REPORT ON OPERATIONS FOR 2015

BLACK & VEATCH PROJECT NO. 192043

PREPARED FOR

Sewerage and Water Board of New Orleans

20 OCTOBER 2016

JULIEN ENGINEERING & CONSULTING

Bruno & Tervalon LLP Certified Public Accountants

BLACK & VEATCH Building a world of difference.

MISSION STATEMENT

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

VISION STATEMENT

Our vision is to have the trust and confidence of our customers
for reliable and sustainable water services

OUR VALUES

We will focus on our customers and stakeholders
We will treat each customer and employee with dignity and respect
We will value each employee, their work, and their commitment
We will be truthful, trustworthy and transparent
We will be knowledgeable and diligent in the performance of our duties
We will use financial resources prudently
We will be accountable for our performance
We will continuously improve our performance
We will ensure that the systems that provide our services remain viable for future generations
We will remain on the job and will be prepared for storms and other risks

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October 20, 2016

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

Dear Board Members:

In accordance with our agreement, we are submitting this Report on Operations of the Water, Sewerage, and Drainage Departments for the year 2015. The report presents the findings of our analysis to confirm compliance with the covenants of the General Water Revenue Bond Resolution and the General Sewerage Revenue Bond Resolution.

The report also contains projections of expected future financial activity for the three departments for the period 2016 through 2020. These projections are based upon historical trends and the Board's operating and capital budgets. Projected costs include an allowance for anticipated future price inflation.

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

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

Very truly yours,
BLACK & VEATCH CORPORATION

Anna White

Anna White
Principal Consultant

Enclosure

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Introduction

PURPOSE AND SCOPE

This report covers operations of the Sewerage and Water Board of New Orleans for the year ended December 31, 2015. This report presents findings of studies made in compliance with covenants of the 2014 General Water Revenue Bond Resolution and the 2014 General Sewerage Service Revenue Bond Resolution. This report also includes recommendations designed to assist the Sewerage and Water Board of New Orleans and its staff in planning future operational policies. Subjects covered include the following:

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

DEFINITIONS

In this report, "Sewerage and Water Board of New Orleans," "Sewerage and Water Board," and "Board" are used synonymously. "General Resolution" refers to either the 2014 General Water Revenue Bond Resolution or 2014 General Sewerage Service Revenue Bond Resolution.

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

HISTORY

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

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

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

The Board's computer based budget code system provides a method of identification of operation and maintenance expenses for the Water, Sewerage, and Drainage Departments. Allocation of

expenses is based upon actual or direct expenses of each Department together with an apportionment of joint expenses. The procedures permit utility plant accounting with annual costs charged to the appropriate property account instead of being charged to current Department income. In accounting for debt service, interest is charged to current year's income and principal and debt service reserve payments are charged to the respective account balances. Historical operating costs, discussed later in this report, reflect the functional classifications.

Water Department

Act No. 541 increased the Board's ability to finance needed water system improvements by authorizing the Board to issue water revenue bonds. Subsequently, water revenue bonds in the amounts of $6,200,000 in 1960, $1,500,000 in 1961, $2,500,000 in 1964, $4,000,000 in 1971, $6,000,000 in 1978, $17,000,000 in 1980, $3,000,000 in 1981, and $5,000,000 in 1982 were issued. All water system revenue bonds outstanding in 1986 were defeased by the $31,350,000 Series 1986 Water Revenue Refunding bond issue. Additional revenue bonds in the amount of $16,000,000 were issued in 1998 and $34,000,000 were issued in 2002. In 2014, the Board issued Water Revenue and Refunding Bonds in the amount of $103,525,000. A portion of the proceeds were used to defease Series 1998 in the amount of $5,570,000 and Series 2002 in the amount of $22,085,000. In 2015, the Board issued Water Revenue Bonds in the amount of $100,000,000. Principal payments will begin in 2018. As of December 31, 2015, total outstanding debt service on all outstanding revenue bonds totaled $203,525,000.

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

Sewerage Department

Act No. 567 gave the Board authority to set and collect sewerage service charges to be used for operational and capital costs of the Sewerage Department, and to issue sewerage service revenue bonds. This Act permitted the Board, for the first time in its history, to charge users of the sewerage system directly for related costs. Under the authority of Act No. 567, sewerage service charges were implemented May 1, 1967 and subsequently, sewerage service revenue bonds totaling $33,000,000 were sold in 1968, 1976, 1982 (2 issues), and 1983. All sewerage system revenue bonds outstanding in 1986 were defeased by the $21,280,000 Series 1986 Sewerage Service Revenue bonds. These bonds were fully retired in 1994. Sewerage system revenue bonds in the amount of $30,000,000 were issued in 1997; $25,000,000 in 1998; $47,100,000 in 2000 (two issues); $32,720,000 in 2001; $57,000,000 in 2002; and $5,500,000 in 2003. $33,000,000 in revenue bonds, $25,200,000 in Bond Anticipation Notes (BANs), and $111,800,000 in Refunding BANs were issued in 2004. The 2004 BANs were defeased by the $137,000,000 Refunding BANs Series 2005A. A portion of the 2005 BANs was refinanced with the Refunding BANs Series 2006. The remaining balance on the 2005 BANs were paid from funds on hand. The Refunding BANs Series 2006 were due July 15, 2009 and were paid in full by the issuance of Refunding Bonds Series 2009 in the amount of $23,375,000. In 2014, the Board issued Sewerage Service Revenue and Refunding Bonds in the amount of $158,990,000. A portion of the proceeds were used to defease all outstanding bonds with the exception of the Series 2011 bonds.

In November 2011, the Board and Louisiana Department of Environmental Quality (LADEQ) entered into a loan agreement whereby $9,000,000 of proceeds from the Revolving Loan Fund were

borrowed through the issuance of Sewerage Service Subordinate Revenue Bonds, Series 2011. Debt service payments assume a 20-year term with a 0.45 percent interest rate plus an administrative fee of 0.5 percent. The Board began drawing down the funds during the first quarter of 2012 and as of December 31, 2014, had received a total of $9,000,000 in disbursements. The Board began making principal payments in November of 2013. With the issuance of the Series 2014 bonds, the Series 2011 bonds became parity debt and entitled to the provisions of the General Sewerage Service Revenue Bond Resolution. In 2015, the Board issued Sewerage Service Revenue Bonds in the amount of $100,000,000. Principal payments will begin in 2021.Total outstanding principal on all revenue bonds totaled $255,520,000 as of December 31, 2015.

Drainage Department

In 1966 three constitutional amendments, Acts No. 565, 566, and 567 were enacted by the Louisiana Legislature and subsequently approved by the State's voters. Act No. 565 authorized the City of New Orleans to levy a three-mill ad valorem tax, effective January 1, 1967, to be used solely for operations and capital costs of the drainage system. Provision for issuance of bonds repayable solely from the three-mill tax was also included in the Act. In 1967, the Board issued $15,000,000 of three-mill tax bonds. These bonds were fully retired in 1992.

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

Passage of a referendum in April 1977, authorized the collection of an additional six-mill, ad valorem tax for drainage purposes, effective January 1, 1978. The six-mill ad valorem tax was increased to 6.09 mills in 1988 and to 6.48 mills in 1992 due to reassessment and remained at that level through 2007. In 2007, it was reduced to 4.60 and in 2010 it was increased to the current rate of 4.71 mills. In 1978, the State Legislature authorized a debt limit of $18,000,000 as sought by the Board of Liquidation, City Debt. That debt limit was eliminated by Legislative action in 2003. The Board issued $18,000,000 in Series A, six-mill tax bond in November 1978. During 1994 the Board issued Drainage System Refunding Bonds, Series 1994, for the purpose of refunding the six-mill 1978 bonds. The 1994 bonds were considered to be an obligation of the six-mill ad valorem tax revenue and have been repaid.

In 1980, a constitutional amendment, Act No. 844, authorized an increase in the exemption of each homestead from ad valorem taxes from $5,000 to $7,500, and provided for periodic reassessment.

In 1981, a nine-mill ad valorem tax was approved and became effective January 1, 1982. The purpose of the nine-mill tax levy is to provide funds for the operation, maintenance, and construction of the drainage system. State law set the authorized debt limit for nine-mill bonds at $68,000,000. That debt

limit was eliminated by Legislative action in 2003. The Board sold nine-mill bond issues of $22,000,000 in 1982 and $30,000,000 in 1983. In 1986, $12,525,000 Drainage System Bonds Series 1986A and $15,755,000 Drainage System Bonds Series 1986B were authorized and sold for the purpose of refunding a portion the 1982 nine-mill bonds and a portion of the 1983 nine-mill bonds, respectively. In 1992 the Drainage System Bonds, Series 1982, was fully refunded, and beginning in 1993, debt service payments on the Drainage System Bonds, Series 1986A was paid from nine-mill tax revenue. In 1993, proceeds from the Drainage System Bonds, Series 1986B fully refunded the Drainage System Bonds, issue of 1983, and the debt service on these bonds became the obligation of nine-mill tax revenue. All Series 1986A and Series 1986B bonds have been retired. In 1998 nine-mill bonds in the amount of $10,000,000 were issued and additional nine-mill bonds in the amount of $20,000,000 were issued in 2002. In 2014, the Board issued Drainage System Refunding Bonds in the amount of $14,900,000 for the purpose of refunding Series 1998 and Series 2002. The total nine-mill Drainage System Bonds outstanding as of December 31, 2015 was $12,750,000.

In 1988, reassessment caused the nine-mill ad valorem tax to be increased to 9.13 mills, and 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 2016; six-mill tax through 2027; and nine-mill tax through 2031.

General

During January 2006, the Board entered into a long-term agreement with the Federal Emergency Management Agency (FEMA) under the Community Disaster Loan Act of 2005. The Board has drawn down $61,956,747 of the funds available. In December 2010, the Board was granted a partial forgiveness in the amount of $36,790,000 of principal and $4,648,410 of accrued interest, leaving a balance of $25,166,747 in principal. In September of 2013, the Board was granted full forgiveness of the remaining balance of $25,166,747.

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed $77,465,247, which was the total amount available to the Board. Of that amount, $31,500,000 was used to make a partial payment on the Sewerage Service Refunding BANs Series 2005A that matured on July 26, 2006. The remainder was used to make debt service payments on the Drainage System special tax bonds, the Sewerage Service revenue bonds, and the Water revenue bonds that were due on December 1, 2006; June 1, 2007; December 1, 2007; and June 1, 2008. Principal payments on the bonds began in July 2012 and continue through July 2026. As of December 31, 2015, the amount outstanding was $61,653,132.

The Board is currently receiving funds from the U.S. Army Corps of Engineers (COE) sponsored and congressionally authorized Southeast Louisiana Urban Flood Control (SELA) Project. This funding will allow additional construction projects which were identified in the 1970s, but which have not been completed because of funding limitations. The identified projects are to be funded either 100 percent from federal funds or 65 percent from federal funds and 35 percent from local funds. The payback period for the local share is 30 years and is anticipated to begin in 2018.

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. During 2015, the Board provided 1,298,246,000 gallons of water for public services to agencies of the City of New Orleans. The value of this water, at current rates, is $6,123,591.86. The value of the sewerage charges is $6,551,362.

The three revenue-generating public agencies - the New Orleans Museum of Art, City Park, and Audubon Park – continued to receive water for public services under "caps", or maximum annual limits, established by the Legislature in 1982. The Museum of Art used 205,400 gallons or 2,348,400 below its annual "cap" of 2,553,800 gallons. City Park used 1237,139,800 gallons or 198,183,600 below its annual "cap" of 235,323,400 gallons. Audubon Park used 106,828,100 gallons or 133,171,900 gallons below its annual "cap" of 240,000,000 gallons.

The Sewerage and Water Board and the Orleans Parish School Board (OPSB) reached an agreement effective July 1, 1992, whereby the schools would be charged for any water exceeding an allowance of six gallons per day, for 365 days per year, for each student enrolled and any other person regularly assigned to that campus or facility. The allowance was lowered to four gallons per day effective July 1, 1993.

SOURCES OF FINANCIAL DATA

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

SUMMARY OF FINDINGS

This section contains a summary of the financial operations of the Water, Sewerage, and Drainage Departments for the year 2015. Projections of future operations are also presented as a basis for determining the adequacy of present revenue sources to finance projected operating expenses and proposed capital program costs of the respective departments.

The statistical data maintained by the Board includes the compilation of detailed information on water sales and revenues. Information provided for 2015 includes a summary of the number of bills issued, billed volume, and revenues by customer class for both the Water and Sewerage Departments.

Operation and maintenance expenses are summarized by supplemental accounts that are used for internal purposes to identify the cost in each functional category that is incurred for personal services, services and utilities, material and supplies, replacement and maintenance, and other special charges.

Water Department

Water Revenue Bond Resolution Requirements

Sewerage and Water Board financial operations for 2015 have complied with the requirements set forth in the 2014 General Water Revenue Bond Resolution.

Summary of 2015 Operations

Based upon a tabulation of water bills rendered during the year, the Water Department provided water service to an average of 129,809 regular billed customers and 1,119 governmental accounts,

the latter of which are served without charge. According to data provided by the Board, of the 51,563.5 million gallons of water pumped by the Department during the year, 13,810.2 million gallons were sold, 653.3 million gallons were metered to customers without charge, treatment plant process water totaled 645.3 million gallons, and unmetered uses accounted for the remaining 36,454.7 million gallons. Unmetered water uses include fire protection; flushing streets, sewers, and drains; chlorinating and flushing new water mains; construction of streets; Sewerage and Water Board plant uses; and unaccounted for system losses.

The total revenue from water sales, delinquent fees, interest income and other income increased from $74,220,847 in 2014 to $82,956,619 in 2015. Operation and maintenance expenses (excluding claims paid) increased from $69,394,244 in 2014 to $78,264,668 in 2015. After adding claims of $813,979 and debt service payments of $5,176,250, a negative balance of $1,298,278 was available for capital related expenditures in 2015, unadjusted for depreciation.

Ability to Finance Future Operations and Proposed Improvements

A summary of projected financial operations of the Water Department for the period 2016 through 2020 is shown in Table 12 of the report. Revenues shown on Line 1 of Table 12 are based on rates that became effective January 1, 2016. Revenue from future annual water system revenue increases of 10 percent effective January 1, 2017 through January 1, 2020 are shown on Line 2 of Table 12.

Future long term debt financing of $90,000,000 in 2017 and $34,000,000 in 2019 is indicated to fund the proposed capital improvement program.

As demonstrated in Tables 11 and 12, it is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Water Department during the 2016-2020 study period examined herein.

Sewerage Department

Sewerage Service Revenue Bond Resolution Requirements

Sewerage and Water Board financial operations for 2015 have complied with the requirements set forth in the 2014 General Sewerage Service Revenue Bond Resolution.

Summary of 2015 Operations

The total revenue from sewer charges, delinquent fees, interest income and other income increased from $88,757,242 in 2014 to $98,165,766 in 2015. Operation and maintenance expenses (excluding claims paid) increased from $48,559,050 in 2014 to $58,028,723 in 2015. After adding claims of $392,928 and debt service payments of $18,995,178, a balance of $20,748,937 was available for capital related expenditures in 2015, unadjusted for depreciation.

Ability to Finance Future Operations and Proposed Improvements

A summary of projected financial operations of the Sewerage Department for the period 2016 through 2020 is shown in Table 24 of the report. Revenues shown on Line 1 of Table 24 are based on rates that became effective January 1, 2016. Revenue from future annual wastewater system revenue increases of 10 percent effective January 1, 2017 through January 1, 2020 are shown on Line 2 of Table 24.

Future long term debt financing of $130,000,000 in 2017 and $32,000,000 in 2019 is indicated to fund the proposed capital improvement program.

It is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Sewerage Department during the 2016-2020 study period examined herein

Drainage Department

Summary of 2015 Operations

Total revenues received from all sources including interest income totaled $54,367,386 in 2015, an increase of approximately 10.9 percent from $49,014,535 reported for the same sources in 2014. Total operation and maintenance expenses increased about 22.4 percent, from $30,899,222 in 2014 to $37,814,502 in 2015. After adding claims of $1,228,302 and debt service payments of $2,014,350, a balance of $13,310,232 was available for capital related expenditures in 2015.

Ability to Finance Future Operations and Proposed Improvements

An analysis of financial operations projected for the Drainage Department for the period 2016 through 2020 is summarized in Table 35 of the report. Revenue from the three-mill, six-mill, and nine-mill ad valorem taxes may be used for operating expenses, debt service, and capital expenditures; however the three-mill ad valorem tax will expire in 2016.

The analysis indicates that the current revenue sources are not adequate to meet operation and maintenance expenses and total debt service on existing bond issues beginning in 2020. In addition, the Drainage Department will not have the debt capacity to fund all of the capital requirements through 2020. Due to constraints on revenue, it is anticipated that capital projects during the 5-year period will exceed the amount of funding available from the Drainage Department. It is recommended that the Board defer capital projects until an additional source of operating revenue has been identified and the SWBNO has the capacity to debt finance more projects. This deferment is shown on Line 10 of Table 34.

Other Findings

The Board operates a power plant at the Carrollton Water Purification Plant which provides power for the water purification process as well backup power in the event that commercial power fails or becomes unavailable. The Board's analysis of power purchased and produced is shown in the supplemental section of the 2015 Comprehensive Annual Financial Report. In 2015, approximately 73.1 million kilowatt hour (kWh) of power was purchased and 29.2 million kWh of power was generated.

On a unit cost basis, the average cost of purchased power has increased over the past five years from about 8.8¢ per kWh in 2010 to about 9.1¢ per kWh in 2014. During the same period, the Board's unit cost for generated power has decreased from about 39.2¢ per kWh to about 32.5¢ per kWh. The cost of Board generated power is almost 3.6 times higher than that of purchased power; however, this higher cost is offset by the fact that the Board generated power is much more reliable that 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 findings of the onsite assessments of the Sewerage and Water Board of New Orleans (SWBNO) facilities conducted by Black & Veatch from May 16 to May 20, 2016. Site visits were conducted at the water and wastewater treatment plants, Carrollton power plant facilities, and Central Yard facilities to evaluate the condition and operational capabilities of these facilities. In addition, the sewage and drainage pump stations were inspected to evaluate their condition. Interviews were conducted with SWBNO management and supervisors during the site visit to assess the current operations status of the various facilities.

INTRODUCTION

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

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

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

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

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

STAFFING

Adequate staffing continues to be an issue for most departments at the SWBNO. Additional maintenance is required for the SWBNO facilities as equipment ages and more equipment is added. Staffing levels have decreased as the system has aged and expanded within the SWBNO-owned facilities. Vacancies still exist in several departments, especially those departments requiring highly educated and skilled personnel. These shortages are reflected within the more technical disciplines such as mechanical maintenance, electrical maintenance, plant maintenance, welding and fabrication, and operations. Engineering is still understaffed, but it is improving because the slowdown of private industry in the local area.

The SWBNO suspended the domicile policy following Hurricane Katrina, which required employees to live in New Orleans. This suspension action allowed personnel hired by the SWBNO to live outside city limits, thus providing more housing options for employees. The City Council reinstated the residency requirements as of January 1, 2013, which has slowed the hiring of individuals with an interest in working for the SWBNO but live outside city limits. Departments within the SWBNO continue to actively recruit from local college campuses, career job fairs, and trade schools to fill vacancies.

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

Most departments have staffing issues related to being inadequately staffed to fulfill the current needs of the SWBNO. The table below summarizes the number of staff on the payroll for each department related to operations and maintenance, and the percentage of staff eligible for retirement within the next five years (as of May 2016). These conditions demonstrate the need for an effective succession plan for the department heads and supervisors.

Current Number of Board Employees and Employees Eligible for Retirement

DEPARTMENT	EMPLOYEES ON PAYROLL	ELIGIBLE FOR RETIREMENT	% ELIGIBLE FOR RETIREMENT
Operations - Water Purification Plants	50	16	32.0
Operations - Water Quality Laboratory at Carrollton Plant	9	3	33.3
Operations - Water Pumping and Power	75	18	24.0
Operations - Sewage and Drainage Pumping Stations	105	30	28.6
Facility Maintenance	61	17	27.9
Engineering	48	18	37.5
Networks	319	57	17.9
Support Services	102	29	28.4
Environmental Affairs	12	4	33.3
Total	**781**	**192**	**24.6**

WATER PURIFICATION PLANTS

The Black & Veatch representative accompanied the WPP superintendent on facility tours of the Carrollton and Algiers WPPs. The Carrollton and Algiers WPPs are currently operational and producing water that meets or exceeds federal drinking water standards. Treatment systems at both plants are functioning 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. The SWBNO is facing the industry-wide problem of an aging workforce; therefore, there is an immediate need to hire and train personnel for the future sustainability of plant operations. The SWBNO has hired entry-level personnel and is in the process of hiring more to begin addressing those long-term needs. SWB has an internal training program that assists operations staff with passing their state certification exams. In addition, state certified operators are in short supply and are required onsite at all times because they are necessary to successfully operate the plants around the clock. The most senior operators will be retiring within the next few years and will need to be replaced in order to maintain compliance with the state requirements for operator certification in water treatment. At present, there are not enough certified water plant operators to cover all the shifts and the department is using overtime to ensure compliance is maintained.

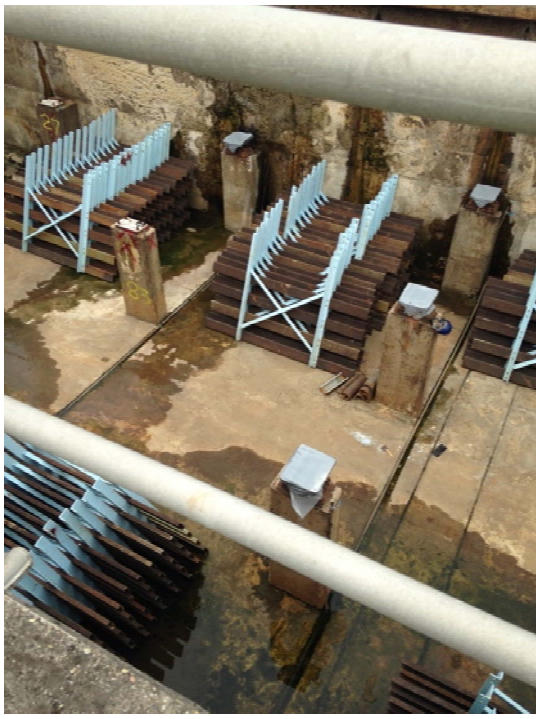
Carrollton Water Purification Plant

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

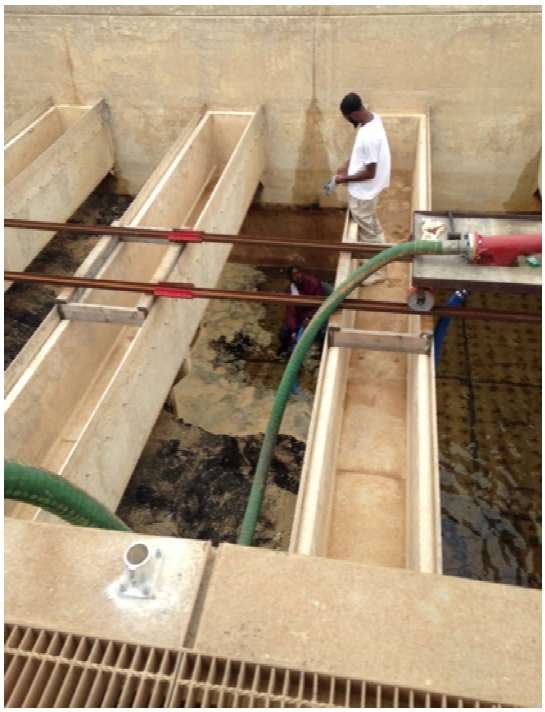
Chlorine in the form of sodium hypochlorite is used to disinfect the clarified water. Anhydrous ammonia is then added to form chloramines for residual disinfection. Additional settling time and disinfection contact time occur in the secondary settling basins. The clarified water is also treated with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

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

The Carrollton WPP is currently treating approximately 135 mgd of water for the East Bank of Orleans Parish, partly due to leaks in the water distribution system. Leaks in the distribution network are a source of persistent problems. These leaks are currently being addressed under the water main replacement program funded by the Federal Emergency Management Agency (FEMA). The water delivery pressure, at 70 psi, has been consistent throughout the last year.



L3 Sedimentation Basin Flocculator Rehab



Filter Media replacement at Filter 7

Figure 1 – Carrollton Water Purification Plant

Improvements initiated and/or completed at the Carrollton WPP during 2015 include:

- The G4 Sedimentation Basin was placed back into service after the basin was cleaned and flocculator rehab was completed in 2015. After operating the basin, it was determined by operations staff that the basin had a leak, and was offline at time of visit.
- Claiborne Filter 1 Media Replacement and Rehab was completed and was recently returned to service. The filter is currently performing well.

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

- L3 Sedimentation Basin is offline for flocculator rehab and maintenance of the basin's mechanical components.
- The bid for a contractor to do a chalk and water test for the G4 Basin will be advertised during the summer of 2016. This work is scheduled to be completed by the end of year.
- A tank mixing study was conducted on all tanks at the plant (including tanks at Algiers WPP) including hydraulic modeling. As a result, these storage tanks will be modified with manifold systems for better tank mixing.
- Four concrete 4 MG storage tanks are in the process of being repainted. The tanks were inspected and the tank structures were determined to be in good condition.

- A filter rehabilitation program is planned for the Sycamore and Claiborne filter galleries. Valves, actuators, corroded piping supports, and leaking pipes associated with the filters need to be repaired or replaced. Media replacement is ongoing for the Claiborne filter gallery.
- Media replacement for Claiborne filters is ongoing currently. Media was being taken out of Filter 7 at the time of the onsite visit. Filter 5 media is also being replaced. At the time of replacement, the filter structure is inspected (such as the underdrains) and additional repairs are made.
- The Sycamore filter wash water pump for the filters is planned for replacement. The packing seal was leaking during the site visit and the pump is nearing the end its service life. The project is currently in design.
- The recycle basin pumps are being replaced. Two of the four pumps are currently inoperable and the other two pumps are nearing the end of their service life. Construction is currently ongoing.
- Design for a new 30-inch sludge discharge line is underway. This new line will provide for much needed capacity and redundancy improvements for the Carrollton WPP. This improvement was in design at time of site visit and will be installed in 2017.
- An additional temporary ferric sulfate bulk storage facility (20,000 gallons of tanks and temporary containment) is in the process of being added due to limited local supply of the chemical.
- A new chemical storage and feed facility is currently under design. The facility will house most of the chemicals onsite.

Algiers Water Purification Plant

The Algiers WPP has a design capacity of 40 mgd. The treatment process at the plant is similar to that of the Carrollton facility and uses the same chemicals with a slightly modified application scheme in the upflow clarifiers. At present, the plant is treating approximately 10 mgd of water and is serving the predominantly residential West Bank portion of the parish.

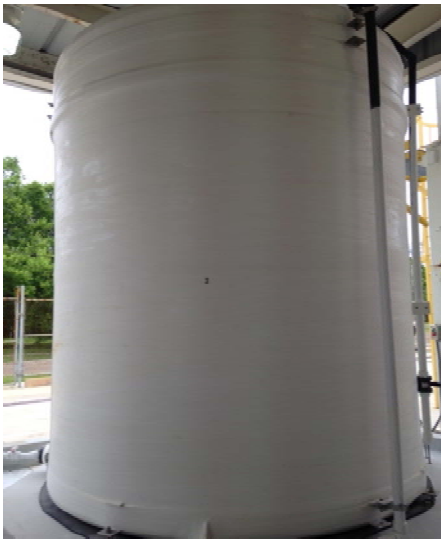
The facility has partially commissioned a new ferric storage and feed system for flocculation at the WPP. This equipment, along with the existing temporary ferric storage and feed equipment, is supporting the needs of the plant with the goal of a complete transition to the new facility by the end of 2016.

Other improvements needed or ongoing at the plant include the following:

- A new bulk sodium hypochlorite tank was added, along with metering pumps to supply bleach for disinfection. Two existing bulk tanks were repurposed from the decommissioned sodium hypochlorite generation system.
- Instrumentation was added to the filters to display flow (MGD) and headloss at each filter. These instruments currently are not tied into SCADA. Future SCADA upgrades will integrate these readings for filter monitoring.
- EIMCO Clarifiers No. 3 and 4 are under contract to design the replacement of the launder troughs. The troughs and steel structures have significant corrosion. The mechanical components of the clarifiers are operating well and are maintained by the maintenance staff.
- EIMCO Clarifier 2 was painted in 2015.

- In addition to the rehab and painting of the EIMCO clarifiers, flash mixing will be added to assist with better TOC removal in the clarifiers. The existing clarifiers will be modified to include an additional mixer near the chemical injection point.
- 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 will be located in an existing building.
- Lime is currently slaked at the WPP. SWB is looking into replacement of the lime equipment pending a decision of process change (different type of lime) or direct replacement of existing slaking equipment.
- The raw water pumping and piping systems need to be improved in order to provide redundancy to the intake system.

Corrosion on Clarifier Troughs



New Sodium Hypochlorite Storage Tank

Figure 2 – Algiers Water Purification Plant

WATER QUALITY LABORATORY

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

The laboratory collects samples for protozoan analysis in addition to coliform analysis. Other regular analyses include hardness, turbidity, fluoride, ammonia, pH, alkalinity, total organic carbon (TOC), dissolved organic carbon (DOC), 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), despite that several of the LDEQ upstream stations have proved unreliable. The EWOCDS program has also been underfunded by the state of Louisiana, which has caused a reduction in sampling and analysis.

The remaining reliable monitoring stations are connected by telecommunications to notify LDEQ if any of the 60 Environmental Protection Agency (EPA) listed pollutants are detected in the river water samples. The LDEQ disseminates the information to the program participants, allowing an 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.

The laboratory is currently under-staffed with one supervisor, one microbiologist, two chemists, and three technicians. The lab lost two chemists and a lab technician over the past year, which has created vacancies that SWB is working to fill. Much of the lab instrumentation and equipment is reaching or has reached the end of its service life and is in need of replacement. Newer analytical instruments and equipment, such as a new gas chromatograph/mass spectrometer (GC/MS), autoclaves for the microbiology lab, and fume hoods in the chemistry lab are needed. The autoclaves are being acquired for lab use. The laboratory staff obtained certification to analyze TOC at the SWBNO facility; however, the certification recently lapsed due to lack of lab staff (mainly chemists) to maintain the QA/QC requirements for TOC analysis.

WATER PUMPING AND POWER

The primary function of the Water Pumping and Power unit of the Operations Department is to produce steam for the generation of 25 hertz (Hz) power in addition to pumping potable water to the City of New Orleans. The facilities at the Carrollton power plant include three pumping steam turbines and one gas turbine for a total theoretical capacity of 61 megawatts (MW of 25 cycle power). The steam required for the turbines is generated in the six boilers at a total capacity of 650,000 pounds of steam per hour. In addition to the 25 Hz turbine, newly installed Turbine No. 6 produces 15 MW of 60 Hz power, and was made operational in early 2016. The turbine only serves as back up, but is run every two weeks to ensure it is working properly.

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

The current capacity of the Carrollton power plant is 40 MW, which is less than the 61 MW design capacity. Turbine No. 4 is currently being repaired and will undergo testing to ensure it is operating capacity. Turbine 3 is currently online and scheduled to be repaired in 2016-2017 once Turbine 4 is back online. Rehabilitation of Boilers No. 4, 5, and 6 was completed in 2015-2016. Boiler 3 is currently being rehabbed and will be complete in 2016. Boiler 1 will be rehabbed once Boiler 3 is completed. Additional boiler piping is scheduled for repair and replacement. This project will occur once all the boilers are rehabbed and operational.

A 200 psi high pressure natural gas line supplies fuel for the 15 MW 60 cycle, dual fuel generator turbine package (Turbine No. 6) and the existing Turbine No. 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 due to storms, hurricanes, etc. The generator serves the majority of the plant and raw water intake stations and provides additional drainage station capacity.

Two steam-driven distribution pumps are located at the power plant. Pump A rehabilitation was completed in March 2014 and Pump B was completed at the end of 2015. Pump B is currently being tested to ensure the pump is operating properly. The Claiborne Pumping Station, consisting of four water distribution pumps (two 60 Hz drive and two 25 Hz drive), and the Panola Station, consisting of two pumping units (each with a 25 and 60 Hz motor), are usually adequate (with 100% redundancy) for pumping finished water to the distribution network. The 25 Hz pump at Panola Station has been converted to operate on both 25 and 60 Hz power for more pumping operation redundancy. The water hammer program will provide for the replacement of equipment and associated valves at the Panola, A & B Pump Room and Claiborne pumping stations. Two elevated tanks will also be installed to provide surge protection to the distribution system. These projects are currently being bid.

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

The water pumping and power unit has 75 current employees. Power for continued operations of the water, sewerage, and drainage systems requires staffing 24 hours per day, 7 days a week. Given the current levels of staffing, overtime is required to cover all the necessary areas within the pumping and power unit. In addition, approximately 18 senior operators or supervisors are set to retire in five years or less. Retirement was mentioned as the main staffing problem in this department, especially at higher pay levels, such as turbine and boiler operations positions. Additional staff will need to be hired and trained to fill these future vacancies due to retirement.

Central Control

The Central Control Power Dispatching Department is primarily responsible for the delivery of an adequate supply of board-generated electrical power, the continuous monitoring of the operational status of all electrical switchgear, and the testing of related electrical feeders and equipment. This department is also responsible for verifying and enforcing the board's safety clearance procedures and associated clearances within the power distribution system. In addition, this department monitors local and regional weather to provide advance warning of storms, which could affect power generation requirements for the drainage and sewerage systems. Coordination of various power supplies, including alternative backup power supplies such as diesel generators and frequency changers, also comprise part of this department's responsibilities. The Central Control Power Dispatching Department 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 also provides valuable information during emergencies such as hurricanes,

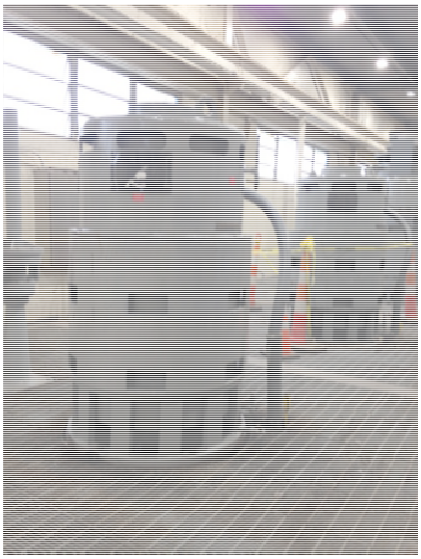
floods, freezes, etc., to the Office of Emergency Preparedness through established board protocols. Lack of staffing continues to be a major issue for this department.

SEWAGE TREATMENT PLANTS

Operations and maintenance activities of both plants have been contracted to Veolia Water. A representative of the SWBNO oversees the contract operator. This representative works in the Operations Department, which is within the SWBNO, for the Operations Department. Both treatment plants were operational at the time of the site visits and were meeting the discharge limits according to treatment plant personnel. The contract to operate both facilities was recently bid; Veolia won the contract and will continue to be the contract operator for the next nine years.

East Bank Sewage Treatment Plant

The East Bank Plant has a treatment capacity of 122 mgd (dry weather). The plant is currently receiving approximately 100 mgd of flow. In 2015, average flow for the plant was 94.07 mgd, which was greater than the 2014 average of 93.5 mgd. 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 finally incinerated. A new sludge dryer is currently under design as an alternative sludge treatment system to supplement the existing fluid bed incinerator (FBI).



Effluent Pumps

New Mixer on Reactor 1

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:

- Reactors 1 and 4 were out of service during site visit. Trains 2 and 3 were online. Rehabilitation and reactor cleaning of Train 1 was completed recently and is awaiting startup. The mixers were replaced with eight new mixers during 2015-2016. Reactor 4 will be rehabbed (currently scheduled for 2017) once Reactor 1 is online.

- LEL sensors were installed in the reactors to monitor explosive gases along its automated valves to make the process safe to operate. This work was completed in 2016.
- There is no automation for the mechanical rake on the bar screens and raking must be conducted manually at regular intervals. A project to install automated rakes with controls is being performed in house and will be completed by the end of 2016.
- A temporary, above ground replacement line is being used to return sludge from the return activated sludge pump stations to the influent channel. The permanent repair design was completed and awarded in 2015. The construction was completed in early 2016 and RAS Pumps 6 and 9 are currently tied into the line. RAS Pumps 7 and 8 will be tied into the line by the end of 2016 and at that point, the temporary line will be taken out of service.
- The scum arm on the secondary clarifiers was not in operation at time of field visit; however the plant operator indicated that the clarifiers needed additional steel repairs and that the repair will be included as part of that project when it goes out to bid in 2016.
- The operator noted the liquid oxygen tank is near the end of its useful life. High purity oxygen system components appeared in good condition. Currently, the contract operator is waiting for quotes from vendors for the tank replacement and is planning to complete in 2016.
- Several mechanical mixers on aerobic reactors were out of service due to regular preventative maintenance. These mixers will not be repaired due to the pending installation of the new mixing system in 2017.
- Effluent pumps appeared to be in fair condition. The operator noted that there have been difficulties keeping these pumps operating reliably due to electrical system issues. The electrical system is being evaluated and will likely require upgrades to increase the reliability of the effluent pumps. A 2400 V Effluent Pump electrical distribution system along with switchgear and VFDs is in design phase and was bid in 2015. Project will begin in August 2016.
- Piping installation from the clarifiers to the wetlands demo and expansion cells were completed in 2016.
- The FBI wet scrubber will be replaced in 2016 or 2017. The incinerator will be taken offline for several months and at that time bricks will be replaced in the walls and ceiling of the FBI.
- The multi-hearth incinerator was decommissioned and removed from the site in 2016.
- A new waste pump in the south pump house will be added to satisfy the EPA's request for pump redundancy.
- A new concrete wall was installed in the sedimentation basin to prevent wastewater from entering the effluent channel to prevent future fecal hits in effluent.
- Replacement of the VSA oxygen system equipment (blowers, motors) is currently being solicited for quotes by the contract operator.
- The ferrator is in service and disinfects the effluent to the wetlands.
- The auto transfer switch is needed to automatically transfer power from two onsite feeders if one fails. Currently this is done manually and requires special personal protective equipment (PPE) and time (at least 30 minutes) to transfer power from one feeder to another to keep the plant online.

- A project to convert gas chlorine to sodium hypochlorite is being considered because of safety concerns. Currently the plant uses rail cars to obtain gas chlorine for disinfection.

The average influent TSS and BOD concentrations for 2015 were approximately 130 milligrams per liter (mg/L) and 96 mg/L, respectively. Effluent quality has been adequate over the last year, with an average effluent TSS concentration of 12.8 mg/L and an average effluent BOD concentration of 17.8 mg/L. Seven permit violations occurred in 2015. Five fecal coliform maximum day limit violations occurred in June 2015. The fecal violations in June 2015 were due to a contractor pumping grit from Reactor 1 when solids were accidentally released into the effluent channel. This facility's permit expired two years ago and a renewal was sent to DEQ on time. SWB is in communication with DEQ and is awaiting a draft permit to review and accept.

West Bank Sewage Treatment Plant

The West Bank Plant has a treatment capacity of 20 mgd (dry weather). The plant is currently 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 Grit Pumps

Valve repair on West Primary Clarifier in progress

Figure 4 – West Bank Sewage Treatment Plant

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

- Concrete and pavement adjacent to the bar screens and aerated grit basins showed cracks and settling.
- Bar Screens 1, 2, and 4 are operational. Bar Screen 3 was recently rehabbed and needs additional adjustments to treat at full screen capacity.

- Grit cyclones for collecting grit from the grit basins exhibited significant corrosion. Two grit classifiers were replaced in 2014 and 2015.
- Three grit pumps were replaced in 2016.
- Aerated Grit Basin 2 was cleaned in 2016.
- Primary sedimentation basins' weirs and rotating arms showed significant corrosion.
- The West Primary Clarifier was rehabbed in 2015-2016 and will be painted by the end of this year.
- The West Primary Clarifier also had a leaking valve during the site visit. The Central Primary Clarifier will have center well repairs conducted, but as of the site visit the time frame was not known.
- Main Collection Basin Pump 3 had impeller replacements and rehabilitation work completed in 2016. Pumps 1 and 2 will be checked and rehabbed later this year or early 2017.
- The structural condition of the trickling filters appeared to be good. Minor structural issues with Trickling Filter No. 1 were noted and are getting worse since the site visit in 2015.
- The drive motor for the arms on the trickling filters is currently inoperable and operates based on hydraulics; however, treatment is still acceptable.
- Pump 2 was offline during the 2015 site visit due to an additional inoperable valve. Maintenance removed and repaired the valve in 2015.
- The SCADA system was down during site visit conducted in 2015. The SCADA was reloaded and is currently online and operational. Minor upgrades to the system are ongoing and should be complete by the end of 2016.
- Influent flow meter is currently not operational. The meter is ordered but requires coordination between contract operator and SWB staff to complete installation.
- A sludge pump on East Primary Clarifier needs to be replaced and is scheduled to be replaced in 2016 or 2017.
- Auto transfer switch is needed to automatically transfer power during a plant outage. Currently this is done manually and requires special PPE and time (at least 30 minutes) to transfer power to keep the plant online.
- A project to convert gas chlorine to sodium hypochlorite is being considered due to safety concerns. The project was bid and awarded in 2016. Construction should begin later in 2016. Currently the plant uses one-ton cylinders to obtain gas chlorine for disinfection.
- A valve replacement program is underway and requires a utility locate a contractor to assist in locating lines and buried valves. The contract operator is currently working with 811 (call before you dig) for assistance before digging.

The monthly average TSS and BOD influent concentrations for 2015 were approximately 106 and 97 mg/L, respectively. The monthly average effluent TSS and BOD concentrations for 2015 have been approximately 10.1 and 8.3 mg/L, respectively. The average flow for 2015 was 9.1 mgd, which is approximately the same as in 2014 at 9.2 mgd. For 2015, this plant has met or exceeded all permitted effluent limits.

SEWERAGE AND DRAINAGE PUMPING STATIONS

Site assessments of the drainage pump stations (DPS) and sanitary sewer lift stations (SLS) of both the East Bank and West Bank of New Orleans were conducted from late May to the first week of June. A Black & Veatch operations specialist was present for the inspections conducted on May 19, 2016, with Julien Engineering representative and SWB staff. The observation report and accompanying table details 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 to be 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 are considered operational either from permanent pumps or the use of temporary pumps. Storm related construction repair and various station improvements have been recently completed at some stations but are ongoing at others. These repairs will increase the probability that the stations remain functional in the event of a major storm or power loss. The repairs include, but are not limited to, the installation of industrial capacity generators, fuel storage tanks, electrical transformers, and storm proofing of pump motors. Several of the stations have undergone structure-related storm proofing measures, as well as including new storm windows and doors. Additionally, many station rooftops, wall framings, and doors have been reinforced to provide greater resistance to the forces sustained due to hurricane wind gusts.

It should be noted that some stations did not have completed repaired at time of inspection or are out of service due to pump maintenance issues. Three SPSs (Station 6, Dodt, and Plum Orchard) are under construction and are using portable pumps at each of these locations. Five SPSs (Burke, Lawrence, Bullard, Lamb, and Lake Forest) have been recently completed and are now in service. There are no DPSs under construction, as the last two stations have been recently completed at Dwyer and Station 5 within the past two years. While all stations are operational, several stations are not at full capacity due to inoperable pumps or the use of temporary pumps.

FACILITY MAINTENANCE

The Facility Maintenance Department consists of four units: (1) Plant Maintenance, (2) Welding & Fabrication, (3) Electrical Maintenance, and (4) Mechanical Maintenance. These units provide meter repairs, removals and installations, major electrical, welding, and fabrication, as well as mechanical maintenance for all SWBNO facilities throughout the system, with the exception of Veolia Water operated sewage treatment plants. The Facility Maintenance Department possesses the specialized equipment and technology necessary to maintain the plant process equipment, drainage pumping stations, sewage pump stations, power generation equipment, and water meter servicing. Automated lathes and mills located in the machine shop and break press, as well as shear and other specialized repair equipment located in the welding and fabrication shop, provide the ability to fabricate parts when replacement parts are excessively expensive or no longer available due to equipment vintage such as gears and parts for older valves.

In addition, new facilities such as Turbine No. 6 have been built within the SWBNO system, which requires additional staff to both operate and maintain. These additional assets prevent in house rehabilitation and preventative maintenance from being completed, which creates a large backlog of work for this department. Currently, one of their major rehab projects, L3 Sedimentation Basin, includes a complete rebuild of gearboxes, drives, paddles, and other equipment and is planned to be completed in about a month, but is not able to keep on schedule due to limited staff. Previous basins

were contracted out; however, this department mentioned that many times that requires them to inspect and at times redo the work contractors have done to keep the system online. Additional rehab work includes bearing work on Drainage Pump Station 11, which is also delayed due to current staffing levels.

Currently, the Facility Maintenance Department has 60 authorized positions. Most of the highly skilled positions (welding and fabrication, electrical, mechanical maintenance) remain vacant. The department is working on getting those vacancies reopened through Civil Service. It was noted during the interview that the residency requirement, as well as pay scales, prevented hiring permanent staff in this department. Additionally, staff mentioned equipment used to conduct work has reached its useful life, such as equipment used to find high voltage lines, bucket truck, welding trucks, and other equipment.

Currently, overtime is necessary to compensate for the limited workforce. More work is being contracted out to subcontractors that was usually done in-house prior to Hurricane Katrina. Many of these contractors are not local and are not always able to provide timely service for critical pieces of equipment. The department is presently facing a lack of qualified personnel to adequately supervise or oversee subcontractors. Approximately 27.9 percent of the Facility Maintenance employees are currently eligible for retirement or will be eligible to retire within five years, including the department head. Thirteen positions (mostly high level senior supervisors in the machine shop) are currently on drop and could leave in the next five years. Three supervisors personnel, including the department head, are all scheduled to retire by the end of 2016 and do not have a planned replacement. The department is actively recruiting at job fairs, and trade schools. SWBNO is working on a partnership with a local community college to start a trade program for skilled trades and plans on hiring from that pool of students. Staff noted that they are working with Civil Service Department to assist in creating more representational job descriptions to gain experience and interested personnel.

ENGINEERING

The Engineering Department includes Mechanical Engineering, Electrical Engineering, Civil Engineering, Construction Administration and Inspection, and Networks Engineering. The Engineering Department administers major contracts throughout the SWBNO facilities and coordinates with other agencies for the design and construction activities impacting SWBNO-maintained facilities. Currently, the department manages over 60 project contracts for both FEMA and capital improvement projects.

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

- New sludge line to the river from the Carrollton WPP is at 80 percent design. Construction should begin in 2017.
- L3 sedimentation basins improvements are ongoing, including replacing static mixers with vertical mixers, adding speed controllers, and repairing flocculator drives. Rehabilitation of L3 should be completed by the end of 2016.
- The SWBNO plans to add a sludge dryer to the East Bank plant. Part of that project is the addition of a new air emission system, which is currently under design.

- An arc flash study is being conducted on electrical equipment for safety purposes and as part of various electrical upgrades at WPPs.
- Chemical feed storage improvements to add additional chemical storage at the Carrollton WPP.
- The filter backwash pump replacement is currently in design phase (60 percent) and will be under construction in 2017
- The water hammer project, which will install two new elevated tanks at Carrollton WPP, is currently out to bid.
- The recycle pump improvements design is complete and construction will end in 2016.
- Rehabilitation of Turbine 4 is ongoing and will be completed by the end of 2016.
- Filter media rehab at Algiers WPP is currently scheduled but has not begun. New instrumentation was added to the filter galleries to display flow and headloss.
- Building or upgrading the city canal system at Florida and Louisiana avenues is currently under construction.
- G4 Basin repairs at Carrollton WPP are currently in the bid phase.
- A recent emergency repair of river intake stations hit by a ship is in progress.
- Rehab of Clarifier 2 at East Bank plant is in the design phase.
- New sludge dryer at East Bank plant is currently at 60 percent design.
- New RAS line at East Bank plant is complete and work is being done to tie the RAS pumps into the line before taking the temporary line off-line. This tie-in should be completed in 2016.
- The piping from the East Bank plant to the expansion and demonstration cells was completed in 2016 and tree planting should start in 2016. The A2 project is currently on hold.
- Flood mitigation contracts for nine sewage pump stations were awarded and the Engineering Department is supervising these contracts. Eight stations are currently under construction and scheduled to be completed by the end of 2016 and one Station is currently under design.
- At Carrollton WPP, fuel tanks are being replaced with a 250,000 gallon above-ground storage tank, which is currently under construction.
- A power plant project to improve valves, steam line, auxiliary power, and address steel was bid and work is ongoing.
- 10 major underground 25 cycle electrical feeders are being replaced throughout the SWBNO facilities. The project is currently under construction. This project is the first design-build project for the SWBNO.

Additional projects planned by the Engineering Department include the following:

- Old River Intake Station rehabilitation.
- The bulk sodium hypochlorite systems at the East and West Bank wastewater treatment plants are being replaced with gas chlorine.
- Turbines No. 5 and 3 are being rehabilitated.

- New lime storage and feed facilities at both WPPs.
- A new chemical storage and feed facility at Carrollton WPP.
- A new filter gallery addition at the Carrollton WPP.
- Various water projects that include filter rehab, valve rehab, and pump replacement.

In addition to contract administration, the Engineering Department is currently adding geographical information system (GIS) technology to further enhance tracking water distribution and sewer piping capabilities. 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. In terms of staffing, the department needs to hire more electrical engineers (due to upcoming retirements) to manage electrical contracts and review electrical design work.

NETWORKS

The Networks Department is charged with maintaining the sanitary sewer system and the potable water distribution system. The water distribution network that was damaged by uprooted trees and other debris during Hurricane Katrina has not been fully repaired. Consequently, the Carrollton WPP is currently purifying approximately 135 mgd of water while serving 92 percent of the pre-Katrina number of accounts. Prior to the levee failure caused by Hurricane Katrina, the plant was purifying approximately 115 mgd of water.

The Networks Department is divided into seven zones. Zone 2 operates the barricade unit making street and lane closures, providing visibility around maintenance sites, and performing preventive maintenance activities such as exercising valves and maintaining fire hydrants. Zone 7 has the after-hours crews, which respond to emergency calls and provide limited surface restorations for repair excavations. Zones 1, 3, 4, 5, and 6 represent geographical areas in New Orleans that provide repair services for their respective areas. Each zone has a staff of approximately 20 to 35 persons who are responsible for repairs within the designated areas. Typically, a three-man crew will complete a work order. More complex work orders may require additional crews on a single work order. Contractors are used to supplement repair work performed within each of the areas, if sufficient manpower within the SWBNO is not available to perform necessary repairs.

According to SWBNO personnel, the biggest challenge is to keep up with the rate of repairs needed due to the increased decay rate of the distribution and collection systems. The Networks Department is finding it harder to keep up with the amount of reactive repairs occurring within the systems with current staffing levels. It was also noted that the increase in residential development (new installations) and increase in city events (runs, bike-a-thons etc.) has also created additional work load, as well as delays in completing work within the systems. Lastly, equipment (backhoes, excavators, flush trucks) and fleet breakdowns have also been an issue over the last year.

The SWBNO conducted a system evaluation of the piping system to detect leaks. The effort to find leaks is ongoing and the department is trying to focus more on lining and replacement, as well as repairs in both the water distribution system and sewer collection system. In terms of staffing, the department is very short-staffed both in engineering and maintenance. The department recently lost

several key engineering personnel that provided technical support and contract management. More senior level engineering staff, as well as engineering interns, is needed to train less experienced staff, provide technical support to the crews, and manage contracts. Additionally, high turnover was noted as a problem in the crews by civil service due to a lack of qualified candidates. The department does have an internal training program for maintenance and engineering staff. Over 1,500 water mains were repaired in 2015. Identification of leaks is ongoing and the SWBNO will continue to incorporate identified leaks into the water main replacement program funded by FEMA. As part of the ESSA program, manholes are also being inspected as an ongoing inspection of the sewer system. Over 1,900 sewer repairs were completed in 2015. In addition to the FEMA-funded projects, Networks also responds to requests for valve closures by contractors and the city.

The Networks Department works in conjunction with the New Orleans Fire Department to monitor and maintain all fire hydrants located in the SWBNO's service area. The Networks Department inspects all fire hydrants within the system. All city hydrants have been mapped and assigned an identification number. The fire hydrants program requires the 16,500 fire hydrants in the database be inspected once every two years to supplement the semiannual inspection cycle of the Fire Department. In 2015, the department inspected over 6,300 hydrants.

The Networks Department completed over 4,000 paving projects in 2015, both in-house and in cooperation with contractors. This department has several maintenance 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 SWBNO owns 790 pieces of rolling stock, which includes trucks, backhoes, and sewer cleaning equipment. The available equipment is being assigned to the various divisions based on the needs of all departments. Forty six new pieces of stock (trucks, pump trailers etc.) were obtained by the department in 2015 and an additional 38 pieces of new stock were obtained as of May 17, 2016.

The Support Services Department performs most all-ground maintenance functions. In addition, Support Services operates the warehouse that stores valves, pipe, hydrants, tools, etc., required by the Networks Department for repair of existing water distribution and sewer pipelines.

Support Services also operates garages for vehicle repair. The garage areas were heavily damaged during Hurricane Katrina. Garage 1 was rehabbed in 2015-2016. Currently, the contractor is working on punch list items with substantial completion scheduled for July 2016. Additional electrical work needs to be completed by the SWBNO and once that work is completed, an occupancy permit will be issued by the building department. This work and permit are expected to be completed by 2016. Garage 2 is currently being rehabbed and has been delayed due to electrical work and should be complete in early 2017.

A new Site Relocation Facility was constructed in 2014 to house personnel until the garage renovations are completed. Currently staff and materials from both garages are being stored in the site relocation building. Ultimately, the Site Relocation Building will also be used to house the Body Repair Shop of Garage 2.

FEMA continues to reimburse equipment and tools for each garage lost to the hurricane in addition to replacing some of the buildings, such as the Annex Building, which will be used to house locker rooms, shower facilities, training rooms, CDL training unit, etc. Various other projects being completed or being conducted within Support Services are:

- Six new vacuum trucks were purchased in 2015 and arrived on site in 2016. Support services are currently leasing five trucks to ensure enough trucks are available.
- Reduction in take home vehicles is ongoing from 2015.
- A new contractor was assigned to mitigate problematic vegetation (lilies) in the canal systems in 2015 and has made significant headway on the reduction of lilies. The department continues to use this contractor for mitigation.
- New contract for security for all SWBNO facilities was recently awarded and went into effect using a new security contractor.
- Support Services is now required to coordinate with Facility Maintenance for day-to-day activities and needs at the WPPs. This department is focusing on staffing the ground maintenance department to maintain a larger portion of the SWBNO facilities. Currently, a contractor is used for the East Bank and the department maintains the West Bank.
- Major change to janitorial services occurred in 2016 to include more facilities.
- Hiring new employees in all areas of support services including mechanics etc. to help support all departments within SWBNO. The department noted that most of the staff is approaching retirement age and, as a result of these retirements, will be short staffed.

Future projects/concerns:

- HVAC system at the St. Joseph building is in need of rehabilitation. Currently, it is not effective in keeping the building cool at all times. The conceptual design was completed in early 2016 and is scheduled to rehab the HVAC in late 2016.
- One elevator in the St. Joseph building is inoperable. Repairs or replacement is needed. The Engineering Department is working on bid documents and the project should be completed in 2017.
- A new building generator is being installed at the St. Joseph building. The building is currently on a portable generator. The project will include a new generator with an automatic transfer switch.
- The Central Yard Facility plans to add an additional parking lot and replace the fence around the building. This project is on hold due to planned street work.
- Support Services phone system will be upgrade once the Carrollton WPP is completed. This project is still pending.

ENVIRONMENTAL AFFAIRS

The Environmental Affairs Department oversees the consent decree and all administrative orders. This department reports there are sewer bypasses and overflow to the Region 6 EPA. Some activities being undertaken by the department include those listed below:

- Continue to monitor industrial users through the pretreatment program.
- Permit compliance in air, water, wastewater, storm water management, solid waste, and underground fuel storage tanks.

The construction of the piping for the East Bank Sewage Treatment Plant wetlands assimilation has been completed. The piping allows treated effluent to be discharged to the demonstration and expansion cells. Currently, SWBNO has a permit from LDEQ to discharge to the demonstration cells but currently no permit has been issued to discharge into the expansion cells. SWBNO began discharging to the demonstration cell in May 2016. Cypress and tupelo trees will be planted in the demonstration cells in 2016. LDEQ has not processed the permit application for the East Bank Wastewater Treatment Plant and cannot discharge into the expansion cells until a permit is issued. The construction of the A2 project, a joint agreement of a wetlands assimilation project between St. Bernard Parish and SWBNO has not been finalized and construction has not begun.

The components of the pretreatment program include monitoring the discharge of the East and West Bank Sewage Treatment Plants in addition to other significant industrial users during the year. One additional user was permitted in 2015 (Churchill Downs Louisiana Horseracing Company, LLC d/b/a Fair Grounds Race Course). An annual report is also submitted to LDEQ to demonstrate pretreatment performance.

In addition, yearly revenue has been received from the following sources associated with the pretreatment program:

- Industrial users billed monthly for excess strength surcharges.
- Sanitary sewerage discharged to the wastewater plant from special events.
- Septage disposal program.

The total revenue received in 2015 from these sources was $1,034,527.61.

No air permits were obtained in 2015. The use of diesel powered units to provide emergency power to drainage pump stations and other SWBNO facilities required these facilities to meet air quality regulations.

SWBNO continues to utilize compliance software for air quality programs at the Carrolton WPP. All Title V Air Permit reports for the East Bank Sewage Treatment Plant and were filed on time and there were no permit violations in 2015.

The Municipal Separate Storm sewer system (MS4) Permit for Orleans Parish is managed by the SWBNO. The Board, along with co-permittees, met the requirements found in the permit and was documented in the annual report filed on May 1, 2015.

Environmental Affairs used a contractor for stormwater sampling required for the M4 permit. The department purchased sampling equipment in 2016 and sampling is now done completely in-house by department staff. All required samples were successfully collected by department staff to meet 2015 permit requirements. Additional projects this department includes starting a Fats, Oils and Grease (FOG) program were the SWBNO will be issuing permits to restaurant with grease traps. The SWBNO will also continue with its green infrastructure pilot program which focuses on community outreach and education. The Environmental Affairs Department needs to hire more staff for the tasks

necessary to maintain compliance with all the various rules and regulations which apply to the SWBNO. They are in the process of hiring more staff such as a Senior, Associate and Intern level City Planners, one Environmental Technician II, and five Environmental Technicians I to assist with ongoing tasks. The department did not express concerns about finding qualified candidates for these vacancies.

STATUS OF CONSENT DECREE FOR SEWERAGE SYSTEM

The SWBNO is complying with the EPA Region 6 and Department of Justice consent decree, which requires cessation of unauthorized discharges and the development of a schedule for repairs to both the collection system and the treatment plant.

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

- Quarterly and annual reporting requirements are to be submitted to the regulatory agency.
- The SWBNO will meet the preventive maintenance requirements of the consent decree.
- Collection system repairs will begin once the hurricane damage to the sewage pump stations has been repaired.

The SWBNO is in compliance with the consent decree. It has met every construction and reporting deadline in the decree and has had no fines related to construction or reporting schedules in 2015.

SUMMARY OF FINDINGS

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

- The management team consists of individuals with significant water, sewerage, and drainage experience. This experience has been developed both internally at SWBNO and at other respected water and sewer utilities.
- Similar to water and sewer utilities across the U.S., the SWBNO departments are faced with a significant number of pending retirements. Approximately 24 percent of current employees are either on the deferred retirement option plan (DROP) or are eligible for retirement. Unless these employees are replaced with qualified individuals, these pending retirements pose a significant threat to SWBNO's ability to perform its core operational and administrative functions. Succession planning and recruitment of qualified employees will be a key element for SWBNO to mitigate the pending retirements.
- Many key system-wide projects that were in design phase in 2015 are currently out to bid and will be under construction such as the water hammer project.
- Several departments are experiencing vacancies, including the Water Purification unit of the Operations Department, as well as the Facilities Maintenance and Networks departments. SWBNO needs to address these vacancies as soon as possible to ensure effective operational and maintenance performance and administrative oversight. Additionally, it was noted while on-site that there is a need for training programs, especially for WPPs operations staff. It was recommended at the site inspection that process operations manuals be developed for the WPPs to provide guidance to entry level and senior level operators to ensure the WPPs are operated consistently.

- The SWBNO has a clear understanding of the existing conditions of the drainage, water and sewage facilities, and is aware of the immediate needs within each division and area; however, funding is needed for the SWBNO to address these issues. Water and sewer customer rate increases have been approved and the SWBNO is currently prioritizing immediate needs such as filter rehabilitation at the Carrollton WPP.
- The SWBNO has started to initiate the filter rehabilitation program at the Carrollton WPP, as the filter system is in need of extensive repairs due to leaking pipes, broken valves, broken actuators, and filter media being at the end of its expected service life. Media rehab is underway at the Claiborne filter gallery and scheduled for the Algiers WPP.
- The rate of decay of the potable water distribution network and the sanitary sewer collection system presents the two biggest challenges. Lines are being replaced or repaired where leaks have been detected by the contractor. Networks Department has experienced high turnover rates in staff in the maintenance crews as well as in the Engineering Department recently. This situation has added to the stress of dealing with the rate of decay and system needs.
- Based on the SPS and SLS inspection, all DPSs and SLSs are considered operational either from permanent pumps or the use of temporary pumps. Three SPSs (Station 6, Dodt, and Plum Orchard) are under construction and are using portable pumps. Five SPSs (Burke, Lawrence, Bullard, Lamb and Lake Forest) have been recently completed and are now in service.
- The sewage plants are meeting permit except for seven excursions in 2015. The seven excursions occurred 7 days in a row at the East Bank WWTP; an onsite contractor accidently placed grit into the effluent channel, which resulted in an exceedance of effluent maximum daily concentration for fecal coliforms. The SWBNO and the contract operator, Veolia, have addressed each issue.

Water Department

ADHERENCE TO WATER REVENUE BOND RESOLUTION REQUIREMENTS

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

The Board was in compliance with the 2014 General Water Revenue Bond Resolution in 2015.

Payment of Indebtedness; Limited Obligations

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

Limitations on Indebtedness

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

Covenants and Representations of Board

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

Covenants with Credit Banks, Insurers, etc.

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

Operation and Maintenance

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

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

Free Service, Competing Service, Billing and Enforcement of Charges

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

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

Sale or Encumbrance of System

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

Insurance

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

Damage, Destruction, Condemnation and Loss of Title

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

Records and Accounts; Inspections and Reports

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

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

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

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

Capital Budget

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

2015 WATER DEPARTMENT OPERATIONS

Funds for the operation and maintenance of Water Department properties were derived from sales of water, delinquent fees, plumbing inspection and license fees, charges for disconnections and reconnections, and from interest earned on available funds. Analyses of the 2015 Water Department operations are discussed in the following paragraphs.

Water Use

According to statistics provided by the Board during 2015 51,563,490,000 gallons of water were pumped by the Water Department. Water sales accounts for 13,810,201,200 gallons and 653,326,900 gallons were metered to City departments without charge. Metered treatment plant process water totaled 645,330,500 gallons. The remaining 36,454,628,400 gallons resulted from unmetered uses, such as fire protection; flushing streets, sewers, drains, and gutters; and unaccounted for system losses.

Number of Customers

Table 2 presents a summary of the historical and projected average number of treated water customers for the period 2011 through 2020. Based on year-end billing summaries, the number of monthly billed customers during 2015 averaged 129,809 compared with 127,876 for 2014. It is projected that the Board will average approximately 131,721 open accounts in 2016 and that the number of accounts will continue to grow at approximately 1 percent each year.

In addition to regular customers, water is sold to construction contractors and other customers on an irregular basis. The Board, by law, also provides water service free of charge to certain municipal and public connections including the Board itself. In 2015 there were 1,119 connections in this group, compared with 1,128 for 2014.

Billed Water Usage

Table 2 also presents a summary of historical and projected treated water sales. Based on year-end billing summaries, a total of 14,000 million gallons of water sales were billed on a monthly basis in 2015, compared with a total of 13,504 million gallons in 2014. Over the past few years, the Board and other water utilities operating in the United States have experienced minimal to no growth in water usage and in some cases, a decline. As a result, a resistance factor is applied to the projected annual usage per customer for each customer class to reflect the impact of price elasticity and the trend of decreasing per capital demand due to conservation efforts and more efficient water fixtures. The volume of water sold is projected to decrease approximately 0.4 percent per year beginning in 2017.

Operating Revenues

The 2016 schedule of rates for retail treated water service is presented in Table 3 and reflects a 10 percent rate increase over 2015 rates. The rates consist of monthly service charges, which vary by

meter size, plus a 4-step declining block volume charge, with the exception of the first block, which is a life-line related charge. Current rates for flat rate fire service are also shown in Table 3. Separate rate schedules, not shown, are used for billing water sold to construction projects and other purposes.

A summary of historical treated water billings and other Water Department revenue is presented in Table 4 for the period 2011 through 2015. The historical revenues shown in Table 4 were developed from detailed records provided by Board Staff. Operating revenues are derived from charges for sale of water and delinquent fees. Sales of water in 2015 were $76,719,113 which, when compared with $69,601,809 for 2014, shows an increase of approximately 10.2 percent. Delinquent fee revenues were $1,288,824 in 2015 which represent a 6.0 percent increase over 2014 delinquent fees.

Non-Operating Revenues

Also shown in Table 4, non-operating revenue of the Water Department includes interest earned on invested funds, and other income from miscellaneous sources. During 2015, non-operating revenue included $966,017 of interest earned from the investment of available funds in the Water System Fund and the Water Revenue Bond Account and $3,982,665 from other sources.

Operation and Maintenance Expenses

Table 5 presents a summary of historical expenses. Expenditures in 2015 increased about 12.8 percent from 2014 expenditures and increased about 22.1 percent from 2013 expenditures. Historical operation and maintenance expenses shown in Table 5 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report. Estimates of future Water Department claims are included on Line 14 of Table 12.

Capital Budget and Expenditures

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

The Water Department's 2015 capital expenditures totaled $38,546,813. The Water Department's capital improvement expenditures for the year are shown in Table 6.

Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Water Department during 2015:

Total Revenues	$82,956,619
Operation and Maintenance Expense	78,264,668
Claims	813,979
Debt Service Payments	5,176,250
Revenue Primarily Available for Capital Expenditures [a]	**-1,298,278**

[a] Excludes depreciation.

PROPOSED CAPITAL IMPROVEMENT PROGRAM

Table 7 presents a summary of the projected major capital improvement program for the period 2016 through 2020. Table 7 is based on the Board's 2016 -2025 Capital Program. The five-year major capital improvement program costs are estimated to total $426,464,000. About 54 percent of this amount, or $231,587,000, is for recurring annual capital improvements, with the remaining $194,877,000 for major improvements. The proposed routine annual capital expenditures for water system improvements and extensions include $35,703,000, for the Water Department's share of power projects, and $69,279,000 for its share of general budget items.

ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

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

Operating Revenues

Operating revenues of the Water Department consist of revenues from water sales. Projected operating revenues for the years 2016 through 2020 are shown in Table 8. These estimates reflect the rate schedule effective January 1, 2016 applied to the projected number of customers and water usage and are projected to decrease, on average, about 0.2 percent per year throughout the study period due the anticipated decline in water consumption. Projected revenue from adopted revenue increases is also shown in Table 8.

Other Revenue Sources

Based upon past practices, the Water Department can expect to obtain revenues or funds from non-operating sources. These include interest earned on available funds, participation by others, house connection charges, fire connections, fire hydrant relocations, and various other income sources. Also, by Board policy, the Water Department receives one-half of the plumbing inspection and license fees currently projected at $299,700 per year.

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

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

Operation and Maintenance Expenses

A summary of projected operation and maintenance expense for the period 2016 through 2020 is shown in Table 9. Estimates of future expenses are based on anticipated future operating conditions and allowances for inflationary factors.

Projections of future operating and maintenance expenses for the study period are based on 2015 actual expenses provided by the SWBNO and an analysis of the current and anticipated operating conditions and trends.

Debt Service Requirements

Future debt service requirements of the Water Department are made up of principal, interest, and reserve fund payments for currently outstanding and future water revenue bond issues. As of December 31, 2015, outstanding debt obligations consisted of $103,525,000 Water Revenue and Refunding Bonds, Series 2014 and $100,000,000 Water Revenue Bonds, Series 2015.

To adequately fund the proposed capital improvements, additional revenue bonds are indicated as shown in Table 10. It is anticipated that the Board will issue revenue bonds in the amount of $90,000,000 in 2017 and $34,000,000 in 2019. Projected bonds shown in Table 10 for 2016 through 2020 are assumed to be sold at an average annual interest rate of 5.5 percent for a term of 30 years with 1 year of capitalized interest.

The Water Department has borrowed from the City of New Orleans Department of Public Works (DPW) and from the Drainage Department. It is anticipated that these funds will be reimbursed during the study period.

Adequacy of Revenues to Finance Proposed Capital Improvements

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

Capital Projects Funding

Table 11 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is $143,667,000. This amount is based on audited data provided by the Board.

Projected revenue bond proceeds, totaling $124,000,000, are shown on Line 2. The amounts and years of issue are developed by considering capital program needs, current policies, other sources of major capital improvement financing, and the debt service coverage requirements of the bond covenants regarding the issuance of parity revenue bonds.

Financing of the major capital improvement program anticipates the transfer of a total of $30,500,000 of operating revenue as shown on Line 3. Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 4 includes anticipated funding by the U.S. Army Corps of Engineers (COE) and FEMA. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 5. Line 6 of the table shows the projected major capital improvement funds available each year.

As of December 31, 2015, the Board had $23,993,300 obligated for open contracts and capital jobs as shown on Line 7 of Table 11. Lines 8 and 9 show the projected Reinvestment in Assets and Major

Capital Additions to be funded as shown in Table 7. Estimated issuance costs and capitalized interest related to the proposed bond issue amounts are shown on Lines 10 and 11.

Line 12 shows the required deposits into the Revenue Bond Reserve Fund associated with proposed bond issues. The debt service reserve on proposed debt is a three-prong test estimated as the lessor of (i) 10 percent of the original principal amount, (ii) the maximum annual debt service, or (iii) 125 percent of the average annual debt service.

The Total Application of Funds is shown on Line 13 of Table 11. The net End of Year Balance is shown on Line 14.

Operating Fund

Line 1 of Table 12 shows projected Revenue from Charges under 2016 rates as previously presented in Table 8. In 2012, the New Orleans City Council approved eight consecutive annual 10 percent water rate increases beginning January 1, 2013. Revenue from these future annual revenue increases of 10 percent effective January 1, 2017 through January 1, 2020 is shown on Line 2.

Other revenue available for system operations is shown on Lines 4 through 7. Interest Income available to the operating fund, shown on Line 4, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Revenue from Plumbing Inspection and License Fees and Other Miscellaneous Revenue are shown on Lines 5 and 6 of Table 12.

Interest from the Bond Reserve Fund, shown on Line 7, is estimated to be 1.0 percent. Total Operating Revenue is shown on Line 8.

Operation and Maintenance expense, previously projected in Table 9, is shown on Line 9 of Table 12. Line 10 shows the estimated allowance for claims. Bad debt expense is assumed to be 2 percent of projected revenue and is shown on Line 11. Projected Net Operating Revenue from system operations is shown on Line 12.

Lines 13 through 15 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing debt includes the Series 2014 and Series 2015 bonds. Line 14 reflects projected principal and interest payments on additional revenue bond debt financing of $90,000,000 in 2017 and $34,000,000. Proposed debt is assumed to be 30 year, 5.5 percent fixed interest rate bonds issued in August, with 1 year of capitalized interest and equal annual payments of principal and interest.

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed $77,465,247 on this agreement. No principal or interest was payable during the initial five-year period of the loan, but after that period, the loan began to bear an interest rate of 4.64 percent. Payments for the water portion of principal and interest began in July 2012 and are shown on Line 16 of Table 12 as subordinate debt.

Anticipated non-operating revenue is shown on Line 18.

Line 19 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing. Line 20 reflects repayment to the Department of Public Works and the Drainage Department as well as claimants.

The General Resolution requires an Operating Reserve Fund of 90 days of the previous year's operation and maintenance expense; however the SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 180 days. Line 21 indicates the projected annual transfers available to meet this requirement throughout the study period. The General Resolution also sets forth the option to maintain a rate stabilization fund. The amount to be transferred to this fund, as well as the timing, is determined by the Executive Director. There are no transfers currently anticipated during the study period as shown on Line 22 of Table 12.

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

The balance of operating funds available at the beginning of the year 2016, shown on Line 24, is comprised of the current cash assets and reflects a balance of $7,022,000. The End of Year Balance, which is exclusive of the operating reserve fund and rate stabilization fund, is shown on Line 25.

Lines 26 through 31 demonstrate that the Board is maintaining an operating reserve equal to at least 180 days of the previous year's operation and maintenance expense beginning in 2018.

As demonstrated in Tables 11 and 12, it is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements and estimated future operation expenses of the Water Department during the 2016-2020 study period examined herein.

Bond Coverage Requirements

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

The calculation of net revenue is shown on Lines 1 through 8 of Table 13. The ability of the Water Department revenues to meet revenue bond coverage requirements is shown on Lines 9 through 13. As shown on Lines 11 and 13, the indicated projected revenue and revenue increases will provide sufficient net revenue to meet coverage requirements during the study period.

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

by the Board, Board of Liquidation and City Council and will go into effect within the following five years.

The results of the additional bonds test are shown on Lines 14 through 20 of Table 13. Lines 18 and 20 of the table indicate that with the magnitude of the adopted annual revenue increases, required minimum levels of coverage are met in each year with indicated coverage levels ranging from 184 percent to 388 percent.

Table 1

Insurance in Force as of December 31, 2015

Insurer	Coverage	Amount of Coverage	Expiration Date
		$	
Lexington Insurance Company	Vehicle Physical Damage Comprehensive Only including Flood	$18,942,139 ($150,000 Deductible)	05/20/16
Zurich	Commercial Crime	$1,000,000 ($5,000 Deductible)	05/01/16
Swiss Re Westchester	Property - Building, Contents, Mobile Equipment, Boiler/Machinery/ Gross Earnings/Extra Expense	$100,000,000 Building and Contents $6,568,829 Mobile Equipment, $25,000,000 sublimit Boiler/Machinery, $9,000,000 Gross Earnings/Extra Expense ($1,000,000 Deductible)	05/20/2016
Genesis/RSUI	Automobile Liability	Limit: $6,000,000 ($350,000 Self-Insured Retention)	06/20/16
Travelers	Fiduciary Liability	$3,000,000 ($50,000 Deductible)	08/01/16
Wright Flood	Flood	84 properties, see schedule	01/01/2016
ACE Mun. Adv.	Public Officials/ Employees Liability Insurance	$10,000,000 ($250,000 Deductible)	11/20/16

Table 2

Water Department
Historical and Projected Sales and
Average Number of Customers (a)

Customer Class	Historical					Projected (b)				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Single Family Residential (c)										
Customers	102,979	105,537	109,836	111,421	113,167	114,900	116,500	117,900	119,200	120,400
Sales (1,000,000 gal.)	6,592	6,461	6,475	6,421	6,527	6,627	6,652	6,668	6,681	6,690
Sales Per Customer (1,000 gal.)	64	61	59	58	58	58	57	57	56	56
Multi-family Residential										
Customers	4,439	4,467	4,549	4,533	4,562	4,600	4,600	4,600	4,600	4,600
Sales (1,000,000 gal.)	788	767	731	686	691	697	690	684	678	672
Sales Per Customer (1,000 gal.)	177	172	161	151	152	152	150	149	147	146
Commercial										
Customers	9,918	9,969	10,193	10,328	10,400	10,500	10,500	10,500	10,500	10,500
Sales (1,000,000 gal.)	3,683	3,694	3,681	3,656	3,667	3,702	3,665	3,630	3,597	3,567
Sales Per Customer (1,000 gal.)	371	371	361	354	353	353	349	346	343	340
Industrial										
Customers	17	19	20	20	21	21	21	21	21	21
Sales (1,000,000 gal.)	42	44	46	52	59	58	58	57	57	56
Sales Per Customer (1,000 gal.)	2,407	2,343	2,324	2,620	2,777	2,776	2,748	2,724	2,700	2,676
Dual Service & Metered Fire Service (d)										
Customers	1,392	1,443	1,509	1,574	1,659	1,700	1,700	1,700	1,700	1,700
Sales (1,000,000 gal.)	2,821	2,786	2,640	2,688	3,057	3,132	3,101	3,071	3,044	3,018
Sales Per Customer (1,000 gal.)	2,027	1,931	1,750	1,708	1,842	1,842	1,824	1,807	1,790	1,775
Total										
Customers	118,745	121,435	126,106	127,876	129,809	131,721	133,321	134,721	136,021	137,221
Sales (1,000,000 gal.)	13,925	13,752	13,573	13,504	14,000	14,217	14,166	14,110	14,056	14,002

(a) Excludes customers receiving free service.
(b) Projections subject to revision in Black & Veatch's *Financial Plan for Water, Sewerage, and Drainage Systems for 2017-2026* report.
(c) Includes duplex.
(d) Does not include flat rate fire protection customers.

Table 3

Water Department
Existing Water Rates
(Effective January 1, 2016)

Rate Components			General Service	Dual Service (a)
			$	$
Monthly Water Service Charge				
Meter Size				
Inches				
5/8			5.94	8.06
3/4			7.26	9.81
1			9.22	12.89
1-1/2			15.22	20.06
2			20.06	28.70
3			45.39	63.69
4			79.06	111.28
6			155.20	216.69
8			229.87	322.10
10			311.85	436.30
12			366.03	512.44
16			487.54	682.28
Monthly Water Quantity Charge - per 1,000 Gallons				
First	3,000	gallons	3.95	3.95
Next	17,000	gallons	6.74	6.74
Next	980,000	gallons	5.30	5.30
Over	1,000,000	gallons	4.44	4.44
Flat Rate Fire Service				
Meter Size				
Inches				
2			13.46	
3			18.30	
4			33.67	
6			58.56	
8			77.59	
10			122.98	
12			159.59	
16			219.62	

(a) Includes Dual Service and all metered fire services.

Table 4

Water Department
Statement of Historical Revenue

Revenue Source	2011	2012	2013	2014	2015
	$	$	$	$	$
Operating Revenue					
Sales of Water	58,804,719	59,208,198	63,248,555	69,601,809	76,719,113
Delinquent Fee	1,085,593	1,048,107	1,150,054	1,216,445	1,288,824
Total Operating Revenue	59,890,312	60,256,305	64,398,610	70,818,254	78,007,937
Nonoperating Revenue					
Interest Earned	44,752	92,849	82,893	349,607	966,017
Plumbing Inspection and License Fees	379,036	343,903	321,518	339,176	305,384
Revenue Sharing	140,655	123,885	219,877	254,577	258,721
Other Income (a)	15,944,157	10,851,066	5,234,998	2,459,234	3,418,560
Total Nonoperating Revenue	16,508,600	11,411,703	5,859,286	3,402,593	4,948,682
Total Revenue	76,398,912	71,668,008	70,257,896	74,220,847	82,956,619

(a) Includes $11,514,936 in operating and maintenance grants in 2011, $7,617,063 in 2012, $1,981,568 in 2013, -$381,876 in 2014 and $2,405 in 2015.

Table 5

Water Department
Historical Operation and Maintenance Expenses (a)

	2011	2012	2013	2014	2015
	$	$	$	$	$
Personal Services	30,819,637	31,410,463	32,375,467	34,802,991	42,333,498
Services & Utilities	13,199,077	12,230,597	15,964,882	16,936,254	17,408,686
Supplies & Materials	17,947,200	17,109,745	14,229,820	14,998,094	18,276,404
Special Current Charges	2,881,217	1,532,863	1,304,502	2,357,932	(103,530)
Furniture & Equipment	221,278	173,656	233,244	298,973	349,610
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance (b)	65,068,409	62,457,322	64,107,915	69,394,244	78,264,668

(a) Historical operation and maintenance expenses do not include the non-cash portion of provision for claims as recorded in the Comprehensive Annual Financial Report. Estimates of future Water Department claims payable are included in Table 11.

(b) Source: Expenditure Analysis by Group Report.

Table 6

Water Department
Capital Expenditures
2015

C.P. #	Project	Actual Expenditures
		$
	Waterworks	
110	Normal Extensions & Replacements	2,181,901
112	Modification to Oak St Raw Water Intake Station	197,263
122	Sycamore and Claiborne Filter Rehabilitation	912,946
156	Advanced Water Treatment	129,613
160	SELA Water Relocation Costs	2,103,237
175	Water Hurricane Recovery Bonds	8,120,449
180	FEMA Review of Change Orders - Water	5,170,319
	Total Waterworks	18,815,729
	Water Distribution	
214	Normal Extensions & Replacements	1,505,838
215	Rehabilitation - Mains, Hydrants & Services	264,850
239	Mains DPW Contracts	2,878,095
	Total Water Distribution	4,648,784
	Power Projects and General Budget	
600	Water Share of Power Projects	5,995,949
700	Water Reserve for Emergencies	270,400
800	Water Share of General Budget Items	8,833,951
	Total Power Projects and General Budget	15,100,301
	Total Water Department	38,564,813

Table 7

Water Department
Projected Capital Improvements (a)

C.P. #	Project	2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
	Reinvestment in Assets						
110	Normal Extension & Replacement	10,459,000	14,070,000	6,245,000	4,920,000	5,470,000	41,164,000
112	Modification to Oak St. Raw Water Intake Station	1,200,000	5,500,000	5,000,000			11,700,000
122	Sycamore and Claiborne Filter Rehabilitation	4,490,000	1,500,000				5,990,000
160	SELA Water Relocation Costs	833,000	603,000	237,000	578,000	2,145,000	4,396,000
214	Normal Extensions & Replacements	2,365,000	2,385,000	2,385,000	2,410,000	2,410,000	11,955,000
216	Water System Replacement Program	5,100,000	5,100,000	5,200,000	5,000,000	5,000,000	25,400,000
239	Mains In Streets Department Contracts	3,200,000	3,200,000	3,200,000	3,200,000	3,200,000	16,000,000
600	Water Share of Power Projects	16,852,000	12,369,000	5,572,000	280,000	630,000	35,703,000
701	Water Reserve for Emergencies	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	10,000,000
800	Water Share of General Budget Items	23,502,000	19,871,000	9,321,000	8,066,000	8,519,000	69,279,000
	Total Routine Capital Improvements	70,001,000	66,598,000	39,160,000	26,454,000	29,374,000	231,587,000
	Major Capital Improvements						
135	Improvements to Chemical System	370,000	1,400,000	3,000,000			4,770,000
156	Advanced Carrollton Water Treatment	6,815,000	200,000	20,120,000	120,000	120,000	27,375,000
157	Advanced Algiers Water Treatment	1,940,000	3,575,000	2,750,000			8,265,000
158	Water Treatment Carr.	200,000	200,000				400,000
159	Water Plant Security Improvements	2,000,000		2,000,000			4,000,000
175	Water Hurricane Recovery Bonds	69,717,000	20,000,000	20,000,000	20,000,000	20,000,000	149,717,000
221	Feeder Main Extension, General	100,000	100,000	50,000	50,000	50,000	350,000
	Total Major Capital Improvements	81,142,000	25,475,000	47,920,000	20,170,000	20,170,000	194,877,000
	Total Water Department Improvements	151,143,000	92,073,000	87,080,000	46,624,000	49,544,000	426,464,000

(a) The improvements for 2016-2020 are based on the 2016 capital budget and 2016-2025 capital program.

Table 8

Water Department
Projected Operating Revenue

	(1)	(2)	(3)
Year	Revenue From Charges	Additional Revenue (a)	Total Service Charge Revenue
	$	$	$
2016	86,140,300	0	86,140,300
2017	86,002,900	8,463,400	94,466,300
2018	85,826,700	17,741,900	103,568,600
2019	85,648,700	27,973,900	113,622,600
2020	85,465,200	39,180,200	124,645,400

(a) Reflects additional revenue from adopted revenue increases.

Table 9

Water Department
Projected Operation and Maintenance Expenses

	2016	2017	2018	2019	2020
	$	$	$	$	$
Personal Services	38,103,500	39,246,600	40,424,000	41,636,700	42,885,800
Services & Utilities	17,930,900	18,468,900	19,022,900	19,593,600	20,181,400
Supplies & Materials	18,824,700	19,389,400	19,971,100	20,570,300	21,187,400
Special Current Charges	1,577,600	1,625,000	1,673,700	1,723,900	1,775,600
Furniture & Equipment	360,100	370,900	382,000	393,500	405,300
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	76,796,800	79,100,800	81,473,700	83,918,000	86,435,500

Table 10

Water Department
Debt Service Requirements

		2016	2017	2018	2019	2020
		$	$	$	$	$
Existing Bonds						
Series 2014		5,501,300	7,700,000	7,693,000	7,700,000	7,690,000
Series 2015		4,721,000	4,940,600	5,640,600	5,694,600	5,783,600
Total Existing Debt Service		10,222,300	12,640,600	13,333,600	13,394,600	13,473,600
Projected Bonds						
	Amount of Issue					
	$					
2016	0	0	0	0	0	0
2017	90,000,000		0	2,722,125	6,533,100	6,533,100
2018	0			0	0	0
2019	34,000,000				0	1,028,333
2020	0					0
Total Projected Debt Service		0	0	2,722,125	6,533,100	7,561,433
Total Debt Service		10,222,300	12,640,600	16,055,725	19,927,700	21,035,033

Table 11

Water Department
Capital Improvement Program Financing

Line No.	Description	Fiscal Year Ending December 31, 2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
1	Funds Available at Beginning of Year	143,667,000	55,737,600	71,202,200	11,177,400	22,562,500	143,667,000
2	Revenue Bond Proceeds	0	90,000,000	0	34,000,000	0	124,000,000
3	Operation Fund Transfers	0	0	4,000,000	10,000,000	16,500,000	30,500,000
4	Participation By Others	86,058,000	32,461,500	27,866,700	22,985,500	23,675,100	193,046,800
5	Interest Income	1,148,900	671,400	491,600	194,900	196,100	2,702,900
6	Total Funds Available	230,873,900	178,870,500	103,560,500	78,357,800	62,933,700	493,916,700
7	Obligated Contracts & Capital Jobs	(23,993,300)	0	0	0	0	(23,993,300)
8	Reinvestment in Assets	(70,001,000)	(68,595,900)	(41,544,800)	(28,907,000)	(33,060,700)	(242,109,400)
9	Major Capital Additions	(81,142,000)	(26,239,300)	(50,838,300)	(22,040,300)	(22,701,500)	(202,961,400)
10	Bond Issuance Expense	0	(1,350,000)	0	(510,000)	0	(1,860,000)
11	Capitalized Interest Requirement	0	(4,950,000)	0	(1,870,000)	0	(6,820,000)
12	Revenue Bond Reserve Fund	0	(6,533,100)	0	(2,468,000)	0	(9,001,100)
13	Total Application of Funds	(175,136,300)	(107,668,300)	(92,383,100)	(55,795,300)	(55,762,200)	(486,745,200)
14	End of Year Balance	55,737,600	71,202,200	11,177,400	22,562,500	7,171,500	7,171,500

Table 12

Water Department
Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No.	Description	Fiscal Year Endiing December 31, 2016	2017	2018	2019	2020
		$	$	$	$	$
1	Revenue from Charges	86,140,300	86,002,900	85,826,700	85,648,700	85,465,200
2	Total Additional Revenue (a)	0	8,463,400	17,741,900	27,973,900	39,180,200
3	Total Service Charge Revenue	86,140,300	94,466,300	103,568,600	113,622,600	124,645,400
4	Interest Income	341,500	348,300	379,100	395,700	404,200
5	Plumbing Insp. & License Fees	299,700	299,700	299,700	299,700	299,700
6	Other Miscellaneous Income	3,155,100	3,155,100	3,155,100	3,155,100	3,155,100
7	Interest from Bond Reserve Fund	164,000	197,000	230,000	242,000	254,000
8	Total Operating Revenue	90,100,600	98,466,400	107,632,500	117,715,100	128,758,400
9	Operation & Maintenance	(76,796,800)	(79,100,800)	(81,473,700)	(83,918,000)	(86,435,500)
10	Provision for Claims	(943,800)	(943,800)	(943,800)	(943,800)	(943,800)
11	Provision for Doubtful Accounts	(1,722,800)	(1,720,100)	(1,716,500)	(1,713,000)	(1,709,300)
12	Net Operating Revenue	10,637,200	16,701,700	23,498,500	31,140,300	39,669,800
	Debt Service					
	Senior Lien Revenue Bonds					
13	Existing	(10,222,300)	(12,640,600)	(13,333,600)	(13,394,600)	(13,473,600)
14	Projected	0	0	(2,722,100)	(6,533,100)	(7,561,400)
15	Total Senior Lien Revenue Bonds	(10,222,300)	(12,640,600)	(16,055,700)	(19,927,700)	(21,035,000)
	Subordinate Revenue Bonds					
16	Gulf Opportunity Zone Act Loan	(639,900)	(639,900)	(639,900)	(639,900)	(639,900)
17	Total Debt Service	(10,862,200)	(13,280,500)	(16,695,600)	(20,567,600)	(21,674,900)
18	Other Non-Operating Revenue	400,500	400,500	400,500	400,500	400,500
19	Transfer to Construction	0	0	(4,000,000)	(10,000,000)	(16,500,000)
20	Due from/(to) Other Departments	(2,186,000)	(436,000)	(436,000)	0	0
21	Transfer to Operating Reserve Fund	0	0	(206,200)	(585,100)	(602,700)
22	Transfer from/(to) Rate Stabilization Fund	0	0	0	0	0
23	Net Annual Balance	(2,010,500)	3,385,700	2,561,200	388,100	1,292,700
24	Beginning of Year Cash Balance (b)	7,022,000	5,011,500	8,397,200	10,958,400	11,346,500
25	End of Year Balance	5,011,500	8,397,200	10,958,400	11,346,500	12,639,200
26	Beginning of Year Cash Balance (b)	7,022,000	35,488,345	38,874,045	41,641,445	42,614,645
27	Customer Deposits	11,178,700				
28	Operating Reserve Fund	19,298,145	0	206,200	585,100	602,700
29	Net annual Balance	(2,010,500)	3,385,700	2,561,200	388,100	1,292,700
30	End of Year Balance	35,488,345	38,874,045	41,641,445	42,614,645	44,510,045
31	Days of O&M Cash on Hand	163	174	181	180	182

(a) Reflects revenue from an eight-year series of annual 10% rate increases effective January 1, 2013; adopted by the City Council in 2012.

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

Table 13

Water Department
Coverage Requirements

Line No.	Coverage Requirements	2016	2017	2018	2019	2020
		$	$	$	$	$
	Projected Net Revenues					
1	Revenue Under Existing Rates	86,140,300	86,002,900	85,826,700	85,648,700	85,465,200
2	Additional Revenue Under Proposed Rate	0	8,463,400	17,741,900	27,973,900	39,180,200
3	Interest Income	1,654,400	1,216,700	1,100,700	832,600	854,300
4	Plumbing and Inspection Fees	299,700	299,700	299,700	299,700	299,700
5	Other Miscellaneous Revenue	3,155,100	3,155,100	3,155,100	3,155,100	3,155,100
6	Transfer from Rate Stabilization Fund	0	0	0	0	0
7	Operation & Maintenance	(76,796,800)	(79,100,800)	(81,473,700)	(83,918,000)	(86,435,500)
8	Net Revenue	14,452,700	20,037,000	26,650,400	33,992,000	42,519,000
	Rate Covenant Coverage					
9	Projected Net Revenues	14,452,700	20,037,000	26,650,400	33,992,000	42,519,000
	Annual Debt Service					
10	Senior Debt	10,222,300	12,640,600	16,055,700	19,927,700	21,035,000
11	Coverage (a)	141%	159%	166%	171%	202%
12	All Debt	10,862,200	13,280,500	16,695,600	20,567,600	21,674,900
13	Coverage (b)	133%	151%	160%	165%	196%
	Additional Bond Coverage					
14	Preceding Year Projected Net Revenues	4,691,900	14,452,700	20,037,000	26,650,400	33,992,000
15	Future Additional Revenue (c)	47,624,600	39,977,700	28,467,000	18,023,600	8,564,900
16	Adjusted Projected Net Revenues	52,316,500	54,430,400	48,504,000	44,674,000	42,556,900
	Maximum Debt Service					
17	Senior Debt	13,473,600	20,006,700	20,006,700	22,474,600	22,474,600
18	Coverage (a)	388%	272%	242%	199%	189%
19	All Debt	14,113,500	20,646,600	20,646,600	23,112,300	23,112,300
20	Coverage (b)	371%	264%	235%	193%	184%

(a) The General Bond Resolution requires net revenue to equal or exceed 125% of debt service.
(b) The General Bond Resolution requires net revenue to equal or exceed 110% of debt service.
(c) Reflects revenue from an eight-year series of annual 10% rate increases effective January 1, 2013; adopted by the City Council in 2012.

Sewerage Department

ADHERENCE TO SEWERAGE SERVICE REVENUE BOND RESOLUTION

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

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

The provisions of the General Sewerage Service Revenue Bond Resolution are virtually identical to those of the General Water Revenue Bond Resolution described in the preceding section of this report. The Board was in compliance with these covenants in 2015. Sewerage Department tables are included at the end of this section.

2015 SEWERAGE DEPARTMENT OPERATIONS

Funds for the operation, maintenance, and debt service requirements of the Sewerage Department are obtained from sewerage service charges. The balance of revenue remaining after meeting these costs may be used for cash financing capital improvements as required. Other fund sources include participation by others, interest earned on invested funds, and other minor sources.

Revenues and expenditures related to the 2015 operations of the Sewerage Department are discussed in the following paragraphs.

Wastewater Volumes

Number of Customers

Table 14 presents a summary of the historical and projected average number of sewer customers for the period 2011 through 2020. Based on year-end billing summaries, the number of monthly billed customers during 2015 averaged 127,105 compared with 125,303 for 2014. It is projected that the Board will average approximately 128,931 open accounts in 2016 and that the number of accounts will continue to grow at approximately 0.9 percent each year.

Billed Wastewater Volume

Table 14 also presents a summary of historical and projected billed wastewater volumes. Based on year-end billing summaries, a total of 11,597 million gallons of wastewater volume was billed in 2015, compared with a total of 11,223 million gallons in 2014. Since 85 percent of residential water

usage and 100 percent of non-residential usage is treated as billable sewer flows, the decrease in sewage volume billed is similar to the decrease in water usage. After factoring in the number of annual bills rendered, the average annual usage per customer for each customer class and the projected resistance factor, the resulting projected contributed wastewater volume reflects a decrease of approximately 0.4 percent per year.

Operating Revenues

The 2016 schedule of rates for retail sewerage service is presented in Table 15 and reflects a 10 percent rate increase over 2015 rates. The rates consist of monthly service charges, which vary by meter size, plus a volume charge. Quantity charges for single family residential and multi-residential customers are based on 85 percent of the metered water consumption to allow 15 percent for lawn watering and other uses, which contribute no flow to the sanitary sewer. All other classes are based on 100 percent of water consumption. Water from private wells or other non-Board sources that is discharged to the sanitary sewer system is to be metered and the consumption included in computing sewerage service charges. Any customer who can show that only a portion of his metered water usage is discharged to the sanitary sewer system is to be charged for only that portion of the total water quantity. A residential customer may have either the 15 percent allowance or a special exemption, but not both.

A summary of historical sewer billings and other Sewerage Department revenue is presented in Table 16 for the period 2011 through 2015. The historical revenues shown in Table 16 were developed from detailed records provided by Board staff. Operating revenues are derived from sewerage service charge revenue, which includes excess strength charges, and delinquent fees. Sewerage service charge revenues in 2015 were $94,775,797 which, when compared with $85,740,367 for 2014, shows an increase of approximately 10.5 percent. Delinquent fee revenues were $861,169 in 2015 which represent an increase of approximately 5.9 percent over 2014 delinquent fees.

Non-Operating Revenues

Also shown in Table 16, Sewerage Department non-operating revenue includes interest earned on the investment of available funds and other minor items of revenue. Interest earned in 2015 consisted of $1,340,586 from investments in the Sewerage System fund, the capital projects and construction fund. Miscellaneous income was $1,188,215 for 2015.

Operation and Maintenance Expenses

Table 17 presents a summary of 2011 through 2015 historical operation and maintenance expenses of the Sewerage Department. Expenditures for 2015 increased about 19.5 percent from 2014 expenditures and about 25.5 percent from 2013 expenditures. Historical operation and maintenance expenses shown in Table 17 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report. Estimates of future Sewerage Department claims are shown on Line 12 in Table 24.

Capital Budget and Expenditures

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

The Sewerage Department's 2015 capital expenditures totaled $46,929,082. Capital improvement expenditures for the year are shown in Table 18.

Summary of Operations

The following tabulation shows a summary of the receipts and expenditures of the Sewerage Department during 2015:

Total Revenues	$98,165,766
Operation and Maintenance Expense	58,028,723
Claims	392,928
Debt Service Payments	18,995,178
Revenue Primarily Available for Capital Expenditures [a]	**20,748,937**

[a] Excludes depreciation.

PROPOSED CAPITAL IMPROVEMENT PROGRAM

Table 19 presents a summary of the projected major capital improvement program for the period 2016 through 2020. Table 19 is based on the Board's 2016-2025 Capital Program. The five-year major capital improvement program costs are estimated to total $439,339,000. Of the projected total, $344,679,000 is considered to be for recurring annual capital improvements. The remaining $94,660,000 is for proposed major capital expenditures. Costs of power projects and general budget items are prorated between the Water, Sewerage and Drainage Departments on the basis of relative use. The projected Sewerage Department pro rata share of power projects and general budget item costs for the five-year period 2016 through 2020 total $21,748,000 and $44,545,000, respectively.

The Board is currently complying with the EPA Region 6 Administrative Order. In January of 2010, the Board successfully completed negotiations for a modification of the Consent Decree. The Capital Improvement Program shown in Table 19 represents the schedule for complying with the modified Consent Decree.

ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

This section of the report analyzes the adequacy of projected revenues to finance the proposed capital improvements shown in Table 19.

Operating Revenues

Future operating revenues of the Sewerage Department consist of sewerage service charge revenues which are summarized for 2016 through 2020 in Table 20. These estimates reflect the rate schedule effective January 1, 2016 applied to the projected number of customers and contributed wastewater flow. Projected revenue from adopted revenue increases is also shown in Table 20.

Other Revenue Sources

Based upon past practices, the Sewerage Department can expect to obtain revenues or funds from non-operating sources. These include interest earned from the investment of available funds, participation by others, and miscellaneous other income. By Board policy, the Sewerage Department receives one-half of the plumbing inspection and license fees, currently projected at $326,100 per year.

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

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

Operation and Maintenance Expense

A summary of projected operation and maintenance expense for the period 2016 through 2020 is shown in Table 21. Estimates of future expenses are based on anticipated future operating conditions and allowances for inflationary factors.

Projections of future operating and maintenance expenses for the study period are based on 2015 actual expenses provided by the SWBNO and an analysis of the current and anticipated operating conditions and trends.

Debt Service Requirements

Future debt service requirements of the Sewerage Department are made up of principal, interest, and reserve fund payments for currently outstanding and future sewerage revenue bond issues. As of December 31, 2015 outstanding debt obligations consisted of $7,755,000 Sewerage Revenue Bonds Series 2011, $147,765,000 Sewerage Service Revenue and Refunding Bonds Series 2014, and $100,000,000 Sewerage Service Revenue and Refunding Bonds Series 2015.

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, 2015, had received a total of $9,000,000 in disbursements. The Board began making principal payment in November 2013. With the issuance of the Series 2014 bonds, the Series 2011 bonds became parity debt and entitled to the provisions of the General Sewerage Service Revenue Bond Resolution. Total outstanding debt obligation on the Sewerage Revenue Bonds Series 2011 was $7,755,000 as of December 31, 2015.

To adequately fund the proposed capital improvements, additional revenue bonds are indicated as shown in Table 22. It is anticipated that the Board will issue revenue bonds in the amount of $130,000,000 in 2017 and $32,000,000 in 2019. Projected bonds shown in Table 22 for 2016 through 2020 are assumed to be sold at an average annual interest rate of 5.5 percent for a term of 30 years.

The Sewerage Department has borrowed from the City of New Orleans Department of Public Works (DPW). It is anticipated that this amount will be reimbursed during the study period.

Adequacy of Revenues to Finance Proposed Capital Improvements

Total revenue requirements for the Sewer Department recognized for purposes of this report include operation and maintenance expense, allowance for claims, debt service costs on major capital improvements financed through the sale of bonds, and expenditures for capital improvements not financed from bond proceeds. Table 23 examines the financing of the major capital improvement

program and Table 24 summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed bonds, and the transfer of operating funds for capital improvement financing.

Capital Projects Funding

Table 23 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the six-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is $133,675,100. This amount is based on audited data provided by the Board.

Projected revenue bond proceeds, totaling $162,000,000, are shown on Line 2. The amounts and years of issue are developed by considering capital program needs, current policies, other sources of major capital improvement financing, and the debt service coverage requirements of the bond covenants regarding the issuance of parity revenue bonds.

Financing of the major capital improvement program anticipates the transfer of a total of $156,000,000 of operating reserves as shown on Line 3. Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 4 includes anticipated funding by the COE and FEMA. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 5. Line 6 of the table shows the projected major capital improvement funds available each year.

As of December 31, 2015, the Board had $35,615,100 obligated for open contracts and capital jobs as shown on Line 7 of Table 23. Lines 8 and 9 show the projected Reinvestment in Assets and Major Capital Additions to be funded as shown in Table 19. Estimated issuance costs related to the proposed bond issue amounts are shown on Line 10.

Line 11 shows the required deposits into the Revenue Bond Reserve Fund associated with proposed bond issues. The debt service reserve on proposed debt is a three-pronged test estimated as the lessor of (i) 10 percent of the original principal amount, (ii) the maximum annual debt service, or (iii) 125 percent of the average annual debt service.

The Total Application of Funds is shown on Line 12 of Table 23. The net End of Year Balance is shown on Line 13.

Operating Fund

Line 1 of Table 24 shows projected Revenue from Charges under 2016 rates as previously presented in Table 20. In 2012, the New Orleans City Council approved eight consecutive annual 10 percent sewer rate increases beginning January 1, 2013. Revenue from these future annual revenue increases of 10 percent effective January 1, 2016 through January 1, 2020 is shown on Line 2.

Other revenue available for system operations is shown on Lines 4 through 7. Interest Income available to the operating fund, shown on Line 4, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Revenue from Plumbing Inspection and License Fees and Other Miscellaneous

Interest from the Bond Reserve Fund, shown on Line 7, is estimated to be 1.0 percent. Total Operating Revenue is shown on Line 8.

Operation and Maintenance expense, previously projected in Table 21, is shown on Line 9 of Table 24. Line 10 shows the estimated allowance for claims. Bad debt expense is assumed to be 2 percent of projected revenue and is shown on Line 11. Projected Net Operating Revenue from system operations is shown on Line 12.

Lines 13 through 15 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing bonds include the Series 2011, Series 2014 and Series 2015 bonds. Line 16 reflects projected principal and interest payments on additional revenue bond debt financing of $130,000,000 in 2017 and $32,000,000 in 2019. Proposed debt is assumed to be 30 year, 5.5 percent fixed interest rate bonds issued in August.

In July of 2006, the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed $77,465,247 on this agreement. No principal or interest was payable during the initial five-year period of the loan, but after that period, the loan began to bear an interest rate of 4.64 percent. Payments for the sewerage portion of principal and interest began in July 2012 and are shown on Line 16 of Table 24 as subordinate debt.

Anticipated non-operating revenue is shown on Line 18.

Line 19 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing. Line 20 reflects payment to the Department of Public Works as well as claimants.

The General Resolution requires an Operating Reserve Fund of 90 days of the previous year's operation and maintenance expense; however the SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 180 days. Line 21 indicates the projected annual transfers available to meet this requirement throughout the study period. The General Resolution also sets forth the option to maintain a rate stabilization fund. The amount to be transferred to this fund, as well as the timing, is determined by the Executive Director. There are no transfers currently anticipated during the study period as shown on Line 22 of Table 24.

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

The balance of operating funds available at the beginning of year 2016, shown on Line 24, is comprised of the current cash assets and reflects a balance of $24,722,800. The End of Year Balance is shown on Line 25.

Lines 26 through 30 demonstrate that the Board is maintaining an operating reserve equal to at least 180 days of the previous year's operation and maintenance expense.

As demonstrated in Tables 23 and 24, it is anticipated that current revenue sources will be adequate to readily finance both projected capital program requirements as currently scheduled and estimated future operation expenses of the Sewerage Department during the 2016-2020 study period examined herein.

Bond Coverage Requirements

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

The calculation of net revenue is shown on Lines 1 through 8 of Table 25. The ability of the Sewerage Department revenues to meet revenue bond coverage requirements is shown on Lines 9 through 13. As shown on Lines 11 and 13, the indicated projected revenue and revenue increases will provide sufficient net revenue to meet coverage requirements during the study period.

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

The results of the additional bonds test are shown on Lines 14 through 20 of Table 25. Lines 18 and 20 of the table indicate that with the magnitude of the adopted annual revenue increases, required minimum levels of coverage are met in each year with indicated coverage levels ranging from 261 percent to 397 percent.

Table 14

Sewerage Department
Historical and Projected Billed Volumes
and Average Number of Customers (a)

Customer Class	Historical					Projected (b)				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Single Family Residential (c)										
Customers	102,265	104,782	109,036	110,599	112,318	114,000	115,500	116,900	118,200	119,400
Sales (1,000,000 gal.)	5,433	5,374	5,392	5,323	5,434	5,515	5,532	5,546	5,557	5,565
Sales Per Customer (1,000 gal.)	53	51	49	48	48	48	48	47	47	47
Multifamily Residential										
Customers	4,429	4,455	4,534	4,514	4,540	4,600	4,600	4,600	4,600	4,600
Sales (1,000,000 gal.)	672	655	621	587	589	597	591	585	580	575
Sales Per Customer (1,000 gal.)	152	147	137	130	130	130	128	127	126	125
Commercial										
Customers	9,861	9,897	10,101	10,161	10,215	10,300	10,300	10,300	10,300	10,300
Sales (1,000,000 gal.)	5,292	5,312	5,258	5,265	5,516	5,562	5,506	5,454	5,404	5,358
Sales Per Customer (1,000 gal.)	536	536	520	518	539	539	534	529	524	520
Industrial										
Customers	27	28	30	29	31	31	31	31	31	31
Sales (1,000,000 gal.)	57	51	47	48	59	59	58	57	57	56
Sales Per Customer (1,000 gal.)	2,123	1,828	1,559	1,644	1,886	1,887	1,868	1,848	1,832	1,816
Total										
Customers	116,581	119,162	123,701	125,303	127,105	128,931	130,431	131,831	133,131	134,331
Sales (1,000,000 gal.)	11,454	11,391	11,317	11,223	11,597	11,732	11,687	11,642	11,598	11,554

(a) Excludes customers receiving free service.
(b) Projections subject to revision in Black & Veatch's *Financial Plan for Water, Sewerage, and Drainage Systems for 2017-2026* report.
(c) Includes duplex.

Table 15

Sewerage Department
Existing Sewer Rates
(Effective January 1, 2016)

Rate Components	General Service
	$
Monthly Sewerage Service Charge	
Meter Size	
Inches	
5/8	16.98
3/4	24.17
1	34.41
1-1/2	63.33
2	92.61
3	219.62
4	366.03
6	732.05
8	1,098.08
10	1,464.10
12	1,683.72
16	2,269.36
Monthly Quantity Charge	
Per 1,000 Gallons	5.91
Excessive Strength Charge per Pound	
BOD	0.39
SS	0.23

Table 16

Sewerage Department
Statement of Historical Revenue

Revenue Source	2011	2012	2013	2014	2015
	$	$	$	$	$
Operating Revenue					
Sewerage Service Charges	69,632,459	70,707,230	77,767,114	85,740,367	94,775,797
Delinquent Fee	725,617	700,605	768,670	812,895	861,169
Total Operating Revenue	70,358,076	71,407,835	78,535,785	86,553,262	95,636,965
Nonoperating Revenue					
Interest Income	253,547	194,080	178,122	257,824	1,340,586
Plumbing Inspection and License Fees	379,036	343,903	321,518	339,176	305,384
Revenue Sharing	175,424	154,509	274,229	317,506	322,674
Other Income (a)	3,009,211	296,406	771,397	1,289,474	560,157
Total Nonoperating Revenue	3,817,218	988,898	1,545,265	2,203,980	2,528,801
Total Revenue	74,175,294	72,396,734	80,081,050	88,757,242	98,165,766

(a) Includes $1,533,624 in operating and maintenance grants in 2011 , -$7,463 in 2012, -$5,367 in 2013 and -$383,354 in 2014.

Table 17

Sewerage Department
Historical Operation and Maintenance Expenses (a)

	2011	2012	2013	2014	2015
	$	$	$	$	$
Personal Services	23,972,125	24,403,860	24,785,716	23,301,162	30,903,283
Services & Utilities	17,593,403	17,225,768	17,463,783	18,342,982	17,148,698
Supplies & Materials	2,307,035	2,800,856	3,201,309	4,946,831	9,090,197
Special Current Charges	(460,199)	296,041	588,515	1,762,961	617,675
Furniture & Equipment	222,279	157,870	199,073	205,113	268,870
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance (b)	43,634,641	44,884,396	46,238,396	48,559,050	58,028,723

(a) Historical operation and maintenance expenses do not include the non-cash portion of provision for claims as recorded in the Comprehensive Annual Financial Report. Estimates of future Water Department claims payable are included in Table 11.

(b) Source: Expenditure Analysis by Group Report.

Table 18

Sewerage Department
Capital Expenditures
2015

C.P. #	Project	Actual Expenditures
		$
	Sewerage Systems	
313	Extensions & Replacements - Sewer Force Mains EPA Consent Decree	224,238
317	Normal Extensions & Replacement of Gravity Mains	8,602,722
318	Rehabilitation Gravity Sewer System	51,094
326	Extensions & Replacements to Sewer Pumping Stations	101,581
339	Mains in Street Dept. Contracts	3,060,270
340	Sewerage Hurricane Recovery Bonds (FEMA)	2,146,280
348	Normal Extensions & Replacements	5,883,071
360	SELA Sewerage Relocation Costs	2,505,848
368	Wetlands Assimilation Project	3,495,751
369	Hurricane Katrina Expenses for Sewer System	(62,199)
375	Sewerage Hurricane Recovery Bonds	5,702,710
380	FEMA Review of Change Orders-Sewer	4,610,630
381	Modification & Extension of WBSTP to 20/50 MGD	30,400
	Total Sewerage System	36,352,396
	Power Projects and General Budget	
600	Sewerage Share of Power Projects	2,253,304
700	Sewer Reserve for Emergencies	280,987
800	Sewerage Share of General Budget Items	8,042,394
	Total Power Projects and General Budget	10,576,685
	Total Sewerage Department	46,929,082

Table 19

Sewerage Department
Projected Capital Improvements (a)

C.P. #	Project	2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
	Reinvestment in Assets						
317	Extensions and Replacements - Gravity Mains	25,326,000	32,727,000	31,800,000	65,276,000	1,700,000	156,829,000
318	Rehabilitation Gravity Sewer System	6,435,000	5,035,000	6,435,000	5,035,000	8,435,000	31,375,000
319	Extension and Replacements - Sanitary Sewer Mains Algiers	500,000	500,000	500,000			1,500,000
326	Extensions and Replacements to Pumping Stations	3,960,000	5,990,000	6,790,000	2,300,000	3,600,000	22,640,000
339	Mains in Streets Department Contracts	5,300,000	5,300,000	5,300,000	5,300,000	5,300,000	26,500,000
348	Extensions and Replacements - Treatment Plants	8,580,000	3,595,000	4,805,000	5,225,000	850,000	23,055,000
360	SELA Sewerage Relocation Costs	844,000	643,000				1,487,000
382	Paving Repair Contracts	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
600	Sewer Share of Power Projects	10,587,000	8,133,000	2,448,000	90,000	490,000	21,748,000
702	Sewer Reserve for Emergencies	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	10,000,000
800	Sewer Share of General Budget Items	12,599,000	9,338,000	8,288,000	6,934,000	7,386,000	44,545,000
	Total Routine Annual Improvements	77,131,000	74,261,000	69,366,000	93,160,000	30,761,000	344,679,000
	Major Capital Improvements						
313	Extensions and Replacements - Sewer Force Mains	8,700,000	10,200,000	5,750,000	9,000,000	11,750,000	45,400,000
358	WWTP Normal Extensions & Replacements			10,000			10,000
368	Wetland Assimilation	8,300,000	300,000				8,600,000
375	Sewerage Hurricane Recovery Bonds	15,610,000	5,000,000	5,000,000	7,000,000		32,610,000
381	Modification and Expansion of WBSTP to 20/50 MGD	1,305,000	1,590,000	2,935,000	210,000		6,040,000
383	Sewerage Hurricane Recovery Bonds (Non FEMA)	2,000,000					2,000,000
	Total Major Improvements	35,915,000	17,090,000	13,695,000	16,210,000	11,750,000	94,660,000
	Total Sewerage System Improvements	113,046,000	91,351,000	83,061,000	109,370,000	42,511,000	439,339,000

(a) The improvements for 2016-2020 are based on the 2016 capital budget and 2016-2025 capital program.

Table 20

Sewerage Department
Projected Operating Revenue

	(1)	(2)	(3)
Year	Revenue From Charges	Additional Revenue (a)	Total Service Charge Revenue
	$	$	$
2016	103,526,500	0	103,526,500
2017	103,675,100	10,118,200	113,793,300
2018	103,811,900	21,382,600	125,194,500
2019	103,947,600	33,743,200	137,690,800
2020	104,064,000	47,310,100	151,374,100

(a) Reflects additional revenue from adopted revenue increases.

Table 21

Sewerage Department
Projected Operation and Maintenance Expenses

	2017	2018	2019	2020	2021
	$	$	$	$	$
Personal Services	27,120,300	27,933,900	28,771,900	29,635,100	30,524,100
Services & Utilities	18,193,100	18,738,800	19,301,000	19,880,000	20,476,400
Supplies & Materials	9,643,800	9,933,100	10,231,100	10,538,000	10,854,200
Special Current Charges	655,300	674,900	695,200	716,100	737,500
Furniture & Equipment	285,200	293,800	302,600	311,700	321,000
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	55,897,700	57,574,500	59,301,800	61,080,900	62,913,200

Table 22

Sewerage Department
Debt Service Requirements

Debt Issue	Amount of Issue	2016	2017	2018	2019	2020
	$	$	$	$	$	$
Existing Bonds						
Series 2014		19,342,700	19,309,800	17,642,500	16,217,500	16,234,100
Series 2015		4,777,800	5,000,000	5,000,000	5,000,000	5,000,000
Series 2011 (LADEQ)		495,700	496,700	496,600	496,500	496,400
Total Existing Debt Service		24,616,200	24,806,500	23,139,100	21,714,000	21,730,500
Projected Bonds						
2016	0	0	0	0	0	0
2017	130,000,000		3,726,958	8,944,700	8,944,700	8,944,700
2018	0			0	0	0
2019	32,000,000				917,417	2,201,800
2020	0					0
Total Projected Debt Service		0	3,726,958	8,944,700	9,862,117	11,146,500
Total Debt Service		24,616,200	28,533,458	32,083,800	31,576,117	32,877,000

Table 23

Sewerage Department
Capital Improvement Program Financing

Line No.	Description	Fiscal Year Ending December 31, 2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
1	Funds Available at Beginning of Year	133,675,100	33,886,500	91,154,000	41,596,400	369,800	133,675,100
2	Revenue Bond Proceeds	0	130,000,000	0	32,000,000	0	162,000,000
3	Operation Fund Transfers	13,000,000	23,000,000	29,000,000	40,000,000	51,000,000	156,000,000
4	Participation by Others	35,030,000	8,726,200	8,894,600	8,780,100	1,164,900	62,595,800
5	Interest Income	842,500	527,500	667,200	186,600	25,800	2,249,600
6	Total Funds Available	182,547,600	196,140,200	129,715,800	122,563,100	52,560,500	516,520,500
7	Obligated Contracts & Capital Jobs	(35,615,100)	0	0	0	0	(35,615,100)
8	Reinvestment in Assets	(77,131,000)	(76,488,800)	(73,590,400)	(101,798,400)	(34,621,800)	(363,630,400)
9	Major Capital Additions	(35,915,000)	(17,602,700)	(14,529,000)	(17,713,100)	(13,224,700)	(98,984,500)
10	Bond Issuance Expense	0	(1,950,000)	0	(480,000)	0	(2,430,000)
11	Revenue Bond Reserve Fund	0	(8,944,700)	0	(2,201,800)	0	(11,146,500)
12	Total Application of Funds	(148,661,100)	(104,986,200)	(88,119,400)	(122,193,300)	(47,846,500)	(511,806,500)
13	End of Year Balance	33,886,500	91,154,000	41,596,400	369,800	4,714,000	4,714,000

Table 24

Sewerage Department
Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No.	Description	Fiscal Year Ending December 31, 2016	2017	2018	2019	2020
		$	$	$	$	$
1	Revenue from Charges	103,526,500	103,675,100	103,811,900	103,947,600	104,064,000
2	Total Additional Revenue (a)	0	10,118,200	21,382,600	33,743,200	47,310,100
3	Total Service Charge Revenue	103,526,500	113,793,300	125,194,500	137,690,800	151,374,100
4	Interest Income	567,700	586,600	594,000	605,100	612,800
5	Plumbing Insp. & License Fees	326,100	326,100	326,100	326,100	326,100
6	Other Miscellaneous Income	597,300	597,300	597,300	597,300	597,300
7	Interest from Bond Reserve Fund	299,000	344,000	389,000	400,000	411,000
8	Total Operating Revenue	105,316,600	115,647,300	127,100,900	139,619,300	153,321,300
9	Operation & Maintenance	(54,269,600)	(55,897,700)	(57,574,500)	(59,301,800)	(61,080,900)
10	Provision for Claims	(264,400)	(264,400)	(264,400)	(264,400)	(264,400)
11	Provision for Doubtful Accounts	(1,138,800)	(1,251,700)	(1,377,100)	(1,514,600)	(1,665,100)
12	Net Operating Revenue	49,643,800	58,233,500	67,884,900	78,538,500	90,310,900
	Debt Service					
	Senior Lien Revenue Bonds					
13	Existing	(24,616,200)	(24,806,500)	(23,139,100)	(21,714,000)	(21,730,500)
14	Projected	0	(3,727,000)	(8,944,700)	(9,862,100)	(11,146,500)
15	Subtotal	(24,616,200)	(28,533,500)	(32,083,800)	(31,576,100)	(32,877,000)
	Subordinate Revenue Bonds					
16	Gulf Opportunity Zone Act Loan	(6,235,200)	(6,235,200)	(6,235,200)	(6,235,200)	(6,235,200)
17	Total Debt Service	(30,851,400)	(34,768,700)	(38,319,000)	(37,811,300)	(39,112,200)
18	Other Non-Operating Revenue	462,100	462,100	462,100	462,100	462,100
19	Transfer to Construction	(13,000,000)	(23,000,000)	(29,000,000)	(40,000,000)	(51,000,000)
20	Due from/(to) Other Departments	(2,911,000)	(486,000)	0	0	0
21	Transfer to Operating Reserve Fund	0	0	0	0	(313,900)
22	Transfer from/(to) Rate Stabilization Fund	0	0	0	0	0
23	Net Annual Balance	3,343,500	440,900	1,028,000	1,189,300	346,900
24	Beginning of Year Cash Balance (b)	24,722,800	28,066,300	28,507,200	29,535,200	30,724,500
25	End of Year Balance	28,066,300	28,507,200	29,535,200	30,724,500	31,071,400
26	Beginning of Year Cash Balance (b)	24,722,800	28,066,300	28,507,200	29,535,200	30,724,500
27	Operating Reserve Fund	0	0	0	0	313,900
28	Net annual Balance	3,343,500	440,900	1,028,000	1,189,300	346,900
29	End of Year Balance	28,066,300	28,507,200	29,535,200	30,724,500	31,385,300
30	Days of O&M Cash on Hand	184	181	182	184	182

(a) Reflects revenue from an eight-year series of annual 10% rate increases effective January 1, 2013; adopted by the City Council in 2012.

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

Table 25

Sewerage Department
Coverage Requirements

Line No.	Coverage Requirements	2016	2017	2018	2019	2020
		$	$	$	$	$
	Projected Net Revenues					
1	Revenue Under Existing Rates (a)	103,526,500	113,793,300	125,194,500	137,690,800	151,374,100
2	Additional Revenue Under Proposed Rates	0	10,118,200	21,382,600	33,743,200	47,310,100
3	Interest Income	1,709,200	1,458,100	1,650,200	1,191,700	1,049,600
4	Plumbing and Inspection Fees	326,100	326,100	326,100	326,100	326,100
5	Other Miscellaneous Revenue	597,300	597,300	597,300	597,300	597,300
6	Transfer from Rate Stabilization Fund	0	0	0	0	0
7	Operation & Maintenance	(54,269,600)	(55,897,700)	(57,574,500)	(59,301,800)	(61,080,900)
8	Net Revenue	51,889,500	70,395,300	91,576,200	114,247,300	139,576,300
	Rate Covenant Coverage					
9	Projected Net Revenues	51,889,500	70,395,300	91,576,200	114,247,300	139,576,300
	Annual Debt Service					
10	Senior Debt	24,616,200	28,533,500	32,083,800	31,576,100	32,877,000
11	Coverage (a)	211%	247%	285%	362%	425%
12	All Debt	30,851,400	34,768,700	38,319,000	37,811,300	39,112,200
13	Coverage (b)	168%	202%	239%	302%	357%
	Additional Bond Coverage					
14	Preceding Year Projected Net Revenues	40,137,200	51,889,500	70,395,300	91,576,200	114,247,300
15	Future Additional Revenue (c)	58,387,300	48,046,600	34,316,500	21,800,500	10,394,800
16	Adjusted Projected Net Revenues	98,524,500	99,936,100	104,711,800	113,376,700	124,642,100
	Maximum Debt Service					
17	Senior Debt	24,806,500	32,083,800	32,083,800	32,877,000	32,877,000
18	Coverage (a)	397%	311%	326%	345%	379%
19	All Debt	31,041,700	38,319,000	38,319,000	39,112,200	39,112,200
20	Coverage (b)	317%	261%	273%	290%	319%

(a) The General Bond Resolution requires net revenue to equal or exceed 125% of debt service.
(b) The General Bond Resolution requires net revenue to equal or exceed 110% of debt service.
(c) Reflects revenue an eight-year series of annual 10% rate increases effective January 1, 2013; adopted by the City Council in 2012.

Drainage Department

2015 DRAINAGE DEPARTMENT OPERATIONS

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

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

The Board is charged with operating, maintaining, repairing, and expanding the major drainage system located throughout the City.

Revenues

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

A summary of historical revenues received by source is shown in Table 26 for the period 2011 through 2015. The historical revenue shown in Table 26 was developed from detailed records provided by Board Staff.

Operation and Maintenance Expenses

Table 27 presents a summary of 2011 through 2015 operation and maintenance expenses of the Drainage Department. Expenditures for 2015 increased about 22.4 percent over 2014 expenditures. Operation and maintenance expenses have increased an average of 4.2 percent per year over the five-year period shown. Historical operation and maintenance expenses shown in Table 27 do not include the non-cash portion of Provision for Claims as recorded in the Comprehensive Annual Financial Report. Estimate of future Drainage Department claims are included on Line 9 in Table 35.

Capital Budget and Expenditures

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

The Drainage Department capital improvement expenditures for 2015 totaled $20,727,040. The Drainage Department's capital improvement expenditures for the year are shown in Table 28.

Summary of Operations

The following tabulation shows a summary of receipts and expenditures of the Drainage Department during 2015:

Total Revenues	$54,367,386
Operation and Maintenance Expense	37,814,502
Claims	1,228,302
Debt Service Payments	2,014,350
Revenue Primarily Available for Capital Expenditures [a]	**13,310,232**

[a] Excludes depreciation.

PROPOSED CAPITAL IMPROVEMENT PROGRAM

Table 29 presents a summary of the projected major capital improvement program for the period 2016 through 2020. Table 29 is based on the Board's 2016-2025 Capital Program. The five-year major capital improvement program costs are expected to total $650,961,000. Major budget items include extension and enlargement of canals plus increased pumping capacity.

Participation by others consists of monies collected from developers and individuals for the extension of drainage service to new customers and from governmental agencies for replacement and expansion of system facilities. As shown in Table 30, future revenues from these sources are estimated by the Board in the 2016 through 2025 Capital Program according to capital project and amount to $393,523,000, most of which is provided by the COE.

The Sewerage and Water Board is currently receiving funds from the COE sponsored and congressionally authorized Southeast Louisiana Urban Flood Control (SELA) Project. This funding will allow additional construction of projects which were identified in the 1970s, but which have not been completed because of funding limitations. The identified projects are to be funded either 100 percent from federal funds or 65 percent from federal funds and 35 percent from local funds. The payback period for the local share is 30 years and is anticipated to begin in 2019.

ABILITY TO FINANCE PROPOSED CAPITAL EXPENDITURES

Drainage Department future operating and capital cost requirements are to be met by the revenue sources previously discussed. In 2015, the three-mill, six-mill, and nine-mill ad valorem taxes were the principal source of operating funds for the Drainage Department.

Revenues

Projected operating income of the drainage system is shown in Table 31. Projections include proceeds from the three-mill, the six-mill, and the nine-mill ad valorem tax and other revenue and are based on the 2014 assessed taxable value. The three-mill ad valorem tax will expire in 2016. It is assumed that the projected revenue from the six- and nine-mill taxes will remain constant during the study period due to the roll-back provisions of Louisiana state law.

Other sources of income include interest earned from the investment of funds held for future use; sales of three-mill, six-mill, and nine-mill ad valorem tax bonds; and participation by others.

Projections of interest income, which vary according to the balance of funds held for future use, are shown in a later section of this report.

The projection of millage revenue for 2016 through 2020 is based on 4.66, 4.71, and 7.06 mills for three-mill, six-mill, and nine-mill taxes, respectively.

Operation and Maintenance Expenses

A summary of projected operation and maintenance expenses is shown in Table 32. Estimates of future expenses are based on anticipated future operating conditions and allowances for inflationary factors.

Projections of future operating and maintenance expenses for the study period are based on 2015 actual expenses provided by the SWBNO and an analysis of the current and anticipated operating conditions and trends. Included in the projected operation and maintenance expense is the anticipated operating costs of the lake front permanent pump and storm surge closure stations that will be completed by June 1, 2017. These costs are estimated at $4,000,000 in 2018 and $8,000,000 each year after.

Debt Service Requirements

Nine-mill bonds in the amount of $14,900,000 were issued in 2014, and as of December 31, 2015, $12,750,000 remained outstanding.

Collection of the three-mill ad valorem tax levy is authorized through 2016; six-mill tax through 2028; and nine-mill tax through 2032.

The Drainage Department has borrowed from the City of New Orleans Department of Public Works (DPW). It is anticipated that this amount will be reimbursed during the study period.

Adequacy of Revenues to Finance Proposed Capital Improvements

Total revenue requirements for the Drainage Department recognized for purposes of this report include operation and maintenance expense, allowance for claims, debt service costs on major capital improvements financed through the sale of bonds, and expenditures for capital improvements not financed from bond proceeds. Table 34 examines the financing of the major capital improvement program and Table 35 summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed bonds, and the transfer of operating funds for major capital improvement financing.

Capital Projects Funding

Table 34 presents the major capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. The amount of Funds Available at Beginning of Year, shown on Line 1, is $24,860,700. This amount is based on audited data provided by the Board.

Projected revenue bond proceeds are shown on Line 2; however, it is projected that the Board will not have the capacity to issue additional bonds during the study period. In addition, it is anticipated that the Board will not have the capacity to finance the major capital improvement program with operating revenue as shown on Line 3.

Other sources of funds available to meet major capital improvement expenditures are Participation by Others and interest income. Participation by Others, as shown on Line 4 includes anticipated funding by the U.S. Army Corps of Engineers (COE) and FEMA as well as others. Interest earnings recognize an assumed 1.0 percent average annual interest rate and are shown on Line 5. Line 6 of the table shows the projected major capital improvement funds available each year.

As of December 31, 2015, the Board had $24,497,900 obligated for open contracts and capital jobs as shown on Line 7 of Table 34. Lines 8 and 9 show the projected Reinvestment in Assets and Major Capital Additions to be funded as shown in Table 29. Due to constraints on revenue, it is anticipated that the capital projects during the 5-year period will exceed the amount of funding available and some projects will need to be deferred until an additional revenue source has been identified. This deferral is shown on Line 10.

The Total Application of Funds is shown on Line 13 of Table 34. The net End of Year Balance is shown on Line 14.

Operating Fund

Money deposited in the Drainage System Fund is obtained primarily from the three-mill, six-mill, and nine-mill ad valorem tax as shown on Lines 1 through 3 of Table 35. The three-mill ad valorem tax will expire in 2016.

Other revenue available for system operations is shown on Lines 4 through 6. Miscellaneous revenue on Line 4 includes rental income, gain or loss on the sale of assets and other miscellaneous income. Interest Income available to the operating fund, shown on Line 5, is estimated to be 1.0 percent of the average of the beginning and end of year Net Annual Balance, except as the average is affected by identifiable nonrecurring major receipts, transfers, or expenditures during the year. Interest from the Bond Reserve Fund, shown on Line 6, is estimated to be 1.0 percent. Total Operating Revenue is shown on Line 7 of Table 35.

Operation and Maintenance expense, previously projected in Table 32, is shown on Line 8 of Table 35. Line 9 shows the estimated allowance for claims. Bad debt expense is assumed to be 0.5 percent of projected revenue and is shown on Line 10. Projected Net Operating Revenue from system operations is shown on Line 11.

Lines 12 through 14 present debt service requirements on currently outstanding and proposed senior revenue bonds. Existing debt includes the Series 2014 bonds. As previously mentioned, it is projected that the Board will not have the capacity to issue additional bonds during the study period.

In July of 2006 the Board entered into a Cooperative Endeavor Agreement with the State of Louisiana to secure proceeds from the State's Gulf Opportunity Tax Credit Bond Loan Program to assist in payment of debt service requirements from 2006 through 2008. The Board has borrowed $77,465,247 on this agreement. No principal or interest was payable during the initial five-year period of the loan, but after that period, the loan began to bear an interest rate of 4.64 percent. Payments for the drainage portion of principal and interest began in July 2012 and are shown on Line 15 of Table 35.

Line 16 reflects the estimated SELA repayments that will begin in 2019. Total debt service is shown on Line 17.

Anticipated non-operating revenue is shown on Line 18. Line 19 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Typically, such accumulated net earnings may be used to help recover portions of the annual costs of system operations or to assist in major capital improvement financing. Line 20 reflects repayment from the Water Department and repayment to the Department of Public Works as well as repayment to claimants.

The General Resolution requires an Operating Reserve Fund of 90 days of the previous year's operation and maintenance expense; however the SWBNO's Financial Management Policy requires an Operating Reserve Fund of not less than 180 days. Line 21 indicates the projected annual transfers available to meet this requirement throughout the study period.

Line 22 indicated the estimated Net Annual Balance from operations remaining at the end of each year.

The balance of operating funds available at the beginning of the year 2016, shown on Line 23, is comprised of current cash assets and reflects a balance of $23,602,600. The End of Year Balance, which is exclusive of the operating reserve fund, is shown on Line 24 and drops to a deficit of $8,167,800 by 2020 which indicates that the existing source of revenue for the Drainage Department will not be sufficient to fund operation and maintenance expense and required debt service payments by 2020.

Lines 25 through 29 demonstrate that the Board is maintaining an operating reserve equal to at least 180 days of the previous year's operation and maintenance expense through 2018; however the balance drops to -28 days by 2020.

Bond Coverage Requirements

A requirement of the Drainage Bond Resolution provides that revenues derived from the nine-mill ad valorem tax should provide an amount sufficient to provide for the interest and principle payment on the Series 2014 bonds. As shown on Line 30 of Table 35 the projected revenue from the nine-mill ad valorem tax will provide sufficient revenue to meet coverage requirements on existing debt during the study period.

The Drainage Bond Resolution also provides that additional parity bonds may be issued, but only after certain conditions have been met. One condition is that the revenues derived from the nine-mill ad valorem tax for the most recently completed calendar year prior to the year of issuance are equal to at least one and one-third (1-1/3) times the maximum debt service on all bonds outstanding and the additional bonds.

Due to the constraints to meet operation and maintenance expense and required debt service payments on existing debt during the study period, the Drainage Department does not have the revenue capacity to issue additional debt. In addition, the revenue from the nine-mill ad valorem tax does not provide the debt capacity needed to fund the five-year capital improvement program; therefore a significant portion of capital improvements must be deferred as previously mentioned. In

the event that the three-mill ad valorem tax is approved by voters for reauthorization, it is projected that this will provide the revenue needed to fund operation and maintenance expense and debt service on existing debt; however, it will not provide funding for major capital improvements. Therefore, in order to completely fund the five-year capital program, an alternative fund source would need to be identified for the Drainage Department.

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

Table 26

Drainage Department
Statement of Historical Revenue

Revenue Source	2011	2012	2013	2014	2015
	$	$	$	$	$
Three-mill Ad Valorem Tax	11,129,376	12,497,723	13,175,711	13,481,526	14,139,193
Six-mill Ad Valorem Tax	11,242,927	12,630,977	13,317,505	13,626,539	14,290,667
Nine-mill Ad Valorem Tax	16,855,081	18,933,290	19,962,114	20,425,388	21,421,102
Two-mill Ad Valorem Tax	4,870	0	0	0	0
Interest Earned	128,571	109,748	92,615	203,832	202,579
Other	1,107,419	1,103,330	1,099,908	1,277,250	4,313,845
Total Revenue	40,468,244	45,275,067	47,647,853	49,014,535	54,367,386

Table 27

Drainage Department
Historical Operation and Maintenance Expenses (a)

	2011	2012	2013	2014	2015
	$	$	$	$	$
Personal Services	19,042,343	18,544,593	18,836,845	17,096,914	25,494,930
Services & Utilities	11,625,307	11,165,440	11,258,057	11,460,611	10,324,968
Supplies & Materials	1,379,826	1,909,601	1,937,679	1,523,346	1,511,946
Special Current Charges	626,289	800,572	578,960	756,295	372,914
Furniture & Equipment	78,332	66,823	91,674	62,057	109,745
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance (b)	32,752,097	32,487,029	32,703,215	30,899,222	37,814,502

(a) Historical operation and maintenance expenses do not include the non-cash portion of provision for claims as recorded in the Comprehensive Annual Financial Report. Estimates of future Water Department claims payable are included in Table 11.

(b) Source: Expenditure Analysis by Group Report.

Table 28

Drainage Department
Capital Expenditures
2015

C.P. #	Project	Actual Expenditures
		$
	Canals	
418	Normal Extensions & Replacements	62,256
439	Major Drainage Participation in DPW Projects	856,549
466	Louisiana Avenue Canal (SELA)	875,674
471	SELA Program Management	2,553,172
476	Hollygrove Canals (SELA-A)	24,929
478	S. Claiborne-Lowerline to Monticello Street	1,560,604
480	FEMA Review of Change Orders-Drainage	(6,347,999)
486	Napoleon Canal Improvements (SELA-B)	856,051
497	Florida Ave. Canad - DPS#19 to Peoples Ave. (SELA-B)	(4,065,824)
498	Dwyer Intake Canal (St. Charles to Dwyer DPS) (SELA-A)	463,694
499	Jefferson Avenue Canal	1,571,027
	Total Drainage Canals	(1,589,867)
	Pumping Stations	
511	Normal Extensions & Rep./Stations	116,470
574	Hurricane Katrina Expenses for Drainage System	47,832
575	Drainage Hurricane Recovery Bonds	177,238
	Total Drainage Pumping Stations	341,539
	Power Projects and General Budget	
600	Drainage Share of Power Projects	17,000,759
703	Drainage Reserve for Emergency	225,678
800	Drainage Share of General Budget Items	4,748,931
	Total Power Projects and General Budget	21,975,368
	Total Drainage Department	20,727,040

Table 29

Drainage Department
Projected Capital Improvements (a)

C.P.#	Project	2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
	Reinvestment in Assets						
418	Normal Ext. & Replacements	750,000	750,000	770,000	770,000	790,000	3,830,000
511	Normal Ext. & Replacement - Stations	17,077,000	52,673,000	28,748,000	14,340,000	2,820,000	115,658,000
600	Drainage Share of Power Projects	61,212,000	31,000,000	11,418,000	5,015,000	12,180,000	120,825,000
703	Drainage Reserve for Emergencies	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	10,000,000
800	Drainage Share of General Budget Items	11,459,000	6,214,000	4,862,000	4,376,000	4,557,000	31,468,000
	Total Routine Capital Improvements	92,498,000	92,637,000	47,798,000	26,501,000	22,347,000	281,781,000
	Major Capital Improvements						
439	Mains, Over 36" in Street Dept. Contracts	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	21,500,000
453	Improvements to Metairie Relief Canal	5,992,000					5,992,000
466	Louisiana Ave. Canal	600,000	600,000	600,000			1,800,000
471	SELA Program Management	1,500,000	1,500,000	1,500,000			4,500,000
478	S. Claib - Lowerline to Monticello St.	220,000	220,000				440,000
483	Airline & Monticello Canal Improvements	50,000	948,000	30,000,000	500,000		31,498,000
486	Napoleon Avenue Canal Improvements	450,000	300,000				750,000
492	Donner Canal Improvements	17,000	595,000	2,210,000	112,788,000		115,610,000
496	General De Gaulle Canal		70,000,000	70,000,000			140,000,000
497	Florida Avenue Canal - DPS #19 to Peoples	950,000	300,000				1,250,000
498	Dwyer Intake Canal	50,000					50,000
499	Jefferson Avenue Canal	910,000	910,000	510,000			2,330,000
512	Expansion of DPS #15		1,220,000	14,500,000			15,720,000
535	DPS #6	340,000		160,000	1,680,000	320,000	2,500,000
573	DPS #13 Improvements	440,000	6,000,000	1,000,000	10,000,000	1,000,000	18,440,000
575	Drainage Hurricane Recovery Bonds	6,600,000					6,600,000
578	Permanent Pump Stations at the Laek Elaine DPS Repairs			200,000			200,000
	Total Major Capital Improvements	22,419,000	86,893,000	124,980,000	129,268,000	5,620,000	369,180,000
	Total Drainage Department Improvements	114,917,000	179,530,000	172,778,000	155,769,000	27,967,000	650,961,000

(a) The improvements for 2016-2020 are based on the 2016 capital budget and 2016-2025 capital program.

Table 30

Drainage Department
Projected Participation by Others (a)

C.P.#	Project	2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
418	Normal Extensions & Replacements	230,000	230,000	230,000	230,000	230,000	1,150,000
453	Improvements to Metairie Relief Canal	1,408,000					1,408,000
483	Airline & Monticello Canal Improvements	50,000	948,000	30,000,000	500,000		31,498,000
492	Donner Canal Improvements				112,788,000		112,788,000
496	General De Gaulle Canal		70,000,000	70,000,000			140,000,000
511	Normal Ext. & Replacement -DPS	1,013,000	13,457,000				14,470,000
535	DPS #6			160,000	320,000	320,000	800,000
575	Hurricane Recovery Bonds	6,600,000					6,600,000
613	Modifications to Power Generating System	1,400,000					1,400,000
676	Modifications to Power Generating System HMGP	53,285,000	29,478,000				82,763,000
807	Improvements to Central Yard and St. Joseph St	646,000					646,000
	Total	64,632,000	114,113,000	100,390,000	113,838,000	550,000	393,523,000

(a) The improvements for 2016-2020 are based on the 2016 capital budget and 2016-2025 capital program.

Table 31

Drainage Department
Projected Operating Revenue

Year	Ad Valorem Tax Revenue			Other	Total
	Three-Mill	Six-Mill	Nine-Mill		
	$	$	$	$	$
2016	14,147,600	14,299,400	21,404,000	969,200	50,820,200
2017	0	14,299,400	21,404,000	979,000	36,682,400
2018	0	14,299,400	21,404,000	989,000	36,692,400
2019	0	14,299,400	21,404,000	999,000	36,702,400
2020	0	14,299,400	21,404,000	1,009,000	36,712,400

Table 32

Drainage Department
Projected Operation and Maintenance Expenses

	2016	2017	2018	2019	2020
	$	$	$	$	$
Personal Services	20,759,800	21,382,600	22,024,000	22,684,800	23,365,300
Services & Utilities	10,634,700	14,953,800	19,402,400	19,984,400	20,584,000
Supplies & Materials	1,557,300	1,604,000	1,652,100	1,701,700	1,752,800
Special Current Charges	384,100	395,600	407,500	419,700	432,300
Furniture & Equipment	113,000	116,400	119,900	123,500	127,200
Repairs & Facility Maintenance	0	0	0	0	0
Total Operation and Maintenance	33,448,900	38,452,400	43,605,900	44,914,100	46,261,600

Table 33

Drainage Department
Debt Service Requirements

Debt Issue	Amount of Issue	2016	2017	2018	2019	2020
	$	$	$	$	$	$
Nine-Mill Tax Bonds						
Series 2014		2,017,100	2,051,900	2,063,400	2,069,200	2,066,200
Total Nine-Mill Debt Service		2,017,100	2,051,900	2,063,400	2,069,200	2,066,200
Projected Bonds						
2016	0	0	0	0	0	0
2017	0		0	0	0	0
2018	0			0	0	0
2019	0				0	0
2020	0					0
Total Projected Debt Service		0	0	0	0	0
Total Debt Service		2,017,100	2,051,900	2,063,400	2,069,200	2,066,200

Table 34

Drainage Department
Capital Improvement Program Financing

Line No	Description	Fiscal Year Ending December 31, 2016	2017	2018	2019	2020	Total
		$	$	$	$	$	$
1	Funds Available at Beginning of Year	24,860,700	84,300	5,200	4,800	700	24,860,700
2	Revenue Bond Proceeds	0	0	0	0	0	0
3	Operation Fund Transfers	0	0	0	0	0	0
4	Participation by Others	64,632,000	117,536,400	106,503,800	124,393,900	619,000	413,685,100
5	Interest Income	125,500	400	0	0	0	125,900
6	Total Funds Available	89,618,200	117,621,100	106,509,000	124,398,700	619,700	438,671,700
7	Obligated Contracts & Capital Jobs	(24,497,900)	0	0	0	0	(24,497,900)
8	Revinvestment in Assets	(92,498,000)	(95,416,100)	(50,708,900)	(28,958,400)	(25,151,700)	(292,733,100)
9	Major Capital Additions	(22,419,000)	(89,499,800)	(132,591,300)	(141,254,600)	(6,325,400)	(392,090,100)
10	Deferred Capital Improvements	49,881,000	67,300,000	76,796,000	45,815,000	30,858,000	270,650,000
11	Bond Issuance Expense	0	0	0	0	0	0
12	Revenue Bond Reserve Fund	0	0	0	0	0	0
13	Total Application of Funds	(89,533,900)	(117,615,900)	(106,504,200)	(124,398,000)	(619,100)	(438,671,100)
14	End of Year Balance	84,300	5,200	4,800	700	600	600

Table 35

Drainage Department
Analysis of Ability of Forecasted Revenue to Finance Projected Revenue Requirements

Line No	Description	Fiscal Year Ending December 31, 2016	2017	2018	2019	2020
		$	$	$	$	$
1	Three-Mill Ad Valorem Tax Revenue (4.66 Mills) (a)	14,147,600	0	0	0	0
2	Six-Mill Ad Valorem Tax Revenue (4.71 Mills)	14,299,400	14,299,400	14,299,400	14,299,400	14,299,400
3	Nine-Mill Ad Valorem Tax Revenue (7.06 Mills)	21,404,000	21,404,000	21,404,000	21,404,000	21,404,000
4	Other Miscellaneous Income	969,200	979,000	989,000	999,000	1,009,000
5	Interest Income	305,900	344,700	270,200	154,900	8,100
6	Interest from Bond Reserve Fund	0	0	0	0	0
7	Total Operating Revenue	51,126,100	37,027,100	36,962,600	36,857,300	36,720,500
8	Operation & Maintenance	(33,448,900)	(38,452,400)	(43,605,900)	(44,914,100)	(46,261,600)
9	Provision for Claims	(1,011,800)	(1,011,800)	(1,011,800)	(1,011,800)	(1,011,800)
10	Provision for Doubtful Accounts	(249,300)	(178,500)	(178,500)	(178,500)	(178,500)
11	Net Operating Revenue	16,416,100	(2,615,600)	(7,833,600)	(9,247,100)	(10,731,400)
	Debt Service					
	Senior Lien Revenue Bonds					
12	Existing	(2,017,100)	(2,024,100)	(2,028,400)	(2,028,600)	(2,036,000)
13	Projected	0	0	0	0	0
14	Subtotal	(2,017,100)	(2,024,100)	(2,028,400)	(2,028,600)	(2,036,000)
15	Gulf Opportunity Zone Act Loan	(407,600)	(407,600)	(407,600)	(407,600)	(407,600)
16	SELA Capital Repayment	0	0		(1,251,900)	(3,850,800)
17	Total Debt Service	(2,424,700)	(2,431,700)	(2,436,000)	(3,688,100)	(6,294,400)
18	Other Non-Operating Revenue	701,700	701,700	701,700	701,700	701,700
19	Transfer to Construction	0	0	0	0	0
20	Due from (to) Other Departments	(2,196,000)	(921,000)	0	0	0
21	Transfer to Operating Reserve Fund	0	538,200	(616,900)	(635,400)	(161,300)
22	Net Annual Balance	12,497,100	(4,728,400)	(10,184,800)	(12,868,900)	(16,485,400)
23	Beginning of Year Cash Balance (b)	23,602,600	36,099,700	31,371,300	21,186,500	8,317,600
24	End of Year Balance	36,099,700	31,371,300	21,186,500	8,317,600	(8,167,800)
25	Beginning of Year Cash Balance	23,602,600	40,761,800	36,033,400	25,848,600	12,979,700
26	Operating Reserve Fund	4,662,100				
27	Net annual Balance	12,497,100	(4,728,400)	(10,184,800)	(12,868,900)	(16,485,400)
28	End of Year Balance	40,761,800	36,033,400	25,848,600	12,979,700	(3,505,700)
29	Days of O&M Cash on Hand	445	342	216	105	(28)
30	Annual Test (c)	1061.1%	1057.5%	1055.2%	1055.1%	1051.3%
31	Additional Bonds Test (d)	1046.7%	1046.7%	1046.7%	1046.7%	1046.7%

(a) The Three-Mill Ad Valorem Tax will expire at the end of 2017.
(b) Reflects beginning of year balance in unrestricted and undesignated cash and cash equivalents and cash and cash equivalents designated for capital projects, less operating reserve requirement.
(c) The General Bond Resolution requires Nine-Mill Ad Valorem Tax Revenue to equal or exceed 100% of annual debt service.
(d) The General Bond Resolution requires Nine-Mill Ad Valorem Tax Revenue to equal or exceed 133% of maximum annual debt service.

Appendix

Assessment of East Bank Sewage Stations

	DATE	FACILITY NAME	ROUTE	LOCATION	STATUS
1	06/06/16	Chickasaw	A	Chickasaw at Metropolitan	2 pumps total; 1 operational.
2	06/06/16	K-Mart	A	Desire at Gentilly	2 pumps total; both operational.
3	06/06/16	Station 23	A	4500 Mithra	3 pumps total, 1 portable pump outside; 2 operational, Pump 1 out of service.
4	06/06/16	Station 17	A	4975 Spain at Selma	2 pumps total; both operational.
5	06/06/16	Station 22	A	5705 Perlita	2 pumps total; both operational.
6	06/06/16	Station 19	A	3730 Jumonville at Milton	2 pumps total; both operational.
7	06/06/16	Station 21	A	6670 Memphis At Filmore	2 pumps total; both operational.
8	06/06/16	Station 18	A	Vicksburg at Florida	2 pumps total; both operational.
9	06/06/16	City Park	A	5701 Marconi Drive	2 pumps total; both operational.
10	06/07/16	Station 20	A	328 37th Street	2 pumps total; both operational.
11	06/07/16	Station 4	A	5899 Fleur de Leis	2 pumps total; both operational.
12	06/07/16	Lakewood South	A	Country Club Drive near Marconi	2 pumps total; both operational.
13	06/07/16	Station 6	A	242 S Solomon at Palmyra	Station being rebuilt. 1 pump total; portable pump outside operational.
14	06/07/16	Station 3	A	8720 Olive near Eagle	2 pumps total; both operational.
15	06/07/16	Station 1	A	7336 Cohn	2 pumps total; both operational.
16	06/07/16	Station 14	A	4000 Clara	2 primary pumps total; both operational, temp pump on site not in service.

	DATE	FACILITY NAME	ROUTE	LOCATION	STATUS
17	06/07/16	Station 5	A	3912 Erato St	2 pumps total; both operational.
18	06/07/16	Station 15	A	2431 Palmyra near Rocheblave	3 pumps; all operational.
19	06/07/16	Station 8	A	Corner of N Broad and Toulouse	2 pumps total; both operational.
20	06/25/15	Station 9	A	2540 Annette at Law	2 pumps total; both operational.
21	06/06/16	Station 16	B	3751 N Miro at Pauline	2 pumps total; both operational.
22	06/06/16	Station 24	B	5027 N Tonti at Forstall	2 pumps total; 1 operational.
23	06/06/16	Station 25	B	2245 Charbonnet	2 pumps total; 1 operational.
24	06/06/16	Station 26	B	2244 St Maurice at Tonti	2 pumps total; 1 operational.
25	06/06/16	Station B	B	4725 St Claude Avenue	2 pumps total; both operational.
26	06/06/16	Southern Scrap	B	Southern Scrap Rd	2 pumps total; both operational.
27	06/06/16	France & Florida	B	Harbor Rd	2 pumps total; both operational.
28	06/06/16	MECO	B	2701 France Road	2 pumps total; both operational.
29	06/06/16	American Marine	B	3855 France Road	2 pumps total; both operational.
30	06/06/16	Victoria at Gentilly	B	3620 Victoria	2 pumps total; both operational.
31	06/06/16	Dodt	B	8118 Chef Menteur Highway	Station being re-built. One (1) pump total; portable pump outside operational
32	06/06/16	PlumOrchid	B	7300 Chef Menteur Highway	Station being rebuilt. 1 pump total; portable pump outside operational
33	06/06/16	Wilson	B	7709 Wilson Avenue	2 pumps total; both operational.

	DATE	FACILITY NAME	ROUTE	LOCATION	STATUS
34	06/06/16	Crowder	B	5500 Crowder Road	2 pumps total; both operational.
35	06/06/16	Castle Manor	B	4950 Gawain at Dwyer	2 pumps total; both operational.
36	06/06/16	Cerise	B	5001 Cerise	2 pumps total; 1 operational.
37	06/06/16	Lakewood Terrace	B	5057 Warren Drive	2 pumps total; 1 operational.
38	06/06/16	McCoy	B	McCoy at Gentilly	2 pumps total; both operational.
39	06/06/16	Amid	B	6800 Almonaster Road	2 pumps total; both operational.
40	06/06/16	Lake Forest	B	10451 Lake Forest Blvd	Station newly rebuilt, but not yet turned over to S&WB. 2 pumps total; both operational.
41	06/06/16	Wright Road	B	Wright Road at Lake Forest	2 pumps total; both operational.
42	06/06/16	Bullard	B	5501 Bullard Road	Station newly rebuilt, but not yet turned over to S&WB. 2 pumps total; both operational.
43	06/06/16	Pines Village	B	6155 Dwyer Road at Foch	2 pumps total; both operational.
44	06/06/16	America	B	6789 Dwyer Road at Westlake	2 pumps total; 1 operational.
45	06/06/16	Station A	B	1321 Orleans Avenue	6 pumps total; 5 operational.
46	06/07/16	Shorewood	C	14441 Morrison Road	2 pumps total; both operational.
47	06/07/16	Briarwood	C	13701 Morrison Road	2 pumps total; both operational.
48	06/07/16	Liggett	C	12501 Morrison Road	2 pumps total; both operational.
49	06/07/16	Berg	C	11501 Morrison Road	2 pumps total; both operational.
50	06/07/16	Weber	C	10141 Morrison Road	2 pumps total; both operational.
51	06/07/16	Burke	C	9001 Morrison	2 pumps total; both operational.

	DATE	FACILITY NAME	ROUTE	LOCATION	STATUS
				Road	
52	06/07/16	Lawrence	C	7900 Morrison Road	Station newly rebuilt, but not yet turned over to S&WB. 2 pumps total; both operational.
53	06/07/16	Lamb	C	6450 Morrison Road	2 pumps total; both operational.
54	06/07/16	Gentilly Oaks	C	5000 Papania Road at Vienna	2 pumps total; 1 operational. Pump 2 not working.
55	06/07/16	Eastover	C	6051 Eastover Drive	2 pumps total; both operational.
56	06/07/16	Paris Road	C	Dwyer West of Paris Road	2 pumps total; both operational.
57	06/07/16	Venetian Isles 2	C	20711 Old Spanish Trail	2 pumps total; both operational.
58	06/07/16	Industrial Parkway	C	4200 Industrial Parkway	2 pumps total; 1 operational. Pump 2 not working.
59	06/07/16	Blvd X	C	4433 Chef Menteur Highway	2 primary pumps not operational and being rebuilt, 2 temporary pumps operational.
60	06/07/16	Alcee Fortier	C	Alcee Fortier Blvd at the Levee	2 pumps total; both operational.
61	06/07/16	Willow Brook	C	Willowbrook off of Michoud	2 pumps total; 1 operational. Pump 2 not working.
62	06/07/16	Oak Island	C	14201 Michoud Blvd	2 pumps total; both operational.
63	06/07/16	Village de Lest	C	11324 Dwyer	2 pumps total; 1 operational. Pump 2 not working.
64	06/07/16	Michoud	C	4400 Michoud Blvd	2 pumps total; both operational.
65	06/07/16	Folgers	C	14601 Gentilly Blvd	2 pumps total; both operational.

Assessment of West Bank Sewage Stations

	DATE	FACILITY NAME	LOCATION	STATUS
1	06/08/16	Memorial	2501 Memorial Park Dr	2 pumps total; both operational.
2	06/08/16	Garden Oaks	3201 Memorial Park Dr	2 pumps total; 1 pump operational.
3	06/08/16	Park Timbers	4100 Lennox Blvd	2 pumps total; both operational.
4	06/08/16	Tall Timbers	3800 Tall Pines Dr	2 pumps total; both operational.
5	06/08/16	Forest Isle	5631 West Forest Park Dr	2 pumps total; both operational.
6	06/08/16	Blair	3800 Blair St	2 pumps total; both operational.
7	06/08/16	Aurora	6000 Carlisle Ct	2 pumps total; both operational.
8	06/08/16	English Turn I	2201 Stanton Rd	2 pumps total; both operational.
9	06/08/16	English Turn II	123 ½ Oak Alley	2 pumps total; both operational.
10	06/08/16	English Turn III		2 pumps total; both operational.
11	06/08/16	Lower Coast	3700 Old Woodland	2 pumps total; both operational.
12	06/08/16	Woodland	4150 Woodland Dr	2 pumps total; both operational.
13	06/08/16	Eton	3440 Eton St	2 pumps total; both operational.
14	06/08/16	Huntlee	3201 Huntlee Dr	2 pumps total; 1 pump operational.
15	06/08/16	Holiday	2799 Holiday Dr	2 pumps total; both operational.
16	06/08/16	Bridge Plaza	2914 Vespasian St	2 pumps total; both operational.
17	06/08/16	Horace	3301 Lawrence St	2 pumps total; both operational.

Assessment of East Bank Drainage Stations

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	06/06/16	Station 1	2501 S .Broad St	11 pumps total; 10 operational, No. 1 constant duty pump not in service.	
2	06/06/16	Station 6	345 Orpheum	Fourteen (14) pumps total; eleven (11) pumps operational, 2 constant duty pumps and pump I out of service	

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
3	06/08/16	I-10 Station	I-10 Service Road	Four (4) pumps total; four (4) pumps operational	Four (4) vertical pumps one (1) of which is a constant duty pump
4	06/06/16	Station 7	5741 Orleans Ave at Marconi Dr	5 pumps total; 4 pumps operational.	Pump C is out of service due to electrical issues.
5	06/08/16	Canal Blvd	5500 Canal Blvd	3 pumps total; all operational.	
6	06/06/16	Station 2	444 N. Broad St	6 pumps total; all operational.	No change from previous year.
7	06/06/16	Station 3	2251 N Broad St	9 pumps total; 4 pumps out of service.	Constant duty pumps 1, 2, 3 & 4 are out of service.
8	06/08/16	Pritchard	2901 Monticello	3 pumps total; all in service.	No change from previous year.
9	06/08/16	Oleander	9400 Oleander	3 pumps total; 3 in service.	No change from previous year.
10	06/06/16	Station 4	5700 Warrington Dr	6 pumps total; all operational.	
11	06/08/16	Station 12	Robert E Lee and Ponchartrain Blvd	1 pump total, 1 in service.	No change from previous year.
12	06/07/16	Station 16	Danube Rd at Wales	4 pumps total; all in service.	No change from previous year.
13	06/07/16	Station 10		4 pumps total; all in service.	No change from previous year.
14	06/07/16	Station 14	Oneida at Haynes	4 pumps total; all operational.	
15	06/07/16	Grant	Grant St at Gentilly Blvd	6 pumps total; 5 in service.	2 pumps inside, both operational; 4 pumps outside, 3 operational. No change from previous year.

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
16	06/07/16	Elaine		2 pumps total; both operational.	No change from previous year.
17	06/06/16	Station 17	2801 Florida Ave	2 pumps total; all in service.	2 drainage pumps operating on one motor. 3 sewage pumps also at this facility; all operational. No change from previous year.
19	06/07/16	Station 5	Florida Ave	8 pumps total; all operational.	6 pumps at old station, 2 pumps at new station. No change from previous year.
20	06/07/16	Station 19	4500 Florida Ave	5 pumps total; all in service.	No change from previous year.
21	06/07/16	Station 20	6300 Intercostal Waterway at Terminal Rd	2 pumps total; 1 operational, 1 out of service.	Pump 1 out of service. No change from previous year.
22	06/07/16	Station 15	Industrial Parkway	3 pumps total; all in service.	No change from previous year.
23	06/07/16	Dwyer	5801 Dwyer Rd	3 pumps total; all in service.	No change from previous year.
24	06/07/16	Maxent	Alcee Fortier	2 pumps total; both operational.	No change from previous year.

Assessment of West Bank Drainage Stations

	DATE	FACILITY NAME	LOCATION	STATUS	NOTES
1	06/03/16	Station 11	5301East Sixth St	5 pumps total; 4 pumps operational.	Stations has 4 major pumps and 1 constant duty pump, 1 major pump out of service being rebuilt with no date for completion of repair. No change from previous year.
2	06/03/16	Station 13	4201 Tall Spruce Dr	7 pumps total; all in service	No change from previous year.