

Integrated Master Planning RFI
Sewerage & Water Board of New Orleans
Special Projects

February 18, 2020

Submitted By:



3012 26th Street
Metairie, LA 70002 | 504.454.3866
www.ardurra.com

3012 26th Street
Metairie, LA 70002
(t) 504.454.3866
www.ardurra.com



February 18, 2020

Sewerage and Water Board of New Orleans
ATT: Patti Wallace, Purchasing Director
625 St. Joseph St., Room 131
New Orleans, Louisiana 70165

RE: Written Response and Firm Profile for Integrated Master Planning RFI

Dear Ms. Wallace:

Ardurra Group, Inc. (Ardurra) is excited to submit response to the above referenced Request for Information. Ardurra is highly interested in participating in the RFI process, including any and all future workshops, stemming from the significant value we believe we offer in supporting the Sewerage and Water Board of New Orleans (SWBNO) in this effort. As you evaluate your submittals, we ask that you keep the following key advantages of Ardurra in mind:

We Know and Understand the Sewerage and Water Board and Orleans Parish. Ardurra (initially as BCG Engineering) has been working continuously for the SWBNO on the largest and most challenging engineering design and management projects, dating back to the 1980s. Ardurra is a known quantity to the SWBNO and has proven to be an excellent steward of the public trust.

100% Local Staff. Ardurra has an office minutes from the SWBNO Carrollton Plant and the main office on St. Joseph Street. Our staff will be available to the SWBNO on short notice at your convenience. And, as Orleans Parish residents, we are fully invested and committed to the success of the SWBNO. Our team will boast project personnel that are local with careers focused on water, wastewater, drainage and streets in the greater New Orleans area. One hundred percent of the work will be performed in Ardurra's local office.

On-Target Experience. With 35 years of experience in engineering assessments, design, construction and program management in the greater New Orleans area, we know the myriad of issues that are involved with executing design and construction services as they relate to the local authorities, USACE and FEMA.

We trust that the enclosed response clearly communicates the Ardurra team's unique understanding and qualifications as they relate to your program. I will be the primary point of contact for Ardurra and should you have any questions or concerns, please contact me at 504.454.3866 or via email at Jbecker@ardurra.com. We look forward to meeting with you to discuss the subsequent steps of this effort.

Sincerely,

A handwritten signature in blue ink that reads "Joseph R. Becker".

Joseph Becker, PE
Client Services Manager
Ardurra Group, Inc.

Sewerage and Water Board of New Orleans INTEGRATED MASTER PLANNING RFI



Firm Profile

Ardurra Group provides a unique opportunity to the Sewerage and Water Board of New Orleans (SWBNO). Through our predecessor, BCG Engineering, we offer the mentality and experience of a local firm that has worked closely and continuously with SWBNO over the last three decades. Additionally, we provide SWBNO the benefits and depth of resources of a national firm, boasting more than 450 professionals in 20+ offices across the country. Most importantly for this project, Ardurra offers several former SWBNO employees, as well as New Orleans residents that are intimately familiar with the workings of the SWBNO. In short, we are committed and fully vested in the success of this project.

Ardurra is a multidisciplinary services firm, providing broad-based solutions that are tailored to the specific needs of the public and private sector. As a responsive and nimble partner, we take ownership of every project to ensure success. We leverage the depth of our professional and technical expertise, as well as our integrated structure, to deliver practical, innovative solutions for our clients. Our core services include:

- Water (Water and Wastewater Conveyance and Treatment, Aquatics Life Support Systems)
- Public Works (Stormwater Management, Water Resources Engineering, Project/Program Management, Construction Management, Staff Augmentation)
- Civil (land development, landscape architecture)
- Environmental

- Structural Engineering
- Surveying Services

More specific to SWBNO, and this particular project, Ardurra offers experts in the planning, design and construction management of potable water, wastewater and stormwater conveyance and treatment systems for municipal infrastructure with in-depth understanding of the unique issues facing federal, state and local government. We also bring expertise regarding infrastructure resiliency planning and funding management. Today, as the demand to improve municipal infrastructure increases while funding remains a challenge, Ardurra brings the experience and expertise to assist public agencies identify and implement cost-effective solutions.

We recognize the very diverse and unique needs of our municipal clients and we work closely alongside local, state, and federal regulatory agencies to find economical and environmentally balanced solutions. Ardurra's multi-discipline capabilities enable us to offer our clients a seamless team of planners, surveyors, scientists and engineers for a more integrated and cost-effective project delivery.

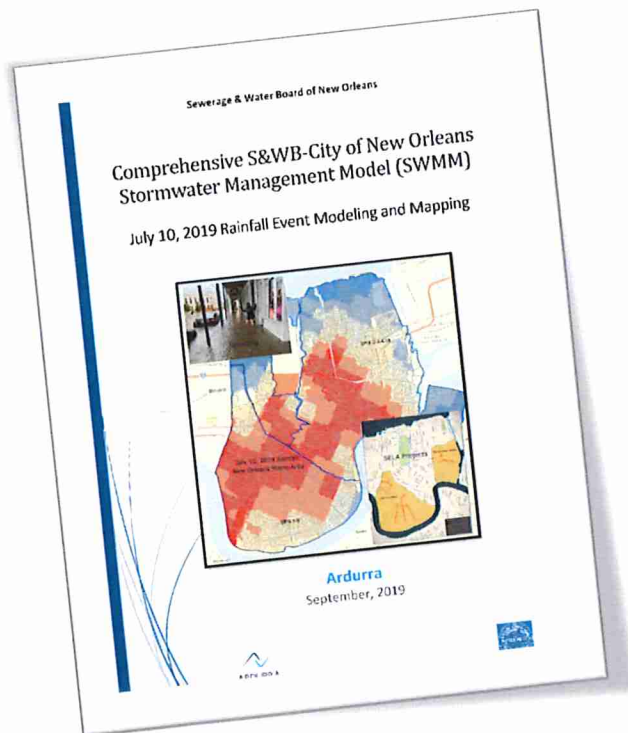
"Ardurra's multi-discipline capabilities enable us to offer our clients a seamless team of planners, surveyors, scientists and engineers for a more integrated and cost-effective project delivery."



Leveraging SELA Experience

One project that Ardurra Group has worked extensively on is the SELA program for the Greater New Orleans area. Over the past three decades, Ardurra Group (initially as BCG Engineering) has worked extensively for our clients in Jefferson and Orleans parishes to identify federal funding sources to address the drainage challenges in the interior of the municipalities and bring the major drainage systems towards a ten-year design storm. Ardurra staff set the wheels in motion for the inception of the SELA program in the 1980s. The principals at Ardurra (previously BCG) conceived the plan to address interior drainage, met with local officials to pitch and refine the concept and leveraged contacts in Washington D.C. to secure the initial funding. Nearly three decades later, the SELA drainage program is still an ongoing

success, with billions of dollars in federal funding injected into the New Orleans area to address the drainage challenges of today -- and tomorrow. The success of the SELA program was identified in a recent report that the Sewerage and Water Board commissioned Ardurra to perform in response to a large rainfall event on July 10, 2019. That report indicated that the SELA program had made a significant improvement in the major drainage system for New Orleans and had reduced flooding during large rainfall events. It is that type of initiative that Ardurra brings to the table to address the challenges that your organization faces today.



"It was important to have Ardurra conduct this study to ensure that the SELA project is doing what it supposed to do. With the contributions of SELA, we are seeing the reduction of flooding around the city. This is a great step forward, but there is still work to be done. I am proud of the work and improvements at the Sewerage & Water Board in conjunction with the Department of Public Works and the Army Corp of Engineers. Our infrastructure & drainage system is a shared responsibility and we have all been seamlessly working together."

**Mayor Cantrell, October 25, 2019 Press Release*



Sewer Consent Decree

While Ardurra has not played a significant role in SWBNO's efforts to negotiate and comply with the consent decree as a firm, several Ardurra employees played a substantial role during their time within the organization. Current Ardurra employees also played a large role in the negotiations of the original consent decree during the mid-1990s, as well as in the subsequent modifications that occurred in the years since the impacts following Hurricane Katrina. In addition to our experience with the negotiations, current Ardurra employees played a major role in ensuring compliance with the consent decree. These roles included:

- the SSERP program
- the preventive maintenance program (both in the plant as well as throughout the collection system)
- the Sewer Overflow Abatement Program
- the Remedial Measures Action Plan
- several green infrastructure projects that were mandated by the decree

The familiarity with the history of the SWBNO environmental success on this agency-defining program enables Ardurra to work quickly across all departments within the SWBNO to ensure continued success of this program. Additionally, it points to the ability of the Ardurra to reach across the silos within your organization and develop a true "team" response that invests the employees within the success of the organization.



Q1: What will be New Orleans' biggest stormwater/drainage challenges in 50 years and what is the best approach to integrated long-range planning to address those challenges?

One of the largest challenges that the City of New Orleans and the SWBNO face over the next 50 years is the drainage system. The massive drainage system that the SWBNO owns and operates is critical for the success of the city and the region. The capabilities of the major drainage system are one of the things that makes the SWBNO so unique. As the Board prepares for the next 50 years, there are several stormwater /drainage challenges that they must be prepared to address.

- How will the SWBNO address its aging infrastructure both inside the pump stations and throughout the major stormwater collection system?
- Who will be responsible for maintaining the minor drainage system?
- What will a preventive maintenance program for the minor drainage system look like?
- Is the current trend towards shorter duration/high intensity rain events an indication of things to come?
- Does the SWBNO need to prepare for larger storm events?
- What steps should be taken to provide a reliable power supply to operate the massive drainage system during all types of weather events?
- How much and what kind of electricity will the SWBNO need to operate its drainage system?
- And finally, what steps can be taken to address the proper financing of the entire drainage system, both now and into the future?

The major drainage system of SWBNO is composed primarily of pipes and covered canals with V-shaped bottoms. Ardurra staff have probably walked more of the

"The capabilities of the major drainage system are one of the things that makes the SWBNO so unique."

SWBNO's covered canals than any other individual alive. We are intimately familiar with the location and condition of the system, both because of our direct experience inspecting and maintaining those facilities, as well as our experience with the SELA drainage program. However, there is a need to clean the open canal system. Additionally, the underground canals constructed as part of the SELA program are generally flat-bottomed and will require an inspection schedule and preventive cleaning. The pipes that are 36" and larger typically receive debris from the city's drainage system which has been woefully under maintained since the Board stopped maintaining the City system in the late 90s. The maintenance of these facilities should be addressed to manage the debris received from the City system.



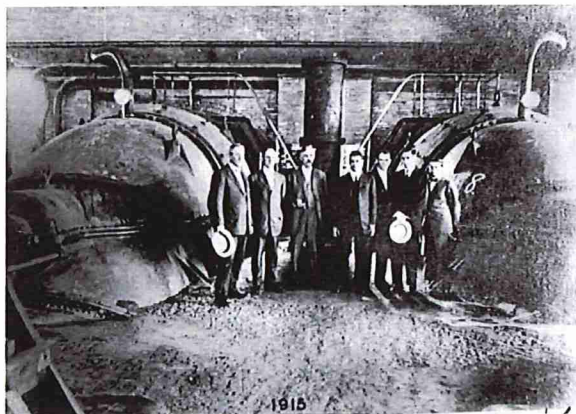
The major drainage system was designed to handle a ten-year design storm. Unfortunately, most of this system was designed more than 80 years ago when there was a lot more greenspace than what exists today. As a result, the same rainfall that fell in the 1940s is carrying a lot more water into the major drainage system. Additionally, there has been a significant rise



"As the firm that envisioned the SELA program, we have proven our ability to develop and implement similar, successful programs, having brought that vision to reality."

in short duration, high intensity rainfall events. Ardurra Group has been at the forefront of addressing these issues in the Greater New Orleans area over the last three decades. As the firm that envisioned the SELA program, we have proven our ability to develop and implement similar, successful programs, having brought that vision to reality. Our firm is uniquely qualified to propose and evaluate steps that can be taken to address these changes in storm type as we move through the 21st century.

The SWBNO's major drainage system, and more specifically, the drainage pump stations have been nationally recognized as an engineering marvel. They feature the Wood Screw Pump, a design that was invented by AB Wood in 1915, a former SWBNO General Superintendent.



This pump is copied all over the world and is used in many locations around the globe. It is a model of efficiency with few moving parts which helps extend the life of the

drainage pumps. Furthermore, the drainage system is massive, with 24 pumping stations and a combined capacity of over 51,000 cubic feet per second (cfs) or almost 400,000 gallons per second. Simply put this drainage system is the envy of anywhere that is subject to significant rain fall events. It is second to no other municipal drainage system in its capacity. It is not an exaggeration to say that the city of New Orleans owes its current footprint and its current existence to the SWBNO's drainage pumping system.



A great many of those pumps have been in constant use for over 80 years, with "the new pumps" approaching 50 years in age. These pumps are becoming more and more difficult to maintain. The SWBNO is relying more and more on their Facility Maintenance Department to manufacture parts for pumps that function but are considered obsolete by their manufacturers. Also, staffing the Facility Maintenance Department has become a greater and greater challenge as you lose the staff that has served you for 30+ years. SWBNO needs to look at a program to begin replacing the major drainage pumps in their system and addressing defects within the drainage pumping stations such as worn discharge tubes.





Since the inception of the major drainage system, the SWBNO has depended upon a central power production facility to provide and distribute the electricity to the facilities that require that power. The SWBNO power facility first went online in the early 1900s and operated continuously from that point until about a week after the damages following Hurricane Katrina. For more than a century, the SWBNO power plant had been a model of reliability and ably served the sanitary sewer, potable water treatment and distribution and storm drainage pumping facilities of the SWBNO. However, those facilities are increasing in age. Recently, the SWBNO boasted an ability to produce nearly 81 MW of power. However, the damages sustained in the aftermath of Katrina have reduced the capacities of several of the 25-cycle turbines and the recent explosion within Turbine 5 has rendered that equipment off-line and quite possibly irreparable. The post Katrina addition of Turbine 6 provides the SWBNO

“For more than a century, the SWBNO power plant had been a model of reliability and ably served the sanitary sewer, potable water treatment and distribution and storm drainage pumping facilities of the SWBNO.”

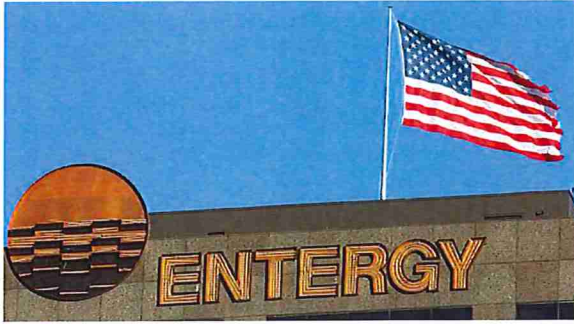
with a source for 60-cycle generation, but the SWBNO does not have the capability to distribute that power throughout its distribution system.



The SWBNO has been in negotiations with Entergy to develop a dedicated power station on the Carrollton plant complex with a feed from the aerial Entergy feeder along Monticello. This station could provide ample 60-cycle power that would then need to be converted to 25-cycle power and distributed throughout the power distribution network.

The ability to self-generate power is an important feature and an advantage. The SWBNO is extremely dependent upon electricity to provide the services that are required to enable people to live and visit the city of New Orleans. You cannot afford to be held hostage to the aerial feeders of the Entergy New Orleans distribution system. As long as there are mylar balloons, hungry squirrels, and high wind events (such as hurricanes) the Entergy facilities are subject to outage without notice and New Orleans' residents know this could mean days of outages. It is advisable to incorporate the Entergy substation dedicated to the SWBNO and located within the Carrollton Plant along with a frequency changer that would convert 60-cycle to 25-cycle as part of an energy strategy. However, this must be accompanied with a plan to address surprise Entergy outages, as well as outages that can be anticipated during dramatic weather events.





The city charter for New Orleans decreed that minor drainage was the responsibility of the city of New Orleans and the major drainage system was the responsibility of the SWBNO. This decision was made in the 1890s when the SWBNO came into existence. From 1942 until 1992 the City of New Orleans collected a millage that was dedicated to the maintenance of minor drainage. By mutual agreement between the agencies, the millage was turned over to the SWBNO so that they would provide this required maintenance. That is why some of the drainage manholes and many of the drain cleanout covers refer to their ownership by the Board instead of the city. In 1991, the 50-year millage went to the ballot for renewal and was soundly rejected by the voters. Without the millage, the city had no money to pay the SWBNO to perform the required maintenance, nor did they have the funds or the expertise to provide these services themselves. Since that time the drainage system has not been properly maintained. The minor drainage system requires constant cleaning of the drain catch basins, proper cleaning of the drain leads and the drain mains. There have been several efforts in the interim to provide these services, but they are always short lived.



The vast majority of citizens believe that the SWBNO is the owner of the minor drainage system and responsible for the maintenance. Historically, the city has had far fewer field workers in the city than the SWBNO. The City's Department of Public Works has not been able to even provide and maintain safety barrels to protect their drainage defects. This results in the SWBNO putting their own safety barrels around the drainage defects until such time as either the city can make the repair or the drain defect causes a sewer or water defect and the SWBNO arrives to repair their defective pipe and also repair the drain. Maintaining the minor drainage system and resolving the ownership of the facilities is a major issue for the SWBNO to discuss with the city. The SWBNO has the expertise and the familiarity with the required equipment, they just need a funding source. Ardurra has been working closely with the SWBNO over the last five years to identify the amount of potential drainage fees that would be required to address expected drainage needs, including preventive maintenance and corrective repair of the minor drainage system. It would make sense that one agency would be responsible for the entire drainage system rather than splitting it, as is the current format.





The SWBNO has been underfunded in drainage for several decades and has tried to make do with the funds available. It is commendable that the agency has taken every possible step to not increase costs to the community, but this effort has left the agency in a precarious position relative to their ability to maintain their current drainage system, as well as to provide upgrades in areas that require additional drainage support. Ardurra has supported the SWBNO in this effort and has been instrumental in identifying federal and state funds that can be used to address drainage improvements. However, there are significant areas within the drainage system that are not being properly maintained. From the power distribution system, to the maintenance and upgrades to the drainage pump stations, to the cleaning of the open canals and major pipes, there is a lot of drainage work that remains unfunded and not performed.



Ardurra has worked with the SWBNO to identify a drainage fee that would be charged to the residents and businesses of New Orleans. This fee has the advantage of not being exempt in the way so many

current structures are exempted from property taxes. Implementation of a drainage fee would be an important way to provide the funding that is required to address the deficiencies that plague the major and minor drainage systems. This fee could be incorporated into an additional property tax in an effort to not make the fee too large at the onset.

In summation, as the SWBNO looks to the next 50 years and beyond, SWBNO should consider the following:

- SWBNO should be in a place where they can properly and regularly inspect, maintain and operate their major drainage system
- SWBNO should operate the minor drainage system for the city, but proper financing must be identified to provide for those services.
- SWBNO should continue work to bring the major and minor drainage systems to the event that they can handle a 10-year storm event and an evaluation should be made as to what that 10-year storm event will look like in the future.
- SWBNO should identify the needed pumping capacities as well as the pumping capabilities and work must begin to prepare for the storms in the latter half of the 21st century.
- SWBNO should schedule replacement of pumps that have exceed their design life and accelerate inspection of century-old drainage canals to determine if they are satisfactory condition.
- SWBNO should identify a reliable and redundant power supply for the entire drainage system. In many cases it would be important to identify three separate and independent sources of power to ensure operation of the critical equipment and its most vulnerable times.



Q2: What will be New Orleans' biggest wastewater, sewerage challenges in 50 years and what is the best approach to integrated, long-range planning to address those challenges?

The SWBNO sewage collection system has been the subject of much work over the past three decades. A lengthy and litigious process with the Department of Justice and the Environmental Protection Agency has resulted in a sewage collection system that has made great strides during this time period. Indeed, the SWBNO has gone from being on the EPA's most wanted poster to now being a poster boy and a model of compliance. However, there remains many issues that must be addressed as we look to the horizon fifty years into our future:

- As residents shift to work and live in downtown areas, do we have the capacity to handle the additional flow that comes with increased residential occupancy?
- How long will this trend last?
- Will future residents continue this trend, or will they begin a shift away from the downtown areas?
- What impacts will occur in the short-term to areas that have decreased flow as residents move downtown?
- What improvements can be made to the sewage treatment process and what changes will be mandated by regulation?
- What steps need to be made in order to ensure consent decree compliance and how can the SWBNO continue that success after the consent decree is completed?
- What steps should the SWBNO take to address the aging collection system?

- And finally, how much money will the SWBNO need to address all these issues and what sources are available to obtain those required funds?

"The SWBNO sewage treatment plants have been operated under contract by a private firm for nearly three decades, which has proven to be extremely cost-effective, as it has been difficult to employ and retain people with the skills required to operate the facilities."

The SWBNO sewage treatment plants have been operated under contract by a private firm for nearly three decades. This has proven to be extremely cost-effective for the SWBNO as it has been difficult to employ and retain people with the skills required to operate the facilities. This contract has been overseen by a small group of SWBNO employees. However, it has been noted that the private vendor has been known to cut corners in the interest of the company's bottom line rather than protecting the interest of the SWBNO. Better supervision at the plant, accompanied by detailed annual reviews would assist in the management of this contract operator and provide objectivity to ensure that the plant is being operated properly and in compliance with all federal and state guidelines, as well as in the best interest of the SWBNO.

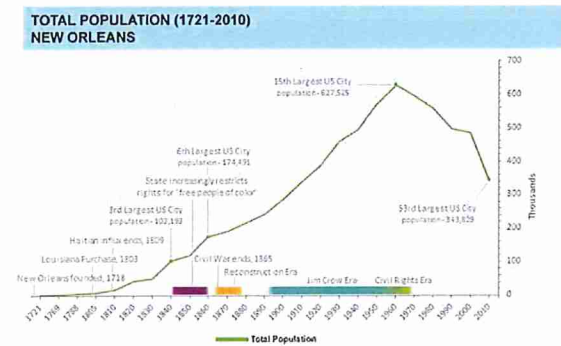




The capacity of the plant was an issue in the immediate years in advance of Katrina. As the population returns and the sewer mains and pump and lift stations become more efficient, there will be an increase in the amount of flow reaching the treatment plants. Steps should be taken to evaluate the current flow conditions, and an expectation of the flow conditions in the coming decades to ensure that you will be prepared to address the challenges as they arrive.



The SWBNO has been under a consent decree with the United States Department of Justice for more than 20 years. While originally scheduled to be completed by 2010, the decree has been amended several times primarily due to damages suffered in the aftermath of Hurricane Katrina. The current consent decree end-date is 2024 and recently work was being completed ahead of schedule. The consent decree has specific requirements for preventive maintenance, inspection and corrective repairs, environmental remediation and remedial projects. There are thousands of interim and final deadlines for tasks identified in the decree and the SWBNO has done an excellent job of meeting each deadline. In the short term, it is important that the SWBNO exercise continued focus on the requirements in the decree.



The SWBNO also operates one of the last sewage incinerators in Louisiana. At some point, it will be necessary for the SWBNO to replace the Multi Hearth Incinerator and a new treatment process will need to be identified. On the West Bank, the treatment plant is located right next door to one of the most exclusive neighborhoods in the city. As that area develops, the plant must be able to operate effectively and control odors.

Additionally, in the long-term, the preventive maintenance tasks required have proven useful in reducing sewage blockages and overflows. Efforts should be underway to continue the focus that the decree required and efforts should be undertaken to ensure that these measures are replicated and implemented on the east bank under the decree are continued on the west bank, which did not fall under the jurisdiction of the decree.



The Environmental Protection Agency, under the Clean Water Act, is continually reviewing policies and procedures to ensure that sewage collection is done in a manner that is least harmful to the environment. The SWBNO should be very attentive and active in dealing with the EPA as well as the Louisiana



Department of Environmental Quality (LaDEQ). Changes to regulations can prove to be expensive and time consuming to address. By being proactive with EPA and LaDEQ you can help to ensure compliance in a timely manner and avoid significant fines and further decrees.

One of the strongest features of the SWBNO is their Environmental Department. Under current leadership, this department is constantly forward focused and has an excellent relationship with both EPA and LaDEQ. Steps should be taken to ensure that this relationship continues when this department manager leaves the agency.

The current East Bank Treatment Plant is landlocked and further expansion would prove to be difficult. Any significant changes in treatment would require careful coordination to ensure continued current

"Post Katrina, there has been federal funding available to begin a pipe replacement program; however, this effort pales in comparison to the program that is required."

compliance through any construction that might be required. The SWBNO has undertaken an environmental project in the vicinity of the East Bank Plant that is restoring land that was lost as a result of the construction of the Mississippi River-Gulf Outlet (MRGO) Canal. This project has proven to be a successful means for restoring land lost and could be considered as a possibility for constructing additional land for the plant in the event that it is required for expansion or for treatment modifications.



The collection system was installed in the first half of the twentieth century. As a result, nearly 70% of the sanitary sewer collection system is past its design life. The SWBNO has done a magnificent job of maintaining the sewage collection system over the past 20 years, but there is only so much you can do to extend the life of the system. At some point you are going to need to be able to commit to a significant replacement plan. Post Katrina, there has been federal funding available to begin a pipe replacement program. However, this effort pales in comparison to the program that is required. The SWBNO collection system is comprised of over 1,400 miles of gravity sewer and over a hundred miles of sewage force mains. If you want a system that can last for the next 60 years, you need to be able to replace 1.7% of your system every year. That equates to replacing 25 miles of pipe every year. If a block is 350' long, 25 miles is about 375 blocks of sewer replaced per year, or a



"A funding source that keeps pace with inflation is of paramount import, otherwise SWBNO will quickly fall back to the financial problems that have existed for decades prior to 2010."

little over 7 blocks per week. Currently, the federally funded replacement program has focused on the smaller diameter collection system. The Clara Street main is a gravity fed main that runs from Tulane University to Sewer Station A. It collects the flow from every sewer station along the way and is responsible for collecting more than 25% of the flow. The main is constantly full, with sewage climbing into the manhole chimneys nearly every morning. It is also more than 100 years old and in some places was installed by brick masons building egg-shaped pipe. If something were to happen to this gravity main, there is no backup route to get the gravity sewer from the riverbend to Station A. There was a plan to install an alternate route sewer force main to collect the flow and take the stress from the current 120-year-old pipe, but this was tabled after Katrina. This line, and the establishment of redundancy for other primary feeders from sewage pumping and lift stations to Sewer Station A need to become a priority.



Sewer station A is New Orleans first sanitary sewer pump station for the SWBNO and is located right next door to the municipal auditorium. It is constructed on what used to be a landfill for the city of New Orleans and originally collected sewage and sent it directly to the river until the treatment plant was constructed. The structure of the station itself is in poor condition and the equipment is being held together by the sheer willpower of your employees. Many of the other 84 sewage pumping and lift stations are in similar condition and are only able to function because of the commitment of the line staff.

Around 2010, the SWBNO was able to get the city council to pass a rate increase for sewer and water that included annual 10% rate hikes to both the sewer and the water portion of the SWBNO invoice for a period of eight years. This rate hike was supposed to leave the SWBNO on sound footing and in need of only annual CPI rate increases for the future. At the time of the 2017 flood events, the SWBNO had significant reserves in both sewer and water. But the decision was made to utilize these funds to pay for emergency drainage pump station and power plant repairs and upgrades.

A funding source that keeps pace with inflation is of paramount import to the SWBNO, otherwise SWBNO will quickly fall back to the financial problems that have existed for decades prior to 2010. Funds should be dedicated to address the



structural defects in the pump stations, the equipment inside of those stations as well as the major trunk mains of the collection system.

In summary, as the SWBNO looks towards the next fifty years in the sanitary sewer system, there are several issues that should be considered:

- SWBNO should remain vigilant towards regulations for upgrades in sewage treatment methods.
- SWBNO should identify a method to replace the outdated incinerator and a method for installing the new treatment method must be identified within the landlocked East Bank campus.
- SWBNO maintenance staff has worked diligently to address defects in the sanitary sewerage collection system pipes and pumps; however, you should remain vigilant to your shifting population to ensure that you have the required capacities in the areas where your residents will be.
- SWBNO should not maintain the preventive maintenance activities in the sewage collection system following completion of the consent decree.
- SWBNO should develop a schedule for replacement of the most aged pipes and pumps.
- SWBNO should identify critical lines and develop a plan to continue collection and treatment in the event of critical failures.
- SWBNO must identify a funding source to perform all of the services while continuing to provide the current levels of service.



Q3: What will be New Orleans' biggest drinking water challenges in 50 years and what is the best approach to integrated, long-range planning to address these challenges?

Over the next fifty years the SWBNO will face several challenges in the potable water system and how you address these issues could decide if the SWBNO continues to exist in its current format:

- What can the SWBNO do to ensure that water quality is constantly achieved?
- What steps can we take to document our success to our customers?
- What steps can be taken to reduce the frequency of boil water advisories?
- With predictions of global sea level rise, will saltwater intrusion have any impact on our raw water source?
- Will increased pharmaceuticals in the raw water source require dramatic changes in the treatment process?
- Will the aging infrastructure in the treatment process be able to withstand the next five decades?
- Which portions need to be replaced?
- How can we address the current problems with metering issues and billing complaints?
- How will we address the aging of the distribution system and the critical transmission lines?
- What can we do with the lead pipe in the system?
- And finally, how in the world can we pay for it all?

In the last decade, the Louisiana Department of Health has made several changes to the standards concerning potable water pressure and the threshold

for public safety. In the past, the SWBNO was able to monitor water pressure at the water plants and a few isolated locations throughout the system that did not record the pressure. Unless someone happened to look at the gauges during the event, there was no way to know if a public threshold had been violated. Now, the SWBNO has recording gauges at a large number of locations and the threshold for declaring Boil Water Emergencies has risen to 15 psi and now 20psi. Locations in New Orleans East have water pressures in the mid-30s during normal operations. Now a simple water closure can cause a violation. The SWBNO is fortunate that your agency has a great relationship with the state Department of Health, but the frequency of boil water advisories has become an issue of distrust and aggravation with the general public and businesses.



While the frequency of boil water advisories has increased significantly in the past decade due to tightening of state regulations, these advisories have not had to be extended for significant periods of time. The testing required to confirm that there is no contamination takes 24 hours. Taking about 100 samples at various locations scattered throughout the distribution system and bringing them back to have samples run is a herculean task. However, the SWBNO has shown that their chlorination system is excellent, despite the tighter regulations that require more tests and even with the large numbers of samples needed, the Board has never had to extend



a boil water advisory as a result of a failed chlorination test.

"The SWBNO has shown that their chlorination system is excellent, despite the tighter regulations that require more tests and even with the large numbers of samples needed, the Board has never had to extend a boil water advisory as a result of a failed chlorination test."

There is no relief coming from the regulatory side. The Louisiana Department of Health has shown no indication that they might consider reducing the threshold back down to 15 or lower. The solution to reducing these boil water advisories lies with more training and monitoring for valve crews that are making closures and addressing the large distribution transmission system. The SWBNO took an important step towards addressing this issue with the installation of large potable water storage tanks at the main water purification plant, but these tanks are only able to buy the system 30 or 40 minutes in the event of a power issue inside the plant. Addressing the reliability of the power generation system inside of the power plant should reduce the need for boil water advisories as a result of power plant failures.

Over the last two years, the SWBNO has also received significant negative attention concerning problems with water bills. This has become a public relations nightmare and the agency has been forced to spend a lot of time and money over that period in an effort to reduce the amount of incorrect

bills and the ongoing media coverage. The media coverage has exacerbated the problem by continuing to allege that the water meters are inaccurate and encouraging people to challenge their bills. The coverage has been focused on customers with outrageously large bills. It is also likely that there are customers with bills that are too low; however, those customers are not complaining. In an effort to increase consumer confidence, the SWBNO needs to be able to demonstrate dramatic steps taken to address this issue.



The SWBNO has been discussing the need for automatic meter readings (AMR) for nearly a decade now. The residential meters that have been installed over the last decade are all compatible with standard chips that will convert the existing meters to AMR. AMR has proven to be a viable meter reading technology in a number of cities for an extended time period. The AMR system could allow for dozens of readings at each location over the course of a month instead of reading most meters once a month and some meters not all. Meter reading would not be impacted by weather and multiple readings a month would allow a customer to monitor their water usage more proactively. The SWBNO staff would be able to identify meters with unusual or inconsistent readings (both positive and negative) daily and inspect them before a bill goes out rather than after a customer has been outraged. Additionally, there are funding options that would allow the SWBNO to spend minimal money in the early stages and allow the supplier to finance the installation.



The public relations for the AMR system could be fantastic. You would be going from a system that everyone is encouraged to question to a system that is technologically more advanced than our neighbors.

There are issues with AMR. The SWBNO metal lids will significantly impact the ability of the meter to transmit the data. It is likely that the SWBNO will need to go to a plastic lid, but those lids could still have the iconic SWBNO logo. We would need to make sure that a chip is selected that will work in the extremely wet conditions present in the meter pits. Moving aggressively to AMR is going to require the replacement of the majority of meters in the distribution system. Many of the old meters have been replaced over the last decade, but that has been scattershot on as needed, meter by meter basis. A significant number of the old meters remain in the system. All of those meters would need to be replaced and some of those old meters may need to be moved, such as meters encased in tree roots.

Overall, the benefits of the AMR system would be enormous. This is probably the single most effective tool to win back customer confidence. The system would:

- Empower the customer to monitor their own account
- Encourage water conservation
- Allow the SWBNO to monitor for questionable readings
- Assist the SWBNO in lowering unaccounted for water

Also, it doesn't have to be expensive in the short run. There are funding options that would allow the SWBNO to spread the cost of this installation out decades or longer.

The same concern that we have for the age of the sewage collections systems exists for the potable water distribution system. Over

60% of the distribution and transmission mains in the system are well past their anticipated life. This aged system is more likely to experience failures that result in emergency repairs. These are the most expensive and most disruptive kinds of

“AMR has proven to be a viable meter reading technology in a number of cities for an extended time period and could allow for dozens of readings at each location over the course of a month instead of reading most meters once a month and some

repairs to make. Crews that are continually responding to emergencies are unable to provide the preventive maintenance that is required. While the consent decree in the sewage collection system has required the SWBNO to be more aggressive in that area, no such decree exists on the potable water side, so the problem has only intensified.

There is a FEMA-funded JIRR water replacement program in place, but those lines are being selected based primarily on the condition of the street rather than on the oldest mains in the system. The JIRR program is only addressing the distribution system, not the transmission mains. The transmission mains are the largest sized pipes in the potable distribution system and are among the oldest pipes. There have been several high-profile water failures that have occurred in the last few years and the story always focuses on the ages of the century old transmission system. We know that there is going to be another failure of the potable transmissions. The FEMA-funded program



has been helpful in addressing some of the pipes, but it is not addressing the transmission mains which are some of the oldest and most critical pipes in the system.

There remains a great deal of concern in the public with lead services. Lead pipe is common in most older cities because lead services were a standard throughout the industry well into the 1970s. The challenge is amplified in New Orleans; however, because we do not have a listing of where the lead services were installed. We have ideas on which areas are likely to have lead services, but we don't know if the services have been addressed in the time period since they were installed. Additionally, with the massive amount of reconstruction that took place in the aftermath of the damages caused by Hurricane Katrina, it is possible that many of these were addressed. However, as long as there are scientists trying to get attention for themselves and their cause, the SWBNO is going to have to be prepared to defend the current system.

There are several areas of concern here. Many of the lead services are actually located on the property owners' side of the system and the SWBNO does not have legal access to the service. Furthermore, the SWBNO (or its contractor working on private property), in the immediate vicinity of private structures, is going to have to bear the weight of legal challenges for property damage in this litigious society. The SWBNO potable water purification system adds calcium during the treatment process and

"The SWBNO will continue to be battered in the public arena driving the need to replace lead pipes at some point."

this acts as a coating on lead pipes. As long as the lead is not disturbed, it is not actually any reason for concern. However, a program to replace lead services will disturb the pipes and could cause existing pipes that were perfectly safe to release lead as part of the replacement process. Nevertheless, lead services remain a public relations pariah, that exists primarily in the older area of mains. The SWBNO will continue to be battered in the public arena driving the need to replace those services at some point. The SWBNO could decide to provide a replacement system or provide a funding mechanism to allow the customer to replace the pipes themselves. This would involve providing a low-interest loan to our customers that would enable them to replace their services and make a repayment as part of their monthly bill. This would eliminate the need to prepare the SWBNO for damaging private property. The SWBNO would most likely be able to get a more attractive interest rate for the program than most of our customer base. We could also consider a no-interest loan for customers meeting a certain economic threshold.



Portions of lead service line removed from residential street in New Orleans

In summary, as we look at the next fifty years, consumer confidence in our ability to provide an abundant quantity of high-quality potable water remains one of the



most important corrections that the SWBNO must address. Additionally, we should:

- Continue efforts to reduce boil water advisories through training of employees, replacement of at-risk distribution mains and continued efforts to provide reliable and redundant power sources for the critical equipment throughout the potable water treatment and delivery process.
- Address the dominating issue of billing issues with an implementation of Automatic Meter Readings, which will allow more frequent readings that will provide both customer and agency monitoring and can be used to address issues in advance of bills be distributed rather than after.
- Replace aging infrastructure, particularly large diameter transmission mains, along with all the appurtenances in the system as well such as valves, hydrants and services.
- Consider establishing a loan program to help concerned customers address the lead services on their property.
- And, as with all of the previous considerations, you must identify the funds required to address each of these issues, along with careful evaluation of all of the potential funding options, whether federal, state or local to address these challenges over the next 50 years.

