

# IMPLEMENTATION OF NEW BILLING SYSTEM AND OVERSIGHT OF BILLING PROCESSES

NEW ORLEANS SEWERAGE AND WATER BOARD



PERFORMANCE AUDIT SERVICES  
ISSUED MARCH 19, 2020

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LOUISIANA LEGISLATIVE AUDITOR  
DARYL G. PURPERA, CPA, CFE

March 19, 2020

The Honorable Patrick Page Cortez,  
President of the Senate  
The Honorable Clay Schexnayder,  
Speaker of the House of Representatives

Dear Senator Cortez and Representative Schexnayder:

This report provides the results of our review of the circumstances surrounding New Orleans Sewerage and Water Board's (S&WB) letting, bidding, and awarding of contracts pertaining to its new billing system. The purpose of this audit was to evaluate S&WB's implementation of the new billing system and oversight of its billing processes.

Overall, we found that S&WB's implementation of the new billing system caused problems, such as unusually high customer bills and duplicate billings. Although some problems have been addressed, the board needs to strengthen oversight of its billing processes.

Specifically, we found S&WB had multiple problems with the implementation of the new billing system, including delayed testing, limited data migration from the old system, and inadequate training, which, in turn, led to billing errors.

In addition, S&WB does not consistently read all customer water meters each month, and its formulas to estimate water consumption were flawed. As a result, some customers received unpredictable bills. While these weaknesses existed before the new billing system was put into place, they were exacerbated by implementation of the new system.

We found, too, that S&WB paid consultants approximately \$1.7 million from calendar years 2017 to 2019 to identify the causes of the billing problems, implement solutions, and make recommendations for improvement. However, as of January 2020, S&WB had not implemented many of these recommendations.

S&WB also does not accurately calculate and track free water consumption and does not ensure all customer accounts eligible for free water were billed for consumption that exceeded the free water thresholds. State law requires S&WB to provide free water and sewer services to public agencies and certain private entities in New Orleans. We calculated that, from fiscal years 2018 to 2019, S&WB provided at least \$26.3 million in free water and sewer services. As a

The Honorable Patrick Page Cortez,  
President of the Senate  
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March 19, 2020  
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result, S&WB is not collecting revenue it could use to pay for city services and to make necessary capital improvements.

The report contains our findings, conclusions, and recommendations. I hope this report will benefit you in your legislative decision-making process.

We would like to express our appreciation to the management and staff of the New Orleans Sewerage and Water Board for their assistance during this audit.

Respectfully submitted,



Daryl G. Purpera, CPA, CFE  
Legislative Auditor

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NOSWB

# Louisiana Legislative Auditor

Daryl G. Purpera, CPA, CFE



Audit Control #40190011

## Implementation of New Billing System and Oversight of Billing Processes New Orleans Sewerage and Water Board

March 2020

### Introduction

House Resolution 174 of the 2019 Regular Session requested the Louisiana Legislative Auditor to review the circumstances surrounding New Orleans Sewerage and Water Board's (S&WB) letting, bidding, and awarding of contracts pertaining to its new billing system, and to review S&WB's implementation and oversight of the system. S&WB transitioned to the new billing system in October 2016. Since then it has experienced issues with the implementation of the system resulting in customers receiving inaccurate or unusually high bills, fewer customers paying their bills due to a lack of trust in S&WB, and a moratorium on shutting off water service for delinquent customers.<sup>1</sup>

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

According to S&WB's May 2018 Billing System Improvement Plan, between October 2016 and May 2018, it investigated 26,119 complaints regarding inaccurate bills, representing approximately 10,204 (7.5%) of its total 136,074 customers.<sup>2</sup> We also evaluated other aspects of S&WB operations based on legislative input and areas identified during background research, including how S&WB estimates water bills, reads meters, and accounts for free water provided to public and private users.

S&WB was authorized in 1899 by the Louisiana Legislature to furnish, construct, operate, and maintain a water treatment and distribution system and a sanitary sewerage system for New Orleans.<sup>3</sup> As of May 2018, S&WB provided services to more than 136,000 customers in Orleans Parish, and in calendar year 2019, had operating expenses of \$301.6 million and revenues of \$296 million. As of December 2019, S&WB reported having 1,585 authorized positions that were filled by 1,309 employees.

#### Examples of Water Meters



S&WB bills customers monthly for water usage based on readings from water meters (see photo). Employees manually read each customer's water meter once a month and input the monthly usage into a handheld device. However, employees are not always able to read meters for reasons such as scratched meters, meters blocked by parked cars, or meters not being able to be physically

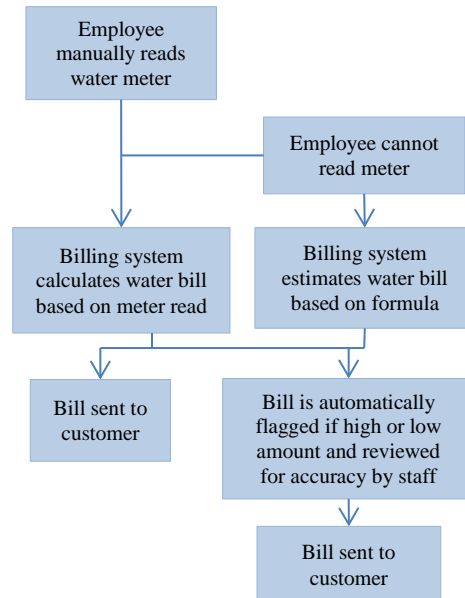
<sup>1</sup> Because of billing issues, S&WB implemented a moratorium in November 2017 on its policy of shutting off water service for customers who did not pay their water bills. S&WB resumed this policy in August 2018.

<sup>2</sup> Some customers made more than one complaint.

<sup>3</sup> Louisiana Revised Statutes (R.S.) 33:4071

located. If a meter is not read, the billing system is programmed to estimate the customer's water usage for that month. Exhibit 1 summarizes S&WB's meter reading and billing process.

**Exhibit 1**  
**S&WB Meter Reading & Billing Process**



**Source:** Prepared by legislative auditor's staff using information provided by S&WB.

In January 2011, S&WB determined that it needed a new billing system to replace its legacy system because the old system was COBOL-based and thus incompatible with other software such as the geographic information system software used to map billing data, could not accept credit cards as a payment method, and would soon lose technical support because of its age. In October 2012, S&WB hired a subcontractor, Langham Consulting/TMG Consulting (Langham/TMG or TMG)<sup>4</sup> to create a Request for Proposal (RFP) for a new billing system.

In June 2013, S&WB advertised for a new billing system and received 10 responses. Eight bidders were eliminated during the scoring process for various reasons, such as not meeting the technical requirements, lack of references, or submitting a late bid. In January 2014, S&WB issued an RFP to the two remaining bidders for the new billing system. An internal S&WB selection committee was tasked with reviewing and evaluating the two proposals and in July 2014, S&WB awarded the contract to Cogsdale Corporation (Cogsdale) based on the committee's scoring and recommendation.

In July 2014, S&WB signed three contracts with Cogsdale for the new billing system including a Software License Agreement, a Software Implementation Agreement, and a Support and Maintenance Agreement. The amount of the three contracts, including five years of maintenance and support, was \$4,400,539; however, change orders and additional software increased costs during implementation by approximately \$1.3 million for a total cost of more than \$5.7 million.

<sup>4</sup> TMG Consulting acquired Langham Consulting during implementation of the billing system.

According to S&WB, the actual total cost for the new billing system was \$8.9 million through calendar year 2020, which includes payments to Langham/TMG for the RFP process and the new billing system project management and quality assurance. In addition, S&WB anticipates needing a supplemental software support agreement with Cogsdale and estimates a cost of \$2.6 million to receive software support services through calendar year 2025. Exhibit 2 shows the total cost for the new billing system through calendar year 2025.

<b>Exhibit 2</b> <b>S&amp;WB Billing System Costs (Projected vs Actual)</b> <b>Calendar Years 2012 through 2025</b>			
<b>Project Component</b>	<b>Initial Projection</b>	<b>Actual Cost</b>	<b>Difference</b>
<b>Third-Party Consultants (Langham/TMG)</b>			
RFP Development, Implementation Project Management and Quality Assurance, and Business Transformation	\$2,523,919	\$3,173,871	\$649,952
<b>Cogsdale Corporation</b>			
Software License	\$588,700	\$936,268	\$347,568
Software Implementation	2,956,605	2,763,980	(192,625)
Maintenance and Support	855,234	1,381,674	526,440
Change Orders	-	648,491	648,491
<b>Total Cogsdale through 2020</b>	<b>\$4,400,539</b>	<b>\$5,730,413</b>	<b>\$1,329,874</b>
Projected Cogsdale Maintenance through 2025	2,590,000	2,590,000*	
<b>Total Cogsdale through 2025</b>	<b>\$6,990,539</b>		
<b>Total Billing System Costs through 2025</b>	<b>\$9,514,458</b>	<b>\$11,494,285</b>	
*Anticipated future costs			
<b>Source:</b> Prepared by legislative auditor's staff using information provided by S&WB.			

The objective of this review was:

**To evaluate S&WB's implementation of its new billing system and oversight of its billing processes.**

Our results are summarized on the next page and discussed in detail throughout the remainder of the report. Appendix A contains S&WB's response to this report, and Appendix B details our scope and methodology. In addition, Appendix C provides a listing of billing issues, descriptions, and S&WB's corrective action for each; Appendix D provides a listing of consultants S&WB hired, including costs associated with each, deliverables, and the status of each project; and Appendix E provides a summary of recommendations made by consultants and the status of each.



## **Objective: To evaluate S&WB's implementation of its new billing system and oversight of its billing processes.**

Overall, we found that S&WB's implementation of the new billing system caused problems, such as unusually high customer bills and duplicate billings. Although some problems have been addressed, S&WB needs to strengthen oversight of its billing processes. Specifically, we found the following:

- **S&WB experienced multiple problems with the implementation of the new billing system, including delayed testing, limited data migration from the old system, and inadequate training, which led to billing errors.** S&WB did not have all processes related to the billing system defined prior to implementing the software, which made the implementation process more complex. In addition, staff did not understand their job processes well enough to apply the trainings in their day-to-day work.
- **S&WB does not consistently read all customer water meters each month, and its formulas to estimate water consumption are flawed. As a result, some customers received unpredictable bills. These weaknesses existed prior to, and were exacerbated by, implementation of the new billing system.** If S&WB invested in automatic meter reader technology and equipment, it would minimize the need for employees to manually read water meters each month.
- **S&WB paid consultants approximately \$1.7 million during calendar years 2017 through 2019 to identify the causes of the billing problems, implement solutions, and make recommendations for improvement. However, as of January 2020, S&WB has not implemented many of these recommendations.** One of these consultants was also required to develop new policies and implement additional software to improve customer service and reduce billing errors, but these tasks were not fully completed.
- **S&WB does not accurately calculate and track free water consumption and does not ensure all customer accounts eligible for free water are billed for consumption exceeding free water thresholds.** State law requires S&WB to provide free water and sewer services to public agencies and certain private entities. During fiscal years 2018 through 2019, we calculated that S&WB provided at least \$26.3 million in water and sewer services for free. As a result, S&WB is not collecting revenue that it could use to fund city services and make necessary capital improvements.

These issues are explained in more detail throughout the remainder of the report along with recommendations to improve S&WB's oversight of its billing system



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**S&WB experienced multiple problems with the implementation of the new billing system, including delayed testing, limited data migration from the old system, and inadequate training, which led to billing errors. S&WB did not have all processes related to the billing system defined prior to implementing the software, which made the implementation process more complex. In addition, staff did not understand their job processes well enough to apply the trainings in their day-to-day work.**

According to S&WB, the purpose of its new billing system was to replace the legacy system with a modern application that provided advanced options for calculating bills, electronic billing, customer self-service capabilities, and other advanced features. The new billing system went live on October 24, 2016, and was meant to address those shortcomings and meet customer expectations and S&WB's customer service goals. As documented in the following sections, problems during and after the implementation were caused by both S&WB and Cogsdale, and were exacerbated by existing weaknesses in S&WB billing processes.

**Weaknesses in the performance of both S&WB and Cogsdale resulted in ongoing issues with the new billing system. For example, prior to going live with the new billing system, S&WB encountered issues such as delays in testing, data migration challenges, and inadequate training, as well as additional errors once the system went live.** There were significant delays in testing the new system, as late as 10 days prior to going live. According to S&WB, it threatened to terminate its contract with Cogsdale due to persistent and significant delays, which resulted in Cogsdale resolving many issues. In addition, Cogsdale and S&WB developed a mandatory certification program for employees to ensure that they were adequately trained because of concerns about the quality of Cogsdale's training and because S&WB staff were not always attending the trainings. S&WB also did not have all processes related to the billing system defined prior to implementing the software, which made implementation more complex, and staff did not understand their job processes well enough to apply the trainings in their day-to-day work.

S&WB did not have Cogsdale migrate all non-essential historical data from its legacy billing system to the new system because of the volume of data and the associated costs.<sup>5</sup> In addition, Cogsdale stated that many of the problems were due to S&WB's lack of pre-existing processes and poor quality data from the old billing system: "garbage in" results in "garbage out." According to Cogsdale, it warned S&WB that not migrating all historical data combined with the poor quality of the data could result in incorrect bills. S&WB's Chief Financial Officer (CFO) at the time of implementation admitted that the legacy system's processes were poorly documented. Exhibit 3 describes examples of the issues encountered during implementation of the new billing system. See Appendix C for a listing of billing issues, descriptions, and S&WB's corrective action for each.

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<sup>5</sup> According to S&WB, it directed Cogsdale to only migrate customer data associated with open accounts, accounts with outstanding balances, and closed accounts if there was a current customer of record on file.

<b>Exhibit 3</b> <b>Examples of Issues During Billing System Implementation</b>	
<b>Issue</b>	<b>Description</b>
Training	Cogsdale provided training to S&WB employees; however, Quality Assurance reports provided to S&WB questioned the quality of the training. In addition, S&WB employees did not always attend trainings. As a result, Cogsdale and S&WB created a mandatory certification program to test whether employees were retaining training information. Employees struggled to apply training because many did not fully understand the processes related to their jobs.
Staff challenges	S&WB had significant turnover within upper management and staff, as well as a culture resistant to significant changes.
Undefined processes	S&WB did not have defined processes prior to developing the new system, which made developing the new billing system more challenging.
Delays in testing	Ten days prior to going live with the system, a significant number of items had not been tested (e.g., customer letters, customer self-service portal, credit card processing, finance integration, smart lists, etc.).
Data migration	S&WB did not migrate all legacy data because of the volume and cost, which affected the system's ability to accurately estimate bills based on customers' historical consumption. Data conversion issues from the old system to the new system could also result in errant billing and runtimes were not at an acceptable speed.
Meter reading issues	Meter reading information did not download correctly to and from handheld meter reading devices. Meter reading routes were no longer correctly sequenced, resulting in employees missing meters or recording inaccurate reads.
Questionable bills sent out	Inaccurate bills were mailed before they were corrected. Approximately 4,700 customers were double-billed because both an estimate and an actual meter read were processed, and unusually high bills were mailed without being flagged for review.
Customers not receiving bills	New customers did not always receive bills because S&WB did not send final bills to previous residents; therefore, water service for new customers could not begin.
User errors	Employees skipped steps in business processes that led to errors and abnormally high bills sent to customers.
Payment problems for customers	Customers experienced problems viewing and paying their bills online. The website timed out due to too many customers trying to access their online accounts.
System bugs	Various bugs occurred after the system went live, including backup servers failing and mailing bar codes not printing correctly.
<b>Source:</b> Prepared by legislative auditor's staff using information provided by S&WB.	

**Recommendation 1:** S&WB should ensure that all employees are appropriately trained on the new billing system and that they understand how to perform their job duties correctly with the new system.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that since July 2018 it has worked to ensure that staff receive appropriate training. In-house training is held regularly and training for the pending upgrade was held for all customer service personnel. Additional training for meter readers and supervisors was provided to improve the routing sequencing and route assignment process. See Appendix A for S&WB's full response.

**Recommendation 2:** S&WB should determine if it has migrated sufficient historical data to the new system so that it can accurately estimate bills for customers when necessary.

**Summary of Management's Response:** S&WB disagrees with this recommendation and stated that while past actions cannot be reversed at this point in time, there is now 3.5 years of historical data in the new system that can provide accurate data for estimating bills for customers when appropriate. See Appendix A for S&WB's full response.

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**S&WB does not consistently read all customer water meters each month, and its estimation formulas are flawed. As a result, some customers received unpredictable bills. These weaknesses existed prior to, and were exacerbated by, implementation of the new billing system. If S&WB invested in automatic meter reader technology and equipment, it would minimize the need for employees to manually read water meters each month.**

While problems associated with the implementation of the new billing system resulted in S&WB sending customers a higher number of unpredictable bills, S&WB was already having some billing issues before it implemented the new billing system. Weaknesses in meter reading and estimation processes can lead to inconsistent bills because these processes result in inaccurate inputs into the billing system. According to a June 2018 report to the Board, S&WB recognized that its inability to read all meters every month resulted in a reliance on estimations and that these estimations were a leading cause of its billing inaccuracies.

**S&WB does not consistently read all customer water meters each month.** According to S&WB, its goal is to read every meter every month; however, there are various reasons a meter may not be read each month. According to a February 2019 consultant report, a minimum of approximately 10% of meters cannot be read in any given month due to scratched meter lenses.<sup>6</sup> Meter readers may not be able to locate meters or they may be obstructed by vehicles or fences so meters that are difficult to locate are routinely skipped. In addition, during the implementation of the billing system, meter reading routes were not sequenced correctly, which led to employees recording meter readings under wrong accounts and missing meters altogether.<sup>7</sup> S&WB also stated that staffing shortages affected its ability to consistently read all meters. Missed or inaccurate reads led to a higher number of estimated bills. In March 2018, S&WB hired 20 additional meter readers to increase the number of meters actually read each month; however, there were still spikes in the number of bills that are estimated from month to month as of October 2019. S&WB has adjusted its meter reading process to regularly assign meter reader employees to the same routes to increase consistency and accuracy of reads. According to Board

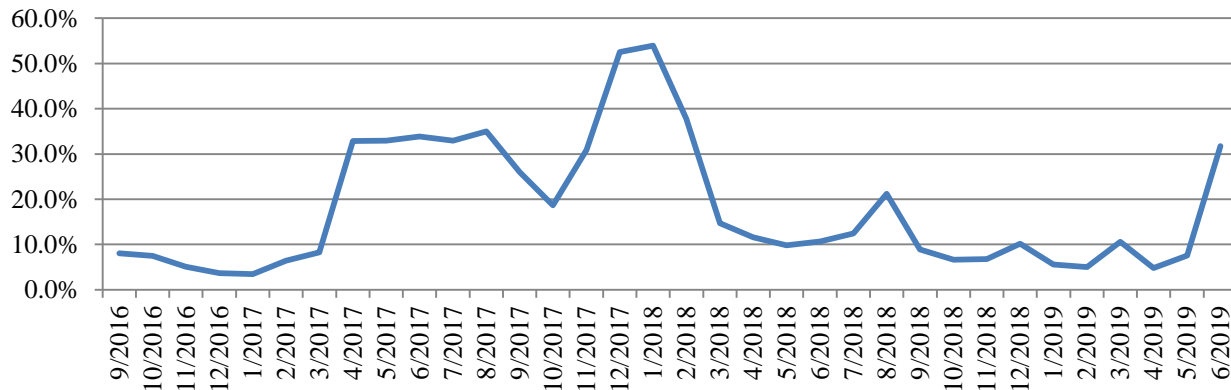
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<sup>6</sup> UtiliWorks Billing Quality Assurance/Quality Control, Utility Billing Assessment, February 2019

<sup>7</sup> According to S&WB, it corrected the sequencing of meter reading routes in January 2019.

meeting documentation, in July 2019, 41,522 (40.4%) of 102,833 bills were estimated, and in October 2019, 18,854 (14.4%) of 130,850 bills were estimated. Exhibit 4 shows the percent of bills that were estimated by month from September 2016 through June 2019.

**Exhibit 4**  
**Percent of Bills Estimated**  
**September 2016 through June 2019**

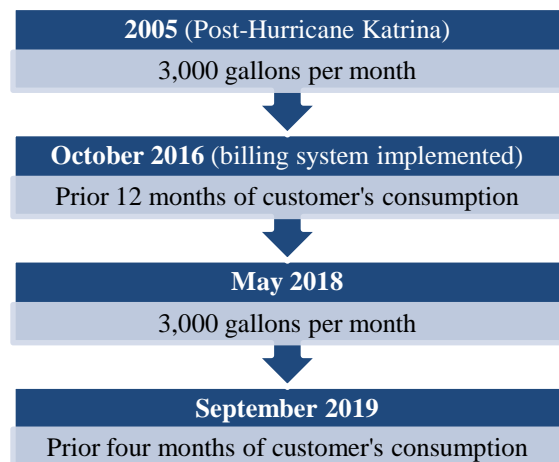


**Source:** Prepared by legislative auditor's staff using S&WB billing data.

If S&WB invested in automatic meter reader technology and equipment, it would minimize the need for employees to manually read water meters each month. In August 2017, S&WB contracted with UtiliWorks for \$184,040 to assess its readiness to implement automated metering, guide the procurement process, and oversee implementation of the automated metering system. In April 2018, S&WB issued an RFP for automatic meter reader equipment. However, the former S&WB CFO cancelled the RFP in the spring of 2018 and current management does not know the reason. According to S&WB, it is currently in the process of selecting a project manager to conduct a meter condition survey and write an RFP for automatic metering.

**Flaws in S&WB's estimation formulas have led to unpredictable bills and spikes in bills when meters are read following an estimate.** When meter readers do not read a customer's water meter, S&WB must estimate the customer's monthly bill based on an estimation formula that has changed several times since August 2005. The estimation formula S&WB used from 2005 until October 2016 and then again from May 2018 to September 2019 estimated all customers' bills based on usage of 3,000 gallons per month,<sup>8</sup> including residential, commercial, and industrial customers. Exhibit 5 summarizes S&WB's estimation formulas during calendar years 2005 through 2019.

**Exhibit 5**  
**S&WB Estimation Formula History**



**Source:** Prepared by legislative auditor's staff using information provided by S&WB.

<sup>8</sup> Or 100 gallons per day

However, because the average consumption of S&WB customers is actually higher than the 3,000 gallons per month used by S&WB to estimate both residential and commercial customers, S&WB has historically been underbilling any customers that used more than 3,000 gallons per month. According to a February 2019 consultant report, S&WB residential customers actually used an average of 5,138 gallons per month and commercial customers used an average of 45,690 gallons per month. To illustrate how much S&WB was underbilling customers prior to September 2019, using the estimation formula based on 3,000 gallons per month, we compared a hypothetical estimated bill using S&WB's formula and the consultant's averages. As shown in Exhibit 6, the estimated monthly bill for the residential customer is \$34 dollars less than what the bill would be based on average usage, and the bill for the commercial customer is \$900 less.

<b>Exhibit 6</b> <b>Bill Comparisons Based on Estimation Formula* Compared to Average Usage</b> <b>Using S&amp;WB Rates as of January 2019***</b>					
<b>Customer Type</b>	<b>Estimated Monthly Consumption</b>	<b>Bill Based on Estimate</b>	<b>Average Monthly Consumption**</b>	<b>Bill Based on Average Consumption</b>	<b>Difference</b>
Residential	3,000 gallons	\$66	5,138 gallons	\$100	(\$34)
Commercial and Industrial	3,000 gallons	\$70	45,690 gallons	\$970	(\$900)
* Formula used from 2005 through October 2016 and May 2018 through September 2019 ** Based on 2019 consultant report *** January 2019 rates as published on S&WB website: <a href="https://www.swbno.org/CustomerService/RatesFeesAndCharges">https://www.swbno.org/CustomerService/RatesFeesAndCharges</a> . See Appendix B for more details on our methodology. <b>Source:</b> Prepared by legislative auditor's staff using information from S&WB.					

The first time that S&WB reads the meter of a customer that has been receiving estimated bills, the customer's bill often spikes and is higher than expected because S&WB needs to "true-up" or correct the bill to collect the amount that was underbilled based on estimations in the previous months. This process delays the revenue stream coming to S&WB for water provided in previous months. In addition, bill spikes can be discouraging for customers who suddenly receive a significantly higher bill, even though the spike is based on their actual water consumption and indicative of what they really owe S&WB.

**To help address inconsistent billing, S&WB changed its estimation formula in September 2019.** According to S&WB, starting in September 2019 it estimated bills based on the average daily usage of a customer's four previous bills, two of which must be actual reads and not estimations, in an attempt to more accurately bill customers for actual water usage. This method is more in line with common practices in other water systems than a flat estimation rate. For example, the Baton Rouge Water Company estimates bills based on six months of prior meter reads.<sup>9</sup> However, many S&WB customers may not have four actual meter reads in a row. We found that during fiscal year 2019, 4,238 (4.4%) of 95,907 water meters had four or more consecutive estimated reads, which could impact the estimation formula for customers with an insufficient number of past meter reads. According to S&WB, if a customer does not have two actual meter reads within the past four months, the system will default to estimating residential

<sup>9</sup> In cases where a customer does not have six months of actual meter reads, the utility uses as much data as they have in creating the estimate.

customers at 170 gallons per day and industrial/commercial customers at 1,500 gallons per day. Requiring meter readers to prioritize reading meters for customers with prior consecutive estimates would increase the accuracy of S&WB's new estimation methodology by making sure that customers have enough actual readings to base estimations on. We found that in fiscal year 2019, S&WB was still estimating 10.8% of monthly bills.

**Recommendation 3:** S&WB should conduct a staffing study to determine the number of employees it needs to consistently read every meter every month so that it can ensure that staffing levels are adequate.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it has already done so. The position of meter reader is a high turnover position and maintaining the appropriate staff level will vary based upon employee career decisions. S&WB's goal is to have an automated meter infrastructure (AMI) which would send readings daily to each account without human intervention. In addition, S&WB stated that attracting and retaining staffing above the entry level and at the supervisory level is difficult due to the current salary limitations and there is not a sufficient financial incentive between the positions to encourage the higher level of responsibility. S&WB has been trying to work with Civil Service on this issue but has not been successful yet in identifying adjustments to ensure market competitive positions. See Appendix A for S&WB's full response.

**Recommendation 4:** S&WB should continue pursuing automatic meter reading technology and equipment.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it is actively working towards an AMI. S&WB just completed a procurement bid to select a project manager for a new AMI that will take three to five years to fully implement. See Appendix A for S&WB's full response.

**Recommendation 5:** S&WB should identify customers with consecutive estimates and prioritize obtaining actual reads of their meters so it can have historical usage data for any potential future estimations.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it has taken actions to reduce opportunities for errors in order to reduce the need for estimates. In addition, S&WB stated that it recently completed a procurement bid for new handheld devices to record reads and these devices are equipped with cameras which can be used for more difficult meter reads or to verify customer inquiries. See Appendix A for S&WB's full response.

**Additional LLA Comments:** S&WB's response does not address the recommendation to identify and prioritize customers with consecutive estimates so that it can have historical usage data for any potential future estimates. While reducing errors is important, there will always be situations that require S&WB to estimate bills and it



should endeavor to ensure that it has as much historical data as possible for those customers who have received estimated bills for consecutive months.

**S&WB paid consultants approximately \$1.7 million during calendar years 2017 through 2019 to identify the causes of billing problems, implement solutions, and make recommendations for improvement. However, as of January 2020, S&WB has not implemented many of the recommendations. One of these consultants was also required to develop new policies and implement additional software to improve customer service and reduce billing errors, but these tasks were not fully completed.**

After implementing the new billing system, S&WB hired several consultants to address billing problems discussed in previous sections of this report, as shown in Exhibit 7. See Appendix D for a list of consultants S&WB hired, including costs associated with each, deliverables, and the status of each project.

<b>Exhibit 7</b> <b>S&amp;WB Consultants Hired to Address Billing Issues</b> <b>As of January 2020</b>			
<b>Date</b>	<b>Consultant</b>	<b>Description</b>	<b>Amount Paid</b>
September 2017	TMG Consulting	Business transformation project to evaluate billing processes flow, make recommendations to improve processes, draft new processes based on the recommendations, and train staff on the new processes	\$841,302
October 2017	Verint	Implement Customer Relationship Management software as part of the business transformation project to address issues identified by TMG; streamline customer service and complaints processes	473,595
April 2018	Water Company of America	Identify unbilled accounts. As of December 2019, \$2.95 million in unbilled water usage was identified and S&WB submitted 139 work orders to address meter repairs, 68% of which have been remedied and are billing properly.	50% of revenue collected for accounts WCA identified for three years*
May 2018	Blue Drop	Assess S&WB's Revenue and Customer Service Department and recommend metrics to evaluate performance	0
October 2018	UtiliWorks	Review billing and meter reading processes and make recommendations for improvement	343,240
<b>Total</b>			<b>\$1,658,137</b>
*As of January 2020, S&WB has paid Water Company of America \$0. <b>Source:</b> Prepared by legislative auditor's staff using information provided by S&WB.			

**S&WB paid consultants approximately \$1.7 million to help determine the causes of its billing issues, but has not yet implemented many of the consultants' recommendations as of January 2020.** S&WB has implemented some metrics recommended by consultants that were needed to assist management in monitoring the billing process, such as determining the percent of meters read daily and reasons why meters are not read. However, S&WB has not



implemented other recommended metrics such as customers with consecutive estimates or number of customers not receiving a monthly bill. Another consultant recommended in January 2019 that S&WB upgrade the new billing system software because it is nine versions behind; however, according to S&WB, it plans to upgrade the new billing system in Spring 2020.<sup>10</sup>

In addition, as of January 2020, S&WB had not implemented any of TMG's recommendations such as S&WB adding automation, including analytics and logic, which would help identify and analyze billing errors as well as minimize the amount of manual effort in the bill review process. While S&WB has a meter reading "scrubbing" process that identifies unusually high or low bills relative to the customers' history and flags them for review by S&WB staff before mailing, this process is highly manual, not formally defined, and does not include supervisory review. This automation would have been especially helpful as S&WB had a backlog of bills needing review in October 2018 due to a shortage of bill review clerks, which could have resulted in customers not receiving their monthly bill. See Appendix E for a summary of recommendations made by consultants and the status of each as of January 2020.

**In addition to providing recommendations, one of these consultants was also required to develop new policies, train staff, and implement additional software to improve customer service and reduce billing errors, but these tasks were not fully completed.** Two of the consultants shown in Exhibit 7 were hired in September and October 2017 for a business transformation project that was supposed to improve customer service and reduce errors by revamping customer service and billing processes and enhancing software tools. According to S&WB, it realized some of its billing issues stemmed from employees trying to use old business processes to operate the new system. TMG Consulting was hired to redesign customer service processes in accordance with industry best practices. TMG's deliverables for the project included reviewing current S&WB processes, identifying best practices and making recommendations, updating or creating policies and procedures, defining key performance indicators, and training S&WB staff on the new processes. However, after TMG delivered the documents defining the current processes and made recommendations for improvements that included key performance indicators, S&WB put the project on hold. According to S&WB, this project was put on hold because the billing team was occupied with addressing billing issues, the new billing system needed an upgrade to proceed, and the project was progressing slowly. In addition, S&WB stated that it has changed the procurement process that was used to acquire these services.

S&WB paid TMG \$841,302, even though S&WB put the project on hold<sup>11</sup> and TMG was not able to provide all deliverables, including updating S&WB's policies and procedures and providing training to employees. S&WB also paid Verint \$473,595 to implement software that would integrate with the new billing system, allowing S&WB to streamline customer service processes and better track complaints. However, this software was never implemented. According to S&WB, it could not implement the software because the new billing system needed to be upgraded first, but it is planning to implement the software after the billing system is upgraded in the Spring of 2020.

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<sup>10</sup> The new billing system upgrade is anticipated to cost \$96,600.

<sup>11</sup> Current S&WB management does not know the reason prior management put the TMG project on hold.

**Recommendation 6:** S&WB should upgrade the new billing system to the appropriate version so that it can implement the software developed by Verint to streamline its customer service processes and better track complaints.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it has been actively working on completing an upgrade to the billing system anticipated in 2020. This upgrade will allow S&WB to implement the Verint system purchased in early 2018. See Appendix A for S&WB's full response.

**Recommendation 7:** S&WB should implement all metrics and key performance indicators recommended by contractors and use those metrics on a regular basis to evaluate its performance and make management decisions.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it has identified the metrics it believes are most important for daily evaluation and performance measurement. S&WB now has real-time call center data, reviews customer billing/collections data daily, runs daily reports for bill reviews and meter reading exceptions, and has been providing monthly indicators to both the Board of Directors and the public on various customer engagement measures. S&WB stated that it will continue to monitor the measures it believes to be applicable and develop processes or reports as necessary to assist with the identification of the selected metrics. See Appendix A for S&WB's full response.

**Recommendation 8:** S&WB should implement the recommendations TMG made regarding business process improvements and document new or updated policies and procedures.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it has worked since July 2018 to update or create policies, procedures, and processes, some of which were based upon the work prepared by TMG. S&WB completed a revised draft of the rules and regulations and has been working through final legal reviews. As S&WB completes the billing system update and implements Verint, it will document the additional functionality and re-train staff. S&WB also stated that as it continues to make system improvements, its processes and procedure documentation will evolve and may not look like the information TMG provided in 2018. See Appendix A for S&WB's full response.

**Recommendation 9:** After S&WB upgrades the new billing system, it should implement the Verint Customer Relationship Management application that it has already paid for.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that it is working to complete an upgrade to the billing system anticipated in 2020 so that it can move to implement the Verint system purchased in early 2018. See Appendix A for S&WB's full response.

**Recommendation 10:** S&WB should ensure that it does not pay contractors for services that were not delivered.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that the current administration is providing oversight and new procurement processes to ensure that all services required under contracts are the services received. The Executive Director has instructed the legal department to review options to compel any contractors who may have been paid for services not delivered to make good on those services or return excess payments. See Appendix A for S&WB's full response.

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**S&WB does not accurately calculate and track free water consumption and does not ensure all customer accounts eligible for free water are billed for consumption exceeding free water thresholds. State law requires S&WB to provide free water and sewer services to public agencies and certain private entities. During fiscal years 2018 through 2019, we calculated that S&WB provided at least \$26.3 million in water and sewer services for free. As a result, S&WB is not collecting revenue that it could use to fund city services and make necessary capital improvements.**

State law<sup>12</sup> requires S&WB to provide free water and sewer services to the City of New Orleans and its public institutions and free water up to specified thresholds to the Orleans Parish School Board,<sup>13</sup> the Audubon Park and Zoological Garden, New Orleans City Park, and the New Orleans Museum of Art.<sup>14</sup> However, S&WB does not accurately calculate and track free water consumption. According to S&WB data, it provided approximately \$19.7 million in water and sewer services free of charge to the City of New Orleans during fiscal year 2018 through fiscal year 2019.<sup>15</sup> However, S&WB stated that free water amounts likely include billing errors and that it cannot provide an accurate amount of free water provided to the city because it does not identify and fix consumption errors for free water accounts. In addition, S&WB cannot readily provide actual consumption amounts for the entities with specified thresholds, which means it may not be consistently billing these entities for any usage above the thresholds defined in law.

We estimated the water value for each entity's consumption thresholds using January 2019 water rates at \$6.6 million during fiscal years 2018 through 2019. Exhibit 8 summarizes the

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<sup>12</sup> R.S. 33:4096, *et. seq.*

<sup>13</sup> The threshold for the school board was established in 1992 and is a formula based on the number of students and staff at each school. Each school has its own numeric threshold.

<sup>14</sup> The thresholds for Audubon Park and Zoological Society, City Park, and the New Orleans Museum of Art are based upon each entity's usage as of 1981. Audubon Park and Zoological Society's allowed free usage is 240,000,000 gallons per year, City Park's allowed free usage is 235,323,400 gallons per year, and New Orleans Museum of Art's allowed free usage is 2,553,800 gallons per year.

<sup>15</sup> This amount does not include free services provided to schools because each school has its own numeric threshold and S&WB does not track this information.

amount of free water and sewer services S&WB was statutorily required to provide during fiscal years 2018 through 2019 based on actual usage for the City of New Orleans and the estimated value of water services based on January 2019 rates for entities with thresholds in law.

<b>Exhibit 8</b> <b>Free Water and Sewer Services Provided by S&amp;WB</b> <b>Fiscal Years 2018 through 2019</b>			
<b>Type of Entity</b>	<b>FY 18</b>	<b>FY 19</b>	<b>Total</b>
<b>City of New Orleans*</b>			
S&WB**	\$7,513,360	(\$2,949,679)	\$4,563,681
Public Entities	3,489,510	11,671,706	15,161,216
<b>Total Cost for City of New Orleans</b>	<b>\$11,002,870</b>	<b>\$8,722,027</b>	<b>\$19,724,898</b>
<b>Value of Services for Entities with Thresholds (Amounts are estimated)***</b>			
Audubon Park and Zoological Society Cap	\$1,419,567	\$1,419,567	\$2,839,134
New Orleans Museum of Art Cap	16,260	16,260	32,520
City Park's Cap	1,391,929	1,391,929	2,783,858
New Orleans Schools Cap	480,799	476,860	957,659
<b>Total Estimated Water Value for Capped Accounts</b>	<b>\$3,308,555</b>	<b>\$3,304,616</b>	<b>\$6,613,171</b>
<b>Total</b>	<b>\$14,311,426</b>	<b>\$12,026,643</b>	<b>\$26,338,069</b>
*Figures could include meter reading errors because S&WB does not routinely verify the accuracy of reads for free water accounts. ** Includes free water provided to contractors working on S&WB projects ***These entities may not have met the consumption thresholds for each year. See Appendix B for methodology used to estimate water value. <b>Source:</b> Prepared by legislative auditor's staff using unaudited S&WB data			

We did not identify any other public utility system in the state that is required by law to provide services free of charge. In fact at least one municipal utility system, Lafayette Utilities System (LUS), is specifically prohibited by local ordinance from providing free water to any of its customers.<sup>16</sup> According to LUS, this prohibition provides assurances to its bondholders that the system will be operated and maintained in a prudent and businesslike manner.

Providing free water affects S&WB's ability to repay its debt and to generate sufficient revenue to cover all expenses. According to its comprehensive annual financial report, as of December 31, 2018, S&WB has a total of \$421.9 million of bonded debt.<sup>17</sup> S&WB specifically owes \$197.3 million in outstanding water revenue bonds. In addition, S&WB's operating expenses of \$301.6 million exceeded its revenues of \$296 million during fiscal year 2019. According to the Environmental Protection Agency, it is important for water systems to be able to cover expenses so that they can maintain financial stability and collect reserve funds to cover future costs (i.e., infrastructure repairs, compliance with future regulations, etc.), as we cited in our March 2017 report titled *Water Rates in Louisiana*.<sup>18</sup> In its 2019 annual budget, S&WB noted that it cannot fund its entire Capital program because of a lack of available funds and identified \$3 billion of needed asset and infrastructure investment over the next 10 years.

<sup>16</sup> Lafayette General Utilities Revenue Bond Ordinance No. O-122-2004

<sup>17</sup> This includes \$421.9 million in municipal bonds, \$7.7 million in drainage bonds, \$216.9 million in sewer revenue bonds, and \$197.3 million in water revenue bonds.

<sup>18</sup> The report can be found here:

[http://app.lla.state.la.us/PublicReports.nsf/0/E79C2E44A4A9D635862580EB0057B474/\\$FILE/00012F5D.pdf](http://app.lla.state.la.us/PublicReports.nsf/0/E79C2E44A4A9D635862580EB0057B474/$FILE/00012F5D.pdf).

**Recommendation 11:** S&WB should begin to accurately calculate and track free water consumption, especially for customers that statutorily receive free water below certain thresholds, to ensure that it is correctly billing customers for any usage that exceeds their thresholds.

**Summary of Management's Response:** S&WB agrees with this recommendation and stated that the provision of services free of charge does place an undo financial burden on the agency. While S&WB reads the meters for all water use, some accounts receive "free water" per legislation or have complicated billing consumption thresholds that do not allow for automated, monthly billing with the system. Due to the manual nature required by existing regulations, manual bills must be created for some of these accounts, which are created twice a year. See Appendix A for S&WB's full response.

**Matter for Legislative Consideration:** The legislature may wish to consider amending R.S. 33:4096 to remove the requirements that S&WB provide free services to public agencies and certain private entities in New Orleans.

## **APPENDIX A: MANAGEMENT'S RESPONSE**







# **The Sewerage & Water Board**

## **OF NEW ORLEANS**

625 ST. JOSEPH STREET

NEW ORLEANS, LA 70165

504.529.2837 OR 52.WATER

[www.swbno.org](http://www.swbno.org)

**March 19, 2020**

Mr. Daryl G. Purpera  
Louisiana Legislative Auditor  
P.O. Box 94397  
Baton Rouge, LA 70804-9397

Re: SWBNO Response to Implementation of the New Billing System and Oversight of Billing Processes

Dear Mr. Purpera:

We appreciate the diligence your team showed as they examined the challenges we faced in our billing process. It is validating to read that they reached many of the same conclusions we did when my team came aboard in 2018. We also are grateful that you acknowledged many of the improvements we have made so far. Nevertheless, we will not slow down our urgent effort to provide better service for our customers.

To that end, we have identified an ultimate solution to billing irregularities. It is the installation of Automated Metering Infrastructure (AMI), a citywide network of smart meters connected by wireless signal that will all but eliminate many analog data entry processes vulnerable to error. We have started our migration to AMI, but it will be several years – possibly more than five – before it is fully implemented.

We are not waiting, however, to make attainable changes today that can improve how we deliver water and sewer services. Current leadership did not make the initial decisions that led to the identified shortcomings within the billing process, but we have been very clear that it is our responsibility to correct them. Our goal is to once again earn and hold the trust and confidence of our customers and the community as a model water management utility.

I would like to take this opportunity to highlight some of the successes we have achieved so far. Since Chief Financial Officer Yvette Downs joined the team in July 2018, we greatly reduced the running list of open billing disputes from 8,000 to approximately 2,500. This meets our goal to have less than 2 percent of our active accounts under investigation at any given time.

We eliminated the backlog of approximately 13,000 customers waiting to start a new account, and now that process, on average, takes no longer than a week. We achieved this in part by building within our billing system calculation templates for customer service representatives that expedite the process.

We re-sequenced our meter reading routes to follow more discernable patterns, and we have assigned our readers to routine routes to cut down on errors. We are in the process of purchasing new handheld devices outfitted with cameras. These will allow meter readers to enter a read and photograph the meter dial, enabling the field to document verified reads.

We also restructured in September our bill-estimation process – one of many improvements noted in your report – to more accurately reflect the respective water use at each property. We have seen a reduction in under-estimations as a result.

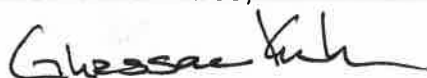
As I said before, we are not done. We are working toward solutions for the remaining challenges highlighted in your report. For example, we plan to complete a software upgrade to the billing system this year. This will let us implement the Verint system, which will greatly simplify how our customer service representatives interface with the billing software.

We are constantly evaluating our training regimen for our customer service and billing review teams. We have implemented new tools and reports to better monitor and enhance the efficiency of billing process. In addition, my leadership team and the leaders of our customer service department and other public-facing departments gather weekly to raise new issues, solve problems, and compare notes on ways to deliver better service to our customers.

We also agree with your team that how we deliver “free water” as required under state law should be further investigated. We are working to better track our delivery and the value of free water. A section of our annual study on water loss is dedicated to these data. Meanwhile, current state law requirements do put undue financial burdens on this utility. The thresholds we must reach under these laws before we can charge for water service are complicated, making it impossible to produce automated bills.

We look forward to future productive conversations with our elected officials, water management experts and, most of all, our customers, to find new ways to provide better service. Thank you again for your attention to these matters.

Yours in service,

A handwritten signature in dark ink, appearing to read "Ghassan Korban", written over a horizontal line.

Ghassan Korban  
Executive Director

## **SWBNO responses to LLA Recommendations**

**Recommendation 1:** *S&WB should ensure that all employees are appropriately trained on the new billing system and that they understand how to perform their job duties correctly with the new system.*

**Response:** The SWBNO agrees with this recommendation. Since July 2018 upon the arrival of our new Chief Financial Officer, Yvette Downs, we have worked to ensure that staff receive appropriate training. We provide in-house training regularly for our customer service representatives. We have also trained them all on the upgrade to the billing system we plan to implement this year. When we improved the route sequencing and route assignment processes, we provided additional training for meter readers and supervisors. We are tracking more data regarding account transfers, reviews of bills, and other functions to help our team improve the performance of their job duties.

**Recommendation 2:** *S&WB should determine if it has migrated sufficient historical data to the new system so that it can accurately estimate bills for customers when necessary.*

**Response:** This recommendation is not applicable to our present situation. We have 3.5 years of historical data in the new system. Additionally, our estimation process, which a third-party quality assurance evaluation recommended, is based on 4 months of billing data for each customer. The new process is designed to prevent “sticker shock,” or an unexpected increase in a bill to make up for inaccurate past estimates of water use that were too low.

**Recommendation 3:** *S&WB should conduct a staffing study to determine the number of employees it needs to consistently read every meter every month so that it can ensure that staffing levels are adequate.*

**Response:** We implemented this recommendation in 2019. We found that the position of meter reader is a high turnover position and maintaining an appropriate staff level is a challenge given the physicality of the work and the low wages. There is not a sufficient financial incentive among the positions to encourage a higher level of responsibility. We have tried to work with Civil Service to make these positions attractive from a wage standpoint, but we have achieved little success so far. Meter readers face additional challenges that prevent the reading of meters, including scratched meters, broken meters, or obstructed f meters when a car is parked over it or it is inside a locked building. We have increased our efforts to repair or replace scratched and broken meters. Although we have increased the number of meters that can be read, some meters remain inaccessible every month. Our goal is to install automated metering infrastructure (AMI) to send daily digital readings daily from each account without human intervention. We have selected a project manager to begin this implementation. We will evaluate our staffing needs and skill levels as we transition to AMI.

**Recommendation 4:** *S&WB should continue pursuing automatic meter reading technology and equipment.*

**Response:** The SWBNO agrees with this recommendation. We estimate it will take 3-5 years to fully implement.

**Recommendation 5:** *S&WB should identify customers with consecutive estimates and prioritize obtaining actual read of their meters so it can have historical usage data for any potential future estimations.*

**Response:** The SWBNO agrees with this recommendation. Estimates are used for several reasons, including inability to read a meter, the discovery of an unusual read, or disputes initiated by customers that may require a new reading to evaluate a previous reading. These last two situations require additional staff, which is a challenge given the constraints described under Recommendation #3.

We have taken actions to reduce opportunities for errors. We completed a quality assurance, quality control study in early 2019 that uncovered our need to resequence meter reading routes and assign routine routes to readers to reduce the risk of errors. We also completed a procurement bid for new handheld devices to record reads. These devices are equipped with cameras that can photograph meter dials when necessary.

**Recommendation 6:** *S&WB should upgrade the new billing system to the appropriate version so that it can implement the software developed by Verint to streamline its customer service processes and better track complaints.*

**Response:** The SWBNO agrees with this recommendation and has actively worked to complete an upgrade to the billing system in 2020. This upgrade will let us implement the Verint system.

**Recommendation 7:** *S&WB should implement all metrics and key performance indicators recommended by contractors and use those metrics on a regular basis to evaluate its performance and make management decisions.*

**Response:** The SWBNO agrees with this recommendation and we have begun to track metrics most important for daily evaluation and performance measurement. We have real-time call center data review customer billing/collections data daily; run daily reports for bill reviews and meter reading exceptions; and we provide monthly indicators to both the Board of Directors and the public on various customer engagement measures. We constantly evaluate the data we track, and edit or add new metrics to help us achieve our goal to perform better as a utility.

**Recommendation 8:** *S&WB should implement the recommendations TMG made regarding business process improvements and document new or updated policies and procedures.*

**Response:** The SWBNO agrees with this recommendation. Since July 2018, we have worked to update or create policies, procedures, and processes based upon the work prepared by TMG. New and existing employees are trained using their recommendations. We reworked our Customer Service rules and regulations and have been working through final legal reviews. When we update our Customer Service Management software, we will document the additional functionality and retrain staff. But it is important to note that TMG provided their recommendations in 2018. Our goal to improve for our customers will almost certainly move this utility beyond what they recommended at that time.

**Recommendation 9:** *After S&WB upgrades the new billing system, it should implement the Verint Customer Relationship Management application that it has already paid for.*

The S&WB agrees with this recommendation. We plan to upgrade the billing system this year to implement Verint and provide better service to our customers.

**Recommendation 10:** *S&WB should ensure that it does not pay contractors for services that were not delivered.*

**Response:** The SWBNO agrees with this recommendation. We deeply revised the existing procurement policies and created a procurement manual to ensure that all services required under contracts are received. The Executive Director has instructed SWBNO legal department to review options to compel any contractors who may have been paid for services not delivered to make good on those services or return excess payments.

**Recommendation 11:** *S&WB should begin to accurately calculate and track free water consumption, especially for customers that statutorily receive free water below certain thresholds, to ensure that it is correctly billing customers for any usage that exceeds their thresholds.*

**Response:** The SWBNO agrees with this recommendation. Free water service places undue financial burden on this utility. We are working with our customers, our state legislators, and other stakeholders to reach an equitable solution to laws and processes that, in some cases, were enacted 40 years ago. Meanwhile, we have designated an internal team with the responsibility of researching these special, statutorily mandated accounts to ensure they are paying what they owe under the law.



## APPENDIX B: SCOPE AND METHODOLOGY

This report provides the results of our performance audit of New Orleans Sewerage and Water Board's (S&WB) implementation of its new billing system and oversight of its billing processes. We conducted this performance audit under the provisions of Title 24 of the Louisiana Revised Statutes of 1950, as amended. This audit generally covered fiscal years 2012 through 2019. Our audit objective was:

**To evaluate S&WB's implementation of its new billing system  
and oversight of its billing processes.**

We conducted this performance audit in accordance with generally-accepted *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. To answer our objective, we reviewed internal controls relevant to the audit objective and performed the following audit steps:

- Obtained and reviewed Requests for Proposals and contracts relating to S&WB's new billing system, as well as documentation showing the bidding, letting, and awarding of the contracts with Cogsdale.
- Obtained new billing system costs from S&WB. We did not audit these amounts for accuracy.
- Interviewed S&WB staff regarding the bidding, letting, and awarding of the new billing system contracts and what problems occurred before, during, and after implementation.
- Obtained and reviewed quality assurance documentation from the implementation of the billing system.
- Obtained and reviewed select email boxes from key current and former S&WB staff.
- Obtained and reviewed S&WB reports to the Board, Board meeting minutes, and supporting documentation.
- Obtained and reviewed contracts or agreements with consultants hired to identify billing problems and make recommendations for improvement, as well as final documents and recommendations.



- Requested the status of S&WB implementation of each of the recommendations made by consultants. We did not verify whether S&WB actually implemented these recommendations.
- Interviewed S&WB staff regarding its meter reading, estimation, and bill review processes.
  - Shadowed S&WB employees on a meter reading route.
  - Requested meter reading staffing levels.
  - Observed S&WB staff during bill review process.
  - Shadowed S&WB employee on bill dispute investigation.
- Requested policies and procedures regarding S&WB's meter reading, estimation, and bill review processes.
- Obtained a SQL backup of S&WB's new billing data system.
  - Conducted limited reliability testing on the data set.
  - Analyzed the data to determine the number of estimated bills versus the number of bills based on actual meter reads.
  - Analyzed the data to determine the number of customers with consecutive estimated bills.
- Compared hypothetical bill amounts using S&WB estimation formulas to average consumption using the January 2019 water rates as published on the S&WB website (<https://www.swbno.org/CustomerService/RatesFeesAndCharges>).
- Requested and analyzed data regarding free water provided to public and private institutions as required by law.
  - Estimated the value of free water thresholds for New Orleans School Board, the Audubon Park and Zoological Garden, New Orleans City Park, and the New Orleans Museum of Art based on January 2019 water rates as published on the S&WB website (<https://www.swbno.org/CustomerService/RatesFeesAndCharges>). We used the most conservative estimate by using the smallest meter size in our calculation.
- Contacted other water systems in Louisiana regarding free water and estimation practices, including Lafayette Utilities System, the Baton Rouge Water Company, Shreveport Water and Sewerage, and the Rural Water Association.
- Discussed the results of our analyses with S&WB management.

## APPENDIX C: BILLING PROBLEMS, DESCRIPTIONS, AND CORRECTIVE ACTION AS OF JANUARY 2020

Problem	Description	Corrective Action
Training	Cogsdale provided training to S&WB employees. Quality Assurance reports questioned the quality of the training. In addition, S&WB employees did not always attend trainings. As a result, Cogsdale and S&WB created a certification program to test whether employees were retaining training information. Employees struggled to apply trainings because many did not fully understand the processes related to their jobs.	According to S&WB, it is conducting ongoing training of the new system.
Staff challenges	S&WB had significant upper management turnover and staff turnover, as well as a culture resistant to change.	S&WB has new executive leadership in place as of July 2018.
Undefined business processes	S&WB did not have defined business processes prior to developing the new system, which made developing the new billing system more challenging.	S&WB contracted for a business transformation project that would redefine business processes in accordance with industry best practices; however, it was never completed.
Delays in testing	Ten days prior to going live with the system, a significant number of items had not been tested (e.g. letters, customer self-service portal, credit card processing, finance integration, smart lists, etc.)	No need for additional action as system is already live.
Data migration	S&WB did not migrate all legacy data because of the volume and cost, which affects the system's ability to estimate bills based on customers' historical consumption. Data conversion issues from the old system to the new system could result in errant billing and runtimes were not at an acceptable speed.	S&WB has not migrated any additional data from the legacy system.
Meter reading issues	Meter reading information did not download correctly to and from handheld meter reading devices. Meter reading routes became out of sequence (what guides meter readers to each meter on route), resulting in missed reads or inaccuracies in reads.	Meter reading route sequencing was corrected as of January 2019, and downloads were corrected.

Problem	Description	Corrective Action
Questionable bills sent out	Bills needing correction were sent out in error. Approximately 4,700 customers were doubled billed because both an estimate and an actual meter read were processed, and unusually high bills were mailed without being flagged for review.	Discrete billing problems have been addressed, and there are multiple factors resulting in questionable bills. However, systematic process changes need to be made to reduce the risk of questionable bills.
Customers not receiving bills	New customers did not always receive bills because S&WB did not migrate all legacy data. In addition, because S&WB did not timely send the previous resident their final bill, water service for the new customer could not begin.	S&WB contracted with Water Company of America to identify unbilled accounts. While it has identified accounts, it did not address how to prevent unbilled accounts.
User errors	Employees skipped steps in business process that led to errors and abnormally high bills sent to customers.	While S&WB stated that training is ongoing, new processes were never developed through the Business Transformation Project that would have reduced user errors.
Payment problems for customers	Customers experienced problems viewing and pay their bills online. The website timed out due to too many customers trying to access their online accounts.	S&WB has corrected most of the problems with customers' ability to pay bills online.
System bugs	Various bugs occurred after the system went live, such as backup servers failing, postal bar codes not printing correctly, and background processes causing other problems.	S&WB has addressed most of the system bugs and has also extended its contract with Cogsdale to help address issues as they arise.
Estimation formula created bills that were too low, resulting in spikes in customer bills	When S&WB's estimation formula was based on 100 gallons per day per customer, it often underbilled customers, particularly commercial and industrial customers. When the customer received an actual meter read after these low estimates, their bill would be a "true-up" bill to make up for actual water consumed based on the read.	S&WB changed its estimation formula to represent more accurate estimates.

Problem	Description	Corrective Action
Estimation formula based on historical meter reads resulted in inconsistent bills	S&WB's estimation formula was calculated based on 12 months of readings and three had to be actual reads. If customers had any bills that were too high or too low, those bills would be used in the estimation formula, exacerbating inconsistent billing problems.	S&WB changed its estimation formula in September 2019 to be based on the average daily usage of a customer's four previous bills, two of which must be actual reads.
Not reading meters every month or inaccurate reads that lead to an over-reliance on estimates	We found that: <ul style="list-style-type: none"> <li>In fiscal year 2017, 170,741 (14.6%) of 1,168,607 monthly meter reads were estimated.</li> <li>In fiscal year 2018, 420,056 (28%) were estimated.</li> <li>In fiscal year 2019, 172,127 (10.8%) were estimated.</li> </ul>	S&WB has hired additional meter reader staff in order to read more meters; however, it does not track or monitor customers receiving consecutive estimates for multiple months.
Customers receiving consecutive estimates for multiple months	We found that during fiscal year 2019, 4,238 (4.4%) of 95,907 water meters had four or more months of consecutive estimated reads.	
Negative bills	When meter dials roll over during the billing period, it creates negative bills. For example, the previous read was 99,990 and current read is 00,010. The billing system subtracts the two reads, calculating negative consumption rather than the actual consumption. Billing clerks should know how to adjust a negative read manually.	According to S&WB, it has a report to identify negative bills and reads, and review of these items is part of the bill review team process.
Lack of policies and procedures	S&WB lacks policies and procedures for key areas, such as meter reading, bill review, information system contracting, etc.	S&WB contracted with TMG to define its current business processes and make recommendations for improvement. It has not yet implemented any of the recommendations or created updated policies and procedures.
<b>Source:</b> Prepared by legislative auditor's staff using data and information provided by S&WB.		



## APPENDIX D: CORRECTIVE ACTION CONSULTANTS, DELIVERABLES, DATES, AND COSTS SEPTEMBER 2017 THROUGH JANUARY 2020

Consultant	Purpose	Deliverables	Delivered	Date Hired	Date Ended	Status	Contract Cost	Amount Paid
Langham/ TMG	Review S&WB processes, policies, etc., to identify issues, recommend improvements, document any changes, and train staff on new processes	Review of current policies	Yes	Sep-17	Jul-18	Stopped	\$797,336	\$841,302
		Review as-is processes	Yes					
		Define key performance indicators (KPIs)	Yes					
		Document to-be processes	No					
		Update policies and procedures	No					
		Identify best practices/changes	No					
		User acceptance testing of all changes	No					
		Create training materials	No					
		Deliver new process training	No					
Verint	Customer Relationship Management (CRM) Software to redesign customer service processes in accordance with best practices and implement CRM system			Oct-17	--	In progress	\$695,776	\$473,595
		Provide CRM software	Yes					
		Implement CRM software	No					
		Provide user training	No					

Consultant	Purpose	Deliverables	Delivered	Date Hired	Date Ended	Status	Contract Cost	Amount Paid
Water Company of America	Identifying unbilled consumption by S&WB customers	Identified accounts	In progress	Apr-18	--	On-going	50% of value of unbilled account for 3 years	\$0 - As of January 2020
Blue Drop	Evaluate customer service operations and recommend opportunities for better service and coordination among departments	Customer service inventory	Yes	May-18	Aug-18	Complete	\$0	\$0
		Recommendations report	Yes					
Utiliworks	Review the meter reading and billing processes and perform quality assurance and control on utility bills and disconnect notices	Mobilization and discovery	Yes	Oct-18	Jan-19	Extended	\$293,240	\$293,240
		Utility billing assessment	Yes					
		Billing review support	Yes					
		Delinquent customer/disconnect notice	No					
Utiliworks	Extend above QA/QC contract to complete delinquent customer/shut-off notice and on-site support	Delinquent customer/disconnect notice	Yes	Jan-19	Feb-19	Complete	\$50,000	\$50,000
<b>Source:</b> Prepared by legislative auditor's staff using data and information provided by S&WB.								



## APPENDIX E: STATUS OF RECOMMENDATIONS MADE BY CONSULTANTS AS OF JANUARY 2020

S&WB provided the status of each of the following recommendations. Those in red have not yet been implemented or S&WB did not know the status. We did not conduct testing to determine if corrective action was actually implemented or if the actions were effective.

Consultant	Date of Recommendation	Recommendation	S&WB Response
UtiliWorks	January 2019	Upgrade new billing system - currently nine major releases behind	Upgrade scheduled to be completed in Spring 2020.
		Change estimation process to be more accurate by: using historical average of individual or base off like-accounts if historical is unavailable	Changed formula as of September 2019.
		Should have continuous training on new billing system and quality assurance	Each unit conducts its own CSM training. QA/QC: supervisors perform random checks of employees' work to assure procedures are being followed.
		Identify all unreadable meters and repair/replace	Being done in conjunction with Facilities Maintenance as the necessary equipment is available.
		Reduce the number of skipped meter readings and prioritize move ins/outs and consecutive estimates	The Meter Reading department is working daily to reduce the number of reads with supervisors going out on routes to assist meter readers with retrieving reads daily; move ins/outs are being scheduled on the scheduled date as requested by the customer; Meter Reading does not consecutively estimate areas.
		Establish new policy whereby if a meter reader finishes route, they can come back to pick up overtime reads	Policy is established.
		Take a photo of all meter reads	Not implemented but in process of purchasing new handheld devices that include cameras.
		Set up a report to flag accounts with multiple negative consumptions and have a team to investigate	Have a report for negative bills and negative reads and review of these items is a part of the bill review team process.
		Establish key performance indicators	This information is tracked by management.

Consultant	Date of Recommendation	Recommendation	S&WB Response
Blue Drop	August 2018	Implement metrics and quick wins for call center, walk-ins, meter operations, billing, and collection:	
		• Percent of meters read (daily)	Implemented
		• Breakdown of reasons for non-reads (daily)	Implemented
		• Breakdown of consecutive estimates by customer type and number of consecutive estimates (weekly)	Not Implemented
		• Percent of appointments met (weekly)	Implemented
		• Number of service orders by complete date and those that have not been completed by required complete date (weekly)	Unknown
		• Separating two-man routes into two one-man routes, when safety is not a concern	Not Implemented
		• Identify all unused and unregistered meters for mass removal	Unknown
		• Unbilled accounts, number and dollar value broken down by month, including transfer bills (weekly)	Not Implemented
		• Number of open disputes and investigations by age (weekly)	Implemented
		• Number of hold batch with status, open or completed (daily)	Not Implemented
		• Percent of accounts billed after bill date by number of days from bill date (weekly)	Not Implemented
		• Identify the dollar value of all unbilled accounts and prioritize the billing backlog by dollar value of unbilled accounts for fast revenue generation	Implemented
		• Dollar value and number of accounts past due, by age (weekly)	Implemented

Consultant	Date of Recommendation	Recommendation	S&WB Response
Blue Drop (Cont.)	August 2018	<ul style="list-style-type: none"> <li>Dollar value and number of account overdue by more than 90 days broken down by collection step (weekly)</li> </ul>	Not Implemented
		<ul style="list-style-type: none"> <li>Statistics related to payment agreements: Number of payment agreements</li> </ul>	Implemented
		<ul style="list-style-type: none"> <li>Statistics related to payment agreements: Percent of payment agreements that are successful</li> </ul>	Not Implemented
		<ul style="list-style-type: none"> <li>Identify the dollar value of all past due accounts and begin proactive collections with the accounts with the highest balances for fast revenue generation</li> </ul>	Implemented
TMG - Business Process Transformation	July 2018	<p>TMG documented 50 S&amp;WB “as-is” processes, which included 99 recommendations for improvement, including:</p> <ul style="list-style-type: none"> <li>Add calculations and logic to report to indicate probable meter roll over and, if possible, the meter read</li> <li>Automate the re-billing process – enter date to be rebilled from forward and have system calculate the bill to remove errors</li> <li>Track dollar amount of adjustments by staff members to identify any that seem to be making many adjustments or many dollars of adjustments</li> <li>Develop regular reporting on high bill complaints along with other complaints</li> </ul>	S&WB has not implemented any of the 99 recommendations and has not adjusted any processes, policies, or procedures based on recommendations.
<b>Source:</b> Prepared by legislative auditor’s staff using data and information provided by S&WB.			