

Final

REPORT ON OPERATIONS FOR 2019

B&V PROJECT NO. 405668

PREPARED FOR

Sewerage and Water Board of New Orleans

8 MARCH 2022



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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Special Notice

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Introduction

PURPOSE AND SCOPE

This report intends to cover operations of the Sewerage and Water Board of New Orleans for the year ending December 31, 2019. However, due to COVID-19, the Black & Veatch team could not conduct the onsite inspections of the above ground facilities until October 2020. Therefore, the reported findings in the Facilities Evaluations section refers to the condition as of October 2020. 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. 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.

“Water System” is the Sewerage and Water Board organization providing domestic water service to residents of the City of New Orleans. “Sewerage System” is the organization providing wastewater service, and “Drainage System” is the organization providing stormwater conveyance and pumping. The Board organization includes some groups that 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 before 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 Systems. Allocation of expenses is based upon actual or direct expenses of each System together with an apportionment of joint expenses. With

respect to debt service, interest is charged to the 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 System

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 was used to defease all outstanding bonds. In 2015, the Board issued Water Revenue Bonds for \$100,000,000. Principal payments began in 2018. As of December 31, 2019, the total outstanding debt service on all outstanding revenue bonds totaled \$32,285,000.

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

Sewerage System

Act No. 567 gave the Board authority to set and collect sewerage service charges for operational and capital costs of the Sewerage System and to issue sewerage service revenue bonds. For the first time in its history, this Act permitted the Board 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 was used to defease all outstanding bonds, except for 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 General Sewerage Service Revenue Bond Resolution provisions. 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 for \$10,000,000 with principal payments beginning in 2022. Outstanding principal on all revenue bonds totaled \$57,505,000 as of December 31, 2019.

Drainage System

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 reassessments shall lose no tax revenues; 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 may increase the millage rates to the prior year's level upon request and after a public hearing. 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 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 nine-mill tax levy aims 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 for \$20,000,000 were issued in 2002. In 2014, the Board issued Drainage System Refunding Bonds in the amount of \$14,900,000 to refund Series 1998 and Series 2002. The total nine-mill Drainage System Bonds outstanding as of December 31, 2018, was \$5,850,000.

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. As the expiration date of the millages draws closer, the Board will need to consider identifying other possible sources of revenue to maintain the future sustainability of the Drainage system if 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 paying debt service requirements from 2006 through 2008. The Board has borrowed \$77,465,247, 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 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.

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 identified in the 1970s but have not been completed because of funding limitations. The identified projects will be funded 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

The 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 Systems for the year 2019.

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 used for internal purposes to identify the cost in each functional category incurred for personal services, services and utilities, material and supplies, replacement and maintenance, and other special charges.

Water System

Water Revenue Bond Resolution Requirements

Sewerage and Water Board financial operations for 2019 have complied with the requirements set forth in the General Water Revenue Bond Resolution.

Summary of 2019 Operations

The total revenue from water sales, delinquent fees, interest income and other income increased from \$93,284,726 in 2018 to \$124,155,678 in 2019. Operation and maintenance expenses increased from \$94,075,558 in 2018 to \$97,668,096 in 2019. After debt service payments of \$13,394,550, a balance of \$13,093,082 was available for capital related expenditures in 2019.

Sewerage System

Sewerage Service Revenue Bond Resolution Requirements

Sewerage and Water Board financial operations for 2019 have complied with the requirements set forth in the General Sewerage Service Revenue Bond Resolution.

Summary of 2019 Operations

The total revenue from sewer charges, delinquent fees, interest income and other income increased from \$116,449,730 in 2018 to \$155,359,847 in 2019. Operation and maintenance expenses decreased from \$95,538,207 in 2018 to \$95,220,260 in 2019. After deducting debt service payments of \$21,713,963, a balance of \$38,425,625 was available for capital related expenditures in 2019.

Drainage System

Summary of 2019 Operations

Total revenues received from all sources, including interest income, increased from 57,660,416 in 2018 to \$77,424,117 in 2019, mainly due to an increase in fair share revenue received in 2019. Total operation and maintenance expenses decreased from \$41,690,821 in 2018 to 41,007,056 in 2019. After deducting debt service payments of \$2,028,500, a balance of \$34,338,621 was available for capital-related expenditures in 2019.

Ability to Finance Future Operations and Proposed Improvements

Black & Veatch has been preparing this report for the Board for over five decades, which has included an analysis of the Board's ability to finance projected revenue requirements, including proposed capital improvements. However, due to unusual circumstances that the Board experienced in 2020 and 2021, which delayed the release of financial documents to support the projections of revenue and revenue requirements for 2020 and beyond and their accuracy, a joint decision was made by Black & Veatch and the Board not to include projections for 2020 and beyond in this report. Instead, the Comprehensive Financial Planning, Cost of Service, and Rate Design Study currently underway will include an analysis of the projected financial plan for 2022 through 2027.

Other Findings

The Board operates a power plant at the Carrollton Water Purification Plant, which provides power for the water purification process and backup power if commercial power fails or becomes unavailable. In 2019, approximately 68.2 million kilowatt-hours (kWh) of power were purchased, and 44.5 million kWh of power was generated. The Board's analysis of power purchased and produced is shown in the supplemental section of the 2019 Comprehensive Annual Financial Report.

On a unit cost basis, the average cost of purchased power has increased over the past five years from about 10.3¢ per kWh in 2014 to about 11.0¢ per kWh in 2018. During the same period, the Board's unit cost for generated power has decreased from about 38.43¢ per kWh to about 30.1¢ per kWh. In 2019, the cost of Board-generated power was 1.9 times higher than that of purchased power; however, this higher cost is offset because 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 Board’s facilities’ onsite assessment findings conducted by Black & Veatch from October 18 to October 21 of 2020. 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 Board management and supervisors during the site visit to assess the current operations status of the various facilities.

INTRODUCTION

The Operations Department of the Board is comprised of four units: (1) Water Purification, (2) Sewage Treatment, (3) Water Pumping and Power, and (4) Sewage and Drainage Pumping. The Board 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 plants is pumped through approximately 1,800 miles of mains to the service connections within the city and 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 the operation of all other sewage stations 24 hours a day.

The Board 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 and 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 Board.

In addition, the Board 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 a day, 7 days a 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 Board provide power to portions of the WPPs and approximately 60 percent of the drainage pumps. Two large vertical sewage pumping units at Station A run on 25-cycle power. The following sections summarize key issues within several departments of the Board.

STAFFING

As of December 31, 2019, the total number of Board employees was 1,290, 31 less than the previous year. The number of employees in the Operations and Maintenance departments increased from 898 to 989 over that same period. Adequate staffing continues to be an issue for most departments at the Board. Additional maintenance is required for the Board facilities as equipment ages, and more equipment is added. Vacancies still exist in several departments, especially those that require highly educated and skilled personnel. These shortages are reflected in more technical disciplines, such as mechanical maintenance, electrical maintenance, plant maintenance, welding and fabrication, and operations.

The Board has a domicile policy that requires employees to live in New Orleans. The Board is 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 Board'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 Board. Table 1 summarizes the staff on the payroll for both the Operations and Maintenance departments and the percentage of staff eligible for retirement within five years of December 31, 2019. These conditions demonstrate the need for an effective succession plan for the department heads and supervisors.

Table 1 - Number of Operations and Maintenance Employees and Employees Eligible for Retirement

DEPARTMENT	EMPLOYEES ON PAYROLL	ELIGIBLE FOR RETIREMENT	% ELIGIBLE FOR RETIREMENT
Operations – WPPs	65	15	23.1%
Operations - Water Quality Laboratory at Carrollton Plant	9	1	11.1%
Operations - Water Pumping and Power	87	17	19.5%
Operations - Sewage and Drainage Pumping Stations	127	26	20.5%
Facility Maintenance	82	18	22.0%
Engineering	51	12	23.5%
Networks	319	52	16.3%
Support Services	99	22	22.2%
Environmental Affairs	22	5	22.7%
Total	989	172	17.4%

WATER PURIFICATION PLANTS

The Black & Veatch representative accompanied the WPPs' superintendents on facility tours of the Carrollton and Algiers WPPs. At the time of the inspection, 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. There were no retirements in 2019; however, the operations department has continued to hire more entry-level staff. The department would like to hire experienced operators, ideally with certifications, but has difficulty due to the residency requirements and pay rates. Staff feels that there is no incentive to become certified, and there is a lack of certified operators state-wide. No management staff was hired in 2019.

The Board internal operator training program stopped in 2017 due to a retirement within the department, and no internal training program has been re-established. This internal training program assisted Operations staff in passing state certification exams and job training. Instead of the internal training program, the Board uses Delgado Community College operator certification classes, paying staff to take the class to obtain a license. The Board 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 held a Water Treatment 4 license. Out of those operators, five were eligible for retirement. One was retired and works part-time in the filter gallery. Four were currently in the deferred retirement option plan (DROP) Program (fully retired in the next five years). Within those indicated for retirement were key staff in the chemical house and filter gallery and one senior operator at the Algiers WPP. Their replacements were already in the DROP program and will be retired within five years. There are 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 was maintained.

As stated previously in the 2017 and 2018 reports, the Louisiana Department of Health's (LDH) plant inspection noted that a lack of managers and certified operators at both WPP was a major deficiency that needed to be addressed by the Board. It was noted that attracting experienced staff was still a challenge in 2019 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 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 Board

is feeding all chemicals at appropriate dosages and maintains adequate chemical storage at each site. Filtration, the final step in the treatment process, is when 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 138 mgd of water for the east bank of the Orleans Parish in 2019. The water delivery pressure at the WPP was maintained at around 72 pounds per square inch (psi) during the inspection, which was consistent throughout 2019 due to in-service water towers. 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).



Second Water Tower Online



Sycamore Filter Pipe Support Rehab

Figure 1 - Carrollton Water Purification Plant

Improvements initiated and/or completed at the Carrollton WPP during 2019 include:

- At the time of the visit, G3 was in service, and G4 was out of service for routine maintenance. L4 was out of service due to leaks in 2018. The basin was cleaned out in 2019, and a contract was put out for L4 repairs in 2020. The contract will go out for rebid and work towards the repairs in 2021.
- As part of the water hammer project, the construction of two elevated storage tanks began in late 2016 to assist with maintaining adequate distribution pressure in case of a line break. The second tank was under construction in 2018 and was completed in 2019. Both elevated tanks were in service at the time of the site visit. The third water elevated storage tank — Michoud, located in New Orleans East/Venetian isles area — was out of service for 14 years but was rehabilitated and placed into service in 2019.

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

- Valves, actuators, corroded piping supports, and leaking pipes associated with the filters need to be repaired or replaced. A filter rehabilitation program is in progress for the Sycamore filter galleries and is planned for Claiborne filter galleries. In 2019, four additional filters in Sycamore galleries were repaired (the contract is for eight total filters). The remainder of the work on Claiborne filter galleries will be completed when additional funding is available.
- The new filter backwash station started construction in 2018 and was completed and placed into service in 2019.
- A new chemical storage and feed facility is currently under design, with the design 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 2019. Improvements should be completed by early 2021.
- It was noted that a long-term project was in the design stage (90 percent) to install a second sludge line to the river to add redundancy. This was still the status in 2019. It was noted during the visit that the line did break again (the line previously broke in 2018), and the need for redundancy is critical.

In terms of compliance, the Carrollton WPP had no compliance issues in 2019.

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 9.2 mgd of water in 2019 and serves the predominantly residential west bank portion of the parish.



Clarifier 1 Nearing Completion



Bulk Fluoride Storage Tanks

Figure 2 - Algiers Water Purification Plant

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 in 2019 and will be completed by early 2021.
- Filter rehab (valves, filter media, air scour system) is still needed on all filters and is on hold due to funding.
- EIMCO Clarifiers 3 and 4 are under contract to replace the launder troughs. The troughs and steel structures had significant corrosion and required rehab. The contract went out in 2018, and rehab on Clarifier 3 began and continued into 2019. At the time of the visit, Clarifiers 3 and 4 were both rehabilitated and in service. Clarifier 2 will be rehabbed by early 2021.
- In addition to the rehab and painting of the EIMCO clarifiers, flash mixing was added to assist with better TOC removal in the clarifiers. The existing clarifiers were modified in 2019 to include an additional mixer near the chemical injection point.
- The fluoride storage and feed system needs 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 old onsite sodium hypochlorite generation equipment was removed in late 2018 and early 2019. The installation of the new fluoride system occurred in 2019 and will be commissioned by early 2021.
- Lime is currently slaked at the WPP. Board 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 2019.
- The raw water pumping and piping systems need to be improved to provide redundancy to the intake system. No work in 2019 was conducted to address this concern. The Board Engineering department is specifying new pumps at Old River Intake at Algiers.

In terms of compliance, the Algiers WPP had no compliance issues in 2019.

WATER QUALITY LABORATORY

The water quality laboratory 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. It is certified by the Louisiana Department of Health and Hospitals to analyze 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. Board is still actively involved in this program.

Telecommunications connect the remaining reliable monitoring stations 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 the FEMA Waterline Replacement Program. In 2019, the lab lost four chemists that were hired in 2018. It was noted at the time of the visit that they were able to rehire three chemists and a lab technician to replace the staff that left. There were two microbiologists, four chemists, and five technicians during the visit. The lab supervisor position is still vacant; the heads of the WPPs are currently filling the role. The laboratory staff had obtained certification to analyze TOC at the Board 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 2019.

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 new fume hoods in the chemistry lab. A GC/MS was purchased in 2019. No other major purchases were made in 2019.

WATER PUMPING AND POWER

The primary function of the water pumping and power unit of the Operations department is to produce power (both 25 hertz (Hz) and 60 Hz) required for potable water, sewerage, and stormwater pumping. Additionally, this department is responsible for pumping raw water and potable water to the City of New Orleans. The 25 Hz-generating equipment at the Carrollton Power Plant includes 3 steam turbines and 1 gas turbine for a total nameplate capacity of 61 megawatts (MW), and 5 electromotive diesel (EMD) generators with a total nameplate capacity of 12.5 MW of 25 Hz power. The steam required for the steam-driven turbines is produced in 6 boilers with a total nameplate capacity of 650,000 pounds of steam per hour.

In addition to the 25 Hz turbines, Turbine Generator 6 produces 15 MW of 60 Hz power and was made operational in early 2014. The turbine serves as backup to Entergy-supplied 60 Hz power.

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 most of the plant and raw water intake stations and provides additional drainage station capacity.

The power generation facility can generate enough power to support operations at the Algiers WPP. The generating station at the Algiers Plant can produce 60 Hz power using a diesel generator. To mitigate a simultaneous Entergy outage and failure of the 60 Hz generator, the facility also contains a 25 Hz frequency changer that can convert 25 Hz power supplied from the Carrollton Water Plant to 60 Hz power for use at the Algiers WPP.

In 2019, a power master plan was initiated to develop a path to upgrade power generating facilities and convert equipment from 25 Hz to 60 Hz power. The plan will most likely include static frequency converters to convert 60 Hz power to 25 Hz power to maintain normal short- and medium-term operations.

At the time of the inspections, the total nameplate (25 Hz and 60 Hz) capacity of the Carrollton Power Plant was 73.5 MW (design capacity). Turbine 3 is limited to 8 MW (out of nameplate capacity of 15 MW) and is listed as emergency use only. At the time of the inspections, Turbine 3 was offline, Turbines 1 and 4 were online, and Turbine 5 was being used as needed. In 2018, the department became aware of a cross-connection between the cooling systems for Turbines 1, 3, 4, and 5 and the Carrollton Water Plant clearwell. As an interim measure, the cooling water circulating pumps for Turbines 1, 3, and 4 run continuously, and the cooling water discharge from Turbine 5 has been re-routed. Potable-water, steam-driven Pump B also contributes to the cross-connection. Pump B will convert to an electric drive in 2020 and will no longer be a contributor. The department is developing alternatives to eliminate the contribution from Turbine 4. The department intends to retire Turbines 1 and 3 as financial resources become available to add additional frequency changers and more modern 60 Hz power generating equipment.

In December 2019, an explosion occurred in Turbine 5, rendering that unit inoperable. Evaluation of options to repair and/or replace that unit is underway.

The original plant design included two steam-driven potable water distribution pumps (Pump A and B). In late 2018, the Pump A gear box failed, and the department changed Pump A from a steam to an electric drive in 2019. Pump B will also be converted to an electric drive by early 2021.

The Claiborne Pumping Station, which consists of 4 water distribution pumps (2 (two) 60 Hz drive and 2 (two) 25 Hz drive), and the Panola Station, which consists of two pumping units (each with 25 and 60 Hz motors), have adequate redundancy for pumping finished water to the distribution network. The 25 Hz pumps at Panola Station have been converted to operate on either 25 or 60 Hz power. The FEMA HMGP-funded water hammer program includes replacing equipment and associated valves at the Panola Station and Claiborne Station. Phase 1 of the water hammer project, which included the construction of two elevated water tanks, was completed in 2019. Phase 2, which includes upgrades to the Claiborne potable water pumping station, is underway and scheduled for completion in 2022.

Storm-proofing projects for critical Board facilities, including the power buildings, were completed by the US Army Corps of Engineers (USACE) in 2017. Improvements for the power buildings included reinforcing the walls, roofing, doors, and windows. Additional damage-related work from Hurricane Katrina included valve replacement and repairs to electrical components and controls. The HMGP-funded fuel farm project, which included replacing an old diesel storage tank with 2 new above-ground tanks with a total capacity of 250,000 gallons, was completed in 2019. Related items for the water pumping and power unit are currently in various design or construction stages.

Another FEMA HMGP-funded project related to the raw water intake pumping is underway and will be completed by early 2021. The Oak Street Pump Station Rehabilitation project includes new raw water pumps at the existing Oak Street station.

At the visit, the water pumping and power unit had 87 employees, which provides for continued operations of the water, sewerage, and drainage systems that required staffing 24 hours a day, 7 days a week. Given the current staffing levels, overtime is still required to cover all the necessary areas within the pumping/power unit and for emergency response. The department continuously tries to reduce overtime by focusing on training operators and using overtime to bridge the knowledge gap. Approximately nine senior operators or supervisors are set to retire in five years or less. Retirement was mentioned as an ongoing 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 retired in September

2020, and a successor has not yet been identified. The hiring and training of additional staff are needed at all levels of the organization due to existing vacancies and those created by retirement.

Recent and upcoming staff retirements also present challenges in training and passing on institutional knowledge. Due to this situation, the department uses maintenance contacts for equipment to help train staff with the help of vendors and manufacturers until staff are sufficiently trained and can conduct the maintenance and troubleshooting in-house.

It was noted again that staff with more technical training and skillsets are needed to operate and maintain Turbine 4 and oversee future upgrades to the powerhouse. Although training for current staff is underway, the current pay level is not sufficient for the department to hire new staff with more advanced skillsets.

Central Control

The Central Control Power Dispatching Department (Central Control) is primarily responsible for delivering 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 Board'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. Central Control plays a vital role in many emergency operational situations. Serving as a hub of communications, Central Control informs the Board's management and senior-level staff of changes in conditions that will affect the Board'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 Board protocols. Additionally, it was noted during the inspection that the department's responsibility has expanded. A new platform was implemented, and becoming familiar with that platform and work related to Generator 4 have created a learning curve for the department.

During the inspections, it was noted that Central Control still did not have enough trained and experienced 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 one of the two most senior staff members is in DROP. Therefore, training new staff members is very critical. Like other departments, staff with more advanced technical skillsets, including instrument and controls technicians, are needed as equipment and new technology are introduced into the system.

SEWAGE TREATMENT PLANTS

Operations and maintenance activities of both plants have been contracted to Veolia Water. A representative of the Board oversees the contract operator. This representative works for the Operations department, which is within the Board. According to treatment plant personnel, both treatment plants were operational at the time of the site visits and met the discharge limits. 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 99 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 High-Efficiency Motor on RAS Pumps



Sludge Dryer in Construction

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 4 was cleaned out in 2018, and no additional work was conducted in 2019 due to funding.
- Clarifier 6 was scheduled to be rehabbed in 2020 but is on hold due to funding.
- Replacing the vacuum swing absorption (VSA) oxygen system equipment (blowers, motors) was solicited for quotes by the contract operator. All equipment was obtained in 2018 and was installed in 2019.
- Two RAS pump motors were upgraded to high-efficiency motors in 2019.
- 3,500 trees and 4,000 bushes were planted in a demonstration cell in early 2018. No additional plantings took place in 2019.
- The electrical Phase 2 project, which included a new 480-volt MCC in the solids building, was under construction in late 2018 and was completed in 2019. Phase 3 electrical improvements (replacement of the MCC for north and south sludge houses) are on hold due to funding.
- The sludge dryer project went out to bid in 2017 and went under construction in 2019. The dryer is scheduled to be completed by early 2021.
- Effluent Pump 6 project is in design and ready for bid. Project construction will occur in 2022-2023 when funds are available.

In 2019, the average flow for the plant was 99.2 mgd, which was slightly less than the 2018 average of 103.51 mgd. Effluent quality has been adequate over the last year, with an average effluent TSS concentration of 17 mg/L and an average effluent BOD concentration of 21 mg/L. One exceedance was noted in February 2019 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 Drive Unit on Primary Clarifier 1



Bar Screens 3 and 4 in Need of Replacement

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 Screens 3 and 4 need to be replaced and are on hold until funding is available.
- Primary Clarifier 1 was taken offline in 2019 and the drive unit was replaced. All primary clarifiers were online at the time of visit. Additional rehab work is on hold.
- Rehab on main collection basin Pumps 1 and 2 was not completed in 2019. Pump 1 was removed from the site in 2018 and was returned in 2019. Pump 2 is still onsite and awaiting assessment. No additional work was done on these pumps in 2019.
- SCADA upgrade is needed for both plants but did not happen in 2019. The upgrade is on hold due to funding.

In 2019, this plant met or exceeded all permitted effluent limits. The average flow for 2019 was 11.15 mgd, slightly less than in 2018 (the average was 10.04 mgd). The monthly average effluent TSS and BOD concentrations in 2019 were approximately 13.0 and 9.0 mg/L, respectively.

SEWERAGE AND DRAINAGE PUMPING STATIONS

Site assessments of the drainage pump stations (DPS) and sanitary sewer lift stations (SLS) of New Orleans' east and west banks were conducted starting August 13, 2020, and concluded on December 10, 2020. A Black & Veatch representative accompanied the subconsultant on October 20, 2020, for a portion of the DPS inspections. The observation report and accompanying table detail the operational status of each SLS and DPS across the city of New Orleans. Pumps that were not turned on at the time of the observations were deemed either "in service" or "out of service" based on direction from Sewerage and Water Board supervisors or pump station operators. Upon inspection, all DPSs and SLSs were considered operational either from permanent pumps or temporary pumps. While all stations were operational, several stations were not at full capacity due to inoperable pumps or the use of temporary pumps.

Sewerage and Water Board has installed Emergency Discharge Connections (EDC) to older above-ground stations where they deemed necessary, unless it is not required because it is a gravity-flow station. No SLSs were replaced within the last year. There are no immediate plans for any stations to be replaced as well.

The most frequent issues at the SLSs were damaged valves, overly-worn shafts, leaking, motors burning out, etc. The most constant issue noticed at the SLSs on the west bank was worn-out shafts discovered at four separate stations. The Board is aware of the issues and has a plan of action to make necessary repairs. The repairs are currently held up due to a lack of funding and skilled workers.

Of the 82 SLSs across the city, 16 stations are not operating at full capacity due to a pump being out of service. Of the 25 DPSs across the city, 4 are not operating at full capacity at this time due to pumps being out of service. Most of these stations can operate with one pump or have a portable pump on-site to assist the station.

There does not appear to be any planned construction projects at any of the DPSs. Maintenance and repair of pumps, screens, and generators is an ongoing daily task. The issues at the pumps were relatively new and should be repaired fairly quickly. The required repairs did not appear to be critical at each station, 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. The Elaine station was completely without power and is running via a generator and a portable pump. The station has been without power since Hurricane Zeta impacted the area. The suction basins at many DPSs were over-run with vegetation. An effort should be made to remove any vegetation and debris from suction basins before it can be pulled in by the drainage pumps and cause any potential damage to equipment.

Due to COVID-19 and recent hurricanes that have hit southeast Louisiana, the Board personnel has not operated at 100 percent. All necessary maintenance still occurs, though it may be delayed somewhat while the machine shop is backed up with work. Some employees must travel in separate cars and/or take on additional assignments if someone is out with an illness. During the number of recent hurricanes, the drainage pump stations were operating efficiently, and they no reported outages or major flooding due to the pump 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, fabrication, and mechanical maintenance for all the Board facilities throughout the system, except for the 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. Brake presses, shears, and other specialized repair equipment are located in the welding and fabrication shop. Storing this equipment in the in-house machine, welding, and fabrication shops allows fabricating 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 Board system, which require additional staff to maintain it, though no additional increase in workload since the last inspection was noted. To maintain the equipment, it requires 2 diesel mechanics — between Turbine 6 and the 20 generators (drainage and underpass lift stations) in the system. Additionally, Maintenance assisted with inspecting and testing Turbine 5 in 2019 due to an inability to find a contractor to assist. This extra work has hampered the machine shop's ability to keep up with preventive maintenance and other repairs.

Finding knowledgeable, qualified staff to troubleshoot issues for complex equipment, such as Turbine 6, continues to be hard and results in dependence on vendors and suppliers. Additional work needs continued in 2019 due to additional equipment. It was noted that 100 generators were added to all the sewerage stations and are now functional, each requiring mechanical, electrical, and I&C support. These additional assets prevent in-house rehabilitation and preventative maintenance from being completed, which creates a large backlog of work for this department. It was noted in the 2018 report that when all the generators became functional, maintenance would not be able to provide the same level of service with current staff without overtime. Additional project delays, such as needed repairs to various issues with Drainage Pump Station 6 pumps, add to the maintenance backlog. One pump was restored in 2018, but another pump (G pump) is currently under repair due to a failed bearing. The work on this pump was originally contracted out in 2019, but the contractor could not conduct the repairs. This resulted in Board Facility Maintenance taking on additional work, which delayed the completion of repairs. As part of the work, maintenance and networks had to replace a 42-inch valve on Florida Avenue due to the contractor's inability to make the required repairs. The pump station was scheduled to be returned to service in late August 2019 but currently has two pumps out of service due to needed repairs.

In 2019, maintenance work on the G4 Basin began. The basin was offline and required 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. This cleanup was completed that year. In 2019, it was noted that a major storm blew the G4 basin monorack off the track. The scope of the work was not within a contractor's capabilities; the Facility Maintenance staff conducted this additional emergency work repair. Additionally, bearing replacement on the paddle mixers is also being addressed in G4 Basin and should be online by early 2021.

It was noted in the 2018 report that additional rehab work completed included bearing work on DPS 11 (screen gearbox failure) and is awaiting new screen placement. It was determined that space parts for the screens were not obtainable, so repairs to the gearboxes and bearings could not be done. No work was completed on the screens in 2019; Maintenance is waiting for Engineering to assist and write a contract to have the old screens removed and a new manufacturer selected.

In 2019, the department continued to assist Engineering with pulling together and reviewing contracts due to new hires in Engineering and improving the bidding process for projects. The last report noted that feedback from Maintenance was not being carried over into Engineering and construction projects. This situation continued to improve in 2019 due to new Engineering staff in the IT department. The IT workers

monitored the equipment and assisted in selecting common equipment to make spare parts more common at all facilities.

At the time of the interview, the department had 53 vacant positions and 90 filled positions. In 2019, most 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 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 2019. It was noted in 2019 that salary adjustments to the trades are needed to attract electrical and skilled labor. Currently, skilled trades in the Maintenance department like electricians work on various equipment such as high voltage, switch gears, generators, EMDs, and other electrical systems. In the outside market, this type of trade would be troubleshooting only one type of maintenance, such as generators. In order to keep this diversity of skills, adequate pay for this experience is required to retain them.

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). In 2019, two of these employees went on sick leave, and the head of the welding shop works part-time. People were hired and are positioned for succession, especially in the instrument shop, to address this situation. 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, and there is no staff available to backfill these field positions

It was noted that overtime is necessary to compensate for the limited workforce. Each department's overtime cannot exceed 750 hours, or it must request a waiver. In 2019, the department exceeded its overtime allotment, but only two or three staff members required additional overhead and was low compared to other departments.

During last year's visit, the department noted that it was facing a lack of qualified personnel to supervise or oversee subcontractors adequately. During 2018 and into 2019, it was noted that that situation 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 would be eligible to retire within 5 years, with 3 retirements in 2020. Thirteen positions (mostly high-level senior supervisors in the machine shop) are in DROP and could leave in the next five years. It was noted that Maintenance stopped trying to rehire retired employees due to a lack of interest from those retired staff members to come back to work.

Because of the lack of experienced people, training of lower-level staff is very limited due to lack of trained staff and is done on the job. The department head noted that 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 because there was a lack of qualified entry-level candidates. The Board still tries to hire from the local community college but has found that most students do not receive training or have the capacity to become full-time Board employees. It was noted that in 2019, 20 trainee students (limited electrical and mechanical experience) were assigned to the Maintenance department without the department's input. It was noted that, currently, there are not enough experienced people to provide the oversight needed to train less experienced trainees. Out of 20 trainees, 10 were placed in the electrical shop, and only 3 showed real promise.

It was noted that Maintenance had sufficient equipment, except for vehicles, to maintain the system and do repairs. In 2019, the department purchased a new balancing machine. It was noted that getting enough functional vehicles continues to be an issue due to a lack of funding. Lack of vehicles has caused some coordination issues with maintaining assets.

In the 2018 report, Operations and other departments had improved at writing their work orders and understanding the importance of documentation. Maintenance mentioned no upgrades to the current work order system were done in 2018, though it was very needed, and no software was purchased in 2019. Having the new software accessible on laptops or station computers would help make sure work orders are closed out and documented correctly. Lastly, it was noted in the 2018 report that 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 purchase orders, which has caused delays in repairing critical equipment. This requires the management of more contracts, which the department does not have current staff to do. It was also noted that not enough of a grace period is given between starting new policies. In 2019, purchasing policies became stricter after the retirement of purchasing staff. For example, it was noted that if the repair cost was at or above \$30,000, it had to go out for professional services in 2019. This requires having to write a contract. By the time a contract is written, bid, and awarded, it could be a minimum of three months before work can begin. To bypass those requirements, the deputy director has to declare an emergency to do the work. Due to those restrictions, it was noted that some repairs and work conducted by Maintenance have been delayed.

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 Board facilities and coordinate with other agencies for the design and construction activities impacting Board-maintained facilities. At the time of the inspections, the department was managing 339 project contracts for FEMA and capital improvement projects.

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

- The 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 the same in 2019.
- The Sycamore filter has recently had two emergency contracts to repair the offline filters (5 Phase Project). Rehab will be completed within the next 5 to 10 years. The Phase 3 design was completed in 2019. Additional phases (3-5) are dependent on funding.
- Chemical feed storage improvements to add additional chemical storage at the Carrollton WPP are in the 95 percent design phase; however, this project was on hold at the time of inspections due to a lack of funding. This project is scheduled to start in 2021.
- The filter backwash pump facility was under construction in 2018 and was placed into service 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 met substantial completion in 2019 and was completed in 2020.
- The water hammer mitigation program includes installing two new elevated tanks at the Carrollton WPP. Phase 1 — tank installation — was completed in 2019. Phase 2 includes major rehab to the

Claiborne pumping system, which was bid in 2019 with construction in 2020. Phase 3 is scheduled to start in 2022.

- 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 was rehabilitated in 2019 back in line at the time of the inspections. Clarifier 4 rehab is scheduled to start by early 2021.
- Two major uptown roadway drainage projects were ongoing at the time of the inspections: Jefferson Ave. Phase 1 project and Louisiana Ave project. Both projects were ongoing during 2018 and were finished 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 2019. This work will continue until 2023.
- Flood mitigation contracts for nine sewage pump stations were awarded and the Engineering department is supervising these contracts. Sewerage Pump Station 8, which started construction in 2017, was completed in 2019.
- Throughout the Board facilities, 10 major underground 25-cycle electrical feeders were replaced. This project was completed in 2019. This project was the first design-build project for the Board.
- The Old River Intake Station rehabilitation project remained in construction during 2019 because of delays related to high river water levels.
- The Florida Ave. Phase 4 project was still in construction in 2018, with a scheduled completion date in 2022. Phases 2 and 3 also began in 2018 and were completed in 2019.
- The Board plans to add a sludge dryer, including a new air emission system, to the East Bank Plant. Construction started in late 2019 and was ongoing in 2020.
- Phase 2 of electrical improvements at the East Bank plant began in 2018 and finished 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 complete, and the project is scheduled to go out to bid by early 2021.
- A Turbine 5 emergency contract was issued to conduct emergency repairs on the Turbine 5 to bring it back to operability after the explosion.

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 a lack of funding.
- A new filter gallery addition at the Carrollton WPP will be designed. The Board 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 Board'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. 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 withstand a higher wind rating. This project is still on hold due to a lack of funding.

The FEMA-funded water main replacement and emergency sewer system assessment requires GIS to 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 with PEs (civil service requirement) due to upcoming retirements to manage electrical contracts and review electrical design work. This situation continued in 2019. The department hired a new electrical engineering intern in 2018, but they left in 2019. Due to the pay scale, it is harder to attract senior-level people. Hiring out of college is difficult since a Louisiana E.I.T license is required to get hired at the desired pay scale. During the visit, it was noted that staffing has improved, and the department has been able to hire more senior-level civil (half time) and mechanical engineering managers (full time) to assist in developing their younger staff. The hires were retired from the private industry. Lastly, the department still needs a Department Head of Civil Engineering and more experienced staff. The engineering department director went on military leave, and the department superintendent resigned in 2019. It was also noted that the Chief of Operations is up for retirement.

NETWORKS

The Networks department maintains the sanitary sewer system and the potable water distribution system. FEMA continues to fund the capital replacement of portions of the water distribution network in response to damage associated with Hurricane Katrina.

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 approximately 35 to 45 people 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. In late 2018, Networks shifted from using contractors to do routine activities, such as repairs and general maintenance, to in-house staff. However, it still utilizes contractors to assist with larger replacement work. It was noted that larger valve replacements, valve repair, and large breaks (deep work) are conducted by contractors. From late 2018 and 2019, it was noted that Networks' overall backlog was reduced in half using in house staff. In 2019, Zones staff continued to step up and increase productivity to reduce backlog and remain on top of normal work.

According to department personnel, the biggest challenge is keeping up with aging infrastructure in the distribution and collection systems and lack of equipment to do repairs and proactive maintenance (including backhoes, dump trucks, and rigs). It was stated that there is a lack of funds at the current time to purchase new equipment. The department noted that maintaining the same level of service was a concern if this situation did not change soon. This situation continued to worsen in 2019. It was noted that

the largest barrier to the department is a lack of access to equipment to make repairs and maintain systems. Due to this situation, equipment has aged and is not being replaced, creating a heavy demand on the equipment over time. This situation also results in inefficient working conditions with personnel (i.e., cannot work simultaneously in different areas of the system due to lack of equipment and vehicles.) This lack of equipment adds to the department's inability to keep up with the aging infrastructure in the system. It was also noted that the procurement process has also become more difficult. 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 workload without impacting a larger portion of the CBD. This same process continued in 2019.

The Board has evaluated the piping system to detect leaks, and this effort is still ongoing. 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. In 2019, multiple segments of water transmission mains were prioritized for lining, but budgeting limitations prevent it from being done. At this time, the focus is still on maintaining large diameter valves for command and control of the distribution system.

Emergency response times in 2018 were also improved, and improvement continued in 2019. Currently, the average response time for emergency inspectors to get on-site is less than one hour (compared to three-four hours previously). The number of complaints received by the Board has also gone down, which in turn shows improved customer satisfaction.

The specialized set of knowledge and skills required by the department necessitates a significant investment in on-the-job training and formal instruction in various subjects, such as safe handling of materials containing asbestos, safe excavation and shoring, confined space entry, etc. The internal training program taken on by senior staff has allowed less experienced staff to receive training to pass all four levels of certification exams to obtain licenses. The department currently has over 50 Class IV Collection/Distribution licenses. This program is a great supplement to departmental test preparation and helps ensure its staff obtains sufficient operator licenses to remain compliant. As stated in previous reports, pay is still a factor in attracting new staff to Networks. In 2019, no support for pay raises or approved incentives programs were noted.

Minor changes to Engineering staff occurred in 2019. It was noted in the 2017 and 2018 reports 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 2019. In 2019, it was noted that the department needs to hire more senior-level professionals and that the pay increases did not attract any candidates. In 2019, the department hired several Engineering interns to do many job functions of the department. This approach has assisted the department with Engineering needs despite lack of experience. It was noted that most managers will be able to retire in five years. The director of Networks has advocated for succession planning for his position and is working to create a new position to assist with training less experienced staff and maintain technical capabilities.

It was noted that Networks did lose three Zone manager positions in 2018 and could not hire replacements for those key staff positions. In 2019, two of these positions were still vacant with no good candidate options. This inability to hire replacements was attributed to not having any qualified candidates in the register due to requirements by civil service. 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 cannot 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 promotions and hiring was still cited as an issue, creating a gap in experience within the department. The department noted that it still uses overtime when needed but has stayed within the allotted time or requested a waiver when needed.

Approximately 1,216 water mains were repaired in 2018. Approximately 1,646 sewer repairs were completed in 2019. Identifying leaks is an ongoing process, and the Board 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. 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 with the New Orleans Fire Department to monitor and maintain all fire hydrants located in Board's service area. The fire department tests each fire hydrant, and a report is generated and sent to Networks. Based on the testing results, Networks conducts the required repairs and replacements to ensure proper fire protection in the system. It was noted that in 2019 the Board received a level 1 rating from the NFPLA.

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 2019, 6,168 hydrants were inspected. Networks is currently 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 7,039 paving project work orders in 2019, both in-house and with contractors. This department has several contracts to assist with the 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 Board 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 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 the repair of existing water distribution and sewer pipelines
7. Support Services Equipment Maintenance Information System (EMIS) Division:
 - a. Maintains the Cyndrus software that tracks 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 bodywork on the entire fleet

The Board owns approximately 954 rolling stock pieces, including trucks, backhoes, and sewer cleaning equipment. The available equipment is being assigned to the various divisions based on the needs of the departments.

A new Site Relocation building (Garage III/new body shop) was constructed in 2014 to house personnel until the garage renovations were completed. In 2019, Support Services Administrative staff and EMIS staff moved its offices to the second floor of Garage II when the fiber optics for the space were complete. Staff and materials from Garage II were stored in the Site Relocation building. Ultimately, the Site Relocation building will house the body repair shop, which is now a separate entity from Garage II due to organizational restructuring. The old body shop is currently being converted into a tire shop.

FEMA continues to reimburse equipment and tools for each garage lost due to hurricanes in addition to replacing some of the buildings. One of the buildings set to be replaced is the Annex building, 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. This situation was still the case in 2019. Projects being completed or conducted within Support Services include the following:

- Take-home vehicles were reduced to 42 as of 2019.

- The contractor assigned to mitigate problematic vegetation (lilies) in the canal systems since 2015 is no longer affiliated with the Board. This contract includes clearing vegetation from the canals and pest control. This function went out to bid and the contract was awarded in 2019.
- A major change to the janitorial services contract occurred in 2016 to include all Board facilities. This service went out to bid in 2019, and a new service provider was selected. It was noted that performance issues were indicated with the new service, and Support Services is working through that with the vendor.
- Promoting staff into current positions due to retirements was ongoing at the time of the inspections in 2018 and 2019 and is still ongoing. If internal candidates are not promoted, the department will look at outside options. In 2019, the main building superintendent retired. Additionally, an analyst was added to the team, and staff stepped up to fill the gaps.
- Additional staffing changes 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. During the interview with Support Services, 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 mechanics and laborers. It was noted that certain departments are maintaining staffing levels but attracting mechanics from the outside with qualified skills is hard due to pay scale. This is the same situation for finding laborers since the position only pays 10-11 dollars an hour.
- The department noted that most of the staff is approaching retirement age, including the department director. As a result, it will be short-staffed. Many senior-level staff, including several successors, are in DROP or retiring within five years. The department continues to 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 will retire in 2020, but succession planning has been a focus for the department, and a successor was identified. The department is currently focused on filling vacancies and getting promotions awarded through Human Resources.
- Additionally, the department is 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 was brought on board under Support Services in 2019. This staff person acts as a liaison between Networks and Support Services to assist with equipment needs.
- 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 2019 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 2019 and are still in progress. This was noted to be a continuous process since the Board, and civil service policy changes are in flux. This effort has been put on the back burner until some of the policies are finalized.

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. In 2019, the department worked on getting a new contract in place so once funds are available, they can proceed with the repairs.
- Due to funding, a new whole-house building generator for the St. Joseph Street Administration building is on hold. This hold was still in place in 2019.
- 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 continued in 2019. One of the lots is on hold due to COVID-19. The Board legal department will sign an agreement to use the land for parking. It has been cleaned, fenced, and is on hold for paving.
- Support Services' phone system upgrade started in 2018 and was completed in 2019.
- Modular units that act as temporary offices will be moved off-site once Garage II is done. Those units were used during 2018 and were removed from the site in 2019.
- Support Services now reports to the general superintendent. It was noted that in 2018 there was a leadership change and the department of logistics was dismantled. The department noted the leadership shift was helpful and has provided stability. The current leadership structure remained in place in 2019.
- It was noted that the Engineering department and Support Services were 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 is GIS-based and was rolled out to staff in 2019. The rollout went well due to internal training. Currently, the crew's supervisor uses it, and the hope is to roll it out to all staff once training and confidence in its use are gained.
- The department noted that they could not purchase much rolling stock in 2019 despite the need for vehicles due to a lack of funds. Despite the needs from Maintenance and Networks, Support Services was only able to purchase one additional vehicle in 2019 due to funding.
- It was noted that the department received an award in 2019 from the regional planning commission due to their addition and use of six hybrid (gas/electric) vehicles to the fleet.

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, stormwater management, solid waste, and underground fuel storage tanks.
- Community outreach programs that focus on environmental education in water, wastewater, and drainage.

On January 22, 2019, a public hearing was held in New Orleans, LA, to hear comments on the East Bank Draft Water Discharge Permit and Environmental Assessment Statement. The new permit for the East Bank Plant was issued on August 20, 2020 and became effective September 1, 2020.

On September 27, 2019, the East Bank Sewage Treatment Plant exceeded the daily maximum limit (0.5 mg/l) for Total Residual Chlorine (TRC). The TRC result was 0.6 mg/l. Operational changes, including revision of the TRC Standard Operating Procedure (SOP) and in-plant monitoring of TRC concentration, have been implemented to meet the effluent discharge limit for TRC.

On February 28, 2019, the Board responded to Warning Letter WE-K-18-00989 concerning a raw sewerage overflow at 6718 Bellaire Drive caused by a private plumbing company. The private plumbing company was connecting to a sewer house connection for another property which caused an unauthorized discharge. The private plumbing problem has been resolved.

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 was not changed in 2017. Work orders are now being generated, so this task is performed annually. Due to this interpretation of the regulation, the deviations were reported on the 2018 Annual Compliance Report filed in 2019. A corrected report has been filed. A few deviations were noted in 2019, including a gas meter that went offline. Gas readings are required daily. On May 3, 2019, the Board responded to the warning letter.

On July 15, 2019, the Board filed a permit renewal application for the facility's Title V Air Permit. The current permit expired on January 23, 2020 and remains in effect until the new permit is issued. As of the timing of the inspections, a final permit has not been issued. LDEQ is in the process of renewing the permit.

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. The new permit was issued on August 29, 2019 and became effective on October 1, 2019.

On September 13, 2019, the West Bank Sewage Treatment Plant exceeded the daily maximum limit for TRC, which was 1.4 mg/l. The TRC result was 1.5 mg/l. Operational changes, including revision of the TRC SOP and in-plant monitoring of TRC concentration have been implemented to meet the effluent discharge limit for TRC.

The components of the pretreatment program include monitoring the discharge of the East and West Bank Sewage Treatment Plants and other significant industrial users during the year. No additional users were permitted in 2019. 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: \$242,601.40
- Sanitary sewerage discharged to the wastewater plant from special events: \$47,190.93

- Septage disposal program: \$158,085.00 (total)
- Board's share (50 percent of the total): \$79,042.50
- Food service establishments billed for permit fees for the FOG program: \$90,071.00
- Fines/penalties from commercial users for Code violations: \$79,776.00
- The total for all the above revenue sources: \$538,681.83

The Power Plant located at the Main Water Purification Plant uses diesel and natural gas-powered units to provide power to DPSs and other Board facilities. The Power Plant must meet air quality regulations found in the facility's Title V Air Permit. Emergency back-up generators are also located at DPSs and other Board facilities. Emergency engine permits permit these units. The permit renewal of the power plant was submitted in 2016. LDEQ reviewed the application in 2017 and issued the permit in February 2018. Board utilizes compliance software for air quality programs at the Carrollton WPP. In 2019, Turbine 5 exploded, and a permit modification was required to use additional turbines to meet power demands.

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, and Turbine 5. The natural gas totalizer on Turbine 5, used to record natural gas usage for the unit, was broken. Turbine 5 had to be taken out of service to repair or replace the totalizer. However, the operating hours and the permitted firing rate for Turbine 5 were used to calculate monthly emissions for Turbine 5, as required by Specific Requirement No. 93. Taking Turbine 5 out of service to repair was difficult to schedule due to the unit being used to pump potable water throughout the east bank of Orleans Parish. Turbine 5 is also used to operate drainage pumps in Orleans Parish. The Boiler 1 natural gas meter was out of service from July 29, 2018, to January 8, 2019. The Boiler 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 5 was completed on December 31, 2018. The repair of the natural gas totalizer for Boilers 1 and 3 was 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 months, beginning January 1, 2018, to December 31, 2018, was 0.22 tons. With the replacement of Turbine 5, gas meter emissions will now 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.

These deficiencies were noted during an inspection of the Carrollton Water Plant on March 29, 2019. The Board received Warning Letter AE-L-19-00536 on June 25, 2019. The Board submitted a response on November 8, 2019.

The Municipal Separate Storm Sewer System (MS4) Permit for the Orleans Parish is managed by the Board. The Board, 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. The final permit was issued on September 29, 2020, and became effective on November 1, 2020.

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, must 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 2019 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 ensure their staff consistently clean the traps properly. Training was also provided for the inspection of grease traps, which must be submitted with a FOG permit application. Certified technicians from grease trap cleaning companies or licensed plumbers can inspect grease traps/interceptors. There were 546 FOG permits issued in 2019 (137 new permits and 409 permit renewals). Department staff use database software to manage the permitting process and track non-compliance, permit applications, and grease trap pumping records. Scantron of the manifest started in 2019.

In 2019, the Board continued with its green infrastructure pilot program. The requirement for green infrastructure projects ended in 2018, but funds were still available to award for projects in 2019. These projects focus on community outreach and education. The Board continued to administer the green infrastructure project throughout 2019. Program accomplishments for 2019 included:

- 24 school events; some schools visited multiple times
- 3,525 students reached (kindergarten to graduate students)
- 27 teachers trained on water management and water quality
- 12 MS4/Orleans Parish Water Quality Task Force meetings
- 7 trainings facilitated by Board staff
- 15 professional trainings attended
- 2 tours of Board facilities and sites
- 142 drains cleaned and/or marked
- 19,000 community members reached directly by outreach activities and events
- 22 community-wide events
- 20 Neighborhood or Civic Association events
- 3 grant applications submitted
- 110 total events during the reporting period, reaching an estimated 19,123 individuals

The Environmental Affairs department continues to hire more staff for the tasks necessary to comply with all the rules and regulations that apply to the Board. Currently, the Pretreatment Section is located at the Central Yard and the Stormwater Section is located at the Carrollton Water Plant. In 2019, the Environmental Affairs department coordinated asbestos and mold abatement projects and responded to chemical releases.

The Board complies with the EPA Region 6 and Department of Justice consent decree, which requires reducing 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 Board will meet the preventive maintenance requirements of the consent decree.

The Board 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 2019.

STATUS OF CONSENT DECREE FOR SEWERAGE SYSTEM

The Board complies with the EPA Region 6 and Department of Justice consent decree, which requires reducing 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 Board will meet the preventive maintenance requirements of the consent decree.

The Board 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 2019.

SUMMARY OF FINDINGS

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

- Due to retirement, the management team is losing individuals with significant water, sewerage, and drainage experience. This experience is occurring both internally at the Board and 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. This situation did not improve in 2019.
- Staffing remains a key item of concern for the Board. Like many water and sewer utilities across the United States, the Board departments are faced with a significant number of pending retirements. Approximately 17.4 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 the Board'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 the Board. 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, the Facilities Maintenance department, and the Networks department. The Board needs to address these vacancies as soon as possible to ensure effective operational performance, maintenance performance, and administrative oversight.
- Construction of the two MG water towers — as part of the water hammer project — started in late 2016, and contractors continued to work on both towers in 2018. Both towers were completed in 2019 and brought online.
- In December 2019, an explosion occurred in Turbine 5, rendering that unit inoperable. Evaluation of options to repair and/or replace that unit were underway in 2020.
- The pumping and power department is continuously trying to reduce overtime by focusing on training operators and using overtime to bridge the knowledge gap. Retirement was mentioned as a continuous staffing problem in this department, especially at higher pay levels such as turbine and boiler operations

positions. Approximately nine senior operators or supervisors are set to retire in five years or less. Additionally, it was also noted that the Chief of Operations retired in September 2020, and a successor has not yet been identified. Additional staff need to be hired and trained at all levels of the organization due to existing vacancies and those created by retirement.

- The Operations department was made aware of a cross-connection to the cooling systems for Turbines 1 and 3 and the Carrollton WPP clearwell, and it was noted in the 2018 report. The department plans to retire Turbines 1 and 3 as soon as possible to address this issue. Steam Pumps A and B also contribute to the cross-connection. The recent conversion of the drive to electricity on Pump A has eliminated that contribution to the cross-connection. Pump B will also be converted to an electric drive, and that work was scheduled for 2020.
- Operations noted that no retirements occurred in 2019; however, the department has continued to hire more entry-level staff. The department would like to hire experienced operators, ideally with certifications, but has difficulty due to the residency requirements and pay rates. Staff feels that there is no incentive to become certified, and there is a lack of certified operators state-wide. Additionally, no management staff was hired in 2019. It was noted in the 2018 report that the Chief of Operations retires in September 2020, though a successor is not currently in place to take over.
- It was noted during the site visit that Central Control still did not have enough trained and experienced staff. This staffing situation was cited as the Center's largest issue. This issue was still a concern in 2019.
- The Board has a clear understanding of the drainage, water, and sewage facilities existing conditions and is aware of the immediate needs within each division and area; however, funding is needed for the Board to address these issues. This was still the case at the time of the visit in 2019. Many CIP projects are on hold due to funding, such as the new chemical building at the Carrollton WPP and other sewerage and WWP improvements.
- The Board continued and completed emergency filter repairs in 2019 that included four additional filters in Sycamore galleries (the contract is for eight total filters). The remainder of the work on Claiborne filter galleries will be completed when additional funding is available.
- Aging infrastructure and lack of equipment, especially vehicles, needed to make repairs were noted as Networks' main concern in 2019. It was noted that a lack of needed equipment, especially vehicles, is causing additional stress on existing equipment, reducing its overall reliability. Networks noted that in 2019 the sewer and water board received a level 1 rating for fire service from the NFPLA.
- It was noted that the most frequent issues at the SLSs were damaged valves, overly-worn shafts, leaking, motors burning out, etc. The most constant issue noticed at the SLSs on the west bank was worn-out shafts discovered at four separate stations. The Board is aware of the issues and has a plan to make necessary repairs. The repairs are currently held up by a lack of funding and skilled workers. Of the 82 SLSs across the city, 16 stations are not operating at full capacity due to a pump being out of service. Most of these stations can operate with one pump or have a portable pump on-site to assist the station. Of the 25 DPSs across the city, only four are not currently operating at full capacity due to pumps being out of service.

It was noted in September 2019 that the East Bank Sewage Wastewater Treatment Plant exceeded the daily maximum limit for TRC, which is 0.5 mg/l. Additionally, in September 2019, the West Bank Sewage Treatment Plant exceeded the daily maximum limit for TRC, which is 1.4 mg/l. Operational changes, including a revision of the TRC SOP and in-plant monitoring of TRC concentrations, have been implemented to meet the effluent discharge limit for TRC.

Water System

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 bondholders. 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 2019.

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 subordinated debt that are obligations payable from the net revenues of the 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

According to the resolution, the General Resolution gives the Board the power to issue bonds and pledge the revenues. 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 a regular basis. 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 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.

2019 WATER SYSTEM OPERATIONS

Funds for the operation, maintenance, and debt service requirements of the Water System are derived from water sales, 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 2019 Water System operations are discussed in the following paragraphs.

Operating Revenues

A summary of historical treated water billings and other Water System revenue is presented in Table 2 for the period 2015 through 2019. The historical revenues shown in Table 2 were developed from detailed records provided by Board Staff. Operating revenues are derived from charges for the sale of water and delinquent fees. Sales of water in 2019 were \$110,437,917, which, when compared with \$89,281,924 for 2018, shows an increase of approximately 24 percent. Delinquent fee revenues were \$2,901,296 in 2019.

Table 2 - Statement of Historical Revenue

Line No.	Description	Historical				
		2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
Operating Revenue						
1	Sales of Water	76,719,113	82,060,525	88,626,216	89,281,924	110,437,917
2	Delinquent Fees (a)	1,288,824	1,098,415	1,838,594	1,005,157	2,901,296
3	Revenue Sharing	258,721	251,002	264,074	264,567	264,768
4	Plumbing Inspection & Licensing Fees	305,384	319,991	297,115	319,127	293,774
5	Other Revenues	3,416,155	2,506,704	1,707,271	1,912,736	3,011,749
6	Total Operating Revenue	81,988,197	86,236,637	92,733,270	92,783,511	116,909,504
Nonoperating Revenue						
7	Interest Income	966,949	2,104,903	1,923,464	422,446	729,371
8	Other Non-Operating Revenue	-	-	-	-	-
9	FEMA Reimbursement	-	-	-	-	-
10	Fair Share Revenue	-	-	-	-	6,516,802
11	Federal Non-Capital Grants	2,405	24,738	800	78,769	-
12	Total Nonoperating Revenue	969,354	2,129,641	1,924,264	501,215	7,246,173
13	Total Revenue	82,957,551	88,366,278	94,657,534	93,284,726	124,155,678

(a) Includes Sewer Allowance

Non-Operating Revenues

Also shown in Table 2, non-operating revenue of the Water System includes interest earned on invested funds and other income from miscellaneous sources. During 2019, non-operating revenue included \$729,371 of interest earned from the investment of available funds in the Water System Fund and the Water Revenue Bond Account and \$10,087,093 from other sources.

Operation and Maintenance Expenses

Table 3 presents a summary of historical operation and maintenance expenses. Expenditures in 2019 increased about 3.8 percent from 2018 expenditures.

Table 3 - Historical Operation and Maintenance Expense

Line No.	Description (a)	Historical				
		2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
1	Power and Pumping	2,987,349	2,833,007	3,353,409	2,530,094	2,605,184
2	Treatment	7,866,310	7,450,742	7,298,509	9,294,004	9,639,792
3	Transmission and Distribution	20,459,955	21,581,831	20,616,130	24,912,011	19,644,181
4	Customer Accounts	1,900,893	2,071,364	2,226,491	2,607,756	2,703,346
5	Customer Service	1,915,020	2,064,751	2,049,950	2,209,330	2,612,778
6	Administration and General	6,852,772	8,238,986	17,437,045	17,812,387	25,445,269
7	Payroll Related	21,038,005	18,842,941	15,902,266	18,691,737	20,223,874
8	Maintenance of General Plant	16,177,610	14,379,697	16,301,541	15,533,798	14,069,152
9	Provision for Claims	813,979	1,847,021	2,844,668	484,441	724,520
10	Total Operating Expenses	80,011,893	79,310,340	88,030,009	94,075,558	97,668,096

(a) Excludes Depreciation.

Capital Budget and Expenditures

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

The Water System's 2019 capital expenditures totaled \$43,945,787. The Water System's capital improvement expenditures for the year are shown in Table 4.

Table 4 - 2019 Capital Expenditures

C.P. No.	Capital Expenditure	2019
		\$
Waterworks		
110	Normal Extension & Replacement	4,271,270
112	Modifications to Oak St. Raw Water Intake Station	901,938
122	Sycamore and Claiborne Filter Rehabilitation	1,678,871
156	Advanced Water Treatment (Carrollton)	824,288
157	Advanced Water Treatment (Algiers)	4,453,185
159	Water Plant Security Improvements	216,400
175	Water Hurricane Recovery Bonds	26,642,809
180	FEMA Review of Change Orders - Water	(25,494,834)
	Total Waterworks	13,493,926
Water Distribution		
214	Normal Extension & Replacement	242,955
239	Mains DPW Contracts	143,551
	Total Water Distribution	386,506
Power Projects and General Budget		
600	Water Share of Power Projects	15,163,133
700	Water Reserve for Emergencies	5,839,119
800	Water Share of General Budget Items	9,063,103
	Total Power Projects and General Budget	30,065,354
	Total Water Department	43,945,787

Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Water System during 2019:

Total Revenues	\$124,155,678
Operation and Maintenance Expense ^(a)	-97,668,096
Debt Service Payments	-13,394,550
Revenue Primarily Available for Capital Expenditures ^a	\$13,093,082

^a Excludes depreciation.

Sewerage System

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 General Sewerage Service Revenue Bond Resolution provisions 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 2019.

2019 SEWERAGE SYSTEM OPERATIONS

Funds for the operation, maintenance, and debt service requirements of the Sewerage System 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 2019 Sewerage System operations is discussed in the following paragraphs.

Operating Revenues

A summary of historical sewer billings and other Sewerage System revenue is presented in Table 5 for the period 2015 through 2019. The historical revenues shown in Table 5 were developed from detailed records provided by Board staff. Operating revenues are derived from sewerage service charge revenue, including excess strength charges and delinquent fees. Sewerage service charge revenues total \$113,363,591 in 2018 and increased to \$140,088,103 in 2019. Delinquent fee revenues were \$3,598,034 in 2019, compared to \$1,250,566 in 2018.

Table 5 - Statement of Historical Revenue

Line No.	Description	Historical				
		2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
Operating Revenue						
1	Sewerage Service Charges	94,775,797	104,060,458	108,810,410	113,363,591	140,088,103
2	Delinquent Fees (a)	861,169	734,725	2,253,310	1,250,566	3,598,034
3	Revenue Sharing	322,674	313,048	329,350	329,965	330,217
4	Plumbing Inspection & License Fees	305,384	318,511	291,215	329,205	288,283
5	Other Revenues	560,157	505,847	528,094	834,260	1,051,920
6	Total Operating Revenue	96,825,180	105,932,588	112,212,378	116,107,587	145,356,556
Nonoperating Revenue						
7	Interest Income	1,341,518	2,308,629	2,109,401	342,098	653,894
8	Other Non-Operating Revenue	-	-	-	-	-
9	FEMA Reimbursement	-	-	-	-	-
10	Fair Share Revenue	-	-	-	-	9,300,681
11	Federal Non-Capital Grants	-	-	45	45	48,716
12	Total Nonoperating Revenue	1,341,518	2,308,629	2,109,446	342,143	10,003,291
13	Total Revenue	98,166,698	108,241,217	114,321,824	116,449,730	155,359,847

(a) Includes Sewer Allowance

Non-Operating Revenues

Also shown in Table 5, non-operating revenue of the Sewerage System includes interest earned on the invested funds and other income from miscellaneous sources. During 2019, non-operating revenue included \$653,894 of interest earned from the investment of available funds in the Sewerage System Fund and the Sewerage Revenue Bond Account and \$11,019,817 from other sources.

Operation and Maintenance Expenses

Table 6 presents a summary of historical operation and maintenance expenses. Expenditures in 2019 decreased about 0.03 percent from 2018 expenditures. Historical operation and maintenance expenses shown in Table 6 do not include Depreciation as recorded in the Comprehensive Annual Financial Report.

Table 6 - Historical Operation and Maintenance Expense

Line No.	Description (a)	2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
1	Power and Pumping	2,773,821	3,033,447	3,455,301	5,425,556	4,944,123
2	Treatment	10,765,096	12,739,603	18,238,266	13,664,971	10,048,430
3	Transmission and Distribution	14,339,390	14,763,699	15,028,132	17,666,548	14,368,415
4	Customer Accounts	1,900,889	2,071,360	2,226,486	2,607,781	2,703,342
5	Customer Service	1,933,616	2,082,863	2,068,365	2,209,324	2,612,773
6	Administration and General	6,704,994	7,710,989	13,862,181	25,328,651	30,907,896
7	Payroll Related	17,245,577	13,998,733	12,642,752	18,604,235	20,123,106
8	Maintenance of General Plant	2,983,385	2,722,422	2,599,670	8,061,802	8,050,655
9	Provision for Claims	392,928	2,380,775	1,318,735	1,969,339	1,461,520
10	Total Operating Expenses	59,039,696	61,503,891	71,439,888	95,538,207	95,220,260

(a) Excludes Depreciation.

Capital Budget and Expenditures

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

Table 7 - 2019 Capital Expenditures

C.P. No.	Capital Expenditure	2019
		\$
	Sewerage Systems	
310	Ext & Replace - Gravity Mains EPA Consent Decree	2,288,501
317	Ext & Replace - Gravity Mains EPA Consent Decree	4,424,198
318	Rehabilitation Gravity Sewer System	45,609
326	Ext. Rep to plumbing Stations EPA Consent Decree	401,305
339	Main in Streets Dept. Contracts	73,633
340	Sewerage Hurricane Recovery Bonds (FEMA)	1,709,544
348	Normal Extensions & Replacements	5,474,199
368	Wetland Assimilation	(177,511)
375	Sewerage Hurricane Recovery Bonds	20,801,278
380	FEMA Review of Change Orders-Sewer	(24,869,730)
	Total Sewerage System	10,171,025
	Power Projects and General Budget	
600	Sewerage Share of Power Projects	6,128,891
800	Sewerage Share of General Budget Items	9,371,624
	Total Power Projects and General Budget	15,500,516
	Total Sewerage Department	25,671,540

The Sewerage System's 2019 capital expenditures totaled \$25,671,540. The Sewerage System's capital improvement expenditures for the year are shown in Table 7.

Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Sewerage System during 2019:

Total Revenues	\$ 155,359,847
Operation and Maintenance Expense	-95,220,260
Debt Service Payments	- 21,713,963
Revenue Primarily Available for Capital Expenditures ^a	38,425,625

^a Excludes depreciation.

Drainage System

2019 DRAINAGE SYSTEM OPERATIONS

The Sewerage and Water Board has provided for the drainage needs of New Orleans since 1903. 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. 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 wetlands on the West Bank.

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 throughout the City. Revenues and expenditures related to the 2019 operations of the Drainage System are discussed in the following paragraphs.

Revenues

Revenues available to the Drainage System 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 for the Drainage System capital improvements included interest income and other miscellaneous sources.

Ad valorem tax in 2019 reflects an increase of 2.3 percent over 2018. A summary of historical revenues received by source is shown in Table 8 for the period 2015 through 2019. The historical revenue shown in Table 8 was developed from detailed records provided by Board Staff.

Table 8 - Statement of Historical Revenue

Line No.	Description	Historical				
		2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
1	Two-mill Ad Valorem Tax	4,960	7,526	2,735	553	35
2	Three-mill Ad Valorem Tax	14,139,193	16,043,825	15,309,309	15,504,589	15,300,420
3	Six-mill Ad Valorem Tax	14,290,667	16,215,799	16,229,098	15,576,221	16,241,889
4	Nine-mill Ad Valorem Tax	21,421,102	23,762,398	23,881,671	23,570,261	24,345,982
5	Other Revenues	4,313,845	1,065,829	1,215,909	2,940,207	21,309,104
6	Interest Income	202,579	253,938	244,250	68,584	226,747
7	Total Revenue	54,372,346	57,349,315	56,882,973	57,660,416	77,424,177

Operation and Maintenance Expenses

Table 9 presents a summary of historical operation and maintenance expenses. Expenditures in 2019 decreased about 1.3% percent from 2018 expenditures. Historical operation and maintenance expenses shown in Table 9 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report.

Table 9 - Historical Operation and Maintenance Expense

Line No.	Description (a)	Historical				
		2015	2016	2017	2018	2019
		\$	\$	\$	\$	\$
1	Power and Pumping	7,378,085	7,642,762	29,743,813	23,918,812	12,463,709
2	Treatment	109,231	109,999	115,132	-	-
3	Transmission and Distribution	1,078,792	829,176	765,297	3,951,459	4,163,871
4	Customer Accounts	5,623	8,303	7,178	27,739	25,098
5	Customer Service	124,708	123,941	99,228	57,760	78,587
6	Administration and General	5,756,618	5,969,536	7,337,611	6,053,021	5,878,102
7	Maintenance of General Plant	14,782,884	11,149,205	9,581,304	12,120,609	13,491,336
8	Payroll Related	7,987,510	6,877,190	7,198,971	5,217,885	5,023,033
9	Provision for Claims	1,228,302	2,223,009	41,109,418	(9,656,464)	(116,680)
10	Total Operating Expenses	38,451,753	34,933,121	95,957,952	41,690,821	41,007,056

(a) Excludes Depreciation.

Capital Budget and Expenditures

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

The Drainage System capital improvement expenditures for 2019 totaled \$50,598,092. The Drainage System's capital improvement expenditures for the year are shown in Table 10.

Table 10 - 2019 Capital Expenditures

C.P No.	Description	2019
		\$
	Canals	
418	Normal Extension & Replacements	13,152
439	Major Drainage Participation in DPW Projects	122,678
466	Louisiana Avenue Canal (SELA)	9,052,407
471	SELA Program Management	2,473,296
478	S. Claiborne-Lowerline to Monticello Street	(792,878)
480	FEMA Review of Change Orders-Drainage	(14,597,250)
496	Gen De Gaulle Drainage Canal SELA	1,044,725
497	Florida Ave. Canal - DPS#19 to Peoples Ave. (SELA-B)	1,700,740
498-00	Dwyer Intake Canal(St. Charles Canal to Dwyer DPS)(SELA)	78,424
	Total Drainage Canals	(904,706)
	Pumping Station	
511	Normal Extension & Rep./Stations	5,838,890
535	DPS #6 Improvements	(56,770)
575	Drainage Hurricane Recovery Bonds	3,361,328
	Total Drainage Pumping Stations	9,143,448
	Power Projects and General Budget	
600	Drainage Share of Power Projects	23,985,071
800	Drainage Share of General Budget Items	4,155,976
	Total Power Projects and General Budget	28,141,047
	Total Drainage Department	36,379,788

Summary of Operations

The following tabulation shows a summary of receipts and expenditures of the Drainage System during 2019:

Total Revenues	\$ 77,424,177
Operation and Maintenance Expense	- 41,007,056
Debt Service Payments	-2,028,500
Revenue Primarily Available for Capital Expenditures ^a	34,388,621

Appendix

Table 11 - Assessment of East Bank Sewage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS
1	8/18/20	Chickasaw	Chickasaw at Metropolitan	Two (2) pumps total; both operational.
2	8/18/20	K-Mart	Desire at Gentilly	Two (2) pumps total; one (1) in service: Pump 2 is out. Issue unknown, repair time unknown.
3	8/19/20	Station 23	4500 Mithra	Two (2) pumps total; both operational.
4	9/2/20	Station 17	4975 Spain at Selma	Two (2) pumps total; both operational: This is a gravity flow station and does not require an Emergency Discharge Connection (EDC).
5	9/2/20	Station 22	5705 Perlita	Two (2) pumps total; one (1) in service: Pump 2 has been out of service for a couple weeks for repair due to trash was discovered in the check valve. Repair time unknown.
6	12/10/20	Station 19	3730 Jumonville at Milton	Two (2) pumps total; both operational.
7	9/2/20	Station 21	6670 Memphis At Filmore	Two (2) pumps total; both operational.
8	9/2/20	Station 18	Vicksburg at Florida	Two (2) pumps total; both operational.
9	9/2/20	City Park	5701 Marconi Drive	Two (2) pumps total; one (1) in service: Pump 1 is out of service because the bearings need to be repaired or replaced. Pump has been out since February. Repair time unknown.
10	9/2/20	Station 20	328 37th Street	Two (2) pumps total; one (1) in service: Pump 2 has been out of service since last week. The 3-phase monitor is not functioning properly. Repair time unknown.
11	9/2/20	Station 4	5899 Fleur de Lis	Two (2) pumps total; both operational: Pump 1 has been out of service since last week. It was taken out of service because it was making a strange noise. Repair time unknown.
12	9/2/20	Lakewood South	Country Club Drive near Marconi	Two (2) pumps total; both operational: - No placard at this location. - This is a gravity flow station.
13	12/9/20	Station 6	242 S Solomon at Palmyra	Three (3) pumps total; all operational: No placard at this location.
14	12/9/20	Station 3	8720 Olive near Eagle	Two (2) pumps total; both operational: Pump 1 out of service since April while the impellor goes through repairs.

NO.	DATE	FACILITY NAME	LOCATION	STATUS
15	12/9/20	Station 1	7336 Cohn	Two (2) pumps total; both operational: - Pump 1 out of service due to a frozen water ring. Repair time is unknown. - No placard at this location.
16	12/9/20	Station 14	4000 Clara	Two (2) pumps total; both operational: No emergency discharge connection.
17	12/9/20	Station 5	3912 Erato St	Two (2) pumps total; both operational.
18	12/9/20	Station 15	2431 Palmyra near Rocheblave	Three (3) pumps; each operational: No placard at this location.
19	12/9/20	Station 8	Corner of N. Broad and Toulouse	Two (2) pumps total; both operational.
20	8/13/20	Station 9	2540 Annette at Law	Two (2) pumps total; both operational.
21	12/10/20	Station 16	3751 N Miro at Pauline	Two (2) pumps total; both operational
22	12/9/20	Station 24	5027 N Tonti at Forstall	Two (2) pumps total; both operational.
23	12/9/20	Station 25	2245 Charbonnet	Two (2) pumps total; both operational.
24	12/9/20	Station 26	2244 St Maurice at Tonti	Two (2) pumps total; one (1) in service: Pump 2 out of service. The motor has been recently repaired but the belt still needs to be replaced. Repair time unknown.
25	12/9/20	Station B	4725 St Claude Avenue	Two (2) pumps total; both operational.
26	12/9/20	Southern Scrap	Southern Scrap Rd	Two (2) pumps total; both operational.
27	12/9/20	France & Florida	Harbor Rd	Two (2) pumps total; both operational.
28	12/9/20	MECO	2701 France Road	Two (2) pumps total; both operational: No placard at this location.
29	8/18/20	American Marine	3855 France Road	Two (2) pumps total; both operational.
30	8/18/20	Victoria @ Gentilly	3620 Victoria	Two (2) pumps total; both operational: No placard at this location.
31	8/18/20	Dodt	8118 Chef Menteur Highway	Two (2) pumps total; both operational.
32	8/18/20	Plum & Orchard	7300 Chef Menteur Highway	Two (2) pumps total; both operational: No emergency discharge connection at station.
33	8/14/20	Wilson	7709 Wilson Avenue	Two (2) pumps total; both operational.
34	8/18/20	Crowder	5500 Block of Crowder	Two (2) pumps total; both operational.
35	8/18/20	Castle Manor	4950 Gawain at Dwyer	Two (2) pumps total; one (1) in service: Pump 2 is out of service while the check valve is being repaired. This pump has

NO.	DATE	FACILITY NAME	LOCATION	STATUS
				been out of service for a couple months and the repair time is unknown.
36	8/18/20	Cerise	5001 Cerise	Two (2) pumps total; both out of service: Portable pump currently in-use at this station. Pump 2 is having the belt repaired and there is also a crack in the wall at this station. Both being repaired by machinist on site at time of inspection. Repair time unknown.
37	8/18/20	Lakeland Terrace	5057 Warren Drive	Two (2) pumps total; both operational.
38	9/2/20	McCoy	McCoy at Gentilly	Two (2) pumps total; both operational: No emergency discharge connection at station.
39	9/2/20	Amid	6800 Almonaster Road	Two (2) pumps total; both operational.
40	8/18/20	Lake Forest	10451 Lake Forest Blvd	Two (2) pumps total; both operational.
41	8/18/20	Wright Road	Wright Road at Lake Forest	Two (2) pumps total; both operational: No emergency discharge connection at station.
42	8/18/20	Bullard	5501 Bullard Road	Two (2) pumps total; both operational.
43	8/14/20	Pines Village	6155 Dwyer Road at Foch	Two (2) pumps total; one (1) in service: Pump 2 has been put out of service within the last week to repair the shaft. Repair time is currently unknown.
44	8/14/20	America	6789 Dwyer Road at Westlake	Two (2) pumps total; both operational
45	11/19/20	Station A	1321 Orleans Avenue	Six (6) pumps total; all operational: Minor leaking at check valve, being repaired at time of inspection.
46	8/14/20	Shorewood	14441 Morrison Road	Two (2) pumps total; both operational.
47	8/14/20	Briarwood	13701 Morrison Road	Two (2) pumps total; both operational.
48	8/14/20	Liggett	12501 Morrison Road	Two (2) pumps total; both operational.
49	8/14/20	Berg	11501 Morrison Road	Two (2) pumps total; both operational.
50	8/14/20	Weber	10141 Morrison Road	Two (2) pumps total; both operational.
51	8/14/20	Burke	9001 Morrison Road	Two (2) pumps total; both operational.
52	8/14/20	Lawrence	8001 Morrison Road	Two (2) pumps total; both operational: No placard at this location.
53	8/14/20	Lamb	6450 Morrison Road	Two (2) pumps total; both operational.
54	8/13/20	Gentilly Oaks	5000 Papania Road at Vienna	Two (2) pumps total; one (1) in service:

NO.	DATE	FACILITY NAME	LOCATION	STATUS
				Pump 2 is out of service because it has a bad flap. The time it will be out is unknown at this time.
55	8/13/20	Eastover	6051 Eastover Drive	Two (2) pumps total; both operational.
56	12/10/20	Paris Road	Dwyer West of Paris Road	Two (2) pumps total; both operational: No placard at this location.
57	8/13/20	Venetian Isles 2	20711 Old Spanish Trail	Two (2) pumps total; both out of service: Both pumps are out at this time because the station was flooded out. A portable pump has been used at this station for about a month. Repair time is currently unknown.
58	8/13/20	Industrial Parkway	4200 Industrial Parkway	Two (2) pumps total; both out of service: Portable pump being used at this station. Both pumps have been out for about a week because excess trash was discovered in the pumps, preventing the pumps from operating properly. Repair time is unknown at this time.
59	8/13/20	Bldv X	4433 Chef Menteur Highway	Two (2) pumps total, both operational.
60	8/13/20	Alcee Fortier	Alcee Fortier Blvd at the Levee	Two (2) pumps total; one (1) in service: Pump 1 has been out for service for about six (6) months. Pump is currently in the shop for repair. Timetable for pump to be back in service is currently unknown at this time.
61	8/13/20	Willow Brook	Willowbrook off of Michoud	Two (2) pumps total; both operational.
62	8/13/20	Oak Island	14201 Michoud Blvd	Two (2) pumps total; both operational.
63	8/13/20	Village de Lest	11324 Dwyer	Two (2) pumps total; both operational.
64	8/13/20	Michoud	4400 Michoud Blvd	Two (2) pumps total; both operational.
65	8/13/20	Folgers	14601 Gentilly Blvd	Two (2) pumps total; one (1) in service: Pump 1 needs a new check valve. This pump has been out for at least two (2) years with the same issue. No timetable for repair.

Table 12 - Assessment of West Bank Sewage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS
1	12/8/20	Memorial	2501 Memorial Park Dr.	Two (2) pumps total; both operational: Large hole in front of station has to be backfilled where a pipe leak has been recently repaired.
2	12/8/20	Garden Oaks	3201 Memorial Park Dr.	Two (2) pumps total; both operational.
3	12/8/20	Park Timbers	4100 Lennox Blvd.	Two (2) pumps total; both operational.
4	12/8/20	Tall Timbers	3800 Tall Pines Dr.	Two (2) pumps total; both operational.
5	12/8/20	Forest Isle	5631 West Forest Park Dr.	Two (2) pumps total; both operational: No emergency discharge connection at this station.
6	12/8/20	Blair	3800 Blair St	Two (2) pumps total; both operational: No emergency discharge connection at this station.
7	12/8/20	Aurora	6000 Carlisle Ct	Two (2) pumps total; both operational: No emergency discharge connection at this station.
8	12/8/20	English Turn I	2201 Stanton Rd.	Two (2) pumps total; both operational: Could not gain access to inside of station.
9	12/8/20	English Turn II	123 ½ Oak Alley	Two (2) pumps total; both operational.
10	12/8/20	English Turn III	400 English Turn Parkway	Two (2) pumps total; both operational.
11	12/8/20	Lower Coast	3700 Old Woodland	Two (2) pumps total; one (1) in service: - No emergency discharge connection at this station. - Pump 2 out for about three (3) months because of a leaking pump seal. Should be repaired soon.
12	12/8/20	Woodland	4150 Woodland Dr.	Two (2) pumps total; one (1) in service: - Pump 2 is out because it is encountering high amperage issues. Has been out of service for about three (3) months. - No emergency discharge connection at this station. - No placard at this location.
13	12/8/20	Eton	3440 Eton St	Two (2) pumps total; one (1) in service: Pump 1 is out of service because of a work shaft. Has been out for nearly one (1) month with no timetable for return.
14	12/8/20	Huntlee	3201 Huntlee Dr.	Two (2) pumps total; one (1) in service: Pump 2 has been out of service for about a year because of a worn shaft. No timetable for return.

NO.	DATE	FACILITY NAME	LOCATION	STATUS
15	12/8/20	Holiday	2799 Holiday Dr.	Two (2) pumps total; one (1) in service: Pump 2 has been out of service for a couple months because of a worn shaft. No timetable for return.
16	12/8/20	Bridge Plaza	2914 Vespasian St	Two (2) pumps total; one (1) in service: Pump 1 out of service with a bad discharge valve that needs to be repaired. Out for about three (3) months; repair TBD.
17	12/8/20	Horace	3301 Lawrence St	Two (2) pumps total; one (1) in service: Pump 2 has been out of service for a couple months because of a worn shaft. Currently in machine shop for repairs.

Table 13 - Assessment of East Bank Drainage Stations

NO.	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	10/20/20	Station 1	2501 S. Broad St.	Eleven (11) pumps total — two (2) are constant duty; all operational.	- Some vegetation in suction basin. - A new generator has been installed within the past year.
2	11/18/20	Station 6	345 Orpheum	Fifteen (15) pumps total; all operational	- Minimal vegetation at debris screens in suction basin. - Pump that was out of service last year has been repaired.
3	11/20/20	I-10 Station	I-10 Service Road	Four (4) pumps total; all operational.	
4	11/18/20	Station 7	5741 Orleans Ave at Marconi Dr.	Five (5) pumps total; four (4) in service.	Constant duty pump 1 has been out for about a year. No timetable for return.
5	11/20/20	Canal Blvd	5500 Canal Blvd	Three (3) pumps total; all operational.	
6	10/20/20	Station 2	444 N. Broad St.	Six (6) pumps total — two (2) are constant duty; all operational.	
7	10/20/20	Station 3	2251 N. Broad St.	Nine (9) pumps total — four (4) are constant duty; all operational.	The “lake” gate is operable but has some noticeable holes and gaps in the gate wall.

NO.	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
					- Lots of vegetation present at suction basin. - Transformer 5 has been repaired.
8	11/20/20	Pritchard	2901 Monticello	Three (3) pumps total; both operational.	This is an unstaffed station.
9	11/20/20	Oleander	9400 Oleander	Three (3) pumps total; all operational.	This is an unstaffed station.
10	11/18/20	Station 4	5700 Warrington Dr.	Six (6) pumps total; all operational.	
11	11/20/20	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 unstaffed station.
13	8/8/19	Station 10	Citrus 9600 Haynes	Four (4) pumps total; all operational.	This is an unstaffed 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 unstaffed station.
16	8/8/19	Elaine	3100 Elaine St.	Two (2) pumps total; both operational.	This is an unstaffed station outdoors.
17	8/8/19	Station 17 (D)	2801 Florida Ave.		This is a joint sewage and drainage station.
18	11/18/20	Station 5	4841 Florida Ave.	Eight (8) pumps total; all operational.	No placard at this location. Two (2) vertical pumps housed in separate building.
19	11/19/20	Station 19	4500 Florida Ave.	Five (5) pumps total; all operational.	
20	11/20/20	Station 20 (AMID)	6300 Intercoastal Waterway at Terminal Rd.	Two (2) pumps total; both operational.	This is an unstaffed station.
21	11/20/20	Maxent	Alcee Fortier	Two (2) pumps total; both operational.	Overgrown vegetation is causing severe blockage at suction basin.

NO.	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
22	11/20/20	Station 15	Industrial Parkway	Three (3) pumps total; all operational.	- Vegetation causing some blockage at suction basin. - This is an unstaffed station.
23	11/20/20	Dwyer	5801 Dwyer Rd.	Three (3) pumps total; all operational.	This is an unstaffed station.

Table 14 - Assessment of West Bank Drainage Stations

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	11/18/20	Station 11	5301 East Sixth St.	Five (5) pumps total; all operational.	Three (3) out of four (4) debris screens are not working.
2	11/17/20	Station 13	4201 Tall Spruce Dr.	Seven (7) pumps total; five (5) pumps operational.	- Vacuum pumps out of service at pumps 4 and 5. Repair time unknown. - Debris screens are out at pumps 2,3,4, & 5.