO continued with its green infrastructure pilot program. The requirement for green infrastructure projects ended in 2018, but funds are available to award for projects 2019. In 2018, 14 demo projects were completed. A notice to proceed for a school is scheduled to be issued in 2019. An RFP will be finalized to advertise for green infrastructure projects for a Board-owned property on Bayou St. John.

These projects focus on community outreach and education. Program accomplishments for 2018 included:

- 19 school events; some schools visited multiple times
- 3,525 students reached
- All grades reached (pre-kindergarten-undergraduate)
- 24 teachers trained on water management and water quality issues
- 12 MS4/Orleans Parish Water Quality Task Force meetings
- 5 tours of SWBNO facilities and sites
- 162 drains cleaned and/or marked in 6 separate events by 144 people
- 5 professional trainings attended; 6 trainings facilitated by Board staff
- 5,605 community members reached directly by outreach activities and events
- 13 community-wide events
- 21 Neighborhood or Civic Association events
- Applied to 2 grants

- 73 total events during the reporting period, reaching an estimated 9,290 individuals

The Environmental Affairs department continues to hire more staff for the tasks necessary to maintain compliance with all the rules and regulations that apply to the SWBNO. In 2018, the department did not lose any staff and all 23 positions were fully staffed. In 2019, one employee is in DROP and has retired. Due to lack of office space in the Central Yard building, the department will be relocating to the Carrollton WPP. The stormwater team relocated to Carrollton WPP in 2018. The rest of the staff is scheduled to move in 2019.

Information for the manifest of the FOG program is currently handwritten. The department currently has the equipment and software to scan information and printed manifest was obtained in 2018. Staff is awaiting training on the equipment and software scheduled for 2019.

As a result of the flooding in August 2015, the department had to take on more responsibility, such as conducting monthly Spill Prevention, Control, and Countermeasure (SPCC) inspections. In 2018, the SPCC inspections at the drainage stations and emergency generator locations were conducted monthly by department staff. Environmental Affairs has updated all existing SPCC plans in 2018 as required by the regulations. The SPCC inspections are done monthly by department staff.

Additional duties of the department included environmental consulting with other SWBNO departments to advise the SWBNO on Asbestos abatement, and RECAP investigations and removal of contaminated soil at various SWBNO-related construction projects. The SWBNO hired environmental personnel for the Project Delivery Unit (PDU) section, which resulted in better response to environmental issues for SWBNO construction projects. The department works with PUD on RFPs and contracts for chemical spill cleanup services, the backflow prevention program, and asbestos abatement at Drainage Station 13.

## **STATUS OF CONSENT DECREE FOR SEWERAGE SYSTEM**

The SWBNO complies with the EPA Region 6 and Department of Justice consent decree, which requires reduction of unauthorized discharges by implementing preventative maintenance requirements and completing repairs to the collection system as outlined in the Third Modified Consent Decree.

Some provisions outlined in the consent decree include those listed below:

- Quarterly and annual reporting requirements are to be submitted to the regulatory agency.
- The SWBNO will meet the preventive maintenance requirements of the consent decree.

The SWBNO is in compliance with the consent decree. It has met every construction and reporting deadline in the decree and has had no fines related to construction or reporting schedules in 2018.

## **SUMMARY OF FINDINGS**

The following items are a summary of the findings during the site inspections:

- The management team is losing individuals with significant water, sewerage, and drainage experience due to retirement. This experience has been developed both internally at SWBNO and at other respected water and sewer utilities. This concern was also noted by LDEQ as a major deficiency at both of the WPPs during their 2017 and 2018 WPP inspections.

- During 2018, the department of logistics was dismantled, and departments now report to a more stable leadership structure under a permanent general superintendent.
- Staffing remains a key item of concern for the SWB. Like many water and sewer utilities across the United States, the SWBNO departments are faced with a significant number of pending retirements. Approximately 17 percent of current employees are either in DROP or are eligible for retirement. Unless these employees are replaced with qualified individuals, these pending retirements pose a significant threat to SWBNO's ability to perform its core operational and administrative functions. Succession planning and recruitment of qualified employees to mitigate the pending retirements will be a key element for SWBNO. This problem was noted by each department at the time of the visit, as well as previous years' reports, especially for Water Operations, Control Center, and Facility Maintenance.
- Several departments are experiencing vacancies, including the water purification unit of the Operations department, as well as the Facilities Maintenance and Networks departments. Within the last year, one high level department head retired (supervisor of operations of both WPPs) and a new department head for power pumping was assigned. SWBNO needs to address these vacancies as soon as possible to ensure effective operational and maintenance performance and administrative oversight. It was noted by every department that during the last year, the high turnover within the SWBNO's Human Resources group along with new human resource procedures hindered efforts to hire and promote staff in a timely fashion. This situation has improved slightly, with each department being assigned a Human Resource representative to provide more support.
- Construction of the two 2 MG water towers -- as part of the water hammer project, started in late 2016, and contractors continued to work on both towers in 2018. At the time of the visit, both towers were online.
- The Operations department was made aware of a cross connection to the cooling systems for Turbine 1 and 3 and the Carrolton WPP clearwell. To address this issue, the department is planning to retire Turbine 1 and 3 as soon as possible. Steam Pumps A and B also contribute to the cross connection, but recent conversion of the drive to electric on Pump A has eliminated that contribution to the cross connection. Pump B will be converted to an electric drive in 2019 and will no longer be a contributor. Approximately 11 senior operators or supervisors are set to retire in 5 years or less. In 2018, 5 senior operators have left and took voluntary retirement. Retirement was mentioned as a continuous staffing problem in this department, especially at higher pay levels, such as turbine and boiler operations positions. Additionally, it was also noted that the Chief of Operations will be retiring in September 2020 and a successor is currently not in place to take over.
- It was noted during the site visit that Central Control still did not have enough trained and experience staff. This staffing situation was cited as the Center's largest issue.
- The SWBNO has a clear understanding of the existing conditions of the drainage, water, and sewage facilities, and is aware of the immediate needs within each division and area; however, funding is needed for the SWBNO to address these issues. This was still the case in 2018 and at the time of the visit. Many projects are on hold due to funding, such as the new chemical building at the Carrolton WPP and other sewerage and WWP improvements.

- The SWBNO continued and completed emergency filter repairs in 2018 that included a rehab of 4 filters in the Sycamore filter gallery, including replacing pipe supports, valves, and actuators, and construction of a new filter backwash station. The station was online at the time of the visit.
- Aging infrastructure and lack of equipment needed to make repairs was noted as Networks main concern. It was noted that the Networks work backlog has been significantly reduced since August 2018 due to change in how Network staff are utilized. It was also noted that paving work order projects were completed. Emergency response time was also noted to have improved significantly
- Many SLSs are slated to be demolished and re-built, including Station 1, Shorewood station, Weber station, and more. Within the last year, the only SLS that was re-built was Station 8 at the corner of Toulouse and N. Broad. This station was re-built entirely with new pumps, a new structure, transformer, site paving, etc. The Sewerage and Water Board has installed nearly all required Emergency Discharge Connections (EDC) to older above ground stations where they deemed necessary (at some stations, an EDC is not required if it is a gravity-flow station).
- The East bank WWTP had one exceedance in February 2018.

## Water Department

### ADHERENCE TO WATER REVENUE BOND RESOLUTION REQUIREMENTS

In 2014, the Sewerage and Water Board sold \$103,525,000 of Water Revenue and Refunding Bonds. The sale of these bonds has obligated the Board to fulfill the covenants of the current bond resolutions. The covenants are designed to protect the interests of the bond holders. Particular covenants of the Board in the General Water Revenue Bond Resolution pertain to the payment of indebtedness; limitations on indebtedness; covenants and representations of the Board; covenants with credit banks, insurers, etc.; operation and maintenance; free service, completing service, billing and enforcement of charges; sale or encumbrance of the system; insurance; damage, destruction, condemnation and loss of title; records and accounts, inspections and reports; and the capital budget. The Requirements of the General Water Revenue Bond Resolution adopted on May 21, 2014, (hereafter collectively called the General Resolution) are discussed in this section.

The Board was in compliance with the General Water Revenue Bond Resolution in 2018.

#### Payment of Indebtedness; Limited Obligations

The General Resolution obligates the Board and the Board of Liquidation (BOL) to promptly pay the principal and interest on all senior and subordinate debt that are obligations payable from the net revenues of Board.

#### Limitations on Indebtedness

The Board must not issue bonds, other senior parity indebtedness or subordinate debt unless it complies with Sections 4.03, 4.04 or 4.05 of the General Resolution, as applicable.

#### Covenants and Representations of Board

The General Resolution gives the Board the power to issue bonds and pledge the revenues according to the resolution. In addition, the Board "... faithfully observe and perform all covenants, conditions and agreements on its part contained in this Resolution, in every issue of Indebtedness issued hereunder and in all proceedings of the Board pertaining thereto."

#### Covenants with Credit Banks, Insurers, etc.

The Board may make covenants and agreements in a supplemental resolution with any insurer, credit bank or other financial institution that agrees to insure or to provide a credit facility to the Board. These covenants and agreements shall be binding on the Board and all the holders of indebtedness the same as if such covenants were set forth in the General Resolution.

#### Operation and Maintenance

The Board "... shall establish and enforce reasonable rules and regulations governing the use of and the services furnished by the System, shall maintain and operate the System in an efficient and economical manner shall maintain the same in good repair and sound operating condition and shall make all necessary repairs, replacements and renewals." In addition, all compensation, salaries, fees and wages paid by the Board shall be reasonable. Finally, the Board shall observe and perform the terms and conditions contained in the Sewerage and Water Board Act (Part III of Chapter 9 of Titles 33 of the Revised

Statutes of Louisiana, as amended), and “comply with all valid acts, rules, regulations, orders and directions of any legislative, executive, administrative, or judicial body applicable to the System or the Board.”

### **Free Service, Competing Service, Billing and Enforcement of Charges**

The Board shall not “... provide any services of the System without making a charge therefor in accordance with the Board’s schedule of rates, fees and charges ... other than those connections, use or services already in existence or as may be required by law ...” In addition, the Board may not “... provide, grant any franchise to provide or give consent for anyone else to provide such services which would compete with the System unless the Board determines that such franchise ... would provide services that the Board has determined are not in its best interest to provide and would not materially impair the interests of the holders of indebtedness.”

The Board will bill customers for services on the regular basis and if the rates, fee or other charges are not paid when due, the Board shall “... to the extent permitted by applicable laws and regulations, disconnect the premises from the System or otherwise suspend service to such premises until ...” delinquent rates, fees or other charges have been paid or a payment plan has become effective.

### **Sale or Encumbrance of System**

The General Resolution requires that, with exceptions, “... neither the System nor any integral part thereof shall be leased, sold, mortgaged or otherwise disposed of ...”

### **Insurance**

The Board “... shall continuously maintain insurance with recognized responsible commercial insurance companies against such risks and in such amounts as are customary for public bodies owning and operating similar systems ...”

### **Damage, Destruction, Condemnation and Loss of Title**

The Board shall restore “... property destroyed or damaged to substantially the same condition as before such destruction, damage; condemnation or loss of title ...”

### **Records and Accounts; Inspections and Reports**

The Board is required to “... keep proper books of records and accounts ... showing complete and correct entries of any transactions relating to the System....”

The Board is also required to file with the Board of Liquidation, City Debt an annual report with financial statements audited by and containing the report of a nationally recognized independent public accountant. The auditor’s report is to include a statement that during their examination, made in accordance with generally accepted auditing standards, nothing came to their attention that would lead them to believe that a default had occurred under the resolution, or to state the nature of the default.

The Board engaged the firms of Postlethwaite & Netterville and Bruno & Tervalon to comply with this covenant. Financial reports with the Accountants’ Certificate have been furnished to the Board of Liquidation, City Debt and have been reproduced for public distribution. The Government Finance Officers

Association (GFOA) has awarded to the Board the “Certificate of Achievement for Excellence in Financial Reporting” for their annual financial reports for 29 years.

### Capital Budget

The Board is required to adopt an annual multi-year financial plan for capital expenses for a minimum of 5 future years.

## 2018 WATER DEPARTMENT OPERATIONS

Funds for the operation, maintenance, and debt service requirements of Water Department are derived from sales of water, delinquent fees, plumbing inspection and license fees, charges for disconnections and reconnections, interest earned on available funds, and other miscellaneous revenue sources. Analyses of the 2018 Water Department operations are discussed in the following paragraphs.

### Operating Revenues

A summary of historical treated water billings and other Water Department revenue is presented in Table 2 for the period 2014 through 2018. The historical revenues shown in Table 2 were developed from detailed records provided by Board Staff. Operating revenues are derived from charges for sale of water and delinquent fees. Sales of water in 2018 were \$89,281,924 which, when compared with \$88,740,868 for 2017, shows an increase of approximately 0.6 percent. Delinquent fee revenues were \$1,005,157 in 2018 which represent a 42 percent decrease over 2017 delinquent fees. The decrease in total operating revenue in 2018 is most likely due to the moratorium on water shut-offs which resulted in unpaid water bills.

Table 2 - Statement of Historical Revenue

Revenue Source	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
<b>Operating Revenue</b>					
Sales of Water	69,529,431	76,909,522	81,320,346	88,740,868	89,281,924
Delinquent Fee	<u>1,288,824</u>	<u>1,098,415</u>	<u>1,838,594</u>	<u>1,723,942</u>	<u>1,005,157</u>
Total Operating Revenue	70,818,255	78,007,937	83,158,940	90,464,810	90,287,081
<b>Nonoperating Revenue</b>					
Interest Earned	350,018	966,949	2,104,903	1,923,464	1,723,942
Plumbing Inspection and License Fees	339,176	305,384	319,991	297,115	319,127
Revenue Sharing	254,577	258,721	251,002	264,074	264,567
Other Income	<u>2,841,110</u>	<u>3,416,155</u>	<u>2,506,704</u>	<u>1,707,271</u>	<u>1,912,736</u>
Total Nonoperating Revenue	<u>3,784,881</u>	<u>4,947,209</u>	<u>5,182,600</u>	<u>4,191,924</u>	<u>4,220,372</u>
Total Revenue	74,603,136	82,955,146	88,341,540	94,656,734	94,507,453

### Non-Operating Revenues

Also shown in Table 2, non-operating revenue of the Water Department includes interest earned on invested funds and other income from miscellaneous sources. During 2018, non-operating revenue included \$1,723,942 of interest earned from the investment of available funds in the Water System Fund and the Water Revenue Bond Account and \$2,496,430 from other sources.

### Operation and Maintenance Expenses

Table 3 presents a summary of historical operation and maintenance expenses. Expenditures in 2018 increased about 12.5 percent from 2017 expenditures. Historical operation and maintenance expenses shown in Table 3 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report.

Table 3 - Historical Operation and Maintenance Expense

Description	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
Personal Services	33,949,200	39,106,300	39,044,700	36,548,100	33,662,500
Services & Utilities	16,520,800	16,081,600	17,330,900	18,479,100	14,286,400
Supplies & Materials	14,630,200	16,883,200	18,846,900	20,741,300	21,812,500
Special Current Charges	2,300,100	(95,600)	244,700	381,400	15,991,800
Furniture & Equipment	291,600	323,000	228,300	265,800	243,100
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	67,691,900	72,298,500	75,695,500	76,415,700	85,996,300

### Capital Budget and Expenditures

Capital expenditures of the Water Department include the cost of replacements and improvements to waterworks facilities, the water distribution system, and the Water Department pro rata share of power projects and general budget costs.

The Water Department's 2018 capital expenditures totaled \$66,540,401. The Water Department's capital improvement expenditures for the year are shown in Table 4.

Table 4 - 2018 Capital Expenditures

C.P. #	Project	Actual Expenditures
		\$
<b>Waterworks</b>		
110	Normal Extensions & Replacements	10,421,828
112	Modification to Oak St Raw Water Intake Station	4,230
122	Sycamore and Claiborne Filter Rehabilitation	5,204,781
156	Advanced Water Treatment (Carrollton)	478,187
157	Advanced Water Treatment (Algiers)	592,109
159	Water Plant Security Improvements	67,767
175	Water Hurricane Recovery Bonds	38,565,190
180	FEMA Review of Change Orders - Water	(24,217,552)
	Total Waterworks	31,116,541
<b>Water Distribution</b>		
214	Normal Extensions & Replacements	1,176,464
216	Water Systems Replacement Program	1,616,008
239	Mains DPW Contracts	2,728,116
	Total Water Distribution	5,520,587
<b>Power Projects and General Budget</b>		
600	Water Share of Power Projects	17,483,242
700	Water Reserve for Emergencies	3,000,144
800	Water Share of General Budget Items	9,419,886
	Total Power Projects and General Budget	29,903,272
	Total Water Department	66,540,401

### Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Water Department during 2018:

Total Revenues	\$94,507,453
Operation and Maintenance Expense	-85,996,300
Claims	-484,441
Debt Service Payments	-13,333,550
<b>Revenue Primarily Available for Capital Expenditures <sup>a</sup></b>	<b>-5,306,838</b>

<sup>a</sup> Excludes depreciation.

### PROPOSED CAPITAL IMPROVEMENT PROGRAM

Table 5 presents a summary of the projected major capital improvement program for the period 2019 through 2023. Table 5 is based on the Board’s amended 2019 Adopted Operating and Capital Budget and the 10-Year Capital Improvement Plan for 2020 - 2029. The five-year major capital improvement program costs are estimated to total \$614,288,900. The proposed annual capital expenditures for the water system include \$37,195,400 for the Water Department’s share of power projects and \$115,365,900 for its share of general budget items.

Table 5 - Projected Capital Improvements (a)

Project	2019	2020	2021	2022	2023	Total
	\$	\$	\$	\$	\$	\$
Equipment						0
Facilities	10,654,400	57,500,000	8,100,000	19,750,000	7,000,000	103,004,400
Normal Extensions	37,474,800	104,357,200	120,140,500	91,339,100	5,411,600	358,723,200
Other						0
Water Share of Equipment	6,095,400	5,305,000	39,903,500	16,864,000	7,534,000	75,701,900
Water Share of Facilities	4,628,200	10,477,400	7,419,300	6,484,500	528,000	29,537,400
Water Share of Hardware	155,400	858,990	268,000	228,400	183,600	1,694,390
Water Share of Other		660,000	0	0	0	660,000
Water Share of Power	7,864,900	3,048,500	1,972,000	10,200,000	14,110,000	37,195,400
Water Share of Software	165,000	2,771,010	2,475,200	781,400	424,600	6,617,210
Water Share of Normal Extensions		165,000	330,000	330,000	330,000	1,155,000
Total Major Capital Improvements	67,038,100	185,143,100	180,608,500	145,977,400	35,521,800	614,288,900

(a) The improvements for 2019-2023 are based on the Board's Adopted 2019 Operating and Capital Budgets and 10-Year Capital Improvement Plan for Fiscal Years 2020-2029.

## ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

This section of the report analyzes the adequacy of projected revenues to finance the proposed capital improvements shown in Table 7.

### Operating Revenues

Operating revenues of the Water Department consist of revenues from water sales. Projected operating revenues for the years 2019 through 2023 are shown in Table 6. Estimated revenue in Table 6 reflects December 2019 year-to-date revenue and the Board's budgeted revenue for 2020. It is assumed that projected revenue from water sales will remain flat through 2023.

Table 6 - Projected Operating Revenue

Year	Revenue From Charges
	\$
2019	112,313,400
2020	118,952,400
2021	118,952,400
2022	118,952,400
2023	118,952,400

### Other Revenue Sources

Based upon past practices, the Water Department can expect to obtain revenues or funds from non-operating sources. These include interest earned on available funds, participation by others, house connection charges, fire connections, fire hydrant relocations, and various other income sources. Also, by

Board policy, the Water Department receives one-half of the plumbing inspection and license fees currently projected at \$293,200 per year.

Interest income from the investment of funds held for future use depends upon the level of water revenue available for investment and the amount of revenue accrued towards payment of future capital expenditures.

Projections of other revenue sources are presented in a subsequent table, which summarizes the Department's financial position during the financing of projected operating and capital requirements.

### Operation and Maintenance Expenses

A summary of projected operation and maintenance expense for the period 2019 through 2023 is shown in Table 7. Projected expenses for 2019 are based on December 2019 year-to-date expenses which reflect a decrease of approximately 8.5 percent from the adopted budget. Projections of future operating and maintenance expenses for the study period are based on the Board's requested 2020 operating budget, which reflects an increase of approximately 20 percent over December 2019 year-to-date expenses, and allowances for inflationary factors.

Table 7 - Projected Operation and Maintenance Expense

Description	2019 (a)	Adjusted 2019 (b)	2020 (c)	2021	2022	2023	2024
	\$	\$	\$	\$	\$	\$	\$
Personal Services	32,626,200	29,858,092	35,887,700	36,784,900	37,704,500	38,647,200	39,613,300
Services & Utilities	13,846,600	12,671,812	15,230,800	15,611,600	16,001,800	16,401,900	16,811,900
Supplies & Materials	21,141,000	19,347,332	23,254,400	23,835,800	24,431,600	25,042,400	25,668,500
Special Current Charges	15,499,500	14,184,474	17,048,900	17,475,100	17,912,000	18,359,800	18,818,800
Furniture & Equipment	235,600	215,611	259,200	265,600	272,300	279,100	286,100
Repairs & Facility Maintenance	0	0	0	0	0	0	0
Total Operation and Maintenance	83,348,900	76,277,321	91,681,000	93,973,000	96,322,200	98,730,400	101,198,600

(a) Represents the Adopted 2019 Operating and Capital Budgets

(b) Represents December YTD Actuals

(c) Represented the Requested 2020 Operating Budget.

### Debt Service Requirements

Future debt service requirements of the Water Department are made up of principal, interest, and reserve fund payments for currently outstanding and future water revenue bond issues. As of December 31, 2018, outstanding debt obligations consisted of \$98,000,000 Water Revenue and Refunding Bonds, Series 2014 and \$99,300,000 Water Revenue Bonds, Series 2015.

Table 8 - Existing and Proposed Debt Service Requirements

Description	2019	2020	2021	2022	2023
	\$	\$	\$	\$	\$
<b>Existing Revenue Bonds</b>					
Series 2014	7,700,000	7,690,000	7,683,500	7,685,000	6,528,800
Series 2015	5,694,600	5,783,600	5,787,800	5,785,400	6,941,300
Total Existing Debt Service	13,394,600	13,473,600	13,471,300	13,470,400	13,470,100
<b>Projected Senior Debt (a)</b>					
	Amount of Issue				
	\$				
2019	0	0	0	0	0
2020	60,000,000	735,000	3,830,673	3,830,673	3,830,673
2021	10,000,000		638,400	638,400	638,400
2022	8,000,000			510,800	510,800
2023	0				0
Total Projected Senior Debt Service	0	735,000	4,469,073	4,979,873	4,979,873
Total Projected Debt Service	13,394,600	14,208,600	17,940,373	18,450,273	18,449,973

(a) Due to the uncertainty of projected revenue, the projected timing and amount of future bond issues is tentative and subject to change.

To adequately fund the proposed capital improvements, additional revenue bonds are indicated as shown in Table 8. It is anticipated that the Board will issue a \$60,000,000 Revenue Bond through the Department of Health and Hospitals (DHH) Drinking Water State Revolving Fund (SRF) program in 2020. Additional revenue bonds in the amount of \$10,000,000 in 2021 and \$8,000,000 in 2022 are projected. The payment schedule for the anticipated DHH loan was provided by the Board's financial advisor. Future bonds, shown in Table 8, for 2021 through 2023 are assumed to be sold at an average annual interest rate of 2.45 percent for a term of 20 years.

### Adequacy of Revenues to Finance Proposed Capital Improvements

Total revenue requirements for the Water Department recognized for purposes of this report include operation and maintenance expense, allowance for claims, debt service costs on major capital improvements financed through the sale of bonds, and expenditures for capital improvements not financed from bond proceeds. Table 11 examines the financing of the major capital improvement program and Table 12 summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed bonds, and the transfer of operating funds for major capital improvement financing.

### Capital Projects Funding

Table 9 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is \$42,726,500. This amount is based on audited data provided by the Board.

Table 9 - Capital Improvement Program Financing

Line No.	Description	Fiscal Year Ending December 31,					Total
		2019	2020	2021	2022	2023	
		\$	\$	\$	\$	\$	\$
1	Funds Available at Beginning of Year	42,726,500	36,457,600	12,062,100	1,223,900	1,304,700	42,726,500
2	Revenue Bond Proceeds (a)	0	60,000,000	10,000,000	8,000,000	0	78,000,000
3	Operation Fund Transfers	36,000,000	0	0	13,000,000	14,000,000	63,000,000
4	Participation By Others (b)	28,653,000	133,641,100	167,584,000	134,443,500	24,811,100	489,132,700
5	Interest Income	457,600	728,800	271,300	180,500	47,300	1,685,500
6	Total Funds Available	107,837,100	230,827,500	189,917,400	156,847,900	40,163,100	674,544,700
7	Obligated Contracts & Capital Jobs	(33,674,100)	0	0	0	0	(33,674,100)
8	Major Capital Additions	(67,038,100)	(188,846,000)	(187,905,100)	(154,912,400)	(38,449,900)	(637,151,500)
9	Deferred Capital Improvements	29,332,700	(29,919,400)	0	0	0	(586,700)
10	Bond Issuance Expense	0	0	(150,000)	(120,000)	0	(270,000)
11	Revenue Bond Reserve Fund	0	0	(638,400)	(510,800)	0	(1,149,200)
12	Total Application of Funds	(71,379,500)	(218,765,400)	(188,693,500)	(155,543,200)	(38,449,900)	(672,831,500)
13	End of Year Balance	36,457,600	12,062,100	1,223,900	1,304,700	1,713,200	1,713,200

(a) Due to the uncertainty of projected revenue, the projected timing and amount of future bond issues is tentative and subject to change.

(b) Includes funding from FEMA, HMCP, Grants, and Fair Share Program.

Projected revenue bond proceeds, totaling \$78,000,000, are shown on Line 2. The amounts and years of issue are developed by considering capital program needs, current policies, other sources of major capital improvement financing, and the debt service coverage requirements of the bond covenants regarding the issuance of parity revenue bonds.

Financing of the major capital improvement program anticipates the transfer of a total of \$63,000,000 of operating revenue as shown on Line 3. Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 4, includes anticipated funding by FEMA, HMCP, grants and the Fair Share Program. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 5. Line 6 of the table shows the projected major capital improvement funds available each year.

As of December 31, 2018, the Board had \$33,674,100 obligated for open contracts and capital jobs as shown on Line 7 of Table 9. Line 8 shows the projected Major Capital Additions to be funded. These costs reflect the total improvements shown Table 7 with 2 percent inflation beginning in 2019. Line 9 indicates that the total capital projects completed in 2019 was less than the amount proposed in the 2019 Capital Budget. This deferral is assumed to be funded in 2020.

Estimated issuance costs related to the proposed bond issue amounts are shown on Line 10. Line 11 shows the required deposits into the Revenue Bond Reserve Fund associated with proposed bond issues. The debt service reserve on proposed debt is a three-prong test estimated as the lesser of (i) 10 percent of the original principal amount, (ii) the maximum annual debt service, or (iii) 125 percent of the average annual debt service.

The Total Application of Funds is shown on Line 12 of Table 9. The net End of Year Balance is shown on Line 13.

## Operating Fund

Line 1 of Table 10 shows projected Revenue from Charges as previously presented in Table 6. In 2012, the New Orleans City Council approved eight consecutive annual 10 percent water rate increases beginning January 1, 2013. Revenue shown on Line 1 reflects revenue from the approved increases. It is projected that a 6 percent revenue increase will be necessary effective January 1, 2021, followed by a 3 percent revenue increase effective January 1, 2022 and January 1, 2023. The revenue from these proposed revenue increases are shown in Lines 4 through 6. The date and magnitude of proposed revenue increases are based on consideration of two principal criteria, which include: (1) total revenue necessary to meet cash requirements, and (2) total revenue required to meet minimum bond coverage requirements.

Total projected revenue from service charges is shown on Line 8. Additional operating revenue includes Interest Income, revenue from Plumbing Inspection and License Fees, Revenue Sharing, Other Miscellaneous Income, and FEMA Reimbursement. Interest income available to the operating fund, shown on Line 9, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Revenue from other sources shown on Lines 10 through 14 are based on 2019 December year-to-date revenue and 2020 budget. Total Operating Revenue is shown on Line 15.

Operation and Maintenance expense, previously projected in Table 7, is shown on Line 16 of Table 10. Lines 17 and 18 include the estimated allowance for claims and bad debt expense which is assumed to be 5 percent of projected revenue in 2019 and 2020 and decreases to 3 percent by 2022. Projected Net Operating Revenue from system operations is shown on Line 19.

Lines 20 through 22 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing debt includes the Series 2014 and Series 2015 bonds. Line 21 reflects projected principal and interest payments on additional revenue bond debt financing of \$60,000,000 in 2020, \$10,000,000 in 2021, and \$8,000,000 in 2022.

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed \$77,465,247 on this agreement. Payments for the water portion of principal and interest began in July 2012 and are shown on Line 25 of Table 10 as subordinate debt. It is assumed that the Sewerage Department will make the total payment, including the Water Department's share, beginning in 2020.

Anticipated non-operating revenue is shown on Line 27. This amount includes revenue from the Fair Share Program in 2019.

Line 28 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing.

The General Resolution requires an Operating Reserve Fund of 90 days of the previous year's operation and maintenance expense; however, the SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 180 days. Line 29 indicates the projected annual transfers available to meet this requirement throughout the study period.

Table 10 - Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No.	Description	Fiscal Year Ending December 31,				
		2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$
1	Revenue from Charges	112,313,400	118,952,400	118,952,400	118,952,400	118,952,400
	Additional Revenue Required					
	Year	Revenue Increase	Months Effective			
2	2019	0.0%	11.0	0	0	0
3	2020	0.0%	11.0	0	0	0
4	2021	6.0%	11.0	6,542,400	7,137,100	7,137,100
5	2022	3.0%	11.0		3,467,500	3,782,700
6	2023	3.0%	11.0			3,571,500
7	Total Additional Revenue	0	0	6,542,400	10,604,600	14,491,300
8	Total Service Charge Revenue	112,313,400	118,952,400	125,494,800	129,557,000	133,443,700
9	Interest Income	318,000	308,600	417,600	454,100	460,200
10	Plumbing Insp. & License Fees	293,200	310,400	310,400	310,400	310,400
11	Revenue Sharing	132,300	259,600	259,600	259,600	259,600
12	Other Miscellaneous Income	2,883,400	0	0	0	0
13	FEMA Reimbursement	1,356,900	756,900	756,900	756,900	756,900
14	Interest from Bond Reserve Fund	169,000	169,000	172,000	178,000	181,000
15	Total Operating Revenue	117,466,200	120,756,900	127,411,300	131,516,000	135,411,800
16	Operation & Maintenance (a)	(76,277,300)	(91,681,000)	(93,973,000)	(96,322,200)	(98,730,400)
17	Provision for Claims	(1,257,100)	(1,288,500)	(1,320,700)	(1,353,700)	(1,387,500)
18	Provision for Doubtful Accounts	(6,007,100)	(5,947,600)	(5,019,800)	(3,886,700)	(4,003,300)
19	Net Operating Revenue	33,924,700	21,839,800	27,097,800	29,953,400	31,290,600
	Debt Service					
	Senior Lien Revenue Bonds					
20	Existing	(13,394,600)	(13,473,600)	(13,471,300)	(13,470,400)	(13,470,000)
21	Projected	0	(735,000)	(4,469,100)	(4,979,900)	(4,979,900)
22	Total Senior Lien Revenue Bonds	(13,394,600)	(14,208,600)	(17,940,400)	(18,450,300)	(18,449,900)
	Subordinate State Revolving Fund Loans					
23	Projected	0	0	0	0	0
24	Total Subordinate State Revolving Fund Loans	0	0	0	0	0
25	Gulf Opportunity Zone Act Loan	(639,900)	0	0	0	0
26	Total Debt Service	(14,034,500)	(14,208,600)	(17,940,400)	(18,450,300)	(18,449,900)
27	Other Non-Operating Revenue	5,511,900	2,501,000	2,501,000	2,501,000	2,501,000
28	Transfer to Construction	(36,000,000)	0	0	(13,000,000)	(14,000,000)
29	Transfer to Operating Reserve Fund	(704,700)	0	(2,673,200)	(565,200)	(579,300)
30	Net Annual Balance	(11,302,600)	10,132,200	8,985,200	438,900	762,400
31	Beginning of Year Cash Balance (b)	12,092,600	790,000	10,922,200	19,907,400	20,346,300
32	End of Year Balance	790,000	10,922,200	19,907,400	20,346,300	21,108,700
33	Beginning of Year Cash Balance (b)	12,092,600	28,150,501	38,282,701	49,941,101	50,945,201
34	Customer Deposits	7,427,400				
35	Operating Reserve Fund	19,933,101	0	2,673,200	565,200	579,300
36	Net annual Balance	(11,302,600)	10,132,200	8,985,200	438,900	762,400
37	End of Year Balance	28,150,501	38,282,701	49,941,101	50,945,201	52,286,901
38	Days of O&M Cash on Hand	123	141	182	183	183

(a) Excludes non-cash expenses of depreciation and allowances, pension liability adjustment, and pension contributions.

(b) Reflects beginning of year balance in unrestricted and undesignated cash and cash equivalents and cash and cash equivalents designated for capital projects, less operating reserve requirement.

Line 30 indicates the estimated Net Annual Balance from operations remaining at the end of each year.

The balance of operating funds available at the beginning of the year 2019, shown on Line 31, is comprised of the current cash assets and reflects a balance of \$12,092,600. The End of Year Balance, which is exclusive of the operating reserve fund, is shown on Line 32.

Lines 33 through 38 demonstrate that the Board is maintaining an operating reserve equal to at least 180 days of the previous year's operation and maintenance expense beginning in 2021.

As demonstrated in Tables 9 and 10, it is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Water Department during the 2019-2023 study period examined herein, with the adopted 10 percent revenue increases in 2019 and 2020, and future revenue increases as indicated.

### **Bond Coverage Requirements**

An additional consideration in measuring the adequacy of revenues is the provision of sufficient debt service coverage to meet the bond covenant requirements for the issuance of parity revenue bonds. The General Resolution provides that rates shall be maintained at levels which are expected to yield net revenues (as defined in the resolution) equal to at least 125 percent of the annual principal and interest requirement for senior debt and 110 percent for senior and subordinate debt in each fiscal year. The SWBNO's Financial Management Policy requires coverage at a minimum of 150 percent for senior debt and 125 percent for senior and subordinate debt.

The calculation of net revenue is shown on Lines 1 through 10 of Table 11. The ability of the Water Department revenues to meet revenue bond coverage requirements is shown on Lines 11 through 15. As shown on Lines 13 and 15, the indicated projected revenue and revenue increases will provide sufficient net revenue to meet coverage requirements during the study period.

The General Resolution further prescribes that additional parity revenue bonds may be issued if net revenue from a previous test year (any 12 consecutive months of the last 24 months) is equal to at least 125 percent of the maximum annual principal and interest requirement for senior debt and 110 percent for senior and subordinate debt. For purposes of the additional bonds test, net revenue may be adjusted to reflect any increases not in effect during the selected test year but have been approved by the Board, Board of Liquidation and City Council and will go into effect within the following five years.

The results of the additional bonds test are shown on Lines 16 through 22 of Table 11. Lines 20 and 22 of the table indicate that with the magnitude of the adopted annual revenue increases, required minimum levels of coverage are met in each year with indicated coverage levels ranging from 250 percent to 336 percent.

Table 11 - Coverage Requirements

Line No.	Coverage Requirements	2018	2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$	\$
<b>Projected Net Revenues</b>							
1	Revenue Under Existing Rates (a)	99,293,900	112,313,400	118,952,400	118,952,400	118,952,400	118,952,400
2	Additional Revenue Under Proposed Rates		0	0	6,542,400	10,604,600	14,491,300
3	Interest Income	1,723,900	944,600	1,206,400	860,900	812,600	688,500
4	Plumbing and Inspection Fees	319,100	293,200	310,400	310,400	310,400	310,400
5	Revenue Sharing	264,600	132,300	259,600	259,600	259,600	259,600
6	Other Miscellaneous Revenue	0	2,883,400	0	0	0	0
7	Operation & Maintenance Grants	1,912,700	1,356,900	756,900	756,900	756,900	756,900
8	Transfer from Rate Stabilization Fund		0	0	0	0	0
9	Operation & Maintenance (b)	(80,839,800)	(76,277,300)	(91,681,000)	(93,973,000)	(96,322,200)	(98,730,400)
10	Net Revenue	22,674,400	41,646,500	29,804,700	33,709,600	35,374,300	36,728,700
			5,610,400				
<b>Rate Covenant Coverage</b>							
11	Projected Net Revenues	22,674,400	41,646,500	29,804,700	33,709,600	35,374,300	36,728,700
Annual Debt Service							
12	Senior Debt	13,333,550	13,394,600	14,208,600	17,940,400	18,450,300	18,449,900
13	Coverage (c)	170%	311%	210%	188%	192%	199%
14	All Debt	13,973,495	14,034,500	14,208,600	17,940,400	18,450,300	18,449,900
15	Coverage (d)	162%	297%	210%	188%	192%	199%
<b>Additional Bond Coverage</b>							
16	Preceding Year Projected Net Revenues		22,674,400	41,646,500	29,804,700	33,709,600	35,374,300
17	Future Additional Revenue		12,367,500	16,515,100	20,220,200	14,968,400	13,668,200
18	Adjusted Projected Net Revenues		35,041,900	58,161,600	50,024,900	48,678,000	49,042,500
Maximum Debt Service							
19	Senior Debt		13,473,550	17,304,173	17,942,573	18,453,373	18,453,373
20	Coverage (c)		260%	336%	279%	264%	266%
21	All Debt		14,034,450	17,304,173	17,942,573	18,453,373	18,453,373
22	Coverage (d)		250%	336%	279%	264%	266%

(a) 2018 revenue reflects preliminary budget amount and does not reflect actual revenue collected which may be less than the amount shown.

(b) Reflects 2018 audited operating expenses for debt service coverage.

(c) The General Bond Resolution requires net revenue to equal or exceed 125% of debt service, however, the Board's Financial Management Policy aims for 150% coverage.

(d) The General Bond Resolution requires net revenue to equal or exceed 110% of debt service, however the Board's Financial Management Policy aims for 125% coverage.

(e) Net Revenue excludes transfers from the Rate Stabilization Fund and proceeds of Operation & Maintenance Grants.

(f) The General Bond Resolution requires net revenue to equal or exceed 100% of debt service.

## Sewerage Department

### ADHERENCE TO SEWERAGE SERVICE REVENUE BOND RESOLUTION

In 2014, the Board issued \$158,990,000 Sewerage Service Revenue and Refunding Bonds. Issuance of these bonds obligated the Board to adhere to the covenants of the Bond Resolution. Briefly, the covenants are concerned with:

- Payment of indebtedness; limited obligations.
- Limitations on indebtedness.
- Covenants and representations of Board.
- Covenants with credit banks, insurers, etc.
- Operation and maintenance.
- Free service, competing service, billing and enforcement of charges.
- Sale or encumbrance of system.
- Insurance
- Damage, destruction, condemnation and loss of title.
- Records and accounts; inspections and reports.
- Capital budget.

The provisions of the General Sewerage Service Revenue Bond Resolution are virtually identical to those of the General Water Revenue Bond Resolution described in the preceding section of this report. The Board was in compliance with these covenants in 2018.

### 2018 SEWERAGE DEPARTMENT OPERATIONS

Funds for the operation, maintenance, and debt service requirements of the Sewerage Department are obtained from sewerage service charges, delinquent fees, plumbing inspection and license fees, interest earned on available funds, and other miscellaneous revenue sources. Analysis of the 2018 Sewerage Department operations are discussed in the following paragraphs.

#### Operating Revenues

A summary of historical sewer billings and other Sewerage Department revenue is presented in Table 12 for the period 2014 through 2018. The historical revenues shown in Table 12 were developed from detailed records provided by Board staff. Operating revenues are derived from sewerage service charge revenue, which includes excess strength charges, and delinquent fees. Sewerage service charge revenues in 2018 were \$113,363,591 which, when compared with \$109,141,514 for 2017, shows an increase of approximately 3.9 percent. Delinquent fee revenues were \$1,250,566 in 2018 which represent a decrease of approximately 35 percent over 2017 delinquent fees.

Table 12 - Statement of Historical Revenue

Revenue Source	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
<b>Operating Revenue</b>					
Sewerage Service Charges	85,692,093	94,902,241	102,541,874	109,141,514	113,363,591
Delinquent Fee	861,169	734,725	2,253,310	1,922,205	1,250,566
Total Operating Revenue	86,553,262	95,636,966	104,795,184	111,063,719	114,614,157
<b>Nonoperating Revenue</b>					
Interest Income	257,413	1,341,518	2,308,629	2,109,401	1,922,205
Plumbing Inspection and License Fees	339,176	305,384	318,511	291,215	329,205
Revenue Sharing	317,506	322,674	313,048	329,350	329,965
Other Income	906,120	560,157	505,847	528,094	834,260
Total Nonoperating Revenue	1,820,215	2,529,733	3,446,035	3,258,060	3,415,635
Total Revenue	88,373,477	98,166,699	108,241,219	114,321,779	118,029,792

### Non-Operating Revenues

Also shown in Table 12, non-operating revenue of the Sewerage Department includes interest earned on the invested funds and other income from miscellaneous sources. During 2018, non-operating revenue included \$1,922,205 of interest earned from the investment of available funds in the Sewerage System Fund and the Sewerage Revenue Bond Account and \$1,493,430 from other sources.

### Operation and Maintenance Expenses

Table 13 presents a summary of historical operation and maintenance expenses. Expenditures in 2018 increased about 24 percent from 2017 expenditures. Historical operation and maintenance expenses shown in Table 13 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report.

Table 13 - Historical Operation and Maintenance Expense

Description	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
Personal Services	22,566,500	27,658,400	27,252,700	26,612,500	26,722,900
Services & Utilities	17,764,600	15,348,100	20,000,200	25,871,600	17,455,300
Supplies & Materials	4,790,800	8,135,700	10,070,500	11,611,200	9,590,300
Special Current Charges	1,707,400	552,800	(55,500)	332,800	26,243,300
Furniture & Equipment	198,600	240,600	199,700	169,500	201,100
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	47,027,900	51,935,600	57,467,600	64,597,600	80,212,900

### Capital Budget and Expenditures

Capital expenditures of the Sewerage Department include the cost of replacements and improvements to wastewater treatment and collection facilities and the Sewerage Department pro rata share of power projects and general budget costs.

Table 14 – 2017 Capital Expenditures

C.P. #	Project	Actual Expenditures
		\$
<b>Sewerage Systems</b>		
310	Extensions & Replacements - Gravity Mains EPA Consent Decree	1,358,899
313	Extensions & Replacements - Sewer Force Mains EPA Consent Decree	1,380,414
317	Extension & Replacement - Gravity Mains EPA Consent Decree	7,694,216
318	Rehabilitation Gravity Sewer System	5,933,124
326	Extensions & Replacements to Sewer Pumping Stations	489,059
339	Mains in Street Dept. Contracts	3,793,231
340	Sewerage Hurricane Recovery Bonds (FEMA)	1,771,298
348	Normal Extensions & Replacements	11,757,316
368	Wetlands Assimilation Project	26,511
375	Sewerage Hurricane Recovery Bonds	6,021,849
380	FEMA Review of Change Orders-Sewer	(1,297,021)
	Total Sewerage System	38,928,894
<b>Power Projects and General Budget</b>		
600	Sewerage Share of Power Projects	8,317,189
800	Sewerage Share of General Budget Items	11,163,511
	Total Power Projects and General Budget	19,480,700
	Total Sewerage Department	58,409,594

The Sewerage Department's 2018 capital expenditures totaled \$58,409,594. The Sewerage Department's capital improvement expenditures for the year are shown in Table 14.

### Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Sewerage Department during 2018:

Total Revenues	\$118,029,792
Operation and Maintenance Expense	-80,212,900
Claims	-1,969,339
Debt Service Payments	-23,139,113
<b>Revenue Primarily Available for Capital Expenditures <sup>a</sup></b>	<b>12,708,440</b>

<sup>a</sup> Excludes depreciation.

### PROPOSED CAPITAL IMPROVEMENT PROGRAM

Table 15 presents a summary of the projected major capital improvement program for the period 2019 through 2023. Table 15 is based on the Board's amended 2019 Adopted Operating and Capital Budget and the 10-Year Capital Improvement Plan for 2020 - 2029. The five-year major capital improvement program costs are estimated to total \$418,768,500. The proposal annual capital expenditures for the sewerage system include \$13,621,300 for the Sewerage Department's share of power projects and \$52,348,000 for its share of general budget items.

Table 15 - Projected Capital Improvements (a)

Project	2019	2020	2021	2022	2023	Total
	\$	\$	\$	\$	\$	\$
Equipment						0
Facilities	6,248,400	7,950,000	3,600,000	8,300,000	6,600,000	32,698,400
Normal Extensions	49,109,000	86,215,300	90,265,800	62,438,200	32,072,500	320,100,800
Other						0
Sewerage Share of Equipment	1,410,000	3,305,000	7,403,500	6,364,000	6,034,000	24,516,500
Sewerage Share of Facilities	2,545,700	5,527,400	2,619,300	6,484,500	528,000	17,704,900
Sewerage Share of Hardware	155,400	859,000	268,000	228,400	183,600	1,694,400
Sewerage Share of Other		660,000	0	0	0	660,000
Sewerage Share of Power	2,406,700	1,165,600	754,000	3,900,000	5,395,000	13,621,300
Sewerage Share of Software	165,000	2,771,000	2,475,200	781,400	424,600	6,617,200
Sewerage Share of Normal Extensions		165,000	330,000	330,000	330,000	1,155,000
Total Major Improvements	62,040,200	108,618,300	107,715,800	88,826,500	51,567,700	418,768,500

(a) The improvements for 2019-2023 are based on the Board's Adopted 2019 Operating and Capital Budgets and 10-Year Capital Improvement Plan for Fiscal Years 2020-2029.

The Board is currently complying with the EPA Region 6 Administrative Order. In January of 2010, the Board successfully completed negotiations for a modification of the Consent Decree. The Capital Improvement Program shown in Table 15 represents the schedule for complying with the modified Consent Decree.

### ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

This section of the report analyzes the adequacy of projected revenues to finance the proposed capital improvements shown in Table 15.

#### Operating Revenues

Future operating revenues of the Sewerage Department consist of sewerage service charge revenues. Projected operating revenues for the years 2019 through 2023 are shown in Table 16. Estimated revenue in Table 16 reflects December 2019 year-to-date revenue and the Board’s budgeted revenue for 2020. It is assumed that projected revenue from sewerage service charges will remain flat through 2023.

Table 16 - Projected Operating Revenue

Year	Revenue From Charges
	\$
2019	142,155,600
2020	148,910,500
2021	148,910,500
2022	148,910,500
2023	148,910,500

## Other Revenue Sources

Based upon past practices, the Sewerage Department can expect to obtain revenues or funds from non-operating sources. These include interest earned from the investment of available funds, participation by others, and miscellaneous other income. By Board policy, the Sewerage Department receives one-half of the plumbing inspection and license fees, currently projected at \$288,700 per year.

Interest income from the investment of funds held for future use depends upon the level of sewerage revenue available for investment and the amount of revenue accrued towards payment of future capital expenditures.

Projections of other revenue sources are presented in a subsequent table, which summarizes the Department's financial position during the financing of projected operating and capital requirements.

## Operation and Maintenance Expense

A summary of projected operation and maintenance expense for the period 2019 through 2023 is shown in Table 17. Projected expenses for 2019 are based on December 2019 year-to-date expenses which reflect a decrease of approximately 21.8 percent from the adopted budget. Projections of future operating and maintenance expenses for the study period are based on the Board's requested 2020 operating budget, which reflects an increase of approximately 43.7 percent over December 2019 year-to-date expenses, and allowances for inflationary factors.

Table 17 - Projected Operation and Maintenance Expense

Description	2019 (a)	Adjusted 2019 (b)	2020 (c)	2021	2022	2023	2024
	\$	\$	\$	\$	\$	\$	\$
Personal Services	30,742,800	24,030,854	34,522,300	35,385,400	36,270,000	37,176,700	38,106,200
Services & Utilities	20,081,100	15,696,878	22,549,800	23,113,600	23,691,400	24,283,700	24,890,800
Supplies & Materials	11,033,000	8,624,212	12,389,300	12,699,100	13,016,600	13,342,000	13,675,500
Special Current Charges	30,191,100	23,599,605	33,902,700	34,750,300	35,619,000	36,509,500	37,422,300
Furniture & Equipment	231,400	180,879	259,800	266,300	272,900	279,800	286,800
Repairs & Facility Maintenance	0	0	0	0	0	0	0
Total Operation and Maintenance	92,279,400	72,132,429	103,623,900	106,214,700	108,869,900	111,591,700	114,381,600

(a) Represents the Adopted 2019 Operating and Capital Budgets

(b) Represents December YTD Actuals

(c) Represented the Requested 2020 Operating Budget.

## Debt Service Requirements

Future debt service requirements of the Sewerage Department are made up of principal, interest, and reserve fund payments for currently outstanding and future sewerage revenue bond issues. As of December 31, 2018, outstanding debt obligations consisted of \$6,475,000 Sewerage Revenue Bonds Series 2011, \$110,440,000 Sewerage Service Revenue and Refunding Bonds Series 2014, and \$100,000,000 Sewerage Service Revenue and Refunding Bonds Series 2015.

To adequately fund the proposed capital improvements, additional revenue bonds are indicated as shown in Table 18. In 2019, the Board issued the Series 2019 LADEQ loan in the amount of \$10,000,000 with principal payments beginning in 2021.

The Board is current working with its financial advisor in anticipation of issuing a total of \$64,500,000 revenue bonds in 2020. It is anticipated that \$10,250,000 of the issue will be a direct placement through

the WIFIA program and the remaining \$55,150,000 will be a public offering. The total project fund proceeds will be \$75,000,000 which includes a premium of \$11,489,053. The Board has also submitted a Letter of Intent for a WIFIA loan in the amount of \$100,474,500, to be issued in 2020 as well. The payment schedule for the 2020 loans was provided by the Board's financial advisor.

Table 18 - Existing and Proposed Debt Service Requirements

Description	2019	2020	2021	2022	2023
	\$	\$	\$	\$	\$
<b>Existing Bonds</b>					
Series 2014	16,217,500	16,234,100	13,106,300	11,089,000	7,279,800
Series 2015	5,000,000	5,000,000	6,950,000	6,850,000	6,750,000
Series 2011 (LADEQ)	463,400	465,400	467,400	469,500	471,400
Total Existing Debt Service	21,680,900	21,699,500	20,523,700	18,408,500	14,501,200
<b>Projected Senior Debt (a)</b>					
	Amount of Issue				
	\$				
2019	10,000,000	0	50,400	551,000	551,300
2020	65,400,000		918,528	2,962,500	4,709,850
2021	0		0	0	0
2022	0			0	0
2023	0				0
Total Projected Debt Service	0	968,928	3,513,500	5,261,550	6,577,200
<b>Projected WIFIA Loans</b>					
	Amount of Issue				
	\$				
2019	0	0	0	0	0
2020	100,474,500	5,725	827,398	1,863,294	2,193,063
2021	0		0	0	0
2022	0			0	0
2023	0				0
Total Projected WIFIA Loan Debt Service	0	5,725	827,398	1,863,294	2,193,063
Total Projected Debt Service	0	22,674,153	24,864,598	25,533,344	23,271,463

(a) Due to the uncertainty of projected revenue, the projected timing and amount of future bond issues is tentative and subject to change.

## Adequacy of Revenues to Finance Proposed Capital Improvements

Total revenue requirements for the Sewer Department recognized for purposes of this report include operation and maintenance expense, allowance for claims, debt service costs on major capital improvements financed through the sale of bonds, and expenditures for capital improvements not financed from bond proceeds. Table 19 examines the financing of the major capital improvement program and Table 20 summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed bonds, and the transfer of operating funds for capital improvement financing.

## Capital Projects Funding

Table 19 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is \$44,088,000. This amount is based on audited data provided by the Board.

Table 19 - Capital Improvement Program Financing

Line No.	Description	Fiscal Year Ending December 31,					Total
		2019	2020	2021	2022	2023	
		\$	\$	\$	\$	\$	\$
1	Funds Available at Beginning of Year	44,088,000	1,743,500	42,761,993	59,378,493	49,069,893	44,088,000
2	Revenue Bond Proceeds (a)	10,000,000	65,400,000	0	0	0	75,400,000
3	WIFIA Disbursements (b)	245,000	17,382,700	48,087,600	18,160,500	8,041,200	91,917,000
4	Operation Fund Transfers	15,000,000	0	0	12,000,000	11,000,000	38,000,000
5	Participation by Others (c)	5,363,800	81,381,600	80,083,500	53,249,500	22,252,100	242,330,500
6	Interest Income	197,200	476,800	512,900	544,800	422,200	2,153,900
7	Total Funds Available	74,894,000	177,873,700	171,445,993	143,333,293	90,785,393	505,378,500
8	Obligated Contracts & Capital Jobs	(33,110,300)	0	0	0	0	(33,110,300)
9	Major Capital Additions	(62,040,200)	(110,790,700)	(112,067,500)	(94,263,400)	(55,818,500)	(434,980,300)
10	Deferred Capital Improvements	22,000,000	(22,440,000)	0	0	0	(440,000)
11	Bond Issuance Expense	0	(951,627)	0	0	0	(951,627)
12	Revenue Bond Reserve Fund	0	(929,380)	0	0	0	(929,380)
13	Total Application of Funds	(73,150,500)	(135,111,707)	(112,067,500)	(94,263,400)	(55,818,500)	(470,411,607)
14	End of Year Balance	1,743,500	42,761,993	59,378,493	49,069,893	34,966,893	34,966,893

(a) Due to the uncertainty of projected revenue, the projected timing and amount of future bond issues is tentative and subject to change.

(b) Based on WIFIA application preliminary loan amortization provided by Financial Advisor.

(c) Includes funding from FEMA, HMCP, Grants, and Fair Share Program.

Projected revenue bond proceeds, totaling \$75,400,000, are shown on Line 2. Line 3 reflects the proposed WIFIA disbursement schedule for the \$100,474,500 2020 WIFIA loan. This schedule was provided by the Board's financial advisor.

Financing of the major capital improvement program anticipates the transfer of a total of \$38,000,000 of operating revenue as shown on Line 4. Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 5 includes anticipated funding by FEMA, HMCP, grants and the Fair Share Program. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 6. Line 7 of the table shows the projected major capital improvement funds available each year.

As of December 31, 2018, the Board had \$33,110,300 obligated for open contracts and capital jobs as shown on Line 8 of Table 19. Line 8 shows the projected Major Capital Additions to be funded. These costs reflect the total improvements shown in Table 15 with 2 percent inflation beginning in 2019. Line 9 indicates that the total capital projects completed in 2019 was less than the amount proposed in the 2019 Capital Budget. This deferral is assumed to be funded in 2020.

Estimated issuance costs related to the proposed bond issue amounts are shown on Line 11. Line 12 shows the required deposits into the Revenue Bond Reserve Fund associated with proposed bond issues. The debt service reserve on proposed debt is a three-pronged test estimated as the lesser of (i) 10 percent of the original principal amount, (ii) the maximum annual debt service, or (iii) 125 percent of the average annual debt service.

The Total Application of Funds is shown on Line 13 of Table 19. The net End of Year Balance is shown on Line 14.

## Operating Fund

Line 1 of Table 20 shows projected Revenue from Charges as previously presented in Table 16. In 2012, the New Orleans City Council approved eight consecutive annual 10 percent sewer rate increases beginning January 1, 2013. Revenue shown on Line 1 reflects revenue from the approved increases. It is projected that a 3.0 percent revenue increase will be necessary effective January 1, 2021. The revenue from this proposed revenue increase is shown in Line 4. The date and magnitude of proposed revenue increase in 2021 is based on consideration of two principal criteria, which include: (1) total revenue necessary to meet cash requirements, and (2) total revenue required to meet minimum bond coverage requirements.

Total projected revenue from service charges is shown on Line 8. Additional operating revenue includes Interest Income, revenue from Plumbing Inspection and License Fees, Revenue Sharing, Other Miscellaneous Income, and FEMA Reimbursement. Interest Income available to the operating fund, shown on Line 9, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Revenue from other sources shown on Lines 10 through 14 are based on 2019 December year-to-date revenue and 2020 budget. Total Operating Revenue is shown on Line 15.

Operation and Maintenance expense, previously projected in Table 17, is shown on Line 16 of Table 20. Lines 17 and 18 show the estimated allowance for claims and bad debt expense which is assumed to be 5 percent of projected revenue in 2019 and 2020 and decreases to 3 percent by 2022. Projected Net Operating Revenue from system operations is shown on Line 19.

Lines 20 through 22 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing bonds include the Series 2011, Series 2014 and Series 2015 bonds. Line 21 reflects projected principal and interest payments on additional revenue bond debt financing of \$10,000,000 in 2019 and \$65,400,000 in 2020.

In July of 2006, the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed \$77,465,247 on this agreement. Payments for the sewerage portion of principal and interest began in July 2012 and are shown on Line 25 of Table 20 as subordinate debt. Starting in 2020, the Sewerage Department will pay the total payment, include the amounts for the Water Department and Drainage Department.

Anticipated non-operating revenue is shown on Line 27. This amount includes revenue from the Fair Share Program in 2019.

Line 28 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing.

The General Resolution requires an Operating Reserve Fund of 90 days of the previous year's operation and maintenance expense; however, the SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 180 days. Line 29 indicates the projected annual transfers available to meet this requirement throughout the study period.

Table 20 - Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No.	Description	Fiscal Year Ending December 31,				
		2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$
1	Revenue from Charges	142,155,600	148,910,500	148,910,500	148,910,500	148,910,500
	Additional Revenue Required					
	Year	Revenue Increase	Months Effective			
2	2019	0.0%	11.0	0	0	0
3	2020	0.0%	11.0	0	0	0
4	2021	3.0%	11.0	4,095,000	4,467,300	4,467,300
5	2022	0.0%	11.0		0	0
6	2023	0.0%	11.0			0
7	Total Additional Revenue	0	0	4,095,000	4,467,300	4,467,300
8	Total Service Charge Revenue	142,155,600	148,910,500	153,005,500	153,377,800	153,377,800
9	Interest Income	445,300	646,400	787,200	867,300	883,100
10	Plumbing Insp. & License Fees	288,700	311,100	311,100	311,100	311,100
11	Revenue Sharing	165,000	323,800	323,800	323,800	323,800
12	Other Miscellaneous Income	943,000	0	0	0	0
13	FEMA Reimbursement	2,261,500	1,261,600	1,261,600	1,261,600	1,261,600
14	Interest from Bond Reserve Fund	293,000	298,000	302,000	302,000	302,000
15	Total Operating Revenue	146,552,100	151,751,400	155,991,200	156,443,600	156,459,400
16	Operation & Maintenance (a)	(72,132,400)	(103,623,900)	(106,214,700)	(108,869,900)	(111,591,700)
17	Provision for Claims	(1,257,100)	(1,288,500)	(1,320,700)	(1,353,700)	(1,387,500)
18	Provision for Doubtful Accounts	(10,314,700)	(7,445,500)	(6,120,200)	(4,601,300)	(4,601,300)
19	Net Operating Revenue	62,847,900	39,393,500	42,335,600	41,618,700	38,878,900
	Debt Service					
	Senior Lien Revenue Bonds					
20	Existing	(21,680,800)	(21,699,500)	(20,523,800)	(18,408,400)	(14,501,300)
21	Projected	0	(968,900)	(3,513,500)	(5,261,600)	(6,577,200)
22	Total Senior Lien Revenue Bonds	(21,680,800)	(22,668,400)	(24,037,300)	(23,670,000)	(21,078,500)
	Subordinate WIFIA Loans					
23	Projected	0	(5,700)	(827,400)	(1,863,300)	(2,193,100)
24	Total Subordinate WIFIA Loans	0	(5,700)	(827,400)	(1,863,300)	(2,193,100)
25	Gulf Opportunity Zone Act Loan	(6,235,200)	(4,136,600)	(3,641,300)	(3,641,300)	(3,641,300)
26	Total Debt Service	(27,916,000)	(26,810,700)	(28,506,000)	(29,174,600)	(26,912,900)
27	Other Non-Operating Revenue	6,820,200	873,700	873,700	873,700	873,700
28	Transfer to Construction	(15,000,000)	0	0	(12,000,000)	(11,000,000)
29	Transfer to Operating Reserve Fund	0	0	0	0	0
30	Net Annual Balance	26,752,100	13,456,500	14,703,300	1,317,800	1,839,700
31	Beginning of Year Cash Balance (b)	1,268,600	28,020,700	41,477,200	56,180,500	57,498,300
32	End of Year Balance	28,020,700	41,477,200	56,180,500	57,498,300	59,338,000
33	Beginning of Year Cash Balance (b)	1,268,600	28,020,700	41,477,200	56,180,500	57,498,300
34	Operating Reserve Fund	0	0	0	0	0
35	Net annual Balance	26,752,100	13,456,500	14,703,300	1,317,800	1,839,700
36	End of Year Balance	28,020,700	41,477,200	56,180,500	57,498,300	59,338,000
37	Days of O&M Cash on Hand	122	146	180	183	184

(a) Excludes non-cash expenses of depreciation and allowances, pension liability adjustment, and pension contributions.

(b) Reflects beginning of year balance in unrestricted and undesignated cash and cash equivalents and cash and cash equivalents designated for capital projects, less operating reserve requirement.

Line 30 indicates the estimated Net Annual Balance from operations remaining at the end of each year.

The balance of operating funds available at the beginning of year 2019, shown on Line 31, is comprised of the current cash assets and reflects a balance of \$1,268,600. The End of Year Balance, which is exclusive of the operating reserve fund and rate stabilization fund, is shown on Line 32.

Lines 33 through 37 demonstrate that the Board is maintaining an operating reserve equal to at least 180 days of the previous year's operation and maintenance expense beginning in 2021.

As demonstrated in Tables 19 and 20, it is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements as currently scheduled and estimated future operation expenses of the Sewerage Department during the 2019-2023 study period examined herein, with the adopted 10 percent revenue increases in 2019 and 2020, and future revenue increases as indicated.

### **Bond Coverage Requirements**

An additional consideration in measuring the adequacy of revenues is the provision of sufficient debt service coverage to meet the bond covenant requirements for the issuance of parity revenue bonds. The General Resolution provides that rates shall be maintained at levels which are expected to yield net revenues (as defined in the resolution) equal to at least 125 percent of the annual principal and interest requirement for senior debt and 110 percent for senior and subordinate debt in each fiscal year. The SWBNO's Financial Management Policy requires coverage at a minimum of 150 percent for senior debt and 125 percent for senior and subordinate debt.

The calculation of net revenue is shown on Lines 1 through 10 of Table 21. The ability of the Sewerage Department revenues to meet revenue bond coverage requirements is shown on Lines 11 through 15. As shown on Lines 13 and 15, the indicated projected revenue and revenue increases will provide sufficient net revenue to meet coverage requirements during the study period.

The General Resolution further prescribes that additional parity revenue bonds may be issued if net revenue from a previous test year (any 12 consecutive months of the last 24 months) is equal to at least 125 percent of the maximum annual principal and interest requirement for senior debt and 110 percent for senior and subordinate debt. For purposes of the additional bonds test, net revenue may be adjusted to reflect any increases not in effect during the selected test year but have been approved by the Board, Board of Liquidation and City Council and will go into effect within the following five years.

The results of the additional bonds test are shown on Lines 16 through 22 of Table 21. Lines 20 and 22 of the table indicate that with the magnitude of the adopted annual revenue increases, required minimum levels of coverage are met in each year with indicated coverage levels ranging from 144 percent to 327 percent.

Table 21 - Coverage Requirements

Line No.	Coverage Requirements	2018	2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$	\$
<b>Projected Net Revenues</b>							
1	Revenue Under Existing Rates (a)	114,614,100	142,155,600	148,910,500	148,910,500	148,910,500	148,910,500
2	Additional Revenue Under Proposed Rates		0	0	4,095,000	4,467,300	4,467,300
3	Interest Income	1,922,200	935,500	1,421,200	1,602,100	1,714,100	1,607,300
4	Plumbing and Inspection Fees	329,200	288,700	311,100	311,100	311,100	311,100
5	Revenue Sharing	330,000					
6	Other Miscellaneous Revenue	0	943,000	0	0	0	0
7	Operation & Maintenance Grants	834,300	2,261,500	1,261,600	1,261,600	1,261,600	1,261,600
8	Transfer from Rate Stabilization Fund		0	0	0	0	0
9	Operation & Maintenance (b)	(81,271,000)	(72,132,400)	(103,623,900)	(106,214,700)	(108,869,900)	(111,591,700)
10	Net Revenue	36,758,800	74,451,900	48,280,500	49,965,600	47,794,700	44,966,100
			4,428,700				
<b>Rate Covenant Coverage</b>							
11	Projected Net Revenues	36,758,800	74,451,900	48,280,500	49,965,600	47,794,700	44,966,100
	Annual Debt Service						
12	Senior Debt	23,139,113	21,680,800	22,668,400	24,037,300	23,670,000	21,078,500
13	Coverage (c)	159%	343%	213%	208%	202%	213%
14	All Debt	29,374,293	27,916,000	26,810,700	28,506,000	29,174,600	26,912,900
15	Coverage (d)	125%	267%	180%	175%	164%	167%
<b>Additional Bond Coverage</b>							
16	Preceding Year Projected Net Revenues		36,758,800	74,451,900	48,280,500	49,965,600	47,794,700
17	Future Additional Revenue		3,438,400	4,264,700	4,467,300	0	0
18	Adjusted Projected Net Revenues		40,197,200	78,716,600	52,747,800	49,965,600	47,794,700
	Maximum Debt Service						
19	Senior Debt		21,749,900	24,037,300	24,037,300	23,669,900	21,078,500
20	Coverage (c)		185%	327%	219%	211%	227%
21	All Debt		27,916,000	29,174,600	29,174,600	29,174,600	27,295,900
22	Coverage (d)		144%	270%	181%	171%	175%

(a) 2018 revenue reflects preliminary budget amount and does not reflect actual revenue collected which may be less than the amount shown.

(b) Reflects 2018 audited operating expenses for debt service coverage.

(c) The General Bond Resolution requires net revenue to equal or exceed 125% of debt service, however, the Board's Financial Management Policy aims for 150% coverage.

(d) The General Bond Resolution requires net revenue to equal or exceed 110% of debt service, however the Board's Financial Management Policy aims for 125% coverage.

(e) Net Revenue excludes transfers from the Rate Stabilization Fund and proceeds of Operation & Maintenance Grants.

(f) The General Bond Resolution requires net revenue to equal or exceed 100% of debt service.

## Drainage Department

### 2018 DRAINAGE DEPARTMENT OPERATIONS

The Sewerage and Water Board has provided for the drainage needs of New Orleans since 1903. The City encompasses a saucer-shaped depression between the Mississippi River and Lake Pontchartrain on the East Bank and an area bordered by the river and adjoining wet lands on the West Bank. Prior to January 1, 1967, when the three-mill drainage tax became effective, the City of New Orleans was obligated to reimburse the Board for the cost of operating and maintaining drainage facilities.

In 1969, studies of projected capital improvement financing needs and revenue requirements indicated the need for additional sources of funds. Constitutional amendments, which would have provided the required funds from an additional three-mill ad valorem tax, were offered in 1970, and again in 1972. The State's electorate rejected both amendments; however, an additional six-mill ad valorem tax was approved April 16, 1977 and became effective January 1, 1978. Subsequently, a nine-mill property tax increase was approved May 16, 1981 and implemented January 1, 1982. The nine-mill tax, which is to be used for operation and maintenance as well as funding of capital improvements, was reauthorized in December 2016.

The Board is charged with operating, maintaining, repairing, and expanding the major drainage system located throughout the City. Revenues and expenditures related to the 2018 operations of the Drainage Department are discussed in the following paragraphs.

#### Revenues

Revenues that were available to the Drainage Department for operation and maintenance expenses, and capital additions, consisted of proceeds from the three-mill, six-mill, and nine-mill ad valorem tax, interest on investments, and miscellaneous income. Other revenues available for Drainage Department capital improvements included interest income and other miscellaneous sources.

A summary of historical revenues received by source is shown in Table 22 for the period 2014 through 2018. The historical revenue shown in Table 22 was developed from detailed records provided by Board Staff. Total revenue in 2018 reflects an increase of 1.5 percent over 2017 revenue.

Table 22 - Statement of Historical Revenue

Revenue Source	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
Two-mill Ad Valorem Tax	1,193	4,960	7,526	2,735	553
Three-mill Ad Valorem Tax	13,481,526	14,139,193	16,043,825	15,309,309	15,504,589
Six-mill Ad Valorem Tax	13,626,539	14,290,667	16,215,799	16,229,098	15,576,221
Nine-mill Ad Valorem Tax	20,425,388	21,421,102	23,762,398	23,881,671	23,570,261
Plumbing License and Inspection Fees	0	0	0	0	0
Interest Earned	203,832	202,579	253,938	244,250	142,751
Other	1,277,250	4,313,845	1,065,829	1,215,909	2,940,207
Total Revenue	49,015,728	54,372,346	57,349,315	56,882,973	57,734,583

## Operation and Maintenance Expenses

Table 23 presents a summary of historical operation and maintenance expenses. Expenditures in 2018 decreased about 6.4% percent from 2017 expenditures. Historical operation and maintenance expenses shown in Table 23 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report.

Table 23 - Historical Operation and Maintenance Expense (a)

Description	2014	2015	2016	2017	2018
	\$	\$	\$	\$	\$
Personal Services	16,652,900	21,339,600	20,619,800	20,928,800	20,180,500
Services & Utilities	11,163,000	8,642,100	9,992,400	10,824,700	6,264,600
Supplies & Materials	1,483,800	1,265,500	1,641,900	22,555,500	11,520,300
Special Current Charges	736,700	312,100	356,000	450,400	13,273,900
Furniture & Equipment	60,400	91,900	100,000	89,100	108,000
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	30,096,800	31,651,200	32,710,100	54,848,500	51,347,300

## Capital Budget and Expenditures

Capital expenditures of the Drainage Department include the cost of replacements and improvements to pumping stations and canals and the Drainage Department's pro rata share of power projects and general budget costs.

The Drainage Department capital improvement expenditures for 2018 totaled \$50,598,092. The Drainage Department's capital improvement expenditures for the year are shown in Table 24.

Table 24 - 2017 Capital Expenditures

C.P. #	Project	Actual Expenditures
		\$
<b>Canals</b>		
418	Normal Extensions & Replacements	19,994
439	Major Drainage Participation in DPW Projects	225,573
466	Louisiana Avenue Canal (SELA)	5,604,846
471	SELA Program Management	1,551,813
478	S. Claiborne-Lowerline to Monticello Street	1,195,599
480	FEMA Review of Change Orders-Drainage	(2,134,618)
497	Florida Ave. Canal - DPS#19 to Peoples Ave. (SELA-B)	616,112
498	Dwyer Intake Canal (St. Charles to Dwyer DPS) (SELA-A)	18,990
499	Jefferson Avenue Canal	449,553
	Total Drainage Canals	7,547,860
<b>Pumping Stations</b>		
511	Normal Extensions & Rep./Stations	9,878,743
535	DPS #6 Improvements	436,345
575	Drainage Hurricane Recovery Bonds	1,420,692
	Total Drainage Pumping Stations	11,735,780
<b>Power Projects and General Budget</b>		
600	Drainage Share of Power Projects	24,758,349
800	Drainage Share of General Budget Items	6,556,104
	Total Power Projects and General Budget	31,314,453
	Total Drainage Department	50,598,092

**Summary of Operations**

The following tabulation shows a summary of receipts and expenditures of the Drainage Department during 2018:

Total Revenues	\$57,734,583
Operation and Maintenance Expense	-51,347,300
Claims	9,656,464
Debt Service Payments	-2,028,550
<b>Revenue Primarily Available for Capital Expenditures <sup>a</sup></b>	<b>14,015,197</b>

**PROPOSED CAPITAL IMPROVEMENT PROGRAM**

Table 25 presents a summary of the projected major capital improvement program for the period 2019 through 2023. Table 25 is based on the Board’s amended 2019 Adopted Operating and Capital Budget and the 10-Year Capital Improvement Plan for 2020 - 2029. The five-year major capital improvement program costs are expected to total \$245,648,300. The proposed annual capital expenditures for the drainage system include \$50,909,000 for the Drainage Department’s share of power projects and \$49,576,000 for its share of general budget items.

Table 25 - Projected Capital Improvements (a)

Project	2019	2020	2021	2022	2023	Total
	\$	\$	\$	\$	\$	\$
Engineering						0
Canals		700,000	250,000	250,000	0	1,200,000
Facilities	24,700	1,200,000	800,000	600,000	600,000	3,224,700
Legal		1,250,000	4,000,000	500,000	0	5,750,000
Normal Extensions	13,391,900	5,162,600	34,764,000	31,721,700	3,248,400	88,288,600
Power						0
SELA	11,000,000	7,300,000	7,800,000	7,800,000	12,800,000	46,700,000
Other						0
Drainage Share of Equipment	680,000	2,890,000	6,511,000	5,440,000	5,100,000	20,621,000
Drainage Share of Facilities	6,972,700	3,788,800	535,100	6,681,000	544,000	18,521,600
Drainage Share of Hardware	160,100	885,000	276,100	235,300	189,200	1,745,700
Drainage Share of Other		680,000	0	0	0	680,000
Drainage Share of Power	5,187,900	4,752,100	3,074,000	15,900,000	21,995,000	50,909,000
Drainage Share of Software	170,000	2,855,000	2,550,200	805,000	437,500	6,817,700
Drainage Share of Normal Extensions		170,000	340,000	340,000	340,000	1,190,000
<b>Total Major Capital Improvements</b>	<b>37,587,300</b>	<b>31,633,500</b>	<b>60,900,400</b>	<b>70,273,000</b>	<b>45,254,100</b>	<b>245,648,300</b>

(a) The improvements for 2019-2023 are based on the Board's Adopted 2019 Operating and Capital Budgets and 10-Year Capital Improvement Plan for Fiscal Years 2020-2029.

The Sewerage and Water Board is currently receiving funds from the COE sponsored and congressionally authorized SELA Project. This funding will allow additional construction of projects which were identified in the 1970s, but which have not been completed because of funding limitations. The identified projects are to be funded either 100 percent from federal funds or 65 percent from federal funds and 35 percent from local funds. The payback period for the local share is 30 years and is anticipated to begin in 2020.

## ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

This section of the report analyzes the adequacy of projected revenues to finance the proposed capital improvements shown in Table 25.

### Operating Revenues

Projected operating income of the drainage system is shown in Table 26. Projections include proceeds from the three-mill, the six-mill, and the nine-mill ad valorem tax and other revenue and are based on the 2018 assessed taxable value. It is assumed that the projected revenue from the ad valorem taxes will remain constant beginning in 2020 due to the roll-back provisions of Louisiana state law.

Table 26 - Projected Operating Revenue

Year	Ad Valorem Tax Revenue			Other	Total
	Three-Mill	Six-Mill	Nine-Mill		
	\$	\$	\$	\$	\$
2019	15,316,900	16,149,000	24,206,700	729,600	56,402,200
2020	18,013,000	19,022,700	28,513,900	729,600	66,279,200
2021	18,013,000	19,022,700	28,513,900	729,600	66,279,200
2022	18,013,000	19,022,700	28,513,900	729,600	66,279,200
2023	18,013,000	19,022,700	28,513,900	729,600	66,279,200

The projection of millage revenue for 2019 through 2023 is based on 4.66, 4.71, and 7.06 mills for three-mill, six-mill, and nine-mill taxes, respectively.

### Other Revenue Sources

Other sources of income include interest earned from the investment of funds held for future use; sales of three-mill, six-mill, and nine-mill ad valorem tax bonds; and participation by others. Projections of interest income, which vary according to the balance of funds held for future use, are shown in a later section of this report.

### Operation and Maintenance Expenses

A summary of projected operation and maintenance expenses for the period 2019 through 2023 is shown in Table 27. Projected expenses for 2019 are based on December 2019 year-to-date expenses which reflect a decrease of approximately 31.5 percent from the adopted budget. Projections of future operating and maintenance expenses for the study period are based on the Board's requested 2020 operating budget, which reflects an increase of approximately 81.9 percent over December 2019 year-to-date expenses, and allowances for inflationary factors.

Table 27 - Projected Operation and Maintenance Expense

Description	2019 (a)	Adjusted 2019 (b)	2020 (c)	2021	2022	2023	2024
	\$	\$	\$	\$	\$	\$	\$
Personal Services	22,064,400	15,114,386	27,488,800	28,176,000	28,880,400	29,602,500	30,342,500
Services & Utilities	6,849,400	4,691,924	8,533,300	8,746,600	8,965,300	9,189,400	9,419,200
Supplies & Materials	12,595,700	8,628,210	15,692,400	16,084,700	16,486,800	16,898,900	17,321,400
Special Current Charges	14,513,000	9,941,584	18,081,000	18,533,000	18,996,400	19,471,300	19,958,100
Furniture & Equipment	118,100	80,900	147,100	150,800	154,600	158,400	162,400
Repairs & Facility Maintenance	0	0	0	0	0	0	0
Total Operation and Maintenance	56,140,600	38,457,004	69,942,600	71,691,100	73,483,500	75,320,500	77,203,600

(a) Represents the Adopted 2019 Operating and Capital Budgets

(b) Represents December YTD Actuals

(c) Represented the Requested 2020 Operating Budget.

### Debt Service Requirements

Future debt service requirements of the Drainage Department are made up of principal, interest, and reserve fund payments for currently outstanding and future drainage revenue bond issues. As of December 31, 2018, outstanding debt obligations consisted of \$7,665,000 of Drainage Revenue Bonds, Series 2014.

It is assumed that no future debt will be issued during the 2019 – 2023 study period.

### Adequacy of Revenues to Finance Proposed Capital Improvements

Total revenue requirements for the Drainage Department recognized for purposes of this report include operation and maintenance expense, allowance for claims, debt service costs on major capital improvements financed through the sale of bonds, and expenditures for capital improvements not financed from bond proceeds. Table 28 examines the financing of the major capital improvement program and Table 29 summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed bonds, and the transfer of operating funds for major capital improvement financing.

### Capital Projects Funding

Table 28 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is a deficit of \$3,180,500. This amount is based on audited data provided by the Board.

Projected revenue bond proceeds are shown on Line 2; however, it is projected that the Board will not have the capacity to issue additional bonds during the study period.

Financing of the major capital improvement program anticipates the transfer of a total of \$18,000,000 of operating revenue as shown on Line 4. Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 4 includes anticipated funding by FEMA, HMCP, grants and the Fair Share Program. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 5. Line 6 of the table shows the projected major capital improvement funds available each year.

Table 28 - Capital Improvement Program Financing

Line No	Description	Fiscal Year Ending December 31,					Total
		2019	2020	2021	2022	2023	
		\$	\$	\$	\$	\$	\$
1	Funds Available at Beginning of Year	(3,180,500)	(3,763,100)	(3,763,100)	(3,763,100)	(3,763,100)	(3,180,500)
2	Revenue Bond Proceeds	0	0	0	0	0	0
3	Operation Fund Transfers	18,000,000	0	0	0	0	18,000,000
4	Participation by Others (a)	11,000,000	19,542,900	45,658,000	56,452,800	38,771,000	171,424,700
5	Interest Income	0	0	0	0	0	0
6	Total Funds Available	25,819,500	15,779,800	41,894,900	52,689,700	35,007,900	186,244,200
7	Obligated Contracts & Capital Jobs	(18,582,600)	0	0	0	0	(18,582,600)
8	Major Capital Additions	(37,587,300)	(32,266,200)	(63,360,800)	(74,574,300)	(48,984,500)	(256,773,100)
9	Deferred Capital Improvements	26,587,300	12,723,300	17,702,800	18,121,500	10,213,500	85,348,400
10	Bond Issuance Expense	0	0	0	0	0	0
11	Revenue Bond Reserve Fund	0	0	0	0	0	0
12	Total Application of Funds	(29,582,600)	(19,542,900)	(45,658,000)	(56,452,800)	(38,771,000)	(190,007,300)
13	End of Year Balance	(3,763,100)	(3,763,100)	(3,763,100)	(3,763,100)	(3,763,100)	(3,763,100)

(a) Includes funding from FEMA, HMCP, Grants, and Fair Share Program.

As of December 31, 2018, the Board had \$18,582,600 obligated for open contracts and capital jobs as shown on Line 7 of Table 28. Line 8 show the projected Major Capital Additions to be funded as shown in Table 25. Due to constraints on revenue, it is anticipated that the capital projects that are not funded through the Participation of Options, on Line 4, will need to be deferred until an additional revenue source has been identified. This deferral is shown on Line 9.

The Total Application of Funds is shown on Line 12 of Table 28. The net End of Year Balance is shown on Line 13.

### Operating Fund

Money deposited in the Drainage System Fund is obtained primarily from the three-mill, six-mill, and nine-mill ad valorem tax as shown on Lines 1 through 3 of Table 29.

Other revenue available for system operations is shown on Line 4. Miscellaneous revenue includes rental income, gain or loss on the sale of assets and other miscellaneous income. Interest Income available to the operating fund, shown on Line 5, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Revenue from FEMA shown on Line 6 is based on 2019 and 2020 budget. Total Operating Revenue is shown on Line 7 of Table 29.

Operation and Maintenance expense, previously projected in Table 27, is shown on Line 8 of Table 29. Lines 9 and 10 show the estimated allowance for claims and bad debt expense which is assumed to be 0.2 percent of projected revenue. Projected Net Operating Revenue from system operations is shown on Line 11.

Table 29 - Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No	Description	Fiscal Year Ending December 31,				
		2019	2020	2021	2022	2023
		\$	\$	\$	\$	\$
1	Three-Mill Ad Valorem Tax Revenue (4.66 Mills)	15,316,900	18,013,000	18,013,000	18,013,000	18,013,000
2	Six-Mill Ad Valorem Tax Revenue (4.71 Mills)	16,149,000	19,022,700	19,022,700	19,022,700	19,022,700
3	Nine-Mill Ad Valorem Tax Revenue (7.06 Mills)	24,206,700	28,513,900	28,513,900	28,513,900	28,513,900
4	Other Miscellaneous Income	0	0	0	0	0
5	Interest Income	8,300	8,400	0	0	0
6	FEMA Reimbursement	904,600	504,600	504,600	504,600	504,600
7	Total Operating Revenue	56,585,500	66,062,600	66,054,200	66,054,200	66,054,200
8	Operation & Maintenance (a)	(38,457,000)	(69,942,600)	(71,691,100)	(73,483,500)	(75,320,500)
9	Provision for Claims	(630,900)	(646,700)	(662,900)	(679,500)	(696,500)
10	Provision for Doubtful Accounts	(11,700)	(13,100)	(13,100)	(13,100)	(13,100)
11	Net Operating Revenue	17,485,900	(4,539,800)	(6,312,900)	(8,121,900)	(9,975,900)
12	Debt Service					
13	Senior Lien Revenue Bonds					
14	Existing	(2,028,550)	(2,035,950)	(2,039,100)	(2,045,000)	0
15	Projected	0	0	0	0	0
16	Total Senior Lien Revenue Bonds	(2,028,550)	(2,035,950)	(2,039,100)	(2,045,000)	0
17	Gulf Opportunity Zone Act Loan	(407,600)	0	0	0	0
18	SELA Capital Repayment	(2,341,000)	(7,611,800)	(8,460,400)	(8,460,400)	(8,460,400)
19	Total Debt Service	(4,777,150)	(9,647,750)	(10,499,500)	(10,505,400)	(8,460,400)
20	Other Non-Operating Revenue	18,984,100	512,900	512,900	512,900	512,900
21	Transfer to Construction	(18,000,000)	0	0	0	0
22	Transfer to Operating Reserve Fund	0	0	(470,600)	(215,600)	(221,000)
23	Net Annual Balance	13,692,850	(13,674,650)	(16,770,100)	(18,330,000)	(18,144,400)
24	Beginning of Year Cash Balance (b)	(6,770,200)	6,922,650	(6,752,000)	(23,522,100)	(41,852,100)
25	End of Year Balance	6,922,650	(6,752,000)	(23,522,100)	(41,852,100)	(59,996,500)
26	Beginning of Year Cash Balance (b)	(6,770,200)	15,075,150	9,553,000	1,406,000	(8,085,400)
27	Operating Reserve Fund	8,152,500	8,152,500	8,623,100	8,838,600	9,059,600
28	Net annual Balance	13,692,850	(13,674,650)	(16,770,100)	(18,330,000)	(18,144,400)
29	End of Year Balance	15,075,150	9,553,000	1,406,000	(8,085,400)	(17,170,200)
30	Days of O&M Cash on Hand	143	50	7	(40)	(83)
	Debt Service Coverage					
	Reflecting Nine-Mill Ad Valorem Tax Revenue Only					
31	Annual Test (c)	731.3%	858.3%	857.0%	854.5%	N/A
32	Additional Bonds Test (d)	725.4%	854.5%	854.5%	854.5%	N/A
	Reflecting All Ad Valorem Tax Revenue					
33	Annual Test (c)	1193.3%	1400.5%	1398.4%	1394.3%	N/A
34	Additional Bonds Test (d)	1183.7%	1394.3%	1394.3%	1394.3%	N/A

(a) Excludes non-cash expenses of depreciation and allowances, pension liability adjustment, and pension contributions.

(b) Reflects beginning of year balance in unrestricted and undesignated cash and cash equivalents and cash and cash equivalents designated for capital projects, less operating reserve requirement.

(c) The General Bond Resolution requires Nine-Mill Ad Valorem Tax Revenue to equal or exceed 100% of annual debt service.

(d) The General Bond Resolution requires Nine-Mill Ad Valorem Tax Revenue to equal or exceed 133% of maximum annual debt service.

Lines 13 through 16 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing debt includes the Series 2014 bonds. As previously mentioned, it is projected that the Board will not have the capacity to issue additional bonds during the study period.

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed \$77,465,247 on this agreement. Payments for the drainage portion of principal and interest began in July 2012 and are shown on Line 17 of Table 35. Starting in 2020, the Sewerage Department will pay the total payment, include the amounts for the Water Department and Drainage Department.

Line 18 reflects the estimated SELA repayments that will begin in 2020. Total debt service is shown on Line 19.

Anticipated non-operating revenue is shown on Line 20. This amount includes revenue from the Air Share Program in 2019.

Line 21 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing.

The SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 45 days of the previous year's operation and maintenance expense. Line 22 indicates the projected annual transfers necessary to meet this requirement throughout the study period.

Line 23 indicated the estimated Net Annual Balance from operations remaining at the end of each year.

The balance of operating funds available at the beginning of the year 2019, shown on Line 24, is comprised of current cash assets and reflects a balance of deficit of \$6,770,200. The End of Year Balance, which is exclusive of the operating reserve fund, is shown on Line 25 and drops to a deficit of \$6,752,000 in 2020 which indicates that the existing source of revenue for the Drainage Department will not be sufficient to fund operation and maintenance expense and required debt service payments starting in 2020.

Lines 26 through 30 demonstrate that the Board is not able to maintain an operating reserve equal to at least 45 days of the previous year's operation and maintenance expense starting in 2021.

### **Bond Coverage Requirements**

A requirement of the Drainage Bond Resolution provides that revenues derived from the nine-mill ad valorem tax should provide an amount sufficient to provide for the interest and principle payment on the Series 2014 bonds. As shown on Line 31 of Table 29 the projected revenue from the nine-mill ad valorem tax will provide sufficient revenue to meet coverage requirements on existing debt during the study period.

The Drainage Bond Resolution also provides that additional parity bonds may be issued, but only after certain conditions have been met. One condition is that the revenues derived from the nine-mill ad valorem tax for the most recently completed calendar year prior to the year of issuance are equal to at

least one and one-third (1-1/3) times the maximum debt service on all bonds outstanding and the additional bonds.

Due to the constraints to meet operation and maintenance expense and required debt service payments on existing debt during the study period, the Drainage Department does not have the revenue capacity to issue additional debt. In addition, the revenue from the nine-mill ad valorem tax does not provide the debt capacity needed to fund the five-year capital improvement program; therefore, a portion of capital improvements must be deferred. Therefore, in order to completely fund the five-year capital program, an alternative funding source would need to be identified for the Drainage Department.

Black & Veatch suggests that when a new funding source is identified, the Board work with its bond counsel and financial advisor to refund all outstanding debt at that time and issue new debt reflecting a general bond resolution that includes the new funding source and all other revenue in the coverage calculation and reflects covenants more consistent with the 2014 water and sewerage resolutions. It is anticipated that the Board will have the capacity to debt finance more projects under the new resolution.

## Appendix

Table 30 - Assessment of East Bank Sewage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS
1	8/30/19	Chickasaw	Chickasaw at Metropolitan	Two (2) pumps total; both operational.
2	8/30/19	K-Mart	Desire at Gentilly	Two (2) pumps total; one (1) in service: <ul style="list-style-type: none"> <li>Pump #2 has been out of service for several months. The discharge valve needs to be replaced. Repair time is currently unknown.</li> </ul>
3	8/30/19	Station 23	4500 Mithra	Two (2) pumps total; both operational.
4	8/28/19	Station 17	4975 Spain at Selma	Two (2) pumps total; both operational <ul style="list-style-type: none"> <li>There is a water leak in the station that is coming from the suction line under the wet well. They believe it is from a fresh water source or break in the main. It has only been occurring for 2-3 days. Further investigation is required for repair solution.</li> <li>This is a gravity flow station and does not require an Emergency Discharge Connection (EDC).</li> </ul>
5	8/28/19	Station 22	5705 Perlita	Two (2) pumps total; both operational.
6	8/29/19	Station 19	3730 Jumonville at Milton	Two (2) pumps total; both operational.
7	8/28/19	Station 21	6670 Memphis At Filmore	Two (2) pumps total; both operational.
8	8/28/19	Station 18	Vicksburg at Florida	Two (2) pumps total; both operational.
9		City Park	5701 Marconi Drive	Two (2) pumps total; both operational.
10	8/28/19	Station 20	328 37th Street	Two (2) pumps total; both operational.
11	8/28/19	Station 4	5899 Fleur de Lis	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>There is a crew on site painting the pump motors, EDC, and other exposed metals, along with doing general cleaning at the station.</li> </ul>
12	8/28/19	Lakewood South	Country Club Drive near Marconi	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> <li>This is a gravity flow station.</li> </ul>
13	8/29/19	Station 6	242 S Solomon at Palmyra	Three (3) pumps total; all operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
14	8/29/19	Station 3	8720 Olive near Eagle	Two (2) pumps total; both operational.
15	8/29/19	Station 1	7336 Cohn	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>Older station that is planned to be rebuilt in future.</li> <li>No placard at this location.</li> </ul>
16	8/29/19	Station 14	4000 Clara	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No emergency discharge connection.</li> </ul>
17	8/29/19	Station 5	3912 Erato St	Two (2) pumps total; both operational.

NO.	DATE	FACILITY NAME	LOCATION	STATUS
18	8/29/19	Station 15	2431 Palmyra near Rocheblave	Three (3) pumps; each operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
19	8/29/19	Station 8	Corner of N. Broad and Toulouse	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>This is a brand-new station that was turned over to the S&amp;WB within the past year.</li> </ul>
20	8/29/19	Station 9	2540 Annette at Law	Two (2) pumps total; both operational.
21	8/26/19	Station 16	3751 N Miro at Pauline	Two (2) pumps total; both operational.
22	8/26/19	Station 24	5027 N Tonti at Forstall	Two (2) pumps total; both operational.
23	8/26/19	Station 25	2245 Charbonnet	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 out because the vacuum pump is not functioning properly. It has been out for a week and the repair time is unknown.</li> </ul>
24	8/26/19	Station 26	2244 St Maurice at Tonti	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 out because the flapper is damaged and needs to be replaced. Part has been ordered and should be repaired in the next few weeks.</li> </ul>
25	8/26/19	Station B	4725 St Claude Avenue	Two (2) pumps total; both operational.
26	8/26/19	Southern Scrap	Southern Scrap Rd	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 is out.</li> </ul>
27	8/26/19	France & Florida	Harbor Rd	Two (2) pumps total; both operational.
28	8/26/19	MECO	2701 France Road	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
29	8/26/19	American Marine	3855 France Road	Two (2) pumps total; both operational.
30	8/26/19	Victoria @ Gentilly	3620 Victoria	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
31	8/20/19	Dodt	8118 Chef Menteur Highway	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
32	8/20/19	Plum & Orchid	7300 Chef Menteur Highway	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No placard at this location.</li> </ul>
33	8/20/19	Wilson	7709 Wilson Avenue	Two (2) pumps total; both operational.
34	8/20/19	Crowder	5500 Block of Crowder	Two (2) pumps total; both operational.
35	8/20/19	Castle Manor	4950 Gawain at Dwyer	Two (2) pumps total; both operational.
36	8/20/19	Cerise	5001 Cerise	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #2 is out because sewer is coming through the wall at the lead joint at the pipe. S&amp;WB will need to excavate to get to point of repair. This pump has been out for 2 or 3 weeks and may be repaired in the next couple months.</li> </ul>

NO.	DATE	FACILITY NAME	LOCATION	STATUS
37	8/20/19	Lakewood Terrace	5057 Warren Drive	Two (2) pumps total; both operational.
38	8/20/19	McCoy	McCoy at Gentilly	Two (2) pumps total; both operational. • No emergency discharge connection at station.
39	8/20/19	Amid	6800 Almonaster Road	Two (2) pumps total; both operational.
40	8/20/19	Lake Forest	10451 Lake Forest Blvd	Two (2) pumps total; both operational.
41	8/20/19	Wright Road	Wright Road at Lake Forest	Two (2) pumps total; both operational. • No emergency discharge connection at station.
42	8/20/19	Bullard	5501 Bullard Road	Two (2) pumps total; both operational. • No placard at this location.
43	8/26/19	Pines Village	6155 Dwyer Road at Foch	Two (2) pumps total; both operational.
44	8/26/19	America	6789 Dwyer Road at Westlake	Two (2) pumps total; both operational.
45	8/20/19	Station A	1321 Orleans Avenue	Six (6) pumps total; all operational.
46	8/20/19	Shorewood	14441 Morrison Road	Two (2) pumps total; both operational.
47	8/20/19	Briarwood	13701 Morrison Road	Two (2) pumps total; both operational.
48	8/20/19	Liggett	12501 Morrison Road	Two (2) pumps total; both operational.
49	8/20/19	Berg	11501 Morrison Road	Two (2) pumps total; both operational.
50	8/20/19	Weber	10141 Morrison Road	Two (2) pumps total; both operational.
51	8/20/19	Burke	9001 Morrison Road	Two (2) pumps total; one (1) in service. • Pump #2 is off because the flap is not functioning properly. Machinist is making the repairs now and the pump should be back in service by next week.
52	8/20/19	Lawrence	8001 Morrison Road	Two (2) pumps total; both operational. • No placard at this location.
53	8/20/19	Lamb	6450 Morrison Road	Two (2) pumps total; one (1) in service: • Pump #2 is out of service because the flap is bad. Should be repaired in a couple weeks after the machinist is done at the Burke station.
54	8/16/19	Gentilly Oaks	5000 Papania Road at Vienna	Two (2) pumps total; one (1) in service. • Pump #2 is out of service because it is making a strange noise. To not risk anything, the pump is off until further investigation.
55	8/16/19	Eastover	6051 Eastover Drive	Two (2) pumps total; both operational.
56	8/16/19	Paris Road	Dwyer West of Paris Road	Two (2) pumps total; both operational. • No placard at this location.
57	8/16/19	Venetian Isles #2	20711 Old Spanish Trail	Two (2) pumps total; one (1) in service. • Pump #1 is not in service because a wooden board was sucked into the pump and broke a check valve

NO.	DATE	FACILITY NAME	LOCATION	STATUS
				this week. Crew is discussing a plan of action to bring the pump back in service. Repair time is unknown.
58	8/16/19	Industrial Parkway	4200 Industrial Parkway	Two (2) pumps total; both operational.
59	8/16/19	Blvd X	4433 Chef Menteur Highway	Two (2) pumps total, both operational.
60	8/16/19	Alcee Fortier	Alcee Fortier Blvd at the Levee	Two (2) pumps total; both operational.
61	8/16/19	Willow Brook	Willowbrook off of Michoud	Two (2) pumps total; both operational.
62	8/16/19	Oak Island	14201 Michoud Blvd	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #2 has been out for about 6 months due to the motor pulling high amps. Further investigation is required to find a solution.</li> </ul>
63	8/16/19	Village de Lest	11324 Dwyer	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 is out due to a bent plate in the pump housing unit. The pump has been out for about a month and should be repaired once the machinist becomes available.</li> </ul>
64	8/16/19	Michoud	4400 Michoud Blvd	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #2 is not pumping properly due to a large sinkhole in the rear of the station. The pump has been off for about a month. More investigating is required to determine how to fill the sinkhole and turn the pump back on.</li> </ul>
65	8/16/19	Folgers	14601 Gentilly Blvd	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 has been out for about a year. The need to replace the check valve, discharge gate valve, and the station isolation valve. There is no timetable for repair.</li> </ul>

Table 31 - Assessment of West Bank Sewage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS
1	8/14/19	Memorial	2501 Memorial Park Dr.	Two (2) pumps total; both operational.
2	8/14/19	Garden Oaks	3201 Memorial Park Dr.	Two (2) pumps total; both operational.
3	8/14/19	Park Timbers	4100 Lennox Blvd.	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #2 is out because the motor blew up after the station flooded due to a sump pump failing. It has been out for 2 or 3 months and should be back in service within a month.</li> </ul>
4	8/14/19	Tall Timbers	3800 Tall Pines Dr.	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 is out of because the volute has a crack in it and the discharge valve needs to be replaced. A diver will be required to make the repairs. No timetable for the repair; it has been out for 6 months.</li> </ul>
5	8/14/19	Forest Isle	5631 West Forest Park Dr.	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No emergency discharge connection at this station.</li> </ul>
6	8/14/19	Blair	3800 Blair St	Two (2) pumps total; both operational.
7	8/14/19	Aurora	6000 Carlisle Ct	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No emergency discharge connection at this station.</li> </ul>
8	8/14/19	English Turn I	2201 Stanton Rd.	Two (2) pumps total; both operational.
9	8/14/19	English Turn II	123 ½ Oak Alley	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #2 has a motor that has burned up. The motor is in the mechanic's shop for repair and should be back in service in a couple weeks.</li> </ul>
10	8/14/19	English Turn III	400 English Turn Parkway	Two (2) pumps total; both operational.
11	8/14/19	Lower Coast	3700 Old Woodland	Two (2) pumps total; both operational. <ul style="list-style-type: none"> <li>No emergency discharge connection at this station.</li> </ul>
12	8/14/19	Woodland	4150 Woodland Dr.	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 is out because the flap is not operating properly. Pump should be repaired and back in service in a couple weeks.</li> <li>No emergency discharge connection at this station.</li> <li>No placard at this location.</li> </ul>
13	8/14/19	Eton	3440 Eton St	Two (2) pumps total; both operational.
14	8/14/19	Huntlee	3201 Huntlee Dr.	Two (2) pumps total; one (1) in service. <ul style="list-style-type: none"> <li>Pump #1 is not in service. Entire pump needs to be re-built and is in the mechanic's shop now for repair. Pump should be back in service in two weeks to one month.</li> </ul>

NO.	DATE	FACILITY NAME	LOCATION	STATUS
15	8/14/19	Holiday	2799 Holiday Dr.	Two (2) pumps total; both operational.
16	8/14/19	Bridge Plaza	2914 Vespasian St	Two (2) pumps total; both operational.
17	8/14/19	Horace	3301 Lawrence St	Two (2) pumps total; both operational.

Table 32 - Assessment of East Bank Drainage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	8/7/19	Station 1	2501 S. Broad St.	Eleven (11) pumps total, 2 are constant duty; all operational.	No debris screens to prevent trash from entering pumps at this station. All debris is moved with the storm water to the next station.
2	8/7/19	Station 6	345 Orpheum	Fifteen (15) pumps total; fourteen (14) in service.	<ul style="list-style-type: none"> <li>Some vegetation appearing at the discharge basin and the debris screens.</li> <li>At Pump A, maintenance crews are doing repair to the motor windings and checking the bolts. This pump will only be out today, and the crew will do the same work on Pump B tomorrow.</li> <li>Constant Duty #1 has problem with shaft. This pump has been out since April of this year and is expected to be repaired in about 2 weeks.</li> </ul>
3	8/7/19	I-10 Station	I-10 Service Road	Four (4) pumps total; all operational.	Anti- reverse ratchets at the three vertical pumps need to be replaced. Pumps are still operational, and the repair time is currently unknown.
4	8/8/19	Station 7	5741 Orleans Ave at Marconi Dr.	Five (5) pumps total; all operational.	
5	8/8/19	Canal Blvd	5500 Canal Blvd	Three (3) pumps total; all operational.	
6	8/7/19	Station 2	444 N. Broad St.	Six (6) pumps total, 2 are constant duty; all operational.	
7	8/7/19	Station 3	2251 N. Broad St.	Nine (9) pumps total, 4 are constant duty; all operational.	<ul style="list-style-type: none"> <li>The “lake” gate will not seal properly and must remain open. As a result, the Marigny gate must stay close at all times.</li> <li>The full-grown tree amongst other vegetation in the basin needs to be removed as well.</li> <li>Transformer #5 is being replaced so the exhaust fans at Pump D are not working. The crew is using two portable fans attached to the exhaust fan as a substitute. It has been out for three to four months and should be replaced soon.</li> </ul>
8	8/7/19	Pritchard	2901 Monticello	Two (2) pumps total; both operational.	This is an unmanned station.

NO.	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
9	8/7/19	Oleander	9400 Oleander	Three (2) pumps total; all operational.	This is an unmanned station.
10	8/8/19	Station 4	5700 Warrington Dr.	Six (6) pumps total; four (4) pumps in service.	
11	8/7/19	Station 12	Robert E Lee and Pontchartrain Blvd	One (1) pump total; one (1) in service.	The pump at this station is having issues with the hydraulic vacuum breaker. No timetable set for repair.
12	8/8/19	Station 16	Danube Rd. at Wales	Four (4) pumps total; all operational.	This is an unmanned station.
13	8/8/19	Station 10	Citrus 9600 Haynes	Four (4) pumps total; all operational.	This is an unmanned station.
14	8/8/19	Station 14 (Jahnke)	Oneida at Haynes	Four (4) pumps total; all operational.	Pump #2 is out because the motor is being replaced. Pump has been out for about two months and should be repaired in the next month or two.
15	8/8/19	Grant	Grant St. at Gentilly Blvd.	Six (6) pumps total; all operational.	This is an unmanned station.
16	8/8/19	Elaine	3100 Elaine St.	Two (2) pumps total; both operational.	This is an unmanned station outdoors.
17	8/8/19	Station 17 (D)	2801 Florida Ave.	Two (2) pumps total; both operational.	Pump E is out because the motor needs to be repaired. S&WB has been having problems with this pump for months. It is out until further funding is received to replace or repair again. The bathroom on the second level is being remodeled.
18	8/8/19	Station 5	4841 Florida Ave.	Eight (8) pumps total; all operational.	No placard at this location. Two vertical pumps housed in separate building. The feeder is out of service at this station.
19	8/8/19	Station 19	4500 Florida Ave.	Five (5) pumps total; all operational.	
20	8/8/19	Station 20 (AMID)	6300 Intercoastal Waterway at Terminal Rd.	Two (2) pumps total; both operational.	This is an unmanned station. Debris collected from the screens needs to be hauled away.
21	8/8/19	Maxent	Alcee Fortier	Two (2) pumps total; both operational.	Overgrown vegetation is causing severe blockage at suction basin.
22	8/8/19	Station 15	Industrial Parkway	Three (3) pumps total; all operational.	Overgrown vegetation is causing severe blockage at suction basin. This is an unmanned station.
23	8/8/19	Dwyer	5801 Dwyer Rd.	Three (3) pumps total; all operational.	This is an unmanned station.

Table 33 - Assessment of West Bank Drainage Stations

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	8/13/19	Station 11	5301 East Sixth St.	Five (5) pumps total; all operational.	3 out of 4 debris screens are not working.
2	8/13/19	Station 13	4201 Tall Spruce Dr.	Seven (7) pumps total; five (5) pumps operational.	Pumps #4 and #5 are out of service while they are being repaired or replaced for something regarding asbestos. Repair time unknown.