



AGENDA

NORTH MIAMI CITY COUNCIL

REGULAR COUNCIL MEETING

**TUESDAY, APRIL 10, 2018
7:00 P.M.**

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TAB J

**DISCUSSION AND RECOMMENDATION ON THE NORTH MIAMI WINSON WATER PLANT.
*Sponsored by: Councilman Philippe Bien-Aime, District 3***

NORTH MIAMI OPERATIONS MANAGEMENT REVIEW

PREPARED FOR

City of North Miami

18 DECEMBER 2017

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Introduction

The City of North Miami (the “City”) retained Black & Veatch to perform a high level review of the existing conditions and basic financial feasibility associated with moving from the existing form of management to a third party operator associated with the Water and Sewer System (the “Utility System”). For the purpose of the Report detailed herein, the Utility System mean backbone water and sewer system assets which include; water treatment, water transmission and distribution, and wastewater collection system. The Report includes four sections: 1) Introduction; 2) Operation Management Review; 3) Economic Feasibility Assessment; and 4) General Conclusion, which outline the operating findings, basic financial feasibility, and general considerations associated with a third party operator managing the existing Utility System. Specifically, the findings consist of comparisons of typical forms of operational management, as defined by the City, with the current management structure maintained by the City.

Section 1: Overview

BACKGROUND

The City of North Miami (the “City”) was incorporated on February 15, 1926 and is a political subdivision in the State of Florida. The City operates under a council-manager form of government and provides general government, public safety, public works, economic and community development, library, public safety, public works, and cultural services to approximately 68,650 residents. In addition, the City operates a water utility, sewer utility, stormwater utility, and provides solid waste services under an enterprise fund. The Utility System operates as a combined system for administrative and financial accounting purposes. As a result, all revenues are combined and all water and sewer operating expenses, capital expenditures, and debt service requirements are maintained through the combined enterprise fund.

Over the years, the City has procured contract services for specific components of the Utility System, such as; the Solid Waste. As such, the City wants to responsibly facilitate requests related to contract services for the Utility System, but most importantly, serve the residents of North Miami by providing the best quality of utility services in the most responsible manner. In order to appropriately serve existing Utility System customers at the lowest possible cost, the City desired a high level review of the financial feasibility and general considerations associated with a third party operating the Utility System (“study”).

This study includes an evaluation of the following three forms of operating management structures, specified by the City:

- Base Case: Maintain Existing Operations by the City;
- Partial Management: Management of only the Water Treatment Plant by a third party; and
- Complete Management: Management of the entire Utility System by a third party operator

For the purposes of the study, the analysis period is anticipated to be 30 years beginning in FY 2017 and ending in FY 2046.

UTILITY SYSTEM DESCRIPTION

The City of North Miami's Utility System serves a population of approximately 68,650 people in a 13 square-mile area. The City is bounded by Unincorporated Dade County and the City of North Miami Beach on the North, NW 17th Avenue on the West, Biscayne Bay on the East, and the Village of Biscayne Park on the South. Customers are located within the City of North Miami, as well as portions of unincorporated Miami-Dade County, Miami Shores, and Biscayne Park. The City provides emergency interconnects to the neighboring municipalities of North Miami Beach and Opa-Locka. The City's Water Treatment Plant pumps and treats an average of 8.5 million gallons of water per day. In addition, the City's water supply is supplemented by water purchased from Miami-Dade County's main water system through several metered interconnects within the water distribution system.

The City owns and operates the Winson Water Treatment Plant (the "WTP"), which is a conventional lime softening plant. Currently, the facility maintains a raw water treatment capacity of 9.3 MGD. A high output pumping and storage system at the plant supplies the distribution system which maintains system pressure at about 60 psi within a piping network sized between 1 – 30 inches. Water supply is obtained through the Biscayne Aquifer system via eight wells, two located at the WTP, and three separate pairs of wells located at three different parks within close vicinity of the WTP.

The City's current Consumptive Use Permit (the "CUP") permits withdrawal from the Biscayne Aquifer at a limit of 9.3 MGD. Assuming a 98.0% treatment efficiency, an inflow of 9.3 MGD in untreated water produces an outflow of 9.11 MGD finished water to meet the demand requirements of the City. In addition, the CUP also allows for approximately 8.24 MGD of finished water demand to be met with ten proposed Floridan Aquifer wells (assuming 10.99 MGD withdrawal with 75% efficiency).

The City's sewer system service area consist of approximately 647,911 lineal feet of gravity sewers, 222,882 lineal feet of force mains, forty four (44) City owned pump stations, and one hundred and twenty-one (121) private pump stations which contribute to the City's wastewater collection and transmission system. In addition, the 647,911 feet of gravity sewer collection system are interconnected by 2,119 manholes. There are no combined sewers in this system. The pipe nominal diameter for the gravity lines range in size from 8" to 36". The majority of the gravity sewer system is composed of Vitrified Clay Pipe (VCP) with G.K. and elastomeric joints. The remaining pipe is Polyvinyl Chloride (PVC), Cast Iron Pipe (CIP), or Ductile Iron Pipe (DIP). Additionally, the 222,882 feet of the force mains have nominal diameters ranging in size from 4" to 20" inches. These lines are made up of one of the following materials: CIP, DIP, Asbestos Cement Pipe (ACP) with Elastomeric Joints, or PVC C-900 with Elastomeric Joints.

OVERVIEW OF MANAGEMENT

The City's charter provides for a Mayor, who is elected city-wide and is permitted to serve up to two consecutive two year terms. In addition, the charter requires four additional City Council members that are elected by District to serve in increments of four years with unlimited terms. In support of the City Council, a City Clerk is elected to serve in increments of four years with unlimited terms.

The City Council maintains the authority to directly appoint a City Manager and a City Attorney. The City Manager reports to the Mayor and City Council and is responsible for the day to day operations of all City departments which consist of the hiring of department heads, monitoring the daily operations of all City Departments, and the development of annual department budgets, to name a few. The City Attorney supports the City Council and City Departments with all legal matters pertaining to the operations and maintenance of all City Departments.

The City provides a number of services to residents and business owners respectively that reside and operate within the service limits of North Miami. One such service is the provision of water and sanitary sewer services which is provided through the Public Works department within the City.

The Public Works Department, that directly serves water and sewer customers, consists of 85 positions at the time the engagement herein commenced. The Public Works Director with support from the Assistant Public Works Director is responsible for the day to day operations and management of all aspects of the department which consist of the Water Plant, Utility Operations, City Engineering, Facilities Management, Fleet Management, Street/Stormwater Services, and General Administration. Each unit within the Public Works Department maintains a Superintendent or Supervisor that supports all unit staff with the daily operations of the respective units.

Figure 1 provides an overview of the Public Works organization specific to water and sewer services.

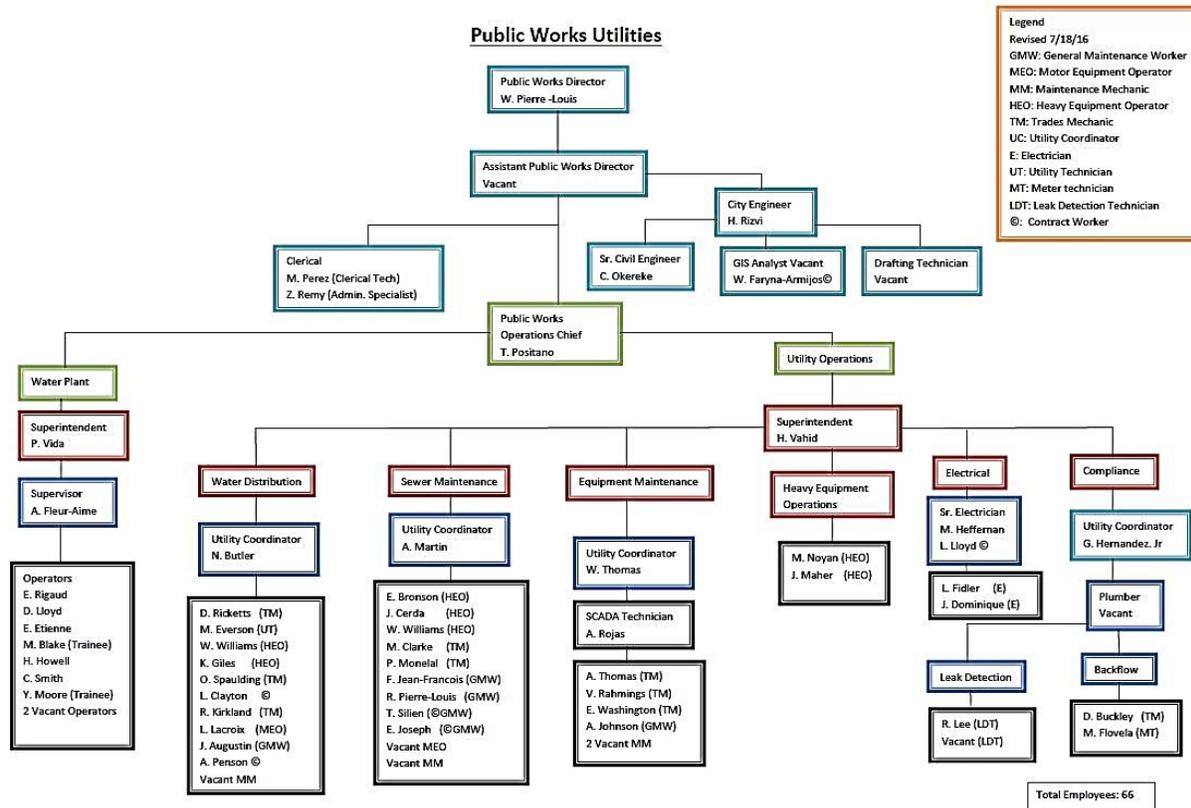


Figure 1: Public Works Utility Organizational Chart

CONSUMPTIVE USE PERMIT

On August 23, 2010, the City renewed its CUP for an additional 20 years which is set to expire on August 23, 2030. The CUP serves as the guiding water source of supply policy that contains certain limiting conditions with which the City must abide in order to provide potable water service to existing customers. The purpose of the CUP is to appropriately manage, monitor, and disburse available water resources within the South Florida region. The South Florida Water Management District (the “SFWMD”) is the regulatory agency that monitors and approves the conditions of the CUP and the City must demonstrate the ability to appropriately manage all allocated water resources. Every five years, the City is required to submit applicable progress reports related to the management of allocated water resources in order to appropriately plan for anticipated increments of additional water supply required to meet future anticipated water demand at the lowest forecasted cost.

The CUP allows the City to withdraw water from two sources: the Biscayne Aquifer and the Floridan Aquifer, with each source having specific withdrawal limitations. On an annual basis, the City is allowed to withdraw 9.3 MGD and 7.97 MGD of water for a total of 17.27 MGD respectively from the Biscayne and Floridan Aquifers. On an annual basis, the City’s average day demand for water service is about 13.3 MGD and the WTP produces about 7.6 MGD of water with the City supplementing the additional water demand requirements through water purchases from Miami-

Dade County. Based on the authorized allocation maintained in the CUP, the City's water demand requirements is at about 78.0% of the authorized CUP allocation on an average day basis. As such, the City must begin to consider and prepare to appropriately implement additional water supply resources before 2030 in order to maintain adequate levels of service to existing and future anticipated customers. In June of 2016, the City submitted the water supply requirements related to the existing CUP to the SFWMD and the forecast indicated that the City will explore additional water supply resources before 2030. In addition, as indicated by the City, the City is currently in compliance with all the CUP requirements.

As a part of the CUP's Conservation Element, the City must implement, maintain, and report the performance of relevant programs and in order to demonstrate the City's willingness and ability to maintain existing water resources at the lowest possible cost to existing customers. In Fiscal Year 2012, the City implemented conservation based water rates to promote the efficient use of water resources. The City implemented a four-block volumetric water rate scheme for the major customer classes. In addition, the City implemented a water system education campaign whereby existing customers were invited to visit the existing water system to learn about the services provided along with actively participating in various public forums to inform and educate all constituents about major initiatives in order to retain feedback about major Utility System decisions from constituents.

LARGE USER AGREEMENT

The City entered into a large user agreement (the "Large User Agreement 1") with the County on June 26th, 2007, whereby the County agreed to provide potable water to the City at established points of connections for a period of 20 years as outlined in Large User Agreement 1. As a part of the agreement, the City agrees to pay the County, on a uniform rate basis, per thousand gallons of water delivered. The uniform rate includes the City's proportionate share of operating and maintenance expenses, renewal and replacement expenses, interest and debt obligations, and other general expenses. Both parties agree to maintain their respective water transmission and distribution systems to all applicable federal, state, county, and other local laws, rules, and regulations. On an annual basis, the City is required to provide the County with a five year forecast or reservation of potable water service for approval by the County. The County's approval of the five year reservation of potable water services provides the City with the ability to optimize its source of water supply over the respective five years.

On the 11th of March, 2010, the City entered into a large user agreement (the "Large User Agreement 2") with the County for the County to provide sewer transmission, treatment, and disposal services to the City. The Large User Agreement 2 requires the City to provide a five year forecast or reservation of the contributed sewer flow to the County. The City agrees to pay the County for the City's proportionate share of operating and maintenance expenses, renewal and replacement expenses, interest and debt obligations, and other general expenses. Additionally, the County agrees not to include any County specific stormwater cost or local collection system costs. Finally, both parties agree to maintain their respective systems to applicable federal, state, and local government standards.

UTILITY SYSTEM CAPACITIES

Over the last five fiscal years, 2011 through 2015, the City has experienced slight decreases in the total amount of potable water produced, but significant increases have occurred in the total amount of water purchased from Miami-Dade County. The City has experienced an increase in the demand for water services over the last five years and has utilized purchase water to meet this incremental demand.

Table 1 provides a summary of the average daily water produced and average purchased water over fiscal years 2011 through 2015.

Table 1: Summary of Average Daily Water Produced and Purchased (MGD)

LINE	YEAR	WATER PRODUCED	PURCHASED WATER	AVERAGE DAILY WATER USAGE
1	2011	8.24	1.20	9.44
2	2012	7.62	3.86	11.48
3	2013	7.88	4.61	12.49
4	2014	7.89	4.45	12.35
5	2015	7.56	5.74	13.30

Note:

- The information detailed herein was provided by City Staff.

All contributed sewer flow is collected by the City and conveyed to Miami-Dade County at the established interconnections with Miami-Dade County. The City maintains no other sewer system interconnections with any other neighboring jurisdiction.

Table 2 provides a summary of the City's average daily sewer flow for dry and wet weather months, along with the annual average flow over the five year period.

Table 2: Summary of Average Daily Sewer Flow (MGD)

LINE	YEAR	DRY WEATHER (APR. – NOV.)	WET WEATHER (MAY – OCT.)	ANNUAL AVERAGE FLOW
1	2011	8.43	10.29	9.36
2	2012	9.59	10.68	10.13
3	2013	9.90	10.62	10.26
4	2014	9.65	10.18	9.91
5	2015	10.05	10.34	10.20

Note:

- The information detailed herein was provided by City Staff.

Section 2: Operations Management Review

The City currently provides water and sewer services through the City's Public Works Department (the "Public Works"). Public Works is organized into five distinct groups, Water Plant, Utility Operations, Facility, Street and Stormwater, and Fleet. The Capital Projects group oversees the Fleet group and the Public Works Operations Chief oversees the other four Public Works groups. Both the Capital Projects group and the Public Works Operations Chief report directly to the Assistant Public Works Director who reports to the Public Works Director. Essentially, the management structure highlighted herein outlines the reporting, decision making, and internal controls hierarchy utilized to maintain operations and provide water and sewer services to existing customers of the City.

As a part of the analysis, Black & Veatch conducted several interviews with the management and supervisory staff to gain an understanding of the existing operating practices and procedures, major utility initiatives, and the City's organizational capacity to continue to provide water and sewer services to existing customers. The Black & Veatch team used the information gathered through data review and interviews to define potential service delivery requirements, determine the feasibility of changes to management and decision making process, and assess the associated direct or indirect impacts. The due diligence performed and information gathered served in providing a platform to understand the City's existing operations in order to simulate and decipher the potential requirements, decisions, and direct or indirect impacts associated with adjusting the existing form of operations management.

Upon consulting with staff, the Black & Veatch team was directed to evaluate the following three distinct operations management scenarios:

- **Base Case:** Maintain Existing Operations;
- **Partial Management:** Management of only the Water Treatment Plant by a third party
- **Complete Management:** Management of the entire Utility System by a third party.

EXISTING WATER AND SEWER SYSTEM OPERATIONS

This section presents the basic findings associated with the operations of the City's water and sewer system. Additionally, this section focuses on specific areas of operations and aspects that must be considered as the City explores the operations management scenarios.

Organization and Staffing

To assure service excellence, the utility's organizational capacity to deliver services must expand commensurate with future increases in water and sewer levels of service. The Utility Director reports to the City Manager and maintains global responsibility of all aspects of the Public Works Department, specifically, the Water and Sewer System. Additionally, the Utility Director is supported by an Assistant Utility Director, but at the time of the study, the Assistant Utility Director position remained unfilled.

As previously discussed, the Public Works Department consists of five groups of which the Public Works Operations Chief is directly responsible for the operations of four of these groups. Our review of the organizational structure and the operations of each of the five groups indicate limited

collaboration and coordination among the groups, which could impact effective exchange of information and ideas and potential operating economies.

Over the past few years, the City has experienced a gradual attrition of the number of water and sewer system staff and the timing associated with filling these open positions have extended beyond defined hiring schedules. Certain key positions, such as the Assistant Public Works Director, two Water Plant Coordinators, and two Collection System maintenance staff, to name a few, were vacant at the commencement of the study. It is imperative that the City strive to fill open positions in short order to maintain existing levels of service.

Existing Maintenance Practices

The City's maintenance staff focuses on a significantly higher proportion of corrective maintenance projects as compared to preventative or predictive maintenance projects. Each of the five major groups within the Public Works Department maintains their own maintenance staff which creates maintenance silos for services within the organization. In addition, current staff has indicated the urgent need to increase maintenance staffing because they are unable to complete all open work orders in an expeditious manner.

Typically, a reactive approach to the maintenance of assets can increase the overall maintenance costs as compared to preventative or predictive maintenance which typically can be more cost effective.

Existing Water Supply

Over the last five years, the City has utilized a combination of water produced from the WTP and water purchased from Miami-Dade County. In 2011, 12.7% of the water sold to customers was purchased from Miami-Dade County, and, by 2015, this total increased to 43.2% as presented in Table 1. Hence, as the City plans to implement the next increment of water treatment capacity projects, the decision making process must include the maintenance of the optimal mix of produced and purchased water at the lowest possible cost to existing customer.

Additionally, the existing Miami-Dade County Water Purchase Agreement requires the City to submit annual five year forecasts of future water purchase requirements from the County. The five year reservation or commitment to purchase water from Miami-Dade County will impact the City's flexibility to install and utilize planned future increments of water supply. Therefore, defining an optimal future mix of purchased and produced water supply will be pivotal for cost effective management of City's water supply requirements.

Water and Sewer System Conditions Assessment

The City has consistently performed the necessary condition assessments of the water and sewer system, and has developed master plans to define projects and initiatives that are critical to maintain the level of service for both the water and sewer systems.

In April 2011 and June 2015, the City completed a Sanitary Sewer Master Plan and a Water Supply Plan, respectively. Each plan utilized specific assumptions around customer growth and the necessary initiatives and projects necessary to serve demand requirements. However, since the completion of the master plans, key variables such as actual population growth, the cost of goods

and supplies, and the availability of staffing, to name a few, have changed. Hence, it is prudent to review and update these plans. Additionally, the City must perform enhanced conditions assessments of the entire water system and sewer system in order to understand the needs and requirements as a part of exploring an operations management scenario.

OPERATIONS MANAGEMENT

Over the last decade, the City has identified and considered third party interest, without taking any action, related to the possibility of establishing an operations management agreement for the water and sewer system. As a part of responsibly managing all City resources cost effectively, the City Council has directed the City staff, to consider all possible operating options that will lower existing customer's utility bill or prevent drastic increases in a customer's utility bill.

This section presents an overview of the three operations management scenarios, namely the Base Case; Partial Management; and the Complete Management, which were evaluated in this study.

OPERATIONS MANAGEMENT CONSIDERATIONS

To evaluate the three scenarios, Black & Veatch identified and reviewed seven areas of operations and management.

Listed below are the seven areas of focus:

- Staffing/Technical Qualifications;
- Maintenance/Performance Reliability;
- Management;
- Emergency Conditions;
- Cost;
- Customer Service; and
- Contract Conditions

Staffing/Technical Qualification

A utility’s capacity to meet its diverse obligations including adequate service levels, system integrity, regulatory compliance, and customer service, depends significantly on adequate and technically qualified staff.

Table 3 provides specific considerations in maintaining adequate staffing and technical resources for the Utility System.

Table 3: Summary of Considerations related to Staffing/Technical Qualifications

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> City would maintain internal control of staffing needs, qualifications, and certifications to ensure FDEP and other regulatory compliance, at a minimum. 	<ul style="list-style-type: none"> Private firms that specialize in treatment plant operations usually have trained staff and resources. Private firms need to meet the minimum FDEP staffing and certification requirements at the treatment plant and other facilities. 	<ul style="list-style-type: none"> Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

Maintenance/Performance Reliability

In order to maintain the existing levels of water and sewer services provided to existing customers, the City maintains dedicated maintenance groups, by function, that drive the performance, reliability, and the overall cost of operating the Utility System. In addition, the City must maintain a well-defined inventory of the Utility System assets and optimize the existing maintenance plans to meet current and future conditions, and in turn, increase service reliability and reduce the cost to operate these assets

Table 4 provides specific considerations around maintenance and performance reliability for the Utility System.

Table 4: Summary of Considerations Related to Maintenance/Performance Reliability

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> ▪ City should maintain a well-defined inventory of system assets and effectively sustain its knowledge of the water treatment, transmission and distribution, and sewer maintenance activities. ▪ City should perform a detailed condition assessment of the equipment at the treatment plant, transmission and distribution, and collection systems before advertising for a private firm. 	<ul style="list-style-type: none"> ▪ Private firms will go through a learning curve to develop an in-depth knowledge of the City’s treatment plants. ▪ Private firms maintain the plant equipment and assets while the City maintains ownership with limited control over the private firm’s maintenance procedures. 	<ul style="list-style-type: none"> ▪ Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

Management

The management and delineation of risk and responsibilities associated with operating the Utility System is a necessary task when considering an operations management scenario. As the City considers an operations management scenario by a third party entity, the City must explicitly define the management roles, responsibilities, and risks associated with the Utility System from a technical, regulatory, and business process perspective.

Table 5 provides specific considerations around the management for the Utility System.

Table 5: Summary of Considerations related to Management

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> City accepts and determines the level of risk in operating and maintaining the treatment plant, transmission and distribution system, and the wastewater collection system to meet internal and regulatory requirements. 	<ul style="list-style-type: none"> Private firms assume most risk for maintaining the plant to meet the contract and regulatory requirements. City maintains regulatory liability with limited control of plant operations and maintenance activities. City may have extra administrative and management efforts to oversee the contract and private firm. 	<ul style="list-style-type: none"> Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

Emergency Conditions

The City is currently responsible for the activities required to maintain the policies, procedures, and administrative and technical statutes associated with emergency response throughout the Utility System. An emergency plan needs to be well-defined in the operation management agreement conditions for a third party operator, along with the appropriate education and training to provide efficient and coordinated emergency response.

Table 6 shows specific considerations regarding emergency response management for the Utility System.

Table 6: Summary of Considerations related to Emergency Conditions

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> ▪ City defines emergency response protocols, controls and coordinates emergency response decisions and activities to manage emergency events. 	<ul style="list-style-type: none"> ▪ Private firms take emergency response decisions and remedial actions with plant staff on site for immediate response to emergencies. ▪ In most cases, the City is not in control of the emergency procedures used by the private firms. ▪ City maintains regulatory liability and notifies FDEP and/or the public and other applicable regulatory agency if the City is out of compliance during an emergency event. 	<ul style="list-style-type: none"> ▪ Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

Cost

As the City considers the option of contracting with a third party operator, the City must comprehensively evaluate the current and future costs to operate, upgrade, and transition to a third party operator.

Table 7 highlights some of the more specific considerations regarding the cost to operate the Utility System.

Table 7: Summary of Considerations related to Cost

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> ▪ City continues to manage the annual O&M budgets and accounting requirements. ▪ City defines and controls the Capital Improvement and Equipment Renewal and Replacement programs, and their associated budget and project controls. ▪ City establishes funding adequacy through utility rates and charges 	<ul style="list-style-type: none"> ▪ A private firm’s annual O&M costs at the treatment plant could be higher than the City’s annual utility O&M budget and actual costs. ▪ Private firms may perceive the need for plant improvements and request additional upfront costs for equipment and other capital improvements. 	<ul style="list-style-type: none"> ▪ Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

Customer Service

The customer service function at the utility must embody the practices and activities that demonstrate responsiveness to existing customer needs and requests. The City currently maintains the customer service functions within the Utility System; however, if the City pursues a third party operator, then the City must establish specific customer standards as a part of the Contract Conditions.

Table 8 references some of the specific considerations around the customer service function within the Utility System.

Table 8: Summary of Considerations related to Customer Service

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> ▪ City continues to respond to customer water and sewer service complaints in a timely manner. ▪ City continues to manage the call-out procedures for after normal business hour complaints. 	<ul style="list-style-type: none"> ▪ The Private firm would respond with plant staff to manage water quality complaints, objectionable water taste and/or odor, and water sample collections for analysis. 	<ul style="list-style-type: none"> ▪ Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems. ▪ Private firm would respond and/or assess after business hour complaints for water leaks, low water pressure, sewer blockages, etc. and contact call-out crews.

Contract Conditions

As the City considers the option of contracting a third party operator, the City must clearly outline the roles, responsibilities, and risks associated with the third party operator operating the Utility System. The established Contract Conditions must outline the roles, responsibilities, and risks associated with the technical, financial, regulatory compliance, customer service, and relevant management of the utility system.

Table 9 provides specific considerations around the contract conditions to operate the Utility System.

Table 9: Summary of Considerations related to Contract Conditions

LINE	SCENARIO 1	SCENARIO 2	SCENARIO 3
<u>Description:</u>			
1	<ul style="list-style-type: none"> ▪ City self-performs the management and O&M of the water and sewer systems. ▪ City continues to optimize all systems for improved efficiency at the most economical cost. ▪ City continues to manage the Miami Dade water and sewer contracts. 	<ul style="list-style-type: none"> ▪ Private firms usually provide better unit cost for longer term contracts. ▪ Negotiations with Private firms can be difficult based on the level of risk the operator is willing to take. ▪ The contract conditions usually promote efficient O&M with incentives for performance and chemical/electrical usage. 	<ul style="list-style-type: none"> ▪ Same as “Partial Management Agreement” but includes the water distribution and transmission system and wastewater collection systems.

OPERATIONS MANAGEMENT RISK MATRIX

Operations management agreements maintain inherent risks which must be monitored and managed by all the applicable parties. Upon completing the due diligence associated with understanding the City's existing operating conditions, Black & Veatch identified certain risks associated with a third party operator managing and operating the Utility System. Black & Veatch has categorized these risks based on the likelihood (probability) and consequence (severity) of occurrence. Each risk is highlighted and defined below.

Likelihood of risk occurring:

- **Low** = The risk is possible, but not likely to occur (<10% probability)
- **Medium** = 10% to 50% probability of risk occurring
- **High** = The risk is likely to occur (>50% probability)

Consequence/Severity of the risk if it occurs:

- **Low** = Consequences are minor, with little or no negative impacts to: plant and/or distribution/collection system's reliability, public interest, and/or costs.
- **Medium** = May create some negative impact to the reliability of the plant and/or distribution/collection systems; may cause some public interest or concern; and/or result in some additional cost to the City.
- **High** = May significantly impact the reliability of the plant and/or distribution/collection systems; may cause safety or environmental issues, may result in public outcry; and/or result in significant cost to the City.

Table 10 provides an opinion of the Operations Management Risk Matrix based on the observed risk.

Table 10: Summary of Considerations related to Contract Conditions

LINE	RISK OBSERVATION	LIKELIHOOD OF RISK	CONSEQUENCE / SEVERITY OF RISK
<u>Description:</u>			
1	Potential for negative public opinion or reaction to using a Private firm for Operation and Maintenance (O&M) activities	Low	Medium
2	Reduced interest from Private firms based on proposed term of contract; thus resulting in a less competitive bid and higher service fee costs	Medium	Medium
3	The costs associated with the transition from Base Case to a Partial/Complete Management Agreement is greater than anticipated	Medium	Medium
4	The inability of the new Private firm to hire qualified staff to manage, operate and maintain plant and/or distribution/collection systems; which could lead to performance issues and negative public attention	Medium	High
5	North Miami and outside professional service staff/consultant may not agree upon the appropriate level of effort to produce an acceptable bid	Medium	Medium
6	Initial performance issues and negative public attention based on learning curve for new Private firm and staff	Medium	High
7	The Private firms performance falls below guarantees and City expectations which could result in regulatory issues, higher O&M costs, and negative public attention	Low	High
8	Private firm defaults on contract and abandons the treatment plant and/or distribution/collection systems; resulting in production shortfalls and increase purchased water, slow response to customer service requests, and negative public attention	Low	High
9	Regulatory fines or public notifications resulting from permit violations even though the City of North Miami has limited control over the facility and system assets	Medium	High
10	New Private firm identifies additional treatment plant and/or distribution/collections system improvements with significant upfront capital costs	Medium	High

OPERATIONS MANAGEMENT TRANSITION RELATED ACTIVITIES

As the City performs the requisite due diligence related to an operations management scenario, specific activities related to transitioning all related facets of the City’s existing organization must be considered. The City’s existing operations, conditions of existing assets, relationships with existing sub-contractors, legal and regulatory requirements instituted by the respective governing bodies, and the impact to the reputation of the organization must be considered and researched thoroughly as a part of structuring an operations management agreement. Figure 3 shows an example outline of transition planning activities that should be undertaken if and when the City decides to initiate the process related to tendering an operations management agreement.

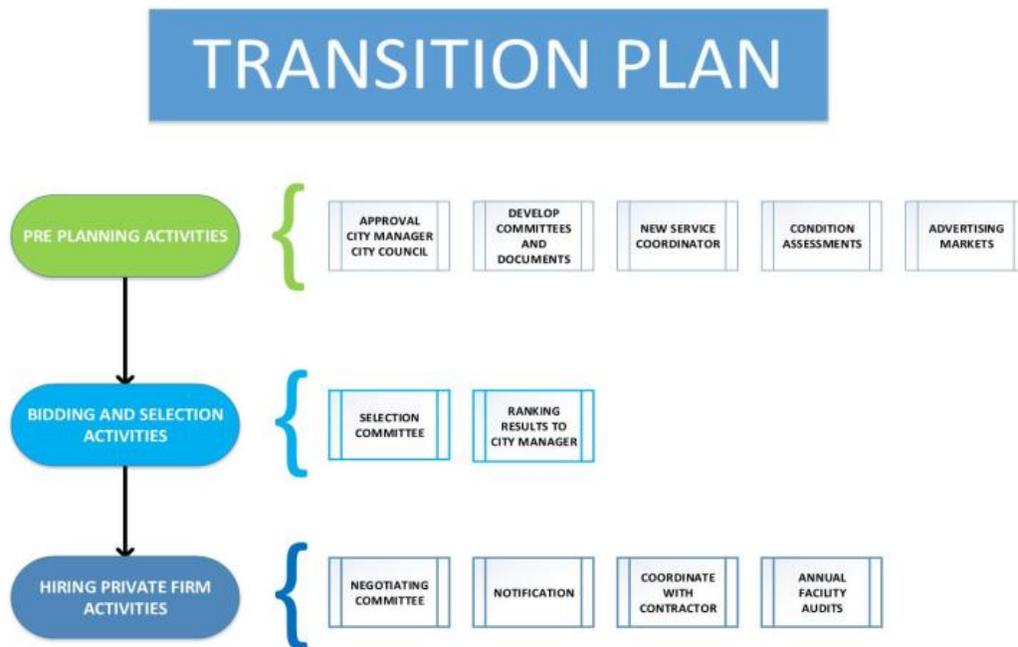


Figure 2: Outline of Transition Planning Activities

In support of Figure 2, provided below is a bulleted list of activities that should be considered by the City.

Transition Related Activities – Pre Planning

- The City should complete a detailed conditions assessment of the treatment plant and equipment, the transmission and distribution system, and the existing sewer system to determine the overall state of the Utility System, define upfront capital costs for necessary improvements, and confirm future renewal and replacement (R&R) requirements.
- The City must develop Measurement & Verification (M&V) protocols for the Scenarios.

- The City should form a small task force to manage and monitor the transition activities, and evaluate potential changes to contract and/or protocols that may be necessary. The City staff identified to serve as the service coordinator will have overall accountability to manage the contract and assure performance of the contract operator, per contract guarantees.

Transition Related Activities – Bidding and Selection

- Contract, Service Agreement, Request for Proposal (RFP) documents – Identify a documents committee to prepare the respective documents. The committee should include the City’s General Counsel and Utility staff; along with assistance from an outside professional services firms. Responses to Requests for Information (RFI) during the RFP process will also be managed by this committee.
- Preparation of the Contract and Service Agreement for a Partial or Complete Management structure should include performance guarantees, incentives, service fee structure escalation indices, liquidated damage structure, included and excluded risks, performance guarantees, and water quality guarantees at a minimum, to name a few.
- RFP Selection Process – Identify a selection committee to review, rank, and interview the RFP firms. The selection committee should include members of the document committee. The RFP selection committee should identify the advertising markets for the RFP process.
- Preparation of the RFP for a Partial or Complete Management structure should include the following areas at a minimum; a Company Overview, the Company’s Capability, staffing qualifications and experience, technical and management approach to contract operations, safety programs with OSHA history, and the company’s regional presence in south Florida.
- RFP Ranking - The RFP selection process can be ranked based on qualifications and a negotiated service fee with the top ranked firm submitting a service fee or the service fee can be included in a firm’s proposal package. As a prerequisite, the contract conditions and service agreement must be completed before initiating the RFP process.

Transition Related Activities – Hiring Private Firm

- The City will need to notify its existing staff, sub-contractors, and other respective stakeholders of the change to contract operations and terminate any contract terms with the City that will be impacted by the operations management agreement.
- The City will need to notify the regulating/governing authorities (FDEP, DOH, DOT, etc.) of the City’s desire to operate the City’s water and/or sewer systems through a contract operator.
- If not available, the City must identify an acceptable computerized maintenance management system (CMMS) that will remain with the City through the end of the contract term.
- Prior to ratifying the respective service agreement, the City must coordinate with the selected operator to review and verify the existing condition of the Utility System.

INTEGRATION RELATED ACTIVITIES

Upon successfully negotiating the Operations Management Agreement, the City and the selected Operations Management firm must complete some defined activities before the contract start date. The City's activities are mostly related to communicating and informing City staff of the change, the stakeholders, and the City's customers. All parties should be advised of the effective start date and any procedural changes from current City policy, at a minimum. Additionally, all city staff, specifically those affected by the third party selection, must be informed of the circumstance and the required operation and maintenance activities needs along with the options available for continued employment.

The activities associated with the contract operator should be defined in the service agreement along with the service agreement terms and negotiated costs. Additionally, the anticipated completion date for these activities will help guide the City in the negotiations and the selection of a contract start date.

The following activities are commonly related to the contract operator, but may not include all of the activities that are a priority to the City.

- The contract operator shall observe and receive training on the facility and/or system operations.
- The contract operator will evaluate the staffing requirements and outline an optimized staffing plan for review by the City.
- The contract operator shall evaluate the equipment and systems; and develop a spare parts inventory for the respective operation and maintenance needs.
- If not available, a computerized maintenance management system will be purchased and the contract operator will populate the equipment manufacturer's data into the system for predictive and preventative maintenance requirements. Additionally, any corrective maintenance records on existing equipment operated the City must be populated into the system.
- The contract operator shall prepare Operations Plan to assure the Facility and System operations are operated in a safe and efficient manner within accepted industry standards. The content of the Operations Plan should be detailed in the service agreement.
- The contract operator shall prepare Standard Operating Procedures for the Facility and/or System operations. Examples of these procedures should be listed in the service agreement.
- The contract operator shall prepare a Maintenance Plan to maintain the Facility and System Operations reliability, durability, and operability throughout the life of the service agreement. The Maintenance Plan is also linked with the Computerized Maintenance Management system. The service agreement should describe the facility and system areas to address.
- The contract operator shall prepare an Emergency Plan. The plan shall include Emergency Response coordination with local responders and employee training; along with Emergency

Action Plans that identifies potential hazards associated with the Facility and System Operations.

- The City and contract operator shall finalize the Staffing and Training Plan for the Facility and/or System Operations. The staffing plan should include an organizational chart along with employee training records and certifications. Regularly scheduled staff training shall be developed for the Facility and/or System Operations and should be relevant to the job functions.
- A Safety and Security Plan shall be prepared by the contract operator. The Security Plan may require City approval for surveillance features, access cards, etc. and the Safety Plan should include in-house safety programs.

Section 3: Economic Feasibility Assessment

The Economic Feasibility Assessment was prepared to examine the economic feasibility of the City moving to an operations management agreement for the Utility System. In detail, the purpose of this section within the report is: (1) to examine the financial feasibility of moving the Utility System to an operations management agreement given existing operating conditions; (2) perform an economic comparison of the three forms of operating conditions under review in order to determine the value of the cash flows associated with each operating condition; and (3) highlight specific financial and economic considerations that must be reviewed and understood by the City.

OVERVIEW

This section of the report presents the results of a comprehensive review and projection of revenues and revenue requirements (costs) associated with the three forms of operations management outlined herein. Revenue and revenue requirements are projected over a 30-year forecast period, recognizing the anticipated growth in the number of customers and water consumption patterns throughout the City. In addition, the analysis recognizes specific infrastructure requirements over the forecast period along with and certain transition related cost, as determined by Black & Veatch and the City collectively. The financial plan developed in support of each form of operations management provides the City with the ability to meet its current financial metrics and maintain its financial health over the forecast period.

This report was prepared for the City and is based on information not within the control of Black & Veatch. Black & Veatch has not been requested to make an independent analysis, to verify the information provided to us, or to render an independent judgment of the validity of the information provided by others. As such, Black & Veatch cannot, and does not, guarantee the accuracy thereof to the extent that such information, data, or opinions were based on information provided by others.

In conducting our analyses and in forming an opinion of the projection of future financial operations summarized herein, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the aforementioned analyses follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are believed to be appropriate for the purpose for which they are used. While Black & Veatch believes that the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur.

GENERAL ASSUMPTIONS

General assumptions utilized in the analyses of revenues and revenue requirements are summarized on the following pages. Any substantial differences between the assumptions and the actual occurrences may affect the indicated revenue increases and proposed changes presented in this report.

General Assumptions

General

- The Base Case form of operations management is assumed to be the current manner by which the City operates the Utility System.
- FY 2017 through FY 2046 is utilized as the forecast period to calculate the financial plans associated with the three forms of operations management.

Revenues

- Revenue projections are based on an annual customer growth rate of 0.5% over the forecast period.
- Projected water and sewer volumes of use are based on historical billed water and sewer volume per customer residing in specific customer classes. Use per customer is forecasted to remain stable at current levels over the forecast period.
- Other operating and non-operating revenue projected based on the aforementioned customer growth rate for applicable fees and earnings.
- The forecast of revenues are prepared and presented on a combined systems basis.
- The proposed revenue increases over the forecast period are the same for the financial forecasts associated with all three forms of operations management.
- An interest rate of 0.25% is utilized to calculate interest earning over the forecast period.

Operating and Maintenance Expenses

- Projected expenses associated with the operation of the water and sewer systems are adjusted for growth based on the escalation factors in Table 11.

Table 11: Escalation Factors

FACTOR	FORECAST PERIOD 2012-2016
Labor Escalation	3.000%
General Inflation	3.000%
Customer Growth (1)	0.500%
Materials & Supplies	4.000%
Electric/Fuel Factor	10.00%
Benefits Factor	5.000%

- With support and guidance from the City staff, Black & Veatch has included the associated operating cost related to a staffing adjustment. The staffing adjustment is based on the City's assessment of the appropriate staffing levels necessary to operating the Utility System.
- Certain activities and tasks must be completed as a part of transitioning the organization to an operations management scenario. As such, the cost associated with certain transition activities

are forecasted and included in the financial forecast detailed for the respective operations management scenarios.

- Black & Veatch did not include an operations management fee in the forecast. The operations management fee is negotiated and includes varying factors that are dependent on the nature of service and risk associated with the agreement.

Major Capital Improvements

- Includes all capital improvements identified for the fiscal year 2017 through fiscal year 2021 and a forecast of capital spending through 2046 that is in line with current levels of capital spending.

Capital Improvement Financing

- Revenue Bonds are issued with 30-year terms, an average interest rate of 6.25 percent, and equal annual principal and interest payments.
- State Revolving Funds (SRF) are issued with 20-year terms, an average interest rate of 1.5%, and equal annual principal and interest payments. The City was successful in procuring a \$25.0 million SRF Loan with an interest rate of 1.5%.
- Bond issuance costs on all issuances are estimated to be 1 percent of the issue amount.
- All capital improvements will be financed through a combination of Revenue Bonds, SRF Loans, Renewal & Replacement Funds, Capital Improvement Fund monies, and funds from operations.
- The City intends to initiate its draw-down from the SRF related to its \$25.0 million loan starting in the fourth quarter of FY 2017 and the financial forecasts associated with the three operations management scenarios forecast the issuance of \$10.0 million in Revenue Bonds every three years starting FY 2020.

Other Expenditures

- The City currently funds certain renewal and replacement projects with cash from operations. On a system-wide basis, all renewal and replacement project, by functional area within the system will become the responsibility of the operator and these projects have been re-assigned to the operator's project list which is included in the CIP and funded through forecasted debt issuances.

Operating Cash Flow

- At beginning FY 2017, the Utility System is projected to have \$18.9 million in unrestricted fund balances and \$7.7 million in Capital Improvement Funds, as provided by the City.
- The results under the three operations management scenarios financial forecast include the utilization of Renewal and Replacement Funds and Funds from Operations. On annual average basis, the aforementioned financial forecast utilizes \$2.5 million in Renewal and Replacement Funds and \$3.6 million in Funds from Operations.
- Through the forecast period defined herein, the City's targets a minimum Utility System cash balance of 200 days by the end of the forecast period. Additionally, the Utility System targets a 1.20 in debt service coverage over the entire forecast period.

FORECAST OF REVENUES

The Utility System derives revenue primarily from charges for treated water and wastewater services along with other revenue sources which can include income associated with fees for billing, service charges, metering fees, connection fees, delinquent fees, and other miscellaneous revenue. For this analysis, the forecast of revenues over the forecast period is maintained and remains unaffected across the respective operations management scenarios. All the assumptions associated with forecasting revenues over the forecast period are maintained for all three operations management scenarios.

Customers and Growth

The analysis of the customer base indicates minimal growth in new customer connections to the Utility System over the forecast period. As a result, the forecast of customer growth is held at 0.50% annually over the forecast period. The Utility System serves six major customer classes; residential, apartment, mobile home, commercial, city, and the sprinkler customer class. At the beginning of FY 2017, the Utility System served about 19,300 water account and 33,500 water living units and this total forecasted to increase to 22,200 water accounts and 38,800 living units by the end of FY 2046. Additionally, the Utility System is forecasted to serve about 12,400 sewer accounts and 31,300 sewer living units and this total forecasted to increase to 14,400 sewer accounts and 36,200 sewer living units by the end of FY 2046.

As a part of the Utility Service Initiation, customers served in the residential, mobile home, and apartment customer classes are designated on the basis of a living unit. Residential properties or lots in and around the utility service area of North Miami, in some cases, have multiple residents living on one property, so in response to determining the magnitude of water and sewer service required, the level of water capacity to be available to this property and the total amounts of residences on the property are factors utilized by the City to designate the total amount of living units on the property. The living unit designation is intended to summarize the total actual amount of residences on a property and serve as the equivalent basis to provide service to a typically customer using a 3/4" water meter.

Forecast of Water and Sewer Flow

The sale of treated water and sewer services is projected to increase slightly over the forecast period. Over the past five (5) fiscal years, water utilities operating in the South Florida region of the United States have experienced significant drought conditions that have prompted the South Florida Water Management District (SFWMD) to issue specific water use mandates to promote the efficient use of water resources by the end user and preserve the regions existing water resources. As issues pertaining to water restrictions and conservation continue to be extremely important and target the implicit reduction in the requirements for water and sewer services, average customer usage is projected to remain fairly stable over the forecast period. As a result, the increase in customers over the forecast period is projected to be the primary influence the amount of potable water sales and billed sewer flow over the forecast period. The volume of water sales is projected to increase from 2,970,297 (thousand gallons) in 2017 to 3,432,541 (thousand gallons) in 2046. Additionally, billed sewer flow is projected to increase from 2,692,520 (thousand gallons) in 2017 to 3,111,356 (thousand gallons) in 2046.

Existing Water and Sewer Rate

As detailed above, the City serves six (6) primary customer classes, residential, apartments, mobile homes, commercial, city and sprinkler. The City renders water and sewer service respectively through an availability/base charge which is assessed for water and sewer service based on the size of a customer’s meter which is representative of the nature of service required by the customer. Additionally, a consumption/volume charge is assessed for water and sewer service which is based on the potable amount of potable water used by a customer and the billed sewer flow. Both the water and sewer consumption charge is assessed on a per thousand gallon basis.

By policy, the City provides water and sewer service to customer’s residing outside of the City’s primary service area. These customers are regarded as outside the City customers and a multiplier of 1.25 is assessed for all water and sewer service on a per utility bill basis.

Table 12 is a summary of the Water System Inside-City Monthly Base Charges.

Table 12: Water System Rates Inside City Customers Monthly Base Charge

METER SIZE (1)	CUSTOMER CLASSES						
	Residential (1) (per living unit) (Single Family)	Residential (1) (per living unit)	Apartments (1) (per living unit)	Mobile Homes (1)	Commercial	City	Sprinkler
3/4" Meter	\$12.51	\$12.51	\$12.51	\$12.51	\$12.51	\$12.51	\$12.51
1" Meter	\$12.51	\$24.20	\$12.51	\$24.20	\$24.20	\$24.20	\$24.20
1.5" Meter	\$12.51	\$59.34	\$12.51	\$59.34	\$59.34	\$59.34	\$59.34
2" Meter	\$12.51	\$147.20	\$12.51	\$147.20	\$147.20	\$147.20	\$147.20
2 (2)" Meter	\$12.51	\$147.20	\$12.51	\$147.20	\$147.20	\$147.20	\$147.20
3" Meter	\$12.51	\$264.29	\$12.51	\$264.29	\$264.29	\$264.29	\$264.29
4" Meter	\$12.51	\$527.75	\$12.51	\$527.75	\$527.75	\$527.75	\$527.75
6" Meter	\$12.51	\$996.31	\$12.51	\$996.31	\$996.31	\$996.31	\$996.31
8" Meter	\$12.51	\$1,757.51	\$12.51	\$1,757.51	\$1,757.51	\$1,757.51	\$1,757.51

Note:

1. Customers classified as Residential-Single Family, Apartments, and Mobile Homes a charged the same Month Base Charge per Meter Size. Additionally, service that is assessed on a Living Unit basis is charged at the ¾" Meter Base Charge of \$12.51 per month per living unit.

Table 13 provides a summary of the volumetric rates that are assessed to existing customers on a per customer class basis.

Table 13: Water System Rates Inside City Volumetric Rates

CUSTOMER CLASSES	USAGE BLOCKS				
	Units	Block 1 (Per 1,000 Gals.)	Block 2 (Per 1,000 Gals.)	Block 3 (Per 1,000 Gals.)	Block 4 (Per 1,000 Gals.)
Residential	\$	\$1.89	\$2.65	\$3.41	\$3.80
Usage Blocks	Gallons	0 – 5,000	5,001–12,000	12,001-20,000	Above 20,000
Apartment	\$	\$1.77	\$1.86	\$1.95	\$2.13
Usage Blocks	Gallons	0 – 2,000	2,001–4,000	4,001-7,000	Above 7,000
Mobile Homes	\$	\$1.82	\$2.63		
Usage Blocks	Gallons	0 - 295,000	Above 295,000		
Commercial	\$	\$1.72	\$2.29	\$2.59	\$3.45
Usage Blocks	Gallons	0 – 15,000	15,001–75,000	75,001 – 315,000	Above 315,000
Sprinkler	\$	\$3.49			
Usage Blocks	Gallons	All Usage			
City	\$	\$1.70	\$2.56	\$3.07	\$3.47
Usage Blocks	Gallons	0 – 60,000	60,001–405,000	405,001 – 780,000	Above 780,000

Table 14 provides a summary of the monthly base charges and the volumetric rates that are assessed to existing sewer customers.

Table 14: Sewer Monthly Base Charge and Volumetric Rates

CUSTOMER CLASS	INSIDE CITY
Base Charge	
Residential (per living unit)	\$16.88
Apartment (per living unit)	\$16.88
Mobile Home (per living unit)	\$16.88
Base Charge All Other Customers:	
3/4" Meter	\$16.88
1" Meter	\$32.65
1.5" Meter	\$80.07
2" Meter	\$198.61
2 (2)" Meter	\$198.61
3" Meter	\$356.60
4" Meter	\$712.10
6" Meter	\$1,344.31
8" Meter	\$2,371.38
Volumetric Rate (Per 1,000 Gals.)	
All Usage	\$4.41

Water and Sewer Revenues

The projection of water and sewer sales revenue under existing rates is based on estimates of the number of utility bills rendered, the average consumption per bill, and the historical distribution of the percentage of consumption sold in each customer class. In addition, volumetric charge revenues are based on water and sewer flow respectively. The City generates availability charge revenues for water and sewer service. The combination of these two sources of revenues make-up the water and sewer system’s user rate revenues. Additionally, the City generates revenues from other sources which include other operating revenues, non-operating revenues, and interest income.

For the purpose of this analysis, the revenues generated by the Utility System will not be impacted by the form and nature of any operations management agreement. As such, the revenues generated by the Utility System will remain constant across the operations management scenarios. Proposed revenue increases will be determined for the Utility System on an annual basis and the revenues associated with the revenue increases will be utilized across all the operations management scenarios. The existing revenues are forecasted to grow from \$34,750,606 in 2017 to \$40,550,376 in 2046.

Table 15 provides a summary of the existing combined systems revenues.

Table 15: Combined System Projected Revenue under Existing Rates

YEAR	USER RATE REVENUES	OTHER REVENUES	TOTAL SYSTEM
2017	\$32,450,365	\$2,300,242	\$34,750,606
2018	\$32,612,616	\$2,323,244	\$34,935,861
2019	\$32,775,679	\$2,346,477	\$35,122,156
2020	\$32,939,558	\$2,369,941	\$35,309,499
2021	\$33,104,256	\$2,393,641	\$35,497,897
2022	\$33,269,777	\$2,417,577	\$35,687,354
2023	\$33,436,126	\$2,441,753	\$35,877,879
2024	\$33,603,306	\$2,466,171	\$36,069,477
2025	\$33,771,323	\$2,490,832	\$36,262,155
2026	\$33,940,180	\$2,515,741	\$36,455,920
2027	\$34,109,881	\$2,540,898	\$36,650,778
2028	\$34,280,430	\$2,566,307	\$36,846,737
2029	\$34,451,832	\$2,591,970	\$37,043,802
2030	\$34,624,091	\$2,617,890	\$37,241,981
2031	\$34,796,350	\$2,643,809	\$37,440,160
2032	\$34,969,467	\$2,669,986	\$37,639,452
2033	\$35,143,444	\$2,696,421	\$37,839,865
2034	\$35,318,287	\$2,723,119	\$38,041,406
2035	\$35,494,000	\$2,750,080	\$38,244,080
2036	\$35,670,587	\$2,777,309	\$38,447,896
2037	\$35,848,053	\$2,804,807	\$38,652,859
2038	\$36,026,401	\$2,832,577	\$38,858,978
2039	\$36,205,637	\$2,860,622	\$39,066,259
2040	\$36,385,764	\$2,888,945	\$39,274,710
2041	\$36,566,788	\$2,917,549	\$39,484,337
2042	\$36,748,712	\$2,946,435	\$39,695,148
2042	\$36,931,542	\$2,975,608	\$39,907,150
2044	\$37,115,281	\$3,005,069	\$40,120,350
2045	\$37,299,934	\$3,034,823	\$40,334,757
2046	\$37,485,506	\$3,064,870	\$40,550,376

Note:

2. All revenues are stated on a combined systems basis throughout the entirety of the analysis.
3. The forecast of existing revenues outlined is utilized for all scenarios detailed herein.

FORECAST OF REVENUE REQUIREMENTS

The system revenues that are required to fund the operations of the water and sewer system must be sufficient to meet the cash requirements of the respective operations. Such revenue requirements include: (1) operating and maintenance expenses; (2) debt service requirements, consisting of principal, interest, and any reserve fund payments on revenue bonds (3) and other expenditures and transfers. In addition, annual revenues need to be adequate to meet the debt service coverage requirements established by the bond ordinance applicable to existing and future revenue bond issues. Projections of cash requirements to meet these system expenditures for the forecast period along with the cash requirements associated with an operations management scenario is developed in this section.

Operating and Maintenance Expenses

Operating and maintenance expenses include the annual expenses associated with all the operating functions of the Utility System. These expenses include the annual salaries and wages of personnel, costs for material and supplies, fuel and electric power costs, and other costs such as employee benefits, insurance, and contract services. Projections of future operating and maintenance expenses are based on budget information provided by the City for FY 2017 and an analysis of current and anticipated operating conditions and trends. In recent years, operating and maintenance expenses have increased primarily due to the combined effects of inflation and rising fuel and energy prices

At the time the study was initiated, the City maintained 21 opened positions which needed to be filled in order to operate at appropriate staffing levels. As a part of the forecast of operating and maintenance expense, a complete forecast of operating and maintenance by Utility System function is utilized for the respective operations management scenarios. Table 16 is a list the existing open positions that are forecasted over the forecast period.

Table 16: Open Utility System Positions

LINE	JOB TITLE	POSITIONS
1	Assistant Public Works Director	1
2	Drafting Technician	1
3	Plant Operator	2
4	Distribution Staff	1
5	Collections Staff	2
6	Lift Station Workers	2
7	Plumber	1
8	Leak Detection Staff	2
9	Meter Readers	5
10	Billing Clerk	2
11	Liens Clerk	1
12	Account Clerk (Return Check)	1

Note:

1. The positions detailed above represent the total number of positions outlined by the City staff that must be filled immediately.

As a part of the analysis of the respective operations management scenarios, specific transition related activities and tasks that must be completed to appropriately engage and initiate a third party operator. As mentioned in previous sections, the cost of these actions by Utility System function is included in the forecast of operations and maintenance across each operations management scenario.

Table 17 lists the forecast of operations and maintenance expense per operations management scenario over the forecast period.

Table 17: Forecast of Operations and Maintenance Expense

YEAR	SCENARIO 1	SCENARIO 2	SCENARIO 3
2017	\$ 28,486,423	\$ 28,683,759	\$ 28,858,646
2018	\$ 29,680,525	\$ 30,943,956	\$ 31,484,355
2019	\$ 30,930,654	\$ 31,943,269	\$ 32,499,880
2020	\$ 32,239,697	\$ 33,282,691	\$ 33,856,000
2021	\$ 33,610,710	\$ 34,684,994	\$ 35,275,502
2022	\$ 35,046,927	\$ 36,153,439	\$ 36,761,663
2023	\$ 36,551,770	\$ 37,691,478	\$ 38,317,948
2024	\$ 38,128,867	\$ 39,302,766	\$ 39,948,030
2025	\$ 39,782,061	\$ 40,991,177	\$ 41,655,799
2026	\$ 41,515,427	\$ 42,760,816	\$ 43,445,377
2027	\$ 43,333,286	\$ 44,616,037	\$ 45,321,135
2028	\$ 45,240,227	\$ 46,561,460	\$ 47,287,711
2029	\$ 47,241,120	\$ 48,601,990	\$ 49,350,029
2030	\$ 49,341,140	\$ 50,742,836	\$ 51,513,316
2031	\$ 51,545,786	\$ 52,989,533	\$ 53,783,127
2032	\$ 53,860,907	\$ 55,347,967	\$ 56,165,369
2033	\$ 56,292,728	\$ 57,824,399	\$ 58,666,323
2034	\$ 58,847,873	\$ 60,425,494	\$ 61,292,676
2035	\$ 61,533,399	\$ 63,158,349	\$ 64,051,547
2036	\$ 64,356,829	\$ 66,030,527	\$ 66,950,521
2037	\$ 67,326,182	\$ 69,050,092	\$ 69,997,685
2038	\$ 70,450,017	\$ 72,225,644	\$ 73,201,665
2039	\$ 73,737,470	\$ 75,566,366	\$ 76,571,667
2040	\$ 77,198,300	\$ 79,082,063	\$ 80,117,524
2041	\$ 80,842,940	\$ 82,783,216	\$ 83,849,740
2042	\$ 84,682,544	\$ 86,681,028	\$ 87,779,548
2042	\$ 88,729,050	\$ 90,787,488	\$ 91,918,964
2044	\$ 92,995,240	\$ 95,115,431	\$ 96,280,851
2045	\$ 97,494,808	\$ 99,678,605	\$ 100,878,987
2046	\$ 102,242,433	\$ 104,491,745	\$ 105,728,138

Note:

1. All revenues are stated on a combined systems basis throughout the entirety of the analysis.
2. The forecast of operations and maintenance expense per management scenario does not include the requisite third party management fee.

Debt Service

The estimated debt service obligations forecasted for the entire Utility System is utilized using information retained from bond obligations provided by the City for the forecast period. In addition, the forecast of proposed debt is based on the proposed financing plan and the aggregated share of debt over the forecast period. Table 18 summarizes the debt service obligations on outstanding and proposed debt for the forecast period.

Table 18: Debt Service Obligations on Outstanding Debt

YEAR	DEBT SERVICE OBLIGATIONS
2017	\$ -
2018	\$ 1,456,143
2019	\$ 1,456,143
2020	\$ 1,781,401
2021	\$ 2,106,658
2022	\$ 2,106,658
2023	\$ 2,431,915
2024	\$ 2,757,172
2025	\$ 2,757,172
2026	\$ 3,082,429
2027	\$ 3,407,686
2028	\$ 3,407,686
2029	\$ 3,732,944
2030	\$ 4,058,201
2031	\$ 4,058,201
2032	\$ 4,383,458
2033	\$ 4,708,715
2034	\$ 4,708,715
2035	\$ 5,033,972
2036	\$ 5,359,230
2037	\$ 5,359,230
2038	\$ 4,228,343
2039	\$ 4,553,600
2040	\$ 4,553,600
2041	\$ 4,878,858
2041	\$ 5,204,115

2043	\$ 5,204,115
2044	\$ 5,529,372
2045	\$ 5,366,743
2046	\$ 5,204,115

Other Expenditures & Transfers

Other expenditures and transfers include costs that are incurred by the Utility System after the fulfillment of operating and maintenance and debt service obligations from Utility System revenues. These costs are typically funded by cash from operations and any other unrestricted sources of funds that may be available to the City.

The City’s current forecast of other expenditures and transfers include four (4) distinct categories which include: renewal and replacement projects, transfers to the general fund, transfers to the pension fund, and reserves for employee benefits.

Renewal and replacement projects are funded based on a City established level of re-investment that must be made within the Utility System. The level of the re-investment is based on 6.0% of the current value of existing assets over the forecast period. Based on the previously described operations management scenarios, the amount of the City’s portion of the annual re-investment will vary with each operations management scenario. Additionally, the functional areas within the City that will be under the management of an operator will maintain the existing level of renewal and replacement projects, but these projects will reside on the operator’s capital expenditure project list. In short, the City will not directly fund these projects with cash from operations.

Transfers to the general fund, transfers to the pension fund, and reserves for employee benefits are direct transfers established by City policy and these cost expenditures will remain consistent over the forecast period.

Table 19 shows the annual expenditures and transfer totals for the water system.

Table 19: Projected Other Expenditures and Transfers

YEAR	SCENARIO 1	SCENARIO 2	SCENARIO 3
2017	\$ 5,130,167	\$ 4,954,507	\$ 4,300,855
2018	\$ 5,277,620	\$ 5,096,691	\$ 4,423,429
2019	\$ 5,429,497	\$ 5,243,140	\$ 4,549,680
2020	\$ 5,585,930	\$ 5,393,982	\$ 4,679,719
2021	\$ 5,747,057	\$ 5,549,350	\$ 4,813,659
2022	\$ 5,913,017	\$ 5,709,379	\$ 4,951,617
2023	\$ 6,083,956	\$ 5,874,209	\$ 5,093,714
2024	\$ 6,260,023	\$ 6,043,983	\$ 5,240,074
2025	\$ 6,441,372	\$ 6,218,851	\$ 5,390,824
2026	\$ 6,628,161	\$ 6,398,965	\$ 5,546,097
2027	\$ 6,820,555	\$ 6,584,482	\$ 5,706,029
2028	\$ 7,018,720	\$ 6,775,565	\$ 5,870,758
2029	\$ 7,222,830	\$ 6,972,381	\$ 6,040,429
2030	\$ 7,433,063	\$ 7,175,100	\$ 6,215,190
2031	\$ 7,645,957	\$ 7,380,256	\$ 6,391,548
2032	\$ 7,862,391	\$ 7,591,460	\$ 6,573,091
2033	\$ 8,085,129	\$ 7,808,890	\$ 6,759,971
2034	\$ 8,314,355	\$ 8,032,731	\$ 6,952,344
2035	\$ 8,550,257	\$ 8,263,172	\$ 7,150,373
2036	\$ 8,793,030	\$ 8,500,407	\$ 7,354,224
2037	\$ 9,042,873	\$ 8,744,636	\$ 7,564,067
2038	\$ 9,299,994	\$ 8,996,066	\$ 7,780,080
2039	\$ 9,564,604	\$ 9,254,908	\$ 8,002,444
2040	\$ 9,836,921	\$ 9,521,383	\$ 8,231,344
2041	\$ 10,117,170	\$ 9,795,714	\$ 8,466,974
2042	\$ 10,405,581	\$ 10,078,134	\$ 8,709,532
2042	\$ 10,702,392	\$ 10,368,881	\$ 8,959,221
2044	\$ 11,007,849	\$ 10,668,200	\$ 9,216,250
2045	\$ 11,322,202	\$ 10,976,345	\$ 9,480,836
2046	\$ 11,645,711	\$ 11,293,575	\$ 9,753,201

Major Capital Improvement

A summary of the Utility System capital improvements over the forecast period is shown in Table 20. The estimated cost of these improvements is \$306.9 million over the forecast period.

The capital improvement projects in Table 20 were identified based on future needs and current regulatory mandates. Additional projects may also be required to meet current regulatory regulations. The nature and magnitude of these potential projects is not known, but should they be required, additional financing beyond that indicated herein will be required.

The cost of the scheduled major capital improvements are expected to be financed from existing fund balances, annual operating revenues, and debt.

Table 20: Capital Improvement Projects

DESCRIPTION	TOTAL PROJECTS
Water Projects	\$196,425,900
Sewer Projects	\$110,490,200
Total System Projects	\$306,916,200

Note:

1. The total system projects represent the total Utility System projects, by system, that are currently planned over the forecast period.

Projected Operating Results

The project operating results provide a summary comparison of the total Utility System revenues against the respective revenue requirements. Total revenue requirements, including operating and maintenance expense, debt service obligations, and other expenditures and transfers are forecasted to increase in excess of the forecasted revenue under existing rates that will be generated from the Utility System. As a result, proposed revenue increases are required over the forecast period to meet the City’s obligations as a result of an operations management scenario.

Table 21 provides a summary of the proposed annual combined systems revenue increases.

Table 21: Proposed Revenue Increases

YEAR	REVENUE INCREASES
2017	0.00%
2018	8.00%
2019	5.00%
2020	5.00%
2021	5.00%
2022	5.00%
2023	4.00%
2024	4.00%
2025	4.00%
2026	4.00%
2027	4.00%
2028	4.00%
2029	4.00%
2030	4.00%
2031	4.00%
2032	4.00%
2033	4.00%
2034	4.00%
2035	4.00%
2036	4.00%
2037	4.00%
2038	4.00%
2039	4.00%
2040	3.75%
2041	3.75%
2041	3.75%
2043	3.75%
2044	3.75%
2045	3.75%
2046	3.75%

As detailed in Table 21, the proposed revenues increases range from a high of 8.00% in FY 2018 to a low of 3.75% by the end of the forecast period. As detailed in the forecast of annual operating cost, the outlined revenue increase will support some of minimum transition and integration requirements associated with the City procuring and hiring a third party operator. The addition of the required third party management fee components and additional capital and other projects identified as a part of a Utility System conditions assessment will increase the cost requirements to be supported by the revenue increases detailed above.

The proposed financial plan detailed per operations management scenario allows the City to meet its policy established financial metrics which include a 1.20 in debt service coverage and 180 days in fund balance at a minimum by the end of the forecast period.

Tables 22, 23, 24 provide a summary of the project operating results associated with each operations management scenario.

Table 22: Projected Operating Results - Scenario 1 (Base Case)

YEAR	REVENUES	OPERATIONS & MAINTENANCE	DEBT OBLIGATIONS	OTHER EXPENDITURES	ANNUAL OPERATING BALANCE
2017	\$ 34,750,606	\$ 28,486,423	\$ -	\$ 5,130,167	\$ 1,134,017
2018	\$ 37,544,870	\$ 29,680,525	\$ 1,456,143	\$ 5,277,620	\$ 1,130,581
2019	\$ 39,514,097	\$ 30,930,654	\$ 1,456,143	\$ 5,429,497	\$ 1,697,803
2020	\$ 41,591,073	\$ 32,239,697	\$ 1,781,401	\$ 5,585,930	\$ 1,984,045
2021	\$ 43,781,740	\$ 33,610,710	\$ 2,106,658	\$ 5,747,057	\$ 2,317,315
2022	\$ 46,092,369	\$ 35,046,927	\$ 2,106,658	\$ 5,913,017	\$ 3,025,768
2023	\$ 48,090,645	\$ 36,551,770	\$ 2,431,915	\$ 6,083,956	\$ 3,023,005
2024	\$ 50,178,393	\$ 38,128,867	\$ 2,757,172	\$ 6,260,023	\$ 3,032,331
2025	\$ 52,359,647	\$ 39,782,061	\$ 2,757,172	\$ 6,441,372	\$ 3,379,042
2026	\$ 54,638,626	\$ 41,515,427	\$ 3,082,429	\$ 6,628,161	\$ 3,412,608
2027	\$ 57,019,737	\$ 43,333,286	\$ 3,407,686	\$ 6,820,555	\$ 3,458,210
2028	\$ 59,507,590	\$ 45,240,227	\$ 3,407,686	\$ 7,018,720	\$ 3,840,957
2029	\$ 62,106,999	\$ 47,241,120	\$ 3,732,944	\$ 7,222,830	\$ 3,910,106
2030	\$ 64,822,998	\$ 49,341,140	\$ 4,058,201	\$ 7,433,063	\$ 3,990,595
2031	\$ 67,658,979	\$ 51,545,786	\$ 4,058,201	\$ 7,645,957	\$ 4,409,036
2032	\$ 70,622,159	\$ 53,860,907	\$ 4,383,458	\$ 7,862,391	\$ 4,515,403
2033	\$ 73,718,275	\$ 56,292,728	\$ 4,708,715	\$ 8,085,129	\$ 4,631,703
2034	\$ 76,953,323	\$ 58,847,873	\$ 4,708,715	\$ 8,314,355	\$ 5,082,380
2035	\$ 80,333,569	\$ 61,533,399	\$ 5,033,972	\$ 8,550,257	\$ 5,215,941
2036	\$ 83,865,564	\$ 64,356,829	\$ 5,359,230	\$ 8,793,030	\$ 5,356,477
2037	\$ 87,556,154	\$ 67,326,182	\$ 5,359,230	\$ 9,042,873	\$ 5,827,869
2038	\$ 91,412,492	\$ 70,450,017	\$ 4,228,343	\$ 9,299,994	\$ 7,434,138
2039	\$ 95,442,058	\$ 73,737,470	\$ 4,553,600	\$ 9,564,604	\$ 7,586,383
2040	\$ 99,420,062	\$ 77,198,300	\$ 4,553,600	\$ 9,836,921	\$ 7,831,240
2041	\$ 103,566,846	\$ 80,842,940	\$ 4,878,858	\$ 10,117,170	\$ 7,727,879
2042	\$ 107,889,602	\$ 84,682,544	\$ 5,204,115	\$ 10,405,581	\$ 7,597,362
2042	\$ 112,395,827	\$ 88,729,050	\$ 5,204,115	\$ 10,702,392	\$ 7,760,270
2044	\$ 117,093,341	\$ 92,995,240	\$ 5,529,372	\$ 11,007,849	\$ 7,560,880
2045	\$ 121,990,292	\$ 97,494,808	\$ 5,366,743	\$ 11,322,202	\$ 7,806,539
2046	\$ 127,095,182	\$ 102,242,433	\$ 5,204,115	\$ 11,645,711	\$ 8,002,922

Table 23: Projected Operating Results - Scenario 2 (Partial Management Agreement)

YEAR	REVENUES	OPERATIONS & MAINTENANCE	DEBT OBLIGATIONS	OTHER EXPENDITURES	OPERATING BALANCE
2017	\$ 34,750,606	\$ 28,683,759	\$ -	\$ 4,954,507	\$ 1,112,340
2018	\$ 37,544,870	\$ 30,943,956	\$ 1,456,143	\$ 5,096,691	\$ 48,080
2019	\$ 39,514,097	\$ 31,943,269	\$ 1,456,143	\$ 5,243,140	\$ 871,545
2020	\$ 41,591,073	\$ 33,282,691	\$ 1,781,401	\$ 5,393,982	\$ 1,132,999
2021	\$ 43,781,740	\$ 34,684,994	\$ 2,106,658	\$ 5,549,350	\$ 1,440,738
2022	\$ 46,092,369	\$ 36,153,439	\$ 2,106,658	\$ 5,709,379	\$ 2,122,893
2023	\$ 48,090,645	\$ 37,691,478	\$ 2,431,915	\$ 5,874,209	\$ 2,093,044
2024	\$ 50,178,393	\$ 39,302,766	\$ 2,757,172	\$ 6,043,983	\$ 2,074,471
2025	\$ 52,359,647	\$ 40,991,177	\$ 2,757,172	\$ 6,218,851	\$ 2,392,447
2026	\$ 54,638,626	\$ 42,760,816	\$ 3,082,429	\$ 6,398,965	\$ 2,396,415
2027	\$ 57,019,737	\$ 44,616,037	\$ 3,407,686	\$ 6,584,482	\$ 2,411,531
2028	\$ 59,507,590	\$ 46,561,460	\$ 3,407,686	\$ 6,775,565	\$ 2,762,878
2029	\$ 62,106,999	\$ 48,601,990	\$ 3,732,944	\$ 6,972,381	\$ 2,799,684
2030	\$ 64,822,998	\$ 50,742,836	\$ 4,058,201	\$ 7,175,100	\$ 2,846,861
2031	\$ 67,658,979	\$ 52,989,533	\$ 4,058,201	\$ 7,380,256	\$ 3,230,989
2032	\$ 70,622,159	\$ 55,347,967	\$ 4,383,458	\$ 7,591,460	\$ 3,299,274
2033	\$ 73,718,275	\$ 57,824,399	\$ 4,708,715	\$ 7,808,890	\$ 3,376,270
2034	\$ 76,953,323	\$ 60,425,494	\$ 4,708,715	\$ 8,032,731	\$ 3,786,382
2035	\$ 80,333,569	\$ 63,158,349	\$ 5,033,972	\$ 8,263,172	\$ 3,878,075
2036	\$ 83,865,564	\$ 66,030,527	\$ 5,359,230	\$ 8,500,407	\$ 3,975,401
2037	\$ 87,556,154	\$ 69,050,092	\$ 5,359,230	\$ 8,744,636	\$ 4,402,197
2038	\$ 91,412,492	\$ 72,225,644	\$ 4,228,343	\$ 8,996,066	\$ 5,962,439
2039	\$ 95,442,058	\$ 75,566,366	\$ 4,553,600	\$ 9,254,908	\$ 6,067,183
2040	\$ 99,420,062	\$ 79,082,063	\$ 4,553,600	\$ 9,521,383	\$ 6,263,015
2041	\$ 103,566,846	\$ 82,783,216	\$ 4,878,858	\$ 9,795,714	\$ 6,109,058
2042	\$ 107,889,602	\$ 86,681,028	\$ 5,204,115	\$ 10,078,134	\$ 5,926,325
2042	\$ 112,395,827	\$ 90,787,488	\$ 5,204,115	\$ 10,368,881	\$ 6,035,344
2044	\$ 117,093,341	\$ 95,115,431	\$ 5,529,372	\$ 10,668,200	\$ 5,780,337
2045	\$ 121,990,292	\$ 99,678,605	\$ 5,366,743	\$ 10,976,345	\$ 5,968,599
2046	\$ 127,095,182	\$ 104,491,745	\$ 5,204,115	\$ 11,293,575	\$ 6,105,747

Table 24: Projected Operating Results - Scenario 3 (Complete Management Agreement)

YEAR	REVENUES	OPERATIONS & MAINTENANCE	DEBT OBLIGATIONS	OTHER EXPENDITURES	OPERATING BALANCE
2017	\$ 34,750,606	\$ 28,858,646	\$ -	\$ 4,300,855	\$ 1,591,106
2018	\$ 37,544,870	\$ 31,484,355	\$ 1,456,143	\$ 4,423,429	\$ 180,943
2019	\$ 39,514,097	\$ 32,499,880	\$ 1,456,143	\$ 4,549,680	\$ 1,008,393
2020	\$ 41,591,073	\$ 33,856,000	\$ 1,781,401	\$ 4,679,719	\$ 1,273,953
2021	\$ 43,781,740	\$ 35,275,502	\$ 2,106,658	\$ 4,813,659	\$ 1,585,921
2022	\$ 46,092,369	\$ 36,761,663	\$ 2,106,658	\$ 4,951,617	\$ 2,272,432
2023	\$ 48,090,645	\$ 38,317,948	\$ 2,431,915	\$ 5,093,714	\$ 2,247,068
2024	\$ 50,178,393	\$ 39,948,030	\$ 2,757,172	\$ 5,240,074	\$ 2,233,116
2025	\$ 52,359,647	\$ 41,655,799	\$ 2,757,172	\$ 5,390,824	\$ 2,555,851
2026	\$ 54,638,626	\$ 43,445,377	\$ 3,082,429	\$ 5,546,097	\$ 2,564,722
2027	\$ 57,019,737	\$ 45,321,135	\$ 3,407,686	\$ 5,706,029	\$ 2,584,887
2028	\$ 59,507,590	\$ 47,287,711	\$ 3,407,686	\$ 5,870,758	\$ 2,941,434
2029	\$ 62,106,999	\$ 49,350,029	\$ 3,732,944	\$ 6,040,429	\$ 2,983,597
2030	\$ 64,822,998	\$ 51,513,316	\$ 4,058,201	\$ 6,215,190	\$ 3,036,291
2031	\$ 67,658,979	\$ 53,783,127	\$ 4,058,201	\$ 6,391,548	\$ 3,426,103
2032	\$ 70,622,159	\$ 56,165,369	\$ 4,383,458	\$ 6,573,091	\$ 3,500,421
2033	\$ 73,718,275	\$ 58,666,323	\$ 4,708,715	\$ 6,759,971	\$ 3,583,266
2034	\$ 76,953,323	\$ 61,292,676	\$ 4,708,715	\$ 6,952,344	\$ 3,999,587
2035	\$ 80,333,569	\$ 64,051,547	\$ 5,033,972	\$ 7,150,373	\$ 4,097,677
2036	\$ 83,865,564	\$ 66,950,521	\$ 5,359,230	\$ 7,354,224	\$ 4,201,590
2037	\$ 87,556,154	\$ 69,997,685	\$ 5,359,230	\$ 7,564,067	\$ 4,635,172
2038	\$ 91,412,492	\$ 73,201,665	\$ 4,228,343	\$ 7,780,080	\$ 6,202,404
2039	\$ 95,442,058	\$ 76,571,667	\$ 4,553,600	\$ 8,002,444	\$ 6,314,347
2040	\$ 99,420,062	\$ 80,117,524	\$ 4,553,600	\$ 8,231,344	\$ 6,517,593
2041	\$ 103,566,846	\$ 83,849,740	\$ 4,878,858	\$ 8,466,974	\$ 6,371,274
2042	\$ 107,889,602	\$ 87,779,548	\$ 5,204,115	\$ 8,709,532	\$ 6,196,407
2042	\$ 112,395,827	\$ 91,918,964	\$ 5,204,115	\$ 8,959,221	\$ 6,313,528
2044	\$ 117,093,341	\$ 96,280,851	\$ 5,529,372	\$ 9,216,250	\$ 6,066,867
2045	\$ 121,990,292	\$ 100,878,987	\$ 5,366,743	\$ 9,480,836	\$ 6,263,725
2046	\$ 127,095,182	\$ 105,728,138	\$ 5,204,115	\$ 9,753,201	\$ 6,409,727

Table 25 below presents a summary of the achieved debt service coverage per operations management scenario.

Table 25: Summary of Debt Service Coverage per Operations Management Scenario

YEAR	SCENARIO 1	SCENARIO 2	SCENARIO 3
2017 (1)	n/a	n/a	n/a
2018	5.40	4.53	4.16
2019	5.89	5.20	4.82
2020	5.25	4.66	4.34
2021	4.83	4.32	4.04
2022	5.24	4.72	4.43
2023	4.74	4.28	4.02
2024	4.37	3.94	3.71
2025	4.56	4.12	3.88
2026	4.26	3.85	3.63
2027	4.02	3.64	3.43
2028	4.19	3.80	3.59
2029	3.98	3.62	3.42
2030	3.81	3.47	3.28
2031	3.97	3.61	3.42
2032	3.82	3.48	3.30
2033	3.70	3.38	3.20
2034	3.85	3.51	3.33
2035	3.73	3.41	3.23
2036	3.64	3.33	3.16
2037	3.77	3.45	3.28
2038	4.96	4.54	4.31
2039	4.77	4.36	4.14
2040	4.88	4.47	4.24
2041	4.66	4.26	4.04
2042	4.46	4.08	3.86
2042	4.55	4.15	3.93
2044	4.36	3.97	3.76
2045	4.56	4.16	3.93
2046	4.78	4.34	4.11

Note:

1. As of FY 2017, the City does not have any debt service obligations and is not forecasted to tender any debt service.

Based on the financial feasibility results for the three scenarios detailed herein, Scenario 2 produces the lowest operating balance by the end of the forecast period. As estimated in FY 2017, Scenario 2 is forecasted to produce an operating balance of \$1.1 million and this total will increase to \$5.8 million by the end of FY 2046. Additionally, Scenario 3 is estimated to produce an operating balance of \$1.6 million in FY 2017 and this total is estimated to grow to \$6.4 million by the end of FY 2046. The results of Scenario 2 and Scenario 3 are detailed in Tables 23 and 24 respectively. When comparing all three scenarios, Scenario 1 produces positive operating results over the forecast period. As detailed in Table 22, Scenario 3 produces an operating balance of \$1.6 million in FY 2017 and this total is forecasted to grow to \$8.0 by the end of FY 2046. As detailed in Table 25, all the scenarios detailed herein meet the target debt service ratio of a 1.20 over the forecast period.

While Scenario 2 & 3 produces positive operating balances, there are a few limiting conditions that must be understood as a part of deciphering these results. The City must complete a Utility System conditions assessment to determine the current state of all assets and the associated cost to maintain, repair, and operate these assets. Additionally, certain cost saving economies may be available to the City, but Black & Veatch has not conducted any analysis to determine certain operating and other cost savings that may be available to the City. Finally, the procurement and ratification of an operations management agreement will include an operator management fee which will be added to the cost to operate detailed in Tables 23 and 24.

ECONOMIC FEASIBILITY ANALYSIS RESULTS

Black & Veatch performed an economic feasibility analysis to outline a comparative basis for showing the project operating results associated with the operations management scenarios under consideration. The approach used is shown in Figure 3 and represents the economic feasibility analysis approach.

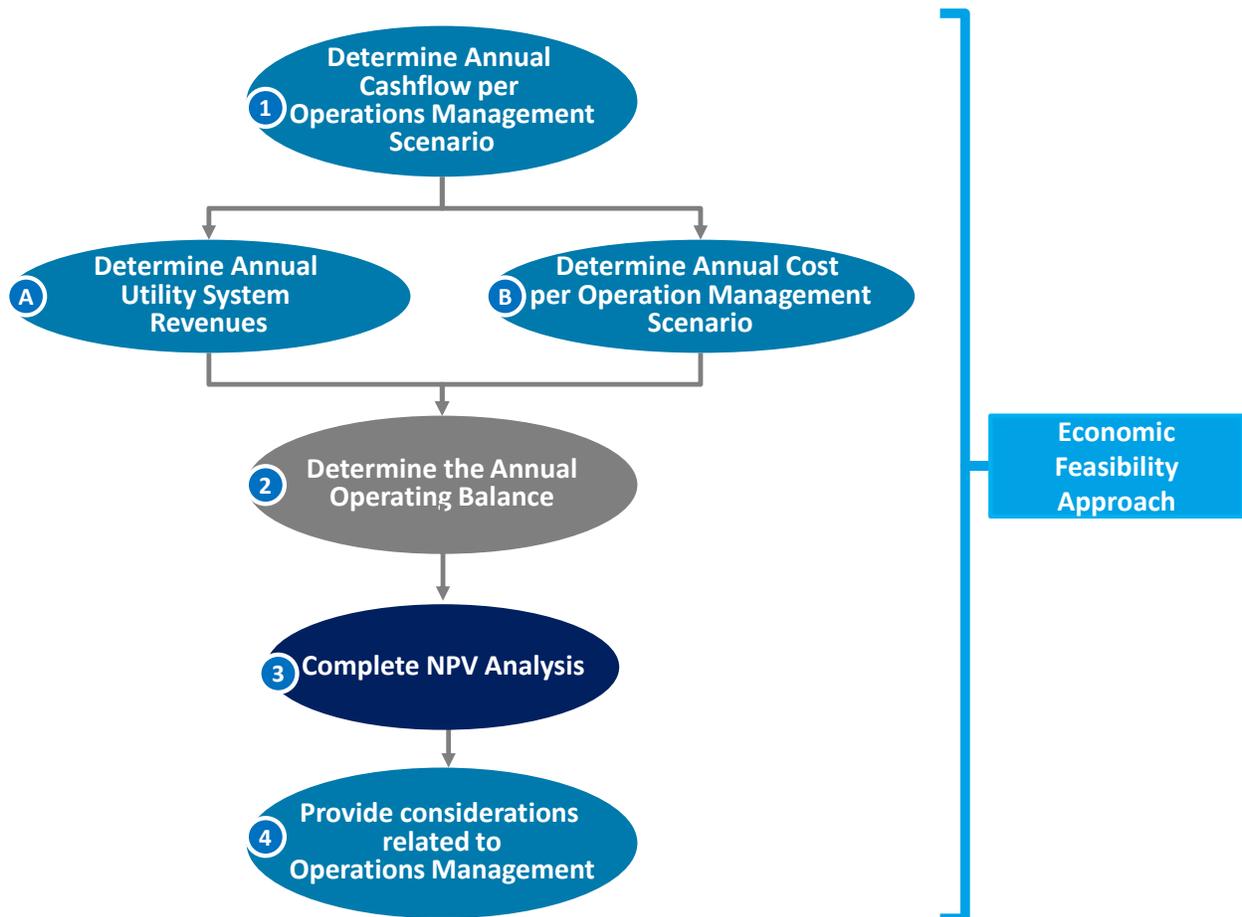


Figure 3: Economic Feasibility Approach Flow Diagram

ECONOMIC FEASIBILITY APPROACH

Provided below is a brief description of each step associated with the economic feasibility approach outlined in Figure 3.

1. **Determine Annual Cash Flows per Operations Management Scenario:** Determine the cash flow, revenue and expenses, associated with the operations management scenario over the forecast period.
2. **Determine Annual Operating Balance per Operations Management Scenario:** Determine and document the annual revenue surplus or shortfall as a result of meeting the annual cost to operate associated with each management scenario.

3. **NPV Analysis:** Discount the annual cash flows per Operations Management Scenario to current-day dollars based on the Utility’s existing cost of borrowing. At the conclusion of this analysis, the Net Present Value (NPV) is determined based on each operations management scenario.
4. **Provide Consideration related to the Implementation of an Operations Management Scenario:** Provide basic considerations around the economic feasibility of the operations management scenarios under consideration.

Discounted Cash Flow

Black & Veatch has performed the economic feasibility analyses and developed an estimate, utilizing a discounted cash flow methodology (DCF). DCF is a commonly accepted methodology in performing economic analyses. A DCF analysis discounts the value of future cash flows in current dollars recognizing the time value of money that a dollar today is worth more than a dollar in the future. A discount rate of 6.0% was used in the DCF calculation presented below:

$$DCF = (Cash\ Flow\ 1) / ((1 + Discount\ Rate)^1) + (CF\ 2) / ((1 + DR)^2) + (CF\ 3) / ((1 + DR)^3) + \dots$$

The DCF analysis identifies the value of future cash flows generated under each operations management scenario. Cash flow is defined as the total available cash generated annually from operations or positive cash flows (total Utility System revenues) less the cost of operating the Utility System annually under each operations management scenario. Upon discounting all the future projected cash flows, a value for this cash flow is determined and called the Net Present Value (NPV).

Net Present Value

NPV is the process of returning future cash flow values to current dollars to determine the current worth of those future cash flows. The NPV serves as a good point estimate to compare the financial conditions associated with each operations management scenario. A positive NPV serves as an indication of the positive impact of the operations management scenario based on current dollars. Conversely, a negative NPV indicates that the operations management scenario will provide a negative future cash flow streams because the costs to implement and operate are greater than the economic benefits achieved.

Net Present Value Comparison

The NPV comparison will detail the actual NPV results of the scenarios under consideration. The NPV results will detail the ability of revenues associated with each scenario to meet annual requirements over the forecast period in current dollars. Current dollars is understood to be the value of money based on the current market, economic, and financing conditions.

As demonstrated in the previous section, all three scenarios produce positive operating balance which indicates a positive NPV for all three scenarios. To calculate the NPV, Black & Veatch utilized an interest rate of 6.0% which is an indication of the existing cost of borrowing faced by the City. Additionally, the NPV analysis is conducted over the forecast period detailed herein.

Table 26 below provides a summary of the calculated NPV per operations management scenario utilizing the operating balances calculated in Tables 22, 23, and 24.

Table 26: Net Present Value Results

SCENARIOS	NPV
Scenario 1	\$53.7 million
Scenario 2	\$38.2 million
Scenario 3	\$40.7 million

Scenario 1 produces the most positive NPV results which serves as an indication that the cost to operate under Scenario 1 is less prohibitive, as compared to Scenario 2 and 3 respectively, based the revenue generated by the Utility System over the forecast period. As previously highlighted, the analysis detailed herein did not consider the additional cost differentials to operate and maintain the system that would be identified as a result of a conditions assessment, potential operating and other cost savings that could be achieve by the Utility System, and inclusion of the management fee associated with hiring a third party operator. The inclusion of the variables listed above will have an impact on the calculated NPV per Scenario as listed in Table 26.

Section 4: General Conclusion

As the City explore the potential of procuring a third party operator for the Utility System, certain detailed due diligence must be completed in order to determine the potential impact a third party operator may have on existing operations and the financial conditions of the Utility System. Listed below are general conclusions that are provided in two categories: Operations Management and Economic Feasibility. These conclusions must be considered as a part of the City assessing and determining the validity of a third party operator.

OPERATIONS MANAGEMENT

Provided below, in no particular order, are the general conclusions associated with the Operations Management Review:

1. The City must develop an optimized Water Supply Plan that delineates the mix of water produced by the City and water purchased from Miami-Dade County in order to clearly detail the City's Water Supply Plan for the immediate future and maximize the withdrawals limitations outlined in the City's CUP.
2. The City must work diligently and timely to fill critical management and other Utility System positions within the organization that remain unfilled.
3. The City must work to standardize and increase the consistency in providing maintenance related services across the Utility System.
4. The City must complete a detailed Utility System conditions assessment to determine the existing state of the Utility System assets. Additionally, the timing and duration of this assessment must be incorporated into the schedule associated with a potential operations management scenario.
5. The City must maintain an inventory of current Utility System assets and optimize existing maintenance plans in order to meet current and future anticipated operating conditions with the philosophy of increasing the rate by which the City implements preventative maintenance projects.
6. As a part of a potential Operating Management Agreement, the City must outline the intended roles, responsibility, and risks associated with a third party operating the Utility System.
7. As a part of a potential Operations Management Agreement, the City and the Operator must agree upon a staffing plan that affords the City the ability to maintain existing levels of service without interruption prior to, during, and after the transition to an Operator.
8. As a part of exploring a potential Operations Management Agreement, the City must review and update, as necessary, the existing Emergency Management Plan in order to educate perspective Operators on the existing emergency management practices of the Utility System.

9. Based on the risk management matrix provided in Table 10, the City must review and re-assess the likelihood and consequences associated with the risk observations and include these risk observations in the framework that will be utilized in assessing the validity of an Operations Management Agreement.
10. Upon deciding to pursue an Operations Management Agreement, the City must form an Operations Management Committee that should include the Operations Management Coordinator, participants from the major operating groups/divisions within the City, and the appropriate outside professional experts.

ECONOMIC FEASIBILITY

Provided below, in no particular order, are the general conclusions associated with the Economic Feasibility Review:

1. Prior to procuring a third party Operator, the City must identify and incorporate, in the Utility System Project Operating Results, the additional costs associated with maintaining and performing the necessary repairs to the Utility System as a result of the Utility System conditions assessment.
2. Prior to procuring a third party Operator, the City must perform the necessary due diligence to determine the operating and other cost savings that could be achieved as a result of an Operations Management Agreement.