Prudent and Economical Management Audit

for the City of Saltillo

By

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An Environmental Assistance Report
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SUMMARY REPORT

Introduction

The City of Saltillo in Lee County, Mississippi is located in the northern part of the Tupelo micropolitan area. According to the 2010 U.S. Census, Saltillo has a population of 4,752. The city's water supply is groundwater and is a Class D[1] community water system.

Financial Ratios

Financial management for a utility should include: (1) providing current stability for the utility (working capital); (2) accurate budgeting; and (3) providing capital improvement funds for future utility infrastructure replacement (depreciation) and expansion. These three areas must be examined on a routine basis to ensure the utility's continued operation. For this study we

[1] A Class D community water system in Mississippi is classified as having one or more wells but no treatment other than chlorination, fluoridation, and phosphate addition.

will use four ratios[2] to evaluate the financial condition and performance of the City of Saltillo: operating ratio, debt service coverage ratio, days of cash-on-hand, and current ratio. Information from the Fiscal year (FY) 2015, 2016, and 2017 City of Saltillo Financial Statements[3] was used to determine the applicable financial ratios for the system. A copy of the FY 2015, 2016, 2017 City of Saltillo Financial Statements, prepared by the accounting firm of Franks, Franks, Wilemon, & Hagood, P.A. may be accessed by visiting www.saltilloms.org or requesting a copy by calling city hall, for reference and to substantiate the numerical values used in calculating the above mentioned ratios. The City of Saltillo Financial Statements prior to FY 2015 were considered to be non-applicable and were not used in the financial analysis.

The first ratio to be considered is the operating ratio which shows the capacity of the utility to generate enough revenue from its normal operations to pay its expenses. The natural benchmark for a utility's operating ratio is greater than 1.0 (>1.0). A utility that is in sound financial shape will typically have an operating ratio above 1.10. In order to calculate the operating ratio, total operating revenue must be calculated by adding all revenue generated by water

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[2] The information gathered as reference for the Operating Ratio, Debt Service Coverage Ratio, Days of Cash-on-Hand, and the Current Ratio were obtained from the "*Key Financial Indicators Exercise*" at http://extension.msstate.edu/sites/default/files/publications/forms/F1180_web.pdf .

[3] The Financial Statements for the City of Saltillo were prepared by Franks, Franks, Wilemon, & Hagood, P.A. for fiscal years 2015, 2016, and 2017.

bills, user fees, hook-up fees, and interest income from security deposits. Operating expenses are calculated by summing the expenses of the utility concerned with the production of water including administrative costs, salaries, chemicals, supplies, fuel, depreciation, interest expense, and miscellaneous expenses attributed to the operation of the system.

FY 2015 Operating Ratio Including Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,407,621 / $1,290,560
Operating Ratio = 1.09

FY 2016 Operating Ratio Including Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,480,169 / $1,393,407
Operating Ratio = 1.06

FY 2017 Operating Ratio Including Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,470,480 / $1,529,259
Operating Ratio = 0.96

FY 2015 Operating Ratio Without Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,407,621 / $990,730
Operating Ratio = 1.42

FY 2016 Operating Ratio Without Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,480,169 / $1,071,607
Operating Ratio = 1.38

FY 2017 Operating Ratio Without Depreciation

Operating Ratio = Operating Revenues / Operating Expenses
Operating Ratio = $1,470,480 / $1,184,653
Operating Ratio = 1.24

The second ratio to be considered is the debt service coverage ratio which measures the ability of the utility to pay the principal, interest, and debt reserve requirements on loans and/or bonds with operating revenue. The natural benchmark for a utility's debt service coverage ratio is greater than 1.0 (>1.0), even though funders often set limits above 1.0. The Mississippi Drinking Water State Revolving Fund ("SRF") looks for a 1.05. The United States Department of Agriculture Rural Development ("USDA-RD") looks for 1.10 and most bonding agencies look for 1.2. In order to calculate the debt service coverage ratio, one would divide the revenue available for debt service by the level/amount of debt service costs. The revenue available for debt service is operating revenues minus non-debt related operating expenses. The level/amount of debt service is the principal and interest on long-term debt.

FY 2015 Debt Service Coverage Ratio

Coverage Ratio = (Operating Revenue-Non Debt Expenses) / Debt Service
Coverage Ratio = ($1,407,621-$990,730) / $293,036
Coverage Ratio = 1.42

FY 2016 Debt Service Coverage Ratio

Coverage Ratio = (Operating Revenue-Non Debt Expenses) / Debt Service
Coverage Ratio = ($1,480,169-$1,071,607) / $411,456
Coverage Ratio = 0.99

FY 2017 Debt Service Coverage Ratio

Coverage Ratio = (Operating Revenue-Non Debt Expenses) / Debt Service
Coverage Ratio = ($1,470,480-$1,184,653) / $396,059
Coverage Ratio = 0.72

The third ratio to be considered is the amount days of cash-on-hand, which measures the ability of the utility to weather a significant temporary reduction in revenue and continue paying for daily operations. The natural benchmark for a utility's days of cash-on-hand should be, at a minimum, enough to last a billing cycle or until such time as a substantial inflow of cash. Fitch Ratings, Inc., one of the major bond rating institutions of the country, rates systems with 285 days of cash-on-hand as an "A" and systems with cash-on-hand equaling 418 days as a "AA." In order to calculate the days of cash-on-hand, one would divide the unrestricted cash and cash equivalents by the operating expenses (not including depreciation) per day (divided by 365).

FY 2015 Days of Cash-on-hand

Days of Cash-on-hand = Unrestricted Cash & Cash Equivalents / (Operating Expenses Excluding Depreciation / 365)
Days of Cash-on-hand = $584,598 / ($990,730/365)
Days of Cash-on-hand = 215 Days

FY 2016 Days of Cash-on-hand

Days of Cash-on-hand = Unrestricted Cash & Cash Equivalents / (Operating Expenses Excluding Depreciation / 365)
Days of Cash-on-hand = $592,404 / ($1,071,607/365)
Days of Cash-on-hand = 201 Days

FY 2017 Days of Cash-on-hand

Days of Cash-on-hand = Unrestricted Cash & Cash Equivalents / (Operating Expenses Excluding Depreciation / 365)
Days of Cash-on-hand = $582,187 / ($1,184,653/365)
Days of Cash-on-hand = 179 Days

The fourth ratio to be considered is the current ratio which is a widely used liquidity measure for water utilities to gauge their ability to meet current

obligations or bills. The current ratio also serves as a good measure of short-term liquidity. It provides a good starting point for looking at the financial strength of a water utility. The natural benchmark for a utility's current ratio is greater than 1.0 (>1.0) with a preferred goal of greater than 2.0 (>2.0). In order to calculate the current ratio, one would first add the unrestricted cash and cash equivalents to the net receivables then divide that total by the current liabilities.

FY 2015 Current Ratio

Current Ratio = (Unrestricted Cash & Cash Equivalents + Receivables, Net) / Current Liabilities
Current Ratio = ($584,598 + $170,721) / $492,571
Current Ratio = 1.53

FY 2016 Current Ratio

Current Ratio = (Unrestricted Cash & Cash Equivalents + Receivables, Net) / Current Liabilities
Current Ratio = ($592,404 + $171,717) / $446,658
Current Ratio = 1.71

FY 2017 Current Ratio

Current Ratio = (Unrestricted Cash & Cash Equivalents + Receivables, Net) / Current Liabilities
Current Ratio = ($582,187 + $175,591) / $455,609
Current Ratio = 1.66

A reasonable conclusion, determined from the above listed information and ratios, is that the City of Saltillo is able to maintain sufficient unrestricted cash and cash equivalents over its current liabilities which results in a stable current ratio for short-term liquidity. In contrast, the operating and debt service coverage ratios are on a steady decline and are below the stated levels for a utility that is considered to be in good financial shape. The days of cash-on-hand

is decreasing at a rate consistent with the operating and debt service coverage ratios, primarily caused by the continual increase in operating expenses. The recent rate increase, adopted by the Mayor and Board of Aldermen in 2019, will improve the city's water utility's financial condition. Saltillo officials should monitor and evaluate the increasing input costs and should work to establish sufficient financial ratios to operate and maintain the water utility. For the remainder of this report, sewer rates are not contemplated as the report solely pertains to water rates and services.

Current Physical Assets

The City of Saltillo has five (5) water wells and four (4) elevated storage tanks. In this section, I will delineate the operability of each site, provide images that may be seen in the appendix, and briefly describe each site's condition.

Water Street

The plant site at Water Street is referenced as Well #01. The well was drilled in 1963 and based on a recent pump test, produces 205 gallons per minute (gpm). There is an elevated tank at this plant site that holds 75,000 gallons. Images 1-5 in Appendix A display the appearance of each of the assets at the Water Street Plant Site.

The elevated tank looks to be in good condition, based on a visual assessment of the tank's exterior. We do not know the condition of the interior of the tank so a tank inspection may be warranted. The well also looks to be in good

condition. The buildings, which house the chlorine bottle, booster pump, and electrical system, are in very poor condition. Recommended improvements include: cleaning and painting the concrete around the well head and the exposed piping. The fiberglass building that stores the chlorine bottle needs to be completely replaced. The vent/looking glass on the door is gone which exposes the chlorine bottle, chlorinator head, and lines to the current weather conditions year-round. The city needs to add redundant chlorination to this site because it is required by the Mississippi State Department of Health-Bureau of Public Water Supply ("MSDH"). The building for the booster pump and electrical might be salvaged and upgraded to meet code. The electrical panel should be brought up to code, there should be no exposed wires, and all junction/breaker boxes should have a cover.

Jeanette Street

The plant site at Jeanette Street is referenced as Well #02. The well was drilled in 1974 and based on a recent pump test, produces 240 gpm. There is no elevated tank at this plant site. At the time of our inspection, this well site and treatment system was not running because it was overflowing the elevated tank at U.S. Hwy. 45 (West). Images 6-8 in Appendix A display the appearance of each of the assets at the Jeanette Street Plant Site.

The well looks to be in good condition. Recommended improvements would include cleaning and painting the concrete around the well head and the

exposed pipe insulation. The buildings, which house the chlorine bottle, booster pump, and electrical, are in very poor condition. The fiberglass building that stores the chlorine bottle needs to be completely replaced. If this plant site is utilized again, the city needs to add redundant chlorination because it is required by MSDH. The building for the booster pump and electrical might be salvaged and upgraded to meet code. The electrical panel should be brought up to code, there should be no exposed wires, and all junction/breaker boxes should have a cover.

U.S. Hwy. 45 (West) Elevated Tank

The city has a stand-alone elevated tank with no well or treatment on-site. This elevated tank has a storage capacity of 150,000 gallons. Images 9 and 10 in Appendix A display the appearance of the tank and site. The elevated tank and security fencing look to be in good physical condition.

Turner Industrial Park, Well #04

The plant site at the Turner Industrial Park has two wells and they are referenced as Well #04 and Well #05. The Turner Industrial Park elevated tank is at the Well #04 site. Well #04 was drilled in 1974 and based on a recent pump test, produces 352 gpm. The elevated tank holds 500,000 gallons. Images 11-15 in Appendix A display the appearance of each of the assets at the Turner Industrial Park Elevated Tank and Plant Site.

The elevated tank looks to be in very good condition. The well appears to be in excellent physical condition. Recommended improvements include cleaning and painting the concrete around the well head. The buildings, which house the chlorine gas cylinder, phosphate container/drum, booster pump, and electrical, are also in excellent condition. This site has redundant chlorination and a concrete room for storage of the chlorine gas cylinders in use. The building containing the booster pump and electrical system are in excellent condition. The electrical looks to be up to code and there are no exposed wires. This site is an example of how all of the city's plant sites should look.

Turner Industrial Park, Well #05

The plant site at the Turner Industrial Park has two wells and they are referenced as Well #04 and Well #05. Well #05 was drilled in 1981 and based on a recent pump test, produces 484 gpm. Images 16-18 in Appendix A display the appearance of each of the assets at the Turner Industrial Park Well #05 Plant Site.

The well appears to be in excellent physical condition. Recommended improvements include cleaning and painting the concrete around the well head. The buildings, which house the chlorine gas cylinder, phosphate container/drum, booster pump, and electrical, are also in excellent condition. This site has redundant chlorination and a concrete room for storage of the chlorine gas cylinders in use. The building containing the booster pump and

electrical system are in excellent condition. The electrical looks to be up to code and there are no exposed wires.

City Park

The plant site at City Park is referenced as Well #03. The well was drilled in 1992 and based on a recent pump test, produces 205 gpm. There is no elevated tank at this plant site. Images 19-21 in Appendix A display the appearance of each of the assets at the City Park Plant Site.

The fencing around the plant site looks to be in an acceptable/working condition. The well also looks to be in good condition. Recommended improvements include cleaning and painting the concrete around the well head. The buildings, which house the chlorine gas cylinder, booster pump, and electrical, are in acceptable condition. The building could use cleaning and painting. The city needs to add redundant chlorination to this site because it is required by MSDH.

Hwy. 145 Elevated Tank

At the time of our inspection of the water system assets, the Hwy. 145 elevated tank was being cleaned and repainted. This tank is the most recent improvement to the elevated storage tanks. This is another stand-alone elevated tank with no well or treatment on-site. This elevated tank has a storage capacity of 150,000 gallons. Image 22 in Appendix A display the appearance of the tank

and site. The elevated tank and security fencing look to be in very good physical condition.

General Water Quality Samples

The City of Saltillo has four (4) wells and treatment plants in continual and current use. At each of those four plants, water treatment entails chlorine for bacterial disinfection and phosphate[4] for sequestration, scale, and corrosion control. During the inspection of the physical assets and treatment plants, water was sampled at multiple locations for a free chlorine residual and pH.

A house adjacent to the Water Street plant had a free chlorine residual of 2.20 and a pH of 7.63. I pulled a sample at the U.S. Hwy. 45 (West) elevated tank and it had a free chlorine residual of 1.05 and a pH of 7.74. For the Turner Industrial Park, Well #04, I pulled a sample in the well yard and it had a free chlorine residual of 1.87 with a pH of 7.69. The initial three samples were taken at the well sites.

In order to validate treatment throughout the distribution system, we sampled three additional locations that were in the distribution and not close to any of the well sites. The first sample was collected at the corner of Westwood Circle and it had a free chlorine residual of 1.76 and a pH of 7.64. The second

[4] Wofford Water Service, Inc. provides the phosphate chemicals to the City of Saltillo. The phosphate being used is Omni Phos II and it is a blended phosphate solution, acceptable for use in potable water systems as defined by standard ANSI/NSF 60.

sample was collected at 112 Garrett Cove which is very near to the end of that water line. The sample had a free chlorine residual of 1.11 and a pH of 7.65. The third sample was collected at 109 Scenic Cove and it had a free chlorine residual of 1.81 and a pH of 7.60.

The free chlorine residuals and pH results are very typical of functioning and effective treatment plants. The free chlorine residual is at an acceptable range[5] at the treatment plant and throughout the distribution to allow for disinfection under normal community water system use. The pH levels throughout the water system are well within an acceptable range[6] for effective chlorine treatment and are non-corrosive.

Service Capacity

The service capacity of any public water supply is calculated by the MSDH Regional Engineer and is determined by the number of connections (metered use) divided by the pump capacity. Pump capacity is determined by the number of gallons per minute that can be produced by a specific well. Service capacity is important because it allows the public water supply to know how many homes, businesses, and industries it can realistically serve and it allows the public water supply to know when it may need to increase their capacity (i.e.

[5] A free chlorine residual in the distribution system should be at or above 0.5.

[6] The normal range for pH in groundwater is 6.0 to 8.5 but it may be more specific depending on the characteristics of the water and the MSDH Regional Engineers recommendation.

wells and storage tanks). A public water supply can increase their capacity by drilling an additional well and/or connecting to another water supply. Another option for adding capacity for service to homes, businesses, and industry is connecting to an adjacent public water supply or an alternate water source, such as surface water. When a public water supply approaches or reaches the 80% service capacity level, MSDH recommends action be taken to increase the service capacity to prevent the system from being put under a moratorium for new connections/customers. Recent action regarding the negative effects of a moratorium on new connections/customers has been well-documented, as an example, at the Northeast Itawamba Water Association[7] proving the devastating effects of a moratorium to the public interest and wholesale interests of citizens. Saltillo is a growing city and officials would be unwise to not plan ahead to prevent such a circumstance, knowing their current service capacity is nearing the 80% threshold.

The City of Saltillo has had a gradually increasing service capacity with a small punctuated change in fiscal year 2017 during a transition period. The past five years of service capacity percentage from fiscal year 2015 to 2019 are 83.2%, 77%, 38.9%, 63.9%, and 73.6% respectively. The upward trend from 2017 to 2019 occurred because the city was transitioning the west side of town (which was on

[7] Docket number 2019-AD-104

surface water) to groundwater and the city has had small population growth. In 2017, the city made a connection with an additional groundwater source and were still connected to the surface water source. By 2018, the surface water source had been disconnected which accounts for the large increase in service capacity percentage. The increase from 2018 to 2019 can be attributed to updated pump tests and an increase in connections.

The current upward trend of service capacity that is nearing 80% indicates a need for the city to immediately identify the next additional source of water. This service capacity need should be factored into the determination of the future actions of the city, in conjunction with evaluating options going forward related to water source supply.

Potential Options for Drinking Water

Water quality within the City of Saltillo has been in question for several years because of a recurrence of "dirty," "cloudy," or "brown" water on the west side of the city. Prior to 2016-17, the west side of the city was served by the Northeast Regional Mississippi Water Supply District ("NRMWSD"), which is a surface water treatment plant. In 2016, the city transitioned to a ground water source because it purchased the Turner Industrial Park elevated tank and wells which gave the city enough capacity to serve the west side of the city. In order to address water quality issues that have been rampant, two options were proposed at a July 5, 2018 public hearing, conducted by the Public Service Commission at

Saltillo City Hall with MSDH – Bureau of Public Water Supply Director William Moody in attendance, to potentially resolve the discolored water issue.

Groundwater Option

The first option, herein referred to as the "Groundwater Option," involves keeping the current groundwater source for the entire water system and installing pressure filters to treat the iron or characteristic that is causing the discoloration. While an option, this choice would very likely be the least cost-effective, long-term, and least impactful on both water quality and service capacity needs for growth. From City of Saltillo onsite visits, the collection of water samples in the distribution system, and interviews conducted with the Mayor and Board of Aldermen, city clerk, and water department employees, the discolored water issues are sporadic in occurrence and not uniform throughout the distribution system. The sporadic nature indicates a reaction between the groundwater source with current treatment and past scaling in infrastructure from the previous surface water source. The installation of pressure filters, under the "Groundwater Option," would be a long-term financial burden on the city and its customers, and will provide minimal correction to the water quality issue, and provide no increase in supply capacity in and of themselves.

The "Groundwater Option" would leave groundwater as the source for the east and west side of Saltillo, albeit with pressure filters installed. From a water quality standpoint, this is a short-term solution with the potential for a

repeat, long-term issue. It should be noted that this option does nothing to address the looming issue of service capacity increases noted earlier in this report. Saltillo experienced a 41% population increase from 2000 to 2010 and a 4.9% population increase from 2010 to 2017. Even though the latest growth trend is not as pronounced as the increase from 2000 to 2010, the city must prepare for growth. If the "Groundwater Option" is chosen, the city will still need to add an additional source of water in the future. If there is no change in the pumping capacity of existing wells, the addition of a mere 220 connections will put the city at the 80% capacity threshold, which necessitates an additional source of water, consequently increasing the cost to customers for production and service for drinking water. It should be noted, with emphasis, that there is no guarantee that drilling an additional groundwater well will be a realistic solution. There may be groundwater supply issues that will weigh into MSDH approval of an additional well.

Surface Water Option

The second option proposed in the July 2018 public meeting was to completely discontinue the use of the current groundwater source and convert the entire city to surface water supplied by the NRMWSD, herein referred to as the "Surface Water Option." This option is acceptable from a drinking water quality stance because NRMWSD has a very reputable management company and quality staffing. Also, the west side of the city was previously served by this

exact water quality source for many years prior to switching the ground water source. Therefore, it is likely that the complete condition of the drinking water may return after a brief interruption. In the event this option is chosen, Saltillo officials should notify customers of the likelihood of a temporary period of dirty water during the transition and be prepared to conduct a thorough flushing program during this time. It is suggested that the city take all measures to notify customers of flushing activities by all means of notice including, but not limited to, an automated electronic system. The west side of Saltillo has been on ground water for approximately three years and having a different water quality moving through the distribution system will cause some disruption to any scaling that may have formed over time. Patience will be key during the transition period. Discolored water will eventually subside due to the flushing program.

As previously stated in the full 'Physical Assets' section, the current plant/sites are not in good condition and have been neglected for years. Utilizing the Surface Water Option, the city would need to make two connections to NRMWSD. One connection already exists, which is the previous connection that served the west side of the city. A new meter can be installed in the current connection pit. The second connection to NRMWSD can be made where the city installed new lines in an effort to better serve the city with increased line capacity. The second connection would be an eight-inch line and meter.

The Surface Water Option will address the water quality issue for the west side of the city and will additionally provide a high quality, different water source for the east side of Saltillo. Even though this option addresses water quality issues for the entire city, there could be temporary periods of discolored water for the customers of the east side of Saltillo, similar to what has occurred on the west side of the city. Again, city officials and customers should be prepared for temporary periods of discolored water during the transition, but know the issue will subside with robust flushing and the passage of time. From a water quality standpoint, this is both a short-term and long-term solution to achieve clear water and reduce customer complaints. Secondly, and very importantly, this option will also greatly assist in addressing Saltillo's water service capacity because under this option, the city's capacity will be determined, in direct correlation with, the service capacity of its source, NMRWSD. According to the most recent MSDH annual inspection, the NMRWSD service capacity is 40.3%[8] and with an addition of Saltillo's 2,532 connections, NMRWSD's capacity would rise to 44.7%. Therefore, enabling Saltillo to benefit from a drop in capacity used from 73.6% to 44.7%, a drop of 28.9%, which ensures capacity for years of economic growth and the addition of new connections/customers without the added cost and maintenance of new wells,

[8] NMRWSD is currently serving 23,193 connections and has the capacity to service 57,540 connections which gives them a current service capacity of 40.3%.

storage tanks, and the installation of pressure filters while achieving a greater water quality.

Table 1 Drinking Water Options, Quality, and Capacity

	Water Quality	**Capacity**
Groundwater	Good	73.6%
Surface Water	Best	44.7%

Cost of Production and Service

The cost of production[9] and service[10] is viewed as one item for this study. The City of Saltillo has an annual water production of 120,705,480 gallons which equates to an average monthly production of 10,058,790 gallons. Based on water consumption records from April 2018 to March 2019, the annual revenue generated from water sales is $683,512. The revenue figure of $683,512 does not include other revenue sources to the city's water fund, which includes such things as disconnection fees, connection fees, late fees, and tap fees. The average monthly consumption for the stated time period and for the entire 2,532 connections is 4,529 gallons for an average water bill of $23.91.

The annual fiscal year audits from 2015, 2016, and 2017 detail revenue as $1,407,621, $1,480,169, and $1,470,480 respectively for an annual increase of

[9] Cost of production may be calculated as simply the costs of pumping, treating and distributing water to customers.

[10] Cost of service may be calculated as all other expense factors associated with a public utility; labor, materials, software, etc.

4.46%. The audits also detail expense as $1,396,291, $1,522,939, and $1,651,126 respectively for an annual increase of 18.25%. There was no rate increase over the stated years so the increase in revenue is due to a gradual increase in customers. The increase in expenses is typical of a water system with aging infrastructure and a public utility's effort to maintain the system and grow.

Projected Funding Schedules

In light of the water quality issues that necessitated this report and the discussion of next steps or best options with the desire for the best continual water quality, the report will analyze the two options and will detail a debt-financing payment structure for each. For financing purposes, the report will examine loan options from the SRF[11] and the USDA-RD[12], which are most commonly used by public water supplies. There are two options which have been discussed in the previous section; continue with the current water source and add filters for iron removal (Groundwater Option) or convert the entire city water system to surface water (Surface Water Option.)

[11] SRF has a fixed interest rate of 1.95% for the duration of the load with a 20 year amortization.

[12] USDA-RD has an interest that is set by the agency on quarterly and the current interest rate is 3.25% and the interest rate is fixed for the duration of the loan. For Public Entities, the maximum amortization is 35 years.

The cost estimate to construct and install the pressure filters for the Groundwater Option is a one-time cost of $1,300,000[13]. Under the Groundwater Option, the city will also need to account for an additional source of water in the future which may include drilling a new groundwater well. Most recent cost estimates derived from current USDA funding for a 300 gpm well, 30,000 gallon pressure tank, and concrete block well house is $960,000. Table 2 displays the repayment scenarios for this one-time cost to install the pressure filters and the future additional water source expense totaling $2,260,000. The repayment scenario for the Groundwater Option does not take into account the chemicals, electricity, maintenance and upkeep of the filters. This cost will not be at a magnitude to justify any additional debt but should be included when factoring continual operations and upkeep.

Table 2 Monthly Customer Impact for Groundwater Option

Groundwater Option - $2,260,000				
Funding Source	Term	Rate	Monthly Payment	Impact Per Customer/ Per Month
SRF	20 Years	1.95%	$11,379.52	$4.49
USDA	35 Years	3.25%	$9,015.98	$3.56

From an initial debt financing standpoint, choosing the Surface Water Option is the least expensive and least impactful to customer rates. The Surface

[13] The approximate one-time cost estimate for the pressure filters was given by the Mayor from an Engineering estimate provided to the city. Scenario 1 estimated capital cost is to be deducted from Scenario 3 capital cost because the city has addressed these upgrades. A copy of the estimates can be seen in Appendix B image 1.

Water Option both allows the city to resolve current water quality issues and increase its service capacity with the only pure construction cost being the expense of making the connections to NMRWSD. The cost estimate given to convert the entire water system to surface water is a one-time cost of $200,000[14]. The repayment scenario for this one-time cost to make the transition is provided below. The repayment scenario does not take into account the fact that the city must purchase the water from the NMRWSD at $0.91 per 1,000 gallons based on the amount of water that passes through the meter, not simply how much is sold to the customers. The city must charge accordingly to maintain the city's infrastructure and pay NMRWSD for the water that passed through the master meter. Do understand that the $200,000 initial cost only funds the change of the source water from groundwater to surface water. The city will perpetually have to pay for the water and pass that cost along to the customers, a synopsis of the potential rate impact that takes into account the entire cost (both construction and purchase of water) will be discussed and illustrated in Table 7.

The financial benefit of the Surface Water Option is that the city can discontinue operation of at least three of their water production plant sites (Water Street, Jeanette Street, and City Park). The discontinuation of these three plant sites will reduce expenses in chemical costs and electricity. The most recent

[14] Cost estimate was determined by the Engineering estimates provided to the city in the form of 'Bid' for services. A copy of the 'Bids' can be seen in Appendix B images 2 and 3.

twelve months of expenditures show the city's chemical costs for these three sites was $8,100 and electrical costs were $15,580 totaling $23,680. We anticipate additional savings because the Turner Industrial Park plant sites will not be running/operating at their previous service levels so there will be a reduced amount of electricity and chemical costs at those sites, but the extent of such savings has not been quantified in this report.

Table 3 Monthly Customer Impact for Surface Water Connection

Surface Water Connection – $200,000				
Funding Source	Term	Rate	Monthly Note	Impact Per Customer/ Per Month
SRF	20 Years	1.95%	$1,007.04	$0.39
USDA	35 Years	3.25%	$797.87	$0.31

Rate Impact to Customers

Saltillo has 2,532 connections with 160[15] of those connections being in excess of one-mile outside the city limits. The sewer rates are not contemplated in this report as it solely pertains to water rates and services. The customers outside the one-mile radius have an average monthly consumption of 4,539 gallons and an average water bill of $21.09. The remaining 2,372 customers that are within the city limits and the one-mile radius have an average monthly consumption of 4,571 and an average water bill of $24.96. Past consumption and revenue are derived from the pre-April 2019 water rate: inside the one-mile radius is $10.43

[15] Customers outside the one-mile radius of the town fall under the rate jurisdiction of the Mississippi Public Service Commission.

base with 2,000 gallons and $4.15 variable for each additional 1,000 gallons; outside the one-mile radius is $12.00 base with 2,000 gallons and $3.50 variable for each additional 1,000 gallons.

Table 4 Pre-April 2019 Water Rate

Inside or Outside	Base Volume	Base Rate	Variable Rate	Avg. Bill	Avg. Consumption
Inside	2,000 gallons	$10.43	$4.15	$24.96	4,571
Outside	2,000 gallons	$12.00	$3.50	$21.09	4,539

The current water rate (adopted April 2019) only impacted the customers within the city limits and within one-mile radius of the city limits, rates for customers outside the one-mile radius stayed the same. The customers inside the one-mile radius and within the city limits will adhere to the current water rate. Applying the average past consumption per customer with the rates adopted in April 2019, the average customer inside the city limits and within the one-mile radius of the city limits will see an increase of $2.39, or 9.57% in their water-only portion of their bill.

Table 5 Current Water Rate

Inside or Outside	Base Volume	Base Rate	Variable Rate	Estimated Bill	Avg. Consumption
Inside	2,000 gallons	$14.50	$5.00	$27.35	4,571
Outside	2,000 gallons	$12.00	$3.50	$21.09	4,539

Under the 'Financial Ratios' section of this report on page one, the evidence shows that city officials were justified in increasing rates in April of

2019 for those customers within the city limits and within the one-mile radius of the city limits to combat aging infrastructure and increasing expenses. With the current rates in place today for those customers within the city limits and within the one-mile radius thereof (at the time of this report), an average monthly bill of $27.35 when multiplied by the 2,372 customers affected produces an estimated annual increase in revenue of $68,028 derived from rates currently being paid by customers. If the city was allowed to adopt the same rates for all customers (within the city limits, within the one-mile radius, outside the one-mile radius), those customers outside the one-mile radius would have an average monthly bill of $27.20, when multiplied by the 160 customers outside the one-mile radius, the city will see an estimated annual increase in revenue of $11,731 which equates to an additional 1.71% increase in total water revenue to the city. The adjustments to all customers mentioned above will generate additional total annual revenue of $79,759 which equates to an 11.67% increase in water revenue to the city.

To get an accurate determination on the future need of revenue for the city's water enterprise fund, we must not only take into account the debt service but also take into the account any costs savings as well as any perpetual expense.

Ground Water Option

Debt Service =	**$108,191.76**
Current Chemical & Electrical =	**7,893.00**
Addition Electrical (Filters) =	**8,400.00**
Additional Maintenance (Filters) =	**2,272.72**
Total Annual Revenue Needed =	**$126,757.48**

Surface Water Option

Water Purchase w/ 20% loss[16] =	**$131,809.86**
Debt Service =	**12,084.48**
Cost Savings Chemical & Electrical =	**(23,680.00)**
Total Annual Revenue Needed =	**$120,214.34**

The Groundwater Option requires $126,757.48 of additional annual revenue to meet its obligations. Dividing the required revenue of the Groundwater Option by the total customer base of 2,532 during a twelve month billable time period, an additional $4.17 will be required from each customer per month. The Surface Water Option will require $120,214.34 of additional annual revenue to meet its obligations, which include both the cost of construction and the ongoing purchase of water. Dividing the required revenue of the Surface Water Option by the total customer base of 2,532 customers during a twelve month billable time period, an additional $3.96 will be required from each customer per month.

Tables 6 and 7 show the change in rates for all customers, when applying the rate adopted April 2019 for customers within the city limits and the one-mile radius of the city limits to the 160 customers outside the one-mile radius.

[16] 20% water loss was determined using the most recent MSDH – Bureau of Public Water Supply inspection report from FY 2018.

Table 6 Current Water Rate with Groundwater Option Impact

Inside or Outside	Avg. Consumption	Base Rate – first 2K Gallons	Variable Rate – All over 2K	Current Avg. Bill	Estimated Bill - Ground	Change
Inside	4,571	$14.50	$5.00	$27.35	$31.52	$4.17
Outside	4,539	$12.00	$3.50	$21.09	$31.52	$10.43

Table 7 Current Water Rate with Surface Water Option Impact

Inside or Outside	Avg. Consumption	Base Rate – first 2K Gallons	Variable Rate – All over 2K	Current Avg. Bill	Estimated Bill - Surface	Change
Inside	4,571	$14.50	$5.00	$27.35	$31.31	$3.96
Outside	4,539	$12.00	$3.50	$21.09	$31.31	$10.22

Conclusion

The City of Saltillo is in a growing area of Mississippi and Lee County so the city should prepare for increasing connections and consumption. The water quality issue in the City of Saltillo may be addressed using current assets and treatment, installing pressure filters, or connecting to the surface water source. The rates of Saltillo increased in April 2019 so this should provide financial strength to their water enterprise fund. The city should monitor and evaluate the growth of their expenses and they should work to establish sufficient financial ratios.

In the immediate and long-term interest of its citizens and for economic growth, the City of Saltillo should re-establish the connection with the NRMWSD for surface water to serve the 973 customers on the west side of Highway 45 by installing a new meter in the service connection pit that was previously used

prior to the 2016 disconnection. Also, the city should add a meter and connection to NRMWSD to serve the remaining 1,559 customers on the east side of city, completing a total conversion to surface water as the city's sole source for water supply. As clearly demonstrated in this report, the surface water connection to NRMWSD is the most cost-effective way to increase service capacity for the City of Saltillo and improve water quality for the customers on the west side of Highway 45 and throughout the system. The surface water connection will serve as an additional source of water to reduce the city's service capacity from its current level of 73.6% to an estimated 44.7%, ensuring a long period of growth capacity without further capital improvement costs. The surface water connection will also allow customers on the west side of Saltillo access to the source water that served them from 2000 to 2016 which should resolve the water quality issue complaints. It should be noted that the return to the NRMWSD can be accomplished in a much timelier manner than the choice of the Groundwater Option, which would likely take a minimum of two years for completion.

Recommended Actions

1. Establish the new connection and appropriate reconnections with NRMWSD for surface water to serve the city.
2. Make the appropriate valve-off adjustments to isolate the NRMWSD connections and to allow the Turner Industrial Park to serve as a backup source of water in times of emergency.

3. Properly abandon the chlorinator building and booster pump room at the Water Street Plant and the City Park Plant.
4. Properly abandon the wells at the Water Street Plant and the City Park Plant.
5. Properly abandon the Jeanette Street Plant (the well, chlorinator building, and booster pump room) and take the plant off line.
6. Keep the current elevated tanks at Water Street, Hwy 145, U.S. Hwy 45, and Turner Industrial Park as storage.
7. Inform the entire customer base of the new source water so they are aware of the water source and quality change.
8. Inform the entire customer base that they will experience discolored water during the transition.
9. Flush the entire water system monthly until the water quality issues and complaints have been resolved.

SECTION II

REFERENCES AND RESOURCES

Mississippi Public Service Commission
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P.O. Box 1174
Jackson, MS 39215-1174
601-961-5405

Ms. Collier will serve as the contact for the Mississippi Public Service Commission and should be contacted if there are any questions that arise from this report.

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