# WIFIA Loan Application

# NMB Water Regional Potable Water Improvements Project

DRAFT

# Contents



**Appendix(es)**



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# Acronyms and Abbreviations

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# Applicant Information

## Background

*a. Describe the applicant's history, ownership, and legal structure (e.g., state governmental agency, local governmental agency, corporation, or partnership). Include a copy of the statutory authority under which the entity was created as part of Exhibit I, if applicable.*
*b. Describe the legal authority of the applicant to carry out proposed project activities described in the application packet, including levying taxes, issuing debt, charging fees, and/or receiving dedicated funding from another entity. Provide documentation as part of Exhibit I.*
*c. Identify what governmental entities (other than the applicant) approved the submission of this application packet and must approve the funding of activities or the carrying out of activities in the application (other than permits). Provide documentation explaining the approval process as part of Exhibit I.*

The City of North Miami Beach, incorporated in 1931, is governed by a commission-manager system of local government. Its leadership is comprised of an elected Mayor, seven-member City Commission which includes the Mayor, and an appointed City Manager. The City Commission has the legal authority to issue debt and raise water billing rates as well as any other required dedicated funding. A copy of the statutory authority under which this entity was created is attached as Exhibit I.

NMB Water is a department of the City of North Miami Beach. NMB Water is counseled by a seven-member Public Utilities Commission, which acts as an advisory committee to the Mayor and City Commission regarding decisions on water utility rates, expansions, and expenditures. The City uses a water and sewer enterprise fund to account for NMB Water operations and capital improvements. NMB Water serves over 180,000 customers in five communities in Miami-Dade County. Water consumption is tracked using Advanced Metering Infrastructure (AMI) and billing occurs on a monthly cycle.

This application has been submitted with the approval of the City Commission. On September 26, 2019 the Commission authorized a rate increase of XX% in order to fund the revenue bond and WIFIA loan financial obligation associated with this project. A copy of this approval and the associated rate increases are included with Exhibit I.

## Organizational Structure

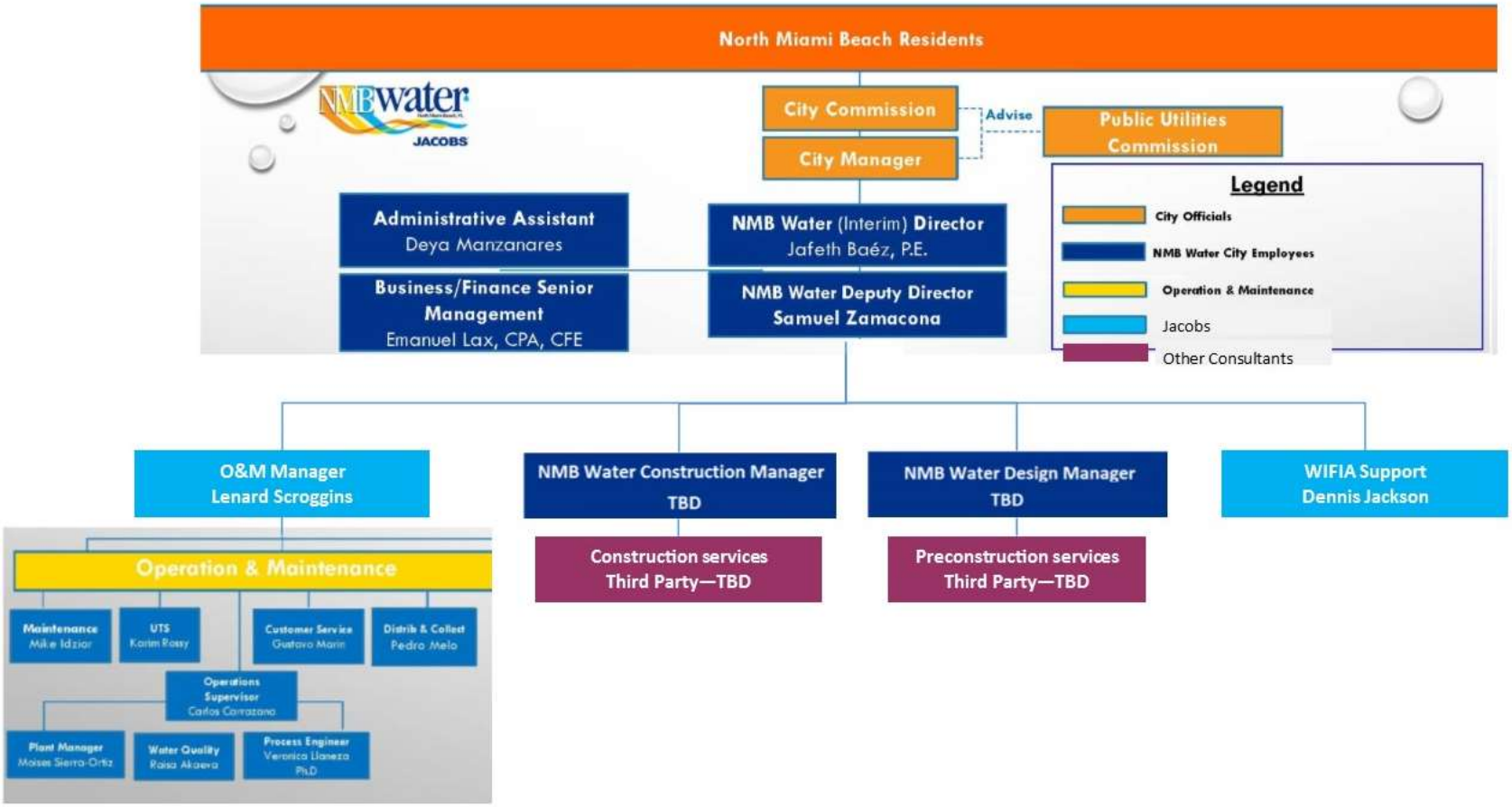
*a. Describe the applicant's organizational structure and the applicant's relationship to any subsidiaries or affiliates. Include the legal names of key principals and staff (e.g., project manager and chief financial officer) and any recent or proposed changes to the organizational structure.*
*b. Provide an organizational chart as Exhibit II, to include the major parties involved in planning, owning, financing, constructing, operating, and/or maintaining the project(s). Include the major service contractors that have been, or will be, retained for the project (e.g., architects, developers, engineers, attorneys, financial advisors and underwriters, environmental consultants). EPA may request additional documentation from major parties other than the applicant as part of the project evaluation and approval process.*

The organizational structure of NMB Water, shown in detail in the attached organizational chart, is led by the City Commission, City Manager, and NMB Water Director. Since the submission of the Letter of Interest the organization has undergone several changes, described below and shown in the updated organization chart on the next page.

NMB Water staff oversee the O&M and and Capital Improvement Programs for the water and wastewater systems and is currently transitioning staff members into management positions to oversee the design and construction activities.

The Jacobs Engineering Program Management Team, contracted by the City in 2017, developed the Capital Improvement Program submitted in the Letter of Interest at the direction of NMB Water staff. Since the submission of the Letter of Interest, the City has adopted a new Program Management structure which involves complete management and development of the Capital Improvement Program by city staff. The Regional Supply Project will be delivered as series of phased Design-Bid-Build projects overseen by City design and construction managers, and the Jacobs staff will be involved in operations of the constructed facilities.

Jacobs currently performs operation and maintenance of the Norwood Water Treatment Plant, water distribution systems, and sewer collection/transmission systems. Operations of the improved system will continue to be performed by the Jacobs O&M Staff as shown in the figure below.


North Miami Beach Residents
NMB water
JACOBS
City Commission
City Manager
Advise
Public Utilities Commission
Legend
City Officials
NMB Water City Employees
Operation & Maintenance
Jacobs
Other Consultants
Administrative Assistant
Deya Manzanares
Business/Finance Senior Management
Emanuel Lax, CPA, CFE
NMB Water (Interim) Director
Jafeth Baéz, P.E.
NMB Water Deputy Director
Samuel Zamacona
O&M Manager
Lenard Scroggins
NMB Water Construction Manager
TBD
NMB Water Design Manager
TBD
WIFIA Support
Dennis Jackson
Construction services
Third Party—TBD
Preconstruction services
Third Party—TBD
Operation & Maintenance
Maintenance
Mike Idzior
UTS
Karim Rossy
Customer Service
Gustavo Marin
Distrib & Collect
Pedro Melo
Operations Supervisor
Carlos Carrazana
Plant Manager
Moises Sierra-Ortiz
Water Quality
Raisa Akaeva
Process Engineer
Veronica Llaneza
Ph.D

Key team members for the Project include the following:

**NMB Water Director: Jafeth?**

Will provide resume

**NMB Water Deputy Director: Sam**

Will provide resume

**NMB Water Finance Director, Emanuel Lax**

TBD

**Jacobs WIFIA Support Advisor, Dennis?**

TBD

## Litigation and/or Conflicts

*Disclose any current, threatened, or pending litigation involving the applicant related to permitting, public involvement, environmental irregularities, construction defects, securities fraud, conflict of interest, failure to perform under a State or Federal contract, or other charges which may reflect on the applicant's financial position or ability to complete the project(s).*

Suggested language below.

Pending litigation exists between NMB Water and a neighboring community regarding the structure of surcharges in the monthly billing cycles. However, the litigation will not impact the ability of NMB Water to repay a WIFIA loan obligation as the revenue collected from surcharges will not be dedicated to the debt service payments, regardless of the litigation outcome.

## Customer Concentration Analysis

*List the historical, if available, or projected breakdown of customers by class and revenue. List the top ten (10) customers by percentage of revenues.*

| **Top 10 Principal Users** | | |
|---|---|---|
| **Customer Name** | **Average Consumption (Units?)** | **Percent of Revenue** |
| Intracoastal Yacht Club | 3992 | |
| Williams Island Ocean Club | 3680 | |
| Plaza del Prado | 3566 | |
| Miami-Dade Water and Sewer | 3390 | |
| Commodore Plaza Condo Association | 3174 | |

| | | |
|---|---|---|
| Plaza of the Americas Club | 3132 | |
| Arlen-Burke | 2920 | |
| Trump International Sonesta Beach | 2891 | |
| Admirals Port | 2753 | |
| Arlen House Condo Association | 2726 | |

# Detailed Project Information

## Project Description

*Describe the need for the project(s), its basic design features, and what it will accomplish. Include an assessment of the current condition of all water facilities relating to the project. If the project(s)'s current scope differs from what is described in the letter of interest, please explain.*

The NMB Water Regional Potable Water Improvements will include a 4-phased expansion and rehabilitation of the aged water supply, treatment, and distribution facilities of NMB Water. The Norwood WTP is in dire need of repair, many systems are near failure, and the WTP is currently running near the edge of its treatment capacity. The Norwood Water Treatment Plant will be rehabilitated and expanded to 41.1 mgd, providing the community with much needed treatment capacity and resiliency. The Project will allow NMB Water to meet current and projected 2030 Average Daily Demand (ADD) and current Maximum Daily Demand (MDD) as required by the Florida Department of Environmental Protection (FDEP) (F.A.C. Chapter 62.555.320[6]) and Chapter 62.555.315[3]). The Project will also reduce pressure losses and main breaks occurring throughout the distribution system.

As described in the 2018 Letter of interest, the distribution and supply systems will be rehabilitated and expanded concurrent to the treatment plant expansion, replacing aged pipes, reducing transmission main breaks, and securing drinking water supply for the existing and future community. Since the submission of the LOI, some changes have been made to the scope of the project due to shifting needs of the system. These changes are described below.

PHASE 1 - NORWOOD WTP EXPANSION PHASE 1 MEMBRANE FACILITY

Phase 1 involves the expansion of the reverse osmosis (RO) and nanofiltration (NF) systems, following the scope included with the Letter of Interest. Phase 1 is under construction and is expected to be completed on the schedule described in the LOI. Drawings and specifications for this phase are included in Exhibit V.

PHASE 2 – NORWOOD WTP EXPANSION PHASE 2 LIME SOFTENING

Phase 2 scope has been adjusted to meet the original intent of the Master Plan which was included with the Letter of Interest and will no longer include expansion of the lime softening system. Instead, NMB Water plans to continue expansion of the membrane system. However, the further expansion of the membrane system is outside of the current CIP planning period and was not included in the Project components for this loan application. Instead, the Project will include rehabilitation of the lime softening process at the Norwood WTP and rehabilitation or replacement of major process systems at the facility.

Along with the lime softening treatment upgrades that will occur, some critical project elements were added to the scope of Phase 2 which were not included with the 2018 LOI:

Electrical System Upgrades - Electrical surge protection and uninterruptable power supplies are required to provide control of the system during power outages and surges. Unattenuated electrical surges would damage critical control and chemical feed units, resulting in loss of plant capacity which could then trigger a boil water notice and it is a safety hazard for the employees. Previous surge system failures have cause small fires. Because of these events occurring at the facility, scope has been added to address required electrical system upgrades.

SCADA, I&C, and Telemetry Upgrades - The existing radio telemetry system is unsupported, so replacement parts cannot be obtained. A failure in the system would result in a loss of control of wells, remote pumps and pressure monitoring devices. The elements required to run the water system -- wells and remote pump stations and generators would not function. Loss of function of these elements could lead to a loss of system pressure and trigger a boil water notice. Therefore, additional scope has been added to improve the I&C system at the facility and update associated SCADA systems. The recommended improvements can be found in the SCADA Master Plan, included in Exhibit V.

Finally, two of the additional three wells which were included as part of the LOI Phase 2 scope have been removed. Upon further evaluation and testing, it was found that with the addition of one well, existing wells have the capacity to meet demands.

The design for Phase 2 is anticipated to be completed in January of 2021. Construction is anticipated to begin August 2021 and be completed by September 2023.

PHASE 3 – TRANSMISSION MAIN IMPROVEMENTS & REPLACEMENTS – IMPROVING PRESSURE

Phase 3 will address sections of the water distribution system that need to be replaced or expanded in capacity to convey the new production capacity of the WTP. Phase 3 will involve the replacement of several transmission mains that were originally constructed from asbestos cement or ductile iron as described in the Letter of Interest. Some changes have occurred in the exact location of the pipe to be replaced, but are largely the same in scope:

- Replacement of approximately 14,000 LF of small galvanized water pipelines between 4-inch to 8-inch Ductile Iron (DIP) throughout the distribution system

- Replacement of 12-inch and larger transmission mains throughout the distribution system

- Replacement of approximately 8,700 LF of 2-inch galvanized pipe with 6-inch DIP in the Honey Hill community from NW 199 Street to NW 202 Street, and NW 7 Avenue to NW 15 Avenue. Design is 100% complete and is included in Exhibit V.

- Replacement of approximately 14,000 LF of piping in the Eastern Shores Community

The condition of the existing pipes was described in the Condition Assessment on Various Diameter Ductile Iron and Asbestos Cement Water Mains document included with the Letter of Interest. The mains that currently serve the areas around I-95 are ductile iron pipes constructed in the 1950s and experience frequent main breaks. The new transmission mains (recommended in the 2017 Water and Wastewater Master Plan, page ES-18 and discussed in detail in Section 6.4, Attachment 1) will reduce main breaks and improve fire flow to the area, allowing for conveyance of the new water capacity of the WTP. Phase 3 will also include replacement of asbestos cement piping built in the 1960s in the Eastern Shores community served by NMB Water, identified as a high-risk area in the Condition Assessment attached to the LOI.

Additionally, this Phase now includes necessary upgrades at the Operations Center Pump Station. The upgrades involve control and pumping systems at the Operations Center pump station. It will allow automatic control of the system and utilization of two pumps in the station that have not been used for the past ten years due to control system issues. Without this project, the Operations Center Pump Station does not have enough capacity to provide water at system pressure to the distribution system. During emergency events at Norwood, the distribution system pressure would drop which would trigger a boil water notice.

Phase 3 design will begin in July 2020, and construction for all parts of Phase 3 is anticipated to be completed May 2025.

PHASE 4 – BISCAYNE AQUIFER WELLS 22 AND 23 CONSTRUCTION – ADDITIONAL WATER SUPPLY CAPACITY

The Biscayne Aquifer wells will no longer be included as a phase of this project. Further review of the capacity of the wells showed the existing wells are able to meet capacity.

## Location

*Describe the location of the project(s) and attach a map as Exhibit IV. Include the name(s) of the counties that the project(s) will serve.*

The Project is in the City of Miami Gardens and North Miami Beach, Florida. The City of North Miami Beach is located in the northern area of Miami-Dade County on the coast of the Atlantic Ocean. The existing Norwood WTP is located at 19150 NW 8 Avenue, Miami Gardens, FL 33169. The Norwood WTP and water supply well improvements will take place within the city limits and water service area of the City of North Miami Beach at said address, while the water transmission main improvements will occur at the locations in North Miami Beach labeled in the map included as Exhibit IV.

## Construction Plans and Specifications

*Attach the construction plans and specifications (with P.E. stamp, if available) for the project(s), including, but not limited to, construction drawings, specifications, construction contract forms, bidding*

*instructions, etc., as Exhibit V. For alternative project delivery methods (i.e., design-build, construction manager at-risk, design-bidbuild), include contractor selection materials such as Request for Qualifications and Request for Proposals. Draft materials are acceptable for the initial application. However, it is expected that final materials will be available for review and approval prior to the obligation event for the loan.*

The following construction Plans and Specifications were attached with the 2018 Letter of Interest:

- Norwood WTP Phase 1 Expansion 90% Design Drawings
- Norwood WTP Phase 1 Guaranteed Maximum Price Documentation

The following updated or additional drawings, specifications, and agreements have been added to Exhibit V:

- Norwood WTP Phase 1 Expansion 100% Design Drawings
- Norwood WTP Phase 1 Expansion 100% Specifications
- Norwood WTP Phase 1 Expansion Construction Contract Forms
- Honey Hill Water Main Replacement 100% Design Drawings
- Honey Hill Water Main Replacement 100% Specifications

Please note that the Honey Hill Water Main Rehabilitation drawings and specifications were completed prior to the submission of the LOI, and do not currently include Federal cross-cutter language. This will be completed with the bid documentation which will be provided prior to the closing of the loan.

## Estimated Project Cost:

*a. Provide a detailed cost estimate for the project(s). Distinguish between total and eligible project costs. Describe any costs or activities that may not be WIFIA-eligible.*
*b. For eligible project costs, provide an activity breakdown, as applicable, for: development-phase activities; construction, reconstruction, rehabilitation, and replacement activities; the acquisition of real property or an interest in real property, environmental mitigation, construction contingencies, and acquisition of equipment; and capitalized interest, reasonably required reserve funds, capital issuance expenses, and other carrying costs during construction. Include other cost categories as necessary.*

The estimated project cost spreadsheet broken down into individual phases and a third-party peer review of the project costs is included in Exhibit V. The costs are broken down in to planning, design, construction, and management categories per year of the project. The total cost, broken down into the same categories, is shown below:

| **Category** | **Cost** |
|---|---|
| Planning | $300,000 |

| | |
|---|---|
| Design | $3,775,000 |
| Construction | $84,304,000 |
| Management | $6,421,000 |
| Total | $94,800,000 |

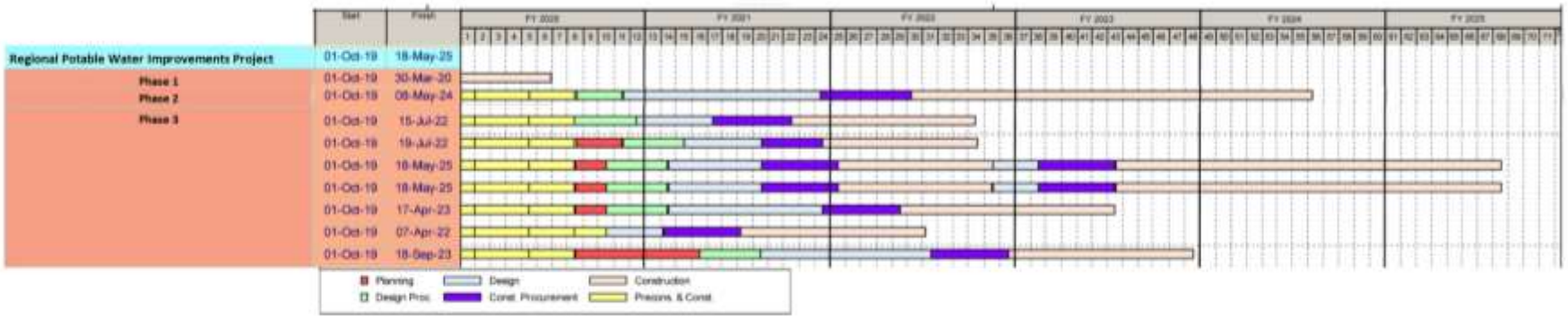
While planning and design for Phase 1 of the project followed the requirements of the WIFIA loan, it is anticipated that the construction costs included in Phase 1 construction will not be eligible for reimbursement as the bid documents did not include provisions for the Davis-Bacon or American Iron and Steel requirements. The cost to retroactively include the DB and AIS requirements was prohibitive.

| | |
|---|---|
| Eligible Costs | $82,500,000 |
| Ineligible costs | $12,300,000 |

## Project Schedule

*Provide a timeline(s) that illustrates the estimated start and completion dates for each major phase or milestone of project development, construction, and/or acquisition. Indicate the applicant's current status on this timeline.*

The project schedule is shown below. Due to the changes described in Section A.2 Organizational Structure, time has been added to the schedule in order to transition new staff into the organization prior to beginning design and construction. The updated schedule is shown below.


Start
Finish
FY 2020
FY 2021
FY 2022
FY 2023
FY 2024
FY 2025
Regional Potable Water Improvements Project 01-Oct-19 18-May-25
Phase 1 01-Oct-19 30-Mar-20
Phase 2 01-Oct-19 06-May-24
Phase 3 01-Oct-19 15-Jul-22
01-Oct-19 19-Jul-22
01-Oct-19 18-May-25
01-Oct-19 18-May-25
01-Oct-19 17-Apr-23
01-Oct-19 07-Apr-22
01-Oct-19 18-Sep-23
Planning
Design
Construction
Design Proc.
Const. Procurement
Prelims. & Const.

# Alternatives Analysis

*a. If an alternatives analysis or business case analyses was not provided in the letter of interest, provide documentation of such analysis.*
*b. Describe in detail the alternatives available, including the discussion of a "no action" alternative. The number and types of alternatives depend upon the scope and complexity of the project.*
*c. Use a minimum planning period of five (5) years, and a maximum planning period not to exceed the useful life of the project.*
*d. Describe the rationale (i.e., lowest capital cost, greater ease of operation, most reliable, fewest environmental impacts, etc.) for the selected alternative. This rationale should include the technical, managerial, financial, environmental, operational, and local decision-making approaches.*
*e. Provide any referenced documents as Exhibit VI.*

**No Action Alternative**

A no action alternative would entail operating the WTP and the conveyance system as is, allowing the facilities to continue to age, and failing to meet required treatment capacity regulations of the Florida Department of Environmental Protection (FDEP) (F.A.C. Chapter 62.555.320[6]) and Chapter 62.555.315[3]). If the transmission system which conveys water from the wells to the treatment plant is not replaced, the existing pipeline will not have the hydraulic capacity to convey the water for the expanded treatment capacity. Finally, if the treatment and distribution system is not upgraded and/or replaced, continued and worsening opportunities for pressure loss in the system would occur due to main breaks and equipment outages at the treatment plant. These outages would result in boil water notices and would present safety hazards to the staff at the treatment and conveyance facilities.

**Alternative A: Complete Project**

The alternatives analysis for the Norwood WTP Expansion and the conveyance systems were described in the July 2018 LOI and the Master Plan. The analysis of the alternatives provided in those documents remains accurate. Some capital projects which were initially included in the WIFIA LOI were re-evaluated as part of the Jacobs Program Management contract after submittal of the LOI in July. It has therefore become apparent that there are projects which will more immediately serve the community and address critical infrastructure needs. The changes are described below.

Changes to Phase 2

After the submission of the LOI it was deemed in the best interest of the treatment facility to expand the membrane treatment facilities rather than the lime softening system. However, the lime softening system remains extremely vulnerable to loss of capacity due to equipment failure or maintenance. The plant does not have enough redundant equipment to provide for taking units out of service for preventive maintenance nor to deal with emergency outages. The Phase II project will rehabilitate the lime softening system and will enhance the ability of the plant to provide continuous production of water and service at all time in the Lime Softening Plant.

Additional improvements were identified within the electrical system which were not included in the LOI. Electrical surge protection and uninterruptable power supplies are required to provide control of the system during power outages and surges. Unattenuated electrical surges would damage critical control and chemical feed units, resulting in loss of plant capacity which could then trigger a boil water notice and it is a safety hazard for the employees. Previous surge system failures have cause small fires and the improvements are relevant to Phase 2 of the Project.

Finally, at the treatment facility the SCADA and Radio Telemetry System Upgrades have been identified in the attached SCADA Master Plan. The existing radio telemetry system is unsupported, so replacement parts cannot be obtained. As described in the project description section, a failure in the system would result in a loss of control of wells, remote pumps and pressure monitoring devices. The elements required to run the water system -- wells and remote pump stations and generators would not function. Loss of function of these elements could lead to a loss of system pressure and trigger a boil water notice.

Changes to Phase 3

The conveyance system has undergone further evaluation through the development of a new hydraulic model and the reassessment of the specific locations for improvements. Additionally, the transmission project was modified slightly to make strategic improvements throughout the system rather than focused on the 20/24-inc and 16-inch lines. The condition assessment for the identified projects in the Project Description section are included as Exhibit VI.

Changes to Phase 4

After performing extensive condition assessments since July 2018, it has been determined that the water supply capabilities of the system are sufficient and the Biscayne Well construction is not needed at this time.

## System Engineer's Report:

*If available, and developed within the past five (5) years, provide the independent engineer's report(s), bond engineer's report(s), system master plan(s), or any other like document(s). Summarize the primary conclusions of the report(s) and indicate how the proposed project(s) fits into the long-term planning of the system. Include any applicable report(s) as Exhibit VII.*

The following documents were provided with the Letter of Interest:

- 2017 Water and Wastewater Master Plan – This will be updated prior to the closing of the loan and can be provided on request once completed.
- Condition Assessment on Various Diameter Ductile Iron and Asbestos Cement Water Mains
- Eastern Shores Condition Assessment

The following documentation has also been compiled which is included in Exhibit VI:

- NMB Water Potable Water Hydraulic Model Update and Calibration Technical Memorandum
- Condition assessment from Craig.
- Cost Estimate Peer review
- Asset Management prioritization document
- SCADA Master Plan

The reports highlight the need for the improvements and expansion of the water treatment plant as well as the high likelihood pipes within the transmission system.

## Environmental Review:

*Summarize the status of the project(s)'s environmental review. Specifically, discuss whether the project(s) has prepared a draft Environmental Assessment, draft Environmental Impact Statement, or other Environmental Information Documents (including applicable cross-cutter coordination and consultation) in accordance with the National Environmental Policy Act. A Categorical Exclusion determination, Finding of No Significant Impact, or Record of Decision will be required prior to execution of the credit agreement with EPA.*

Permitting for the Phase 1: Norwood WTP Membrane Facilities Expansion has been completed, and NMB Water is working closely with the FDEP to ensure all permitting procedures and environmental review is strictly adhered to for the remaining phases of the Project. Regulatory compliance monitoring is strictly adhered to during operations of the facilities and will be monitored throughout the construction project. It is the opinion of NMB Water that there is likely no NEPA impact and the project will likely qualify for Categorical Exclusion. City and County construction permits will be required for the project to commence, as well as common dust, noise, and construction-related permits and approvals.

Formal environmental reviews will occur with the completion of each stage and has not been completed at this time.

## Floodplain Management Plan:

*If the proposed project will be located in or will affect a floodplain as defined in Executive Orders 11988 as amended, provide a floodplain management plan that will describe how the project will meet or exceed applicable State, local, Tribal, and Territorial standards for flood risk and floodplain management, as well as Executive Orders 11988 and 13690; the Federal Flood Risk Management Standard (FFRMS); and the Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input.*

The Norwood Water Treatment Plant is not currently located in the regulated floodplain and no work proposed at the plant will encroach on a regulated floodplain (Appendix XX FIRMETTE). The transmission lines will be constructed along existing roadway corridors and rights-of-ways (extended as needed). The flatness of the county and extensive canal network means that there will be crossings or tunneling under the primary drainage network. Some transmission lines are located within the floodplain, such as those in the Eastern Shores community. However, the County Department of Environmental Management will conduct extensive reviews of these crossings during their environmental permitting of potential wetland impacts, which will include potential floodplain impacts. Transmission lines will be buried and not cause impacts to floodplains. Crossings will be designed and constructed by either boring under canals or cross at existing bridges and will not cause any fill into or obstruction of floodplains or floodways. Because the projects involved in Phase 3 are currently in the preconstruction and planning stages, a formal Floodplain Management Plan has not been completed. The permitting packages will address how the projects will avoid any floodplain impact.

An updated Floodplain Management Plan for under the new program structure will need to be developed.

## Other Permits and Reviews:

*List all other major permits and approvals necessary for construction of the project(s) and the date, or projected date, of the applicant's receipt of such permits and approvals. The list should include permits and approvals required under local, regional, State, and Federal laws and regulations. In particular, indicate when outstanding approvals by State or local government entities are expected. Copies of major permits and approvals will be required upon execution of a credit agreement with EPA.*

A list of permits related to this project are included below:

**TABLE 1 TRANSMISSION MAIN IMPROVEMENT PERMITS**

| Agency Name and Type | Permit | Expected Date of Approval |
|---|---|---|
| City North Miami Beach<br>Utilities Engineering | Plan Review, Stamp, & Signature on Water Main Extension Construction General Permit Application | |
| City North Miami Beach<br>Public Works - Water Engineering | ROW Work Permit | |
| Miami-Dade Department of Regulatory and Economic Resources<br>Water Section | Plan Review & Stamp for Water Main Extension Construction General Permit Application | |
| Miami-Dade Department of Fire Engineering Bureau<br>Water Section | Water Main Permit & Plan Review | |
| Florida Department of Health (DOH) of Miami-Dade County<br>Environmental Engineering Section (EES) | Water Main Extension Construction General Permit | |
| FDEP Southeast District | General Permit 453 (62-330.453) Installation of Utilities | |
| FDEP Southeast District | OR Individual Permit | |
| FDEP Southeast District | De Minimis Exemption (Section 373.406(6) F.S. | |
| USACE South Permit Branch | DEP may issue SPGP on USACE behalf | |
| USACE South Permit Branch | OR SAJ-14 Regional General Permit Sub-Aqueous Utility and Transmission Lines in Florida | |
| USACE South Permit Branch | OR Programmatic General Permit SAJ-42 Minor Activities in Miami-Dade County | |
| USACE South Permit Branch | OR Nationwide Permit 12 Utility Line Activities | |
| USACE South Permit Branch | OR Letter of Permission | |
| USACE South Permit Branch | OR Standard Permit | |
| USACE South Permit Branch | Nationwide Permit 15 U.S. Coast Guard approved bridges | |

| | | |
|---|---|---|
| Miami Dade RER - Coastal Permitting Program | Class I Permit - Short Form #10 Installation of Subaqueous Cable or Pipeline | |
| Miami Dade RER - Coastal Permitting Program | OR Class I Permit - Standard Form | |
| Miami Dade RER - Coastal Permitting Program | Sovereign Submerged Lands Easement | |
| U.S. Coast Guard | Pre-Construction Notification (Post USACE Permit Issuance) | |

## Project Management and Compliance Monitoring Plan:

*Provide a comprehensive project management and monitoring plan that will demonstrate the applicant's ability to deliver the project(s) as planned, fulfill all project commitments, and ensure compliance with all terms of the credit agreement, including all applicable regulations and provision of law. The plan should provide: (a) information on the roles and responsibilities of all entities with decision making authority for the project(s); (b) status reporting processes that document not only the status but changes and potential risks; and (c) coordination processes that provide for advance notification of potential issues to all appropriate agencies and timely resolution.*

The updated Project Management and Compliance Monitoring Plan is being developed under direction of the City.

## Risks and Mitigation Strategies:

*Identify risks to the project completion and sufficiency of revenues. Sample risks might include construction schedules, cost escalation, approvals, and litigation. Identify any mitigation strategies and proposed cost-containment approaches (e.g., design-build, value engineering, guaranteed maximum price and/or completion date, warranties, or other incentive/disincentive clauses).*

Risk and Mitigation Strategies section is expected to undergo changes due to the change in program structure. Will require further direction from City.

# Operations and Maintenance Plan

## Operation and Maintenance Plan

*Attach the operation and maintenance plan for the project(s) as Exhibit VIII. This plan should describe any contractual arrangements that the applicant plans to execute for the operation and maintenance of the project(s), cost estimates for operating and maintaining the project(s), key performance indicators, insurance policies that may be used to cover the project(s), and reserves that will be set aside for the maintenance of the project(s). Draft materials are acceptable for the initial application. However, it is expected that final materials will be available for review and approval prior to the obligation event for the loan.*

The overall operation and maintenance philosophy will be based on meeting permit requirements, optimizing power and chemical usage, implementing proactive management of assets to provide effective and efficient operation, repair, and replacement in compliance with quality management objectives, providing a safe and secure work environment for employees and identifying and managing risk.

A copy of the 2019 Annual Preventative Maintenance Plan and the O&M manual for the treatment facility was provided with the 2018 Letter of Interest (LOI). These documents are still current and reflect the O&M principles employed by NMB Water staff and the Jacobs O&M team.

The NMB Water staff will oversee the activities of the Jacobs operation and maintenance group. The Jacobs Operations and Maintenance team regularly maintains a thorough log of Key Performance Indicators (KPIs), preventative maintenance plans, and emergency preparedness plans, available upon request. The conveyance system Asset Management Plan has been attached for review which highlights these items.

The cost of operations for the upgraded facility was included with the Letter of Interest. This cost estimate is accurate.

## Management Experience:

*Describe each contractor with whom the project(s) has a contractual arrangement for the operation and maintenance of the project(s), or the management team that will be overseeing the operation and maintenance of the project(s). This description should list the members of the management team, and similar projects that each member of the management team has worked on.*

Experience for the key team members from the NMB Water staff has been included in the organizational structure section of the application. NMB Water initially hired Jacobs Engineering Group in 2017 to support operations and maintenance of assets within NMB Water. Since that time, Jacobs has operated and maintains the water and wastewater treatment and conveyance systems within NMB Water. Jacobs, as a firm, has provided O&M services at 200 treatment facilities in North America over the last 40 years. Jacobs operates several similar sized utilities in the State of Florida alone, including the City of Pembroke Pines water and wastewater treatment, collection and distribution systems as well as billing and customer service functions. Jacobs is able to bring in operations troubleshooting staff from multiple locations in the state, including the City of Key West and the City of West Melbourne, solidifying the ability to quickly react to O&M problems that may arise at the facility or in the distribution system.

**Jacobs Operations and Maintenance Manager, Lenard Scroggins**

Lenard to provide blurb

## Operational Risks and Mitigation Strategies:

*Identify operational risks facing the project(s), such as insufficient subscription, insufficiency of supply, deterioration of distribution and conveyance systems, and litigation risks. Identify all mitigation strategies.*

**Operations of the Existing Facility**

The WTP remains operational during the construction of the upgrades and will need to be carefully coordinated so the facility can remain in compliance during the change in process. The City and Jacobs staff will employ mitigation strategies involving pre-approved tie-in schedules, which will coordinate all required staff in the upgrades. The Jacobs operations and maintenance staff on site are fully integrated with the design team and therefore has been trained in the requirements for operations during construction for the expansion and rehabilitation projects.

**Worker Safety**

The facility will need to remain operational during construction, and places risk on the operation of the facility and the safety of the staff. Specifications have been defined requiring an early safety plan that will protect the staff on the site and will reduce the chances of near-misses or recordable incidents. Additionally, a safety management plan has already been developed for Phase 1 which addresses the safety of staff during regular O&M after construction has been completed.

**Process Control and Monitoring**

The goal of the City is to achieve compliance with regulatory permits while minimizing resource consumption. The facility will require a robust control and monitoring program to ensure the City can meet its targets and can continue providing high quality water. As part of the upgrades a SCADA Master Plan has been developed to ensure process control and monitoring is fully functional. The upgrades to the SCADA system will improve operability of the facility and the optimized process control parameters and strategies and will include procedures for implementation.

**Deterioration of Conveyance System**

The continued aging of the conveyance system can result in the increased likelihood of main breaks and loss of pressure throughout the system. If loss of pressure occurs, a boil water order will need to be issued. Additionally, if the transmission system experiences severe breakages, the treatment facility may not be able to receive adequate source water to treat. The project is being completed in order to mitigate the operational risk due to system deterioration. The replacement of the conveyance system will reduce the chances of main breaks or pressure loss, and the improvements at the pump station that have been added to the project will allow for greater operational control in the conveyance system. The transmission lines that are being replaced will ensure adequate water supply is reaching the facility for treatment and distribution.

# Financing Plan

## Estimated total eligible project costs (in dollars):

| Eligible Capital Costs by Cost Type | Estimated Dollar Value |
|---|---|
| Planning | $310,000 |
| Design | $3,895,000 |
| Construction | $91,209,000 |
| Management | $7,036,000 |
| **Total** | **$102,450,000** |

## Requested amount of the WIFIA loan (in dollars):

- Project Costs = $50,200,500
- Application Fee = $300,000
- Capitalized Interest = $6,631,000
- Total WIFIA Loan Request = $57,131,500

## Provide a sources and uses of funds table for the construction period(s), including the proposed WIFIA assistance.

Table # and Figure # summarizes the sources and uses of funds.

Table #. Source and Use of Funds

| Sources Category | Estimated Dollar Value |
|---|---|
| 1. WIFIA Loan | $57,131,500 |
| 2. Revenue Bonds | $26,959,984 |
| 3. SRF Loan | |
| 4. Borrower Cash | $25,289,516 |
| 5. Other (please specify) | |
| **TOTAL SOURCES** | **$109,381,000** |
| **Uses Category** | **Estimated Cost (Escalated Dollars)** |
| 1. Construction | $91,209,000 |
| 2. Design | $3,895,000 |
| 3. Planning | $310,000 |
| 4. Land Acquisition | |
| 5. Other Capital Costs | |
| 6. Contingency | |
| 7. Total Capital Costs (Items 1 - 6) | **$95,414,000** |
| 8. Management | $7,036,000 |
| 9. Ineligible Costs (WIFIA Loan capitalized interest) | $6,631,000 |
| 10. Ineligible Costs (WIFIA Loan application fee) | $300,000 |
| **TOTAL USES** | **$109,381,000** |

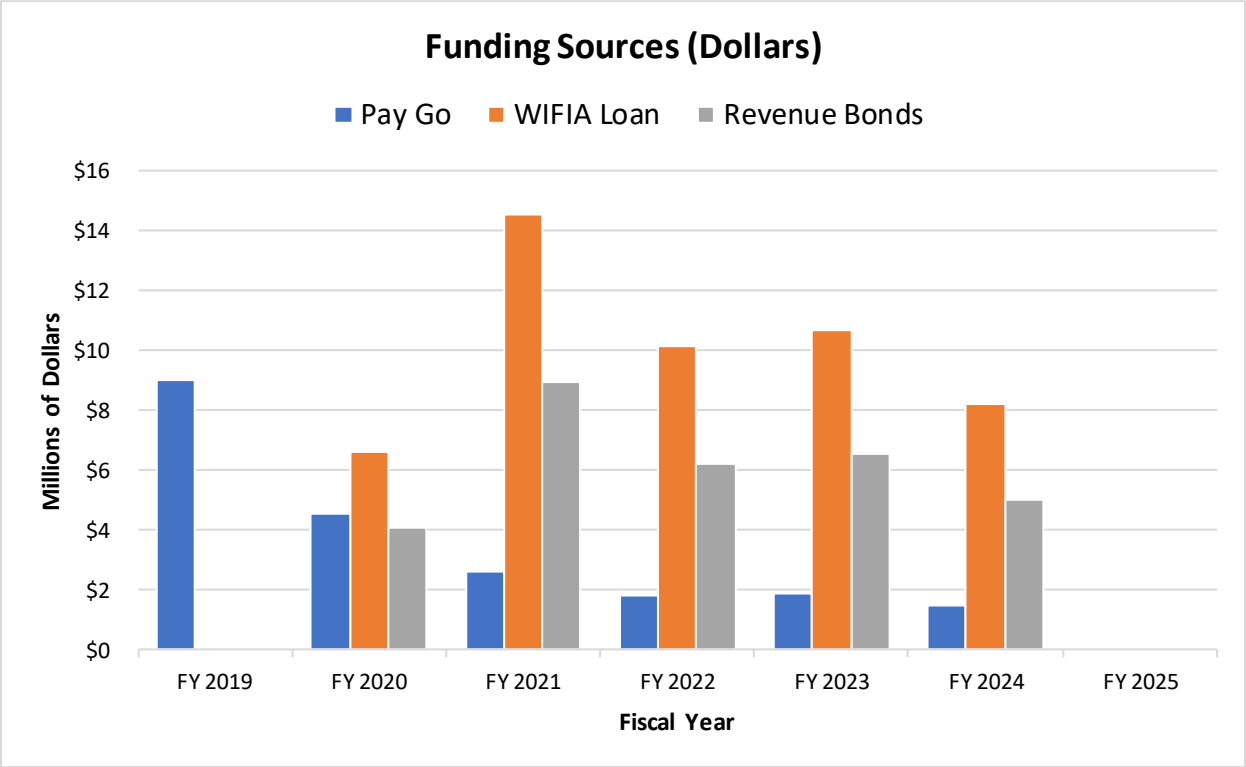



Figure #. Summary of Project Funding Sources by Type

## Rate Study

Bartle and Wells Associates prepared a Water and Sewer Rate Study for North Miami Beach. The Water and Sewer Rate Study Report is provided in Exhibit XIV. Figure # provides projected rate increases identified in the Rate Study.

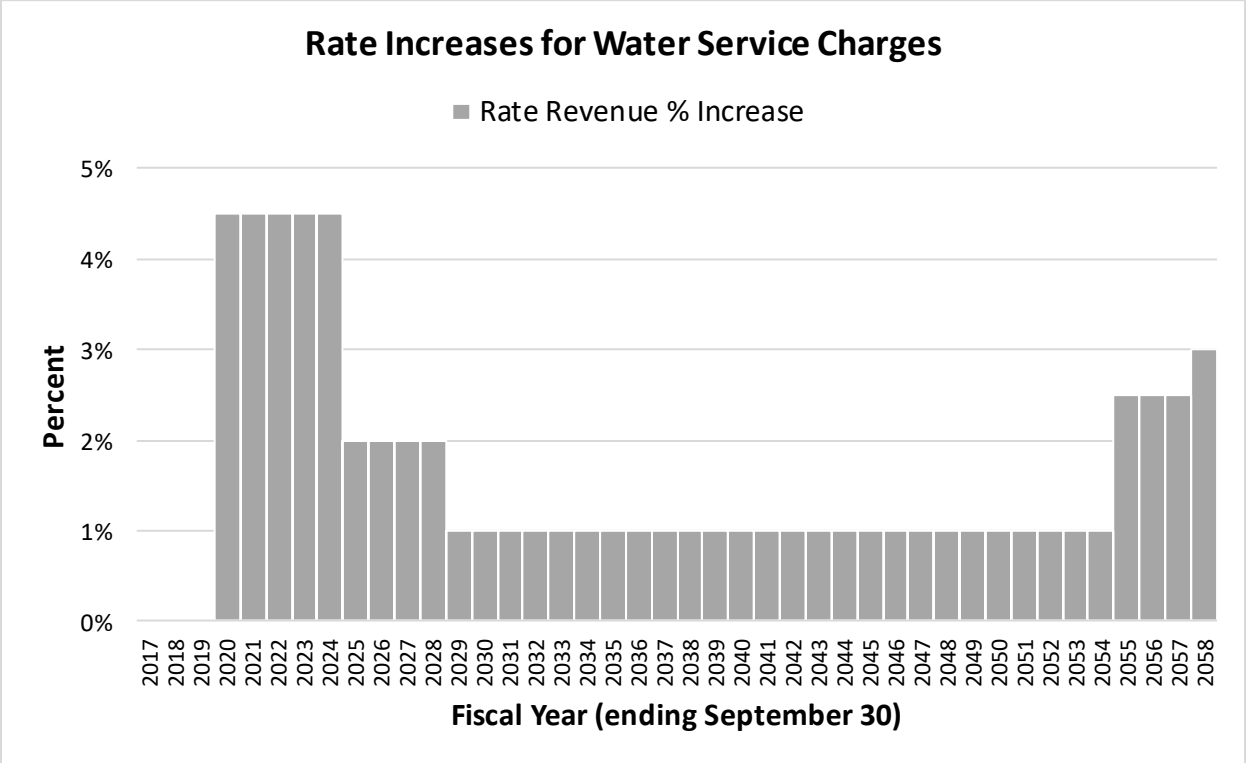



Figure #. Project Rate Increases.

## Construction Cost Estimates

Table # and Figure # provide a summary of the construction cost estimates FY 2019 to FY 2025.

Table #. Summary of Capital Costs by Project by Cost Type (escalated dollars)

| Project | Planning | Design | Construction | Management | Total |
|---|---|---|---|---|---|
| Norwood WTP Expansion Phase 2 | $0 | $1,416,000 | $38,283,000 | $4,821,000 | $44,520,000 |
| Norwood WTP Expansion Phase 1 | $0 | $0 | $12,090,000 | $309,000 | $12,399,000 |
| Eastern Shores Watermain System Rehabilitation | $0 | $824,000 | $13,845,000 | $185,000 | $14,854,000 |
| Norwood WTP Electrical System Improvements | $77,000 | $77,000 | $446,000 | $137,000 | $737,000 |
| System-wide Transmission Watermains Replacement Program | $52,000 | $206,000 | $9,262,000 | $258,000 | $9,778,000 |
| System-wide Distribution Watermains Replacement Program | $52,000 | $206,000 | $9,976,000 | $258,000 | $10,492,000 |
| SCADA and Radio Telemetry System Upgrades | $77,000 | $882,000 | $3,663,000 | $380,000 | $5,002,000 |
| Honey Hill Watermain System Rehabilitation | $0 | $26,000 | $1,652,000 | $308,000 | $1,986,000 |
| Operations Center Pump Station Improvements | $52,000 | $258,000 | $1,992,000 | $380,000 | $2,682,000 |
| Total | $310,000 | $3,895,000 | $91,209,000 | $7,036,000 | $102,450,000 |

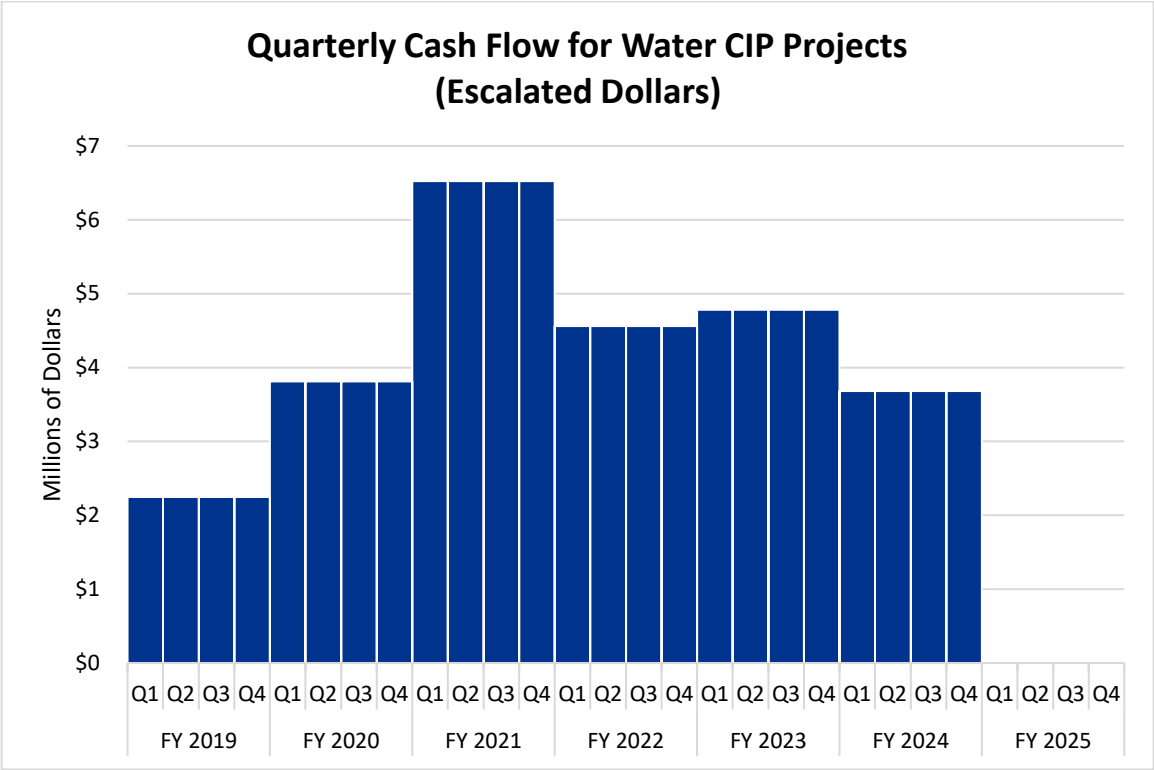



Figure #. Quarterly Cash Flow for Water CIP Project.

• Include detailed construction cost estimates (such as unit pricing) as attachments and provide a basis for the determination of contingency sizing.

## Revenue Pledge

Features of the NMB service area that make WIFIA assistance particularly important include:

• An average dependency ratio of 56 percent with a maximum ratio of 61.2 percent compared to the national average of 49.7 percent. This represents a higher proportion of retired residents living on fixed incomes with an assumedly lower ability to absorb the impact of higher utility bills.

• While the average MHI for the service area is $67,668 (nearly $12,000 higher than the national average) there is a significant spread with certain areas reporting an MHI of $38,387.

• Poverty rates in certain areas of 23.2 percent, far exceeding the national average of 15.2% percent.

NMB Water has an existing customer base of 180,000 residents in North Miami Beach, Miami Gardens, Aventura, Sunny Isles Beach, Golden Beach, and portions of unincorporated Miami-Dade County from which it collects water revenues. To secure this debt and repay the debt needed to deliver these necessary improvements, the City will raise water rates over the next 5 years to levels that ensure high coverage ratios are maintained. In addition to rate increases, the City is moving to bill a monthly fixed charge (instead of on the

existing quarterly schedule) and is moving to bill all customers monthly. Switching to a monthly billing schedule will spread bill payments out into smaller increments, with the objective of fewer collection issues and bill delinquencies. Assessing the fixed charge monthly will also generate an estimated $3.5 million per year additional revenue. Future water rates are still being formalized but will be sufficient to maintain coverage on all new CIP debt. Final rate increases will be dependent on whether or not a WIFIA loan is secured.
Rates will be set so that NMB Water is able to meet a coverage of at least 1.4 on all existing and future obligations. NMB Water's enterprise fund has accumulate more than $17 million in reserves as of FY 2018, allowing for the City to use cash on hand to pay for planning, design, and management services. This is in addition to an operating reserve equal to 50 percent of yearly operation and maintenance expenses.

Figure # provides a summary of projected pledge revenues, which includes water service charges. Water service charges include minimum charge, water consumption charge, water restriction surcharge, and other (very small amount related to ancillary fees and charges). For more details regarding water service charges see the Rate Study Report provided in Exhibit XI.

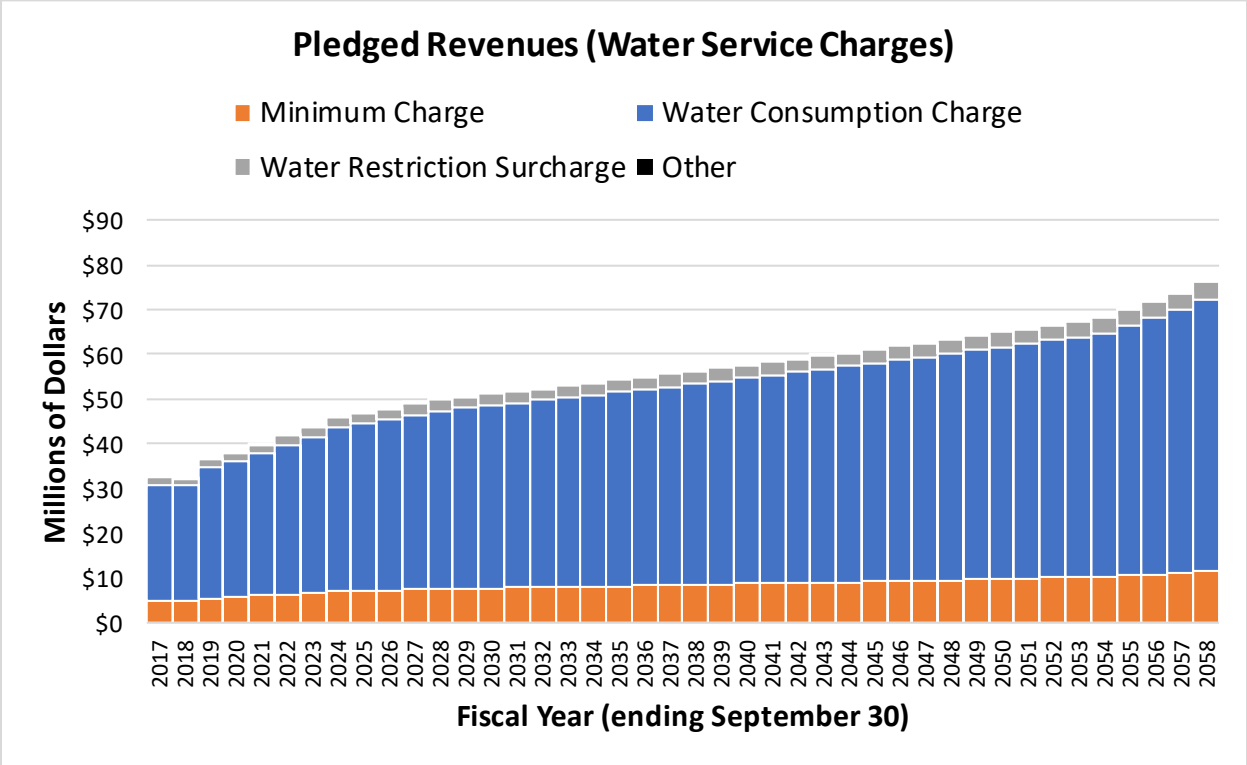



Figure # Summary of projected pledge revenues

## Credit Structure

The NMB Water WIFIA loan will be secured using net revenues (via a net revenue pledge executed by the City Commission) from its existing water rate revenue. The City Commission dedicated a source of revenue to repay the loan on June 19, 2018. NMB Water has a strong history of collection of its water and sewer bills. The WIFIA Loan will be a senior obligation on parity with existing Series 2012 and Series 2015 revenue bonds, existing SRF

loans, and all future revenue bonds. While NMB is not currently projecting that the WIFIA loan will be on a subordinate basis, it is open to the option of a subordinate loan if needed. The WIFIA loan will have straight-line amortization over 30 years, beginning 5 years after construction is complete which is anticipated to be FY 2024. It is assumed that the WIFIA loan will mature in 2056 with principal and/or interest payments beginning in FY 2029.

The City's Water Department (NMB Water) will finance the Project through a combination of Pay Go, revenue bonds, and the WIFIA Loan. A combination of bonds and cash reserves will be used to finance the remainder of the agency's CIP. Both the bonds and WIFIA loan for the Project are planned to have a term of 30 years. Bond repayment will begin the year after issuance, and WIFIA repayment will begin in 2026, ending in 2056. The Pro forma projects the WIFIA interest rate estimated to be 2.75 percent (based on the average weighted life of the loan at current U.S. Treasury rates) and the interest rate on revenue bonds is estimated to be 4.75 percent. The WIFIA loan and revenue bonds will have straight line, level debt service. Exhibit IX provides the Pro forma Financing Plan, including the debt service schedules project revenue bonds and the WIFIA loan.

The WIFIA eligible project in this loan request is the most critical component of a larger CIP program currently being initiated by the City of North Miami Beach to its water and wastewater systems. The total program is estimated to amount to $370 million in capacity expansion and upgrade costs with the bulk of improvements (including the Project) focused on water treatment and conveyance infrastructure.

NMB Water has a strong credit rating, with existing debt rated at A+ in 2018 by Standard and Poor's and AA- by FitchRatings in 2016. In addition, the City of North Miami Beach as a whole has a AAA rating for its collective obligations on existing Municipal Revenue Bonds. NMB Water has only needed to raise rates twice since 2010 and, therefore, is confident that a rate increase will be approved without major difficultly. The City plans to take full advantage of the 5-year deferment in WIFIA loan payments to keep increases manageable for its rate payers, many of whom are retirees and on a fixed income. With a history of maintaining strong cash reserves and high debt coverage, the City expects the WIFIA loan and future revenue bonds to garner a strong investment grade rating. Exhibit XII provides credit rating letter from Standard and Poor's.

The proposed terms for the WIFIA assistance:

## Financial Metrics

NMB Water has a strong financial position and will be able to fund the entirety of its $370 million CIP, including the Project, through a combination of debt and surplus cashflow in addition to maintaining high coverage on existing and planned debt obligations. NMB Water's existing debt includes revenue bonds and SRF loans. The Pro forma Financing Plan (Exhibit IX) provides several key financial metrics includes:

- Debt Service Coverage Ratio for non-Federal debt (see Figure #)
- Debt Service Coverage Ratio for Federal debt (see Figure #)
- Days Cash on Hand (see Figure #)
- Operating Ratio (see Figure #)

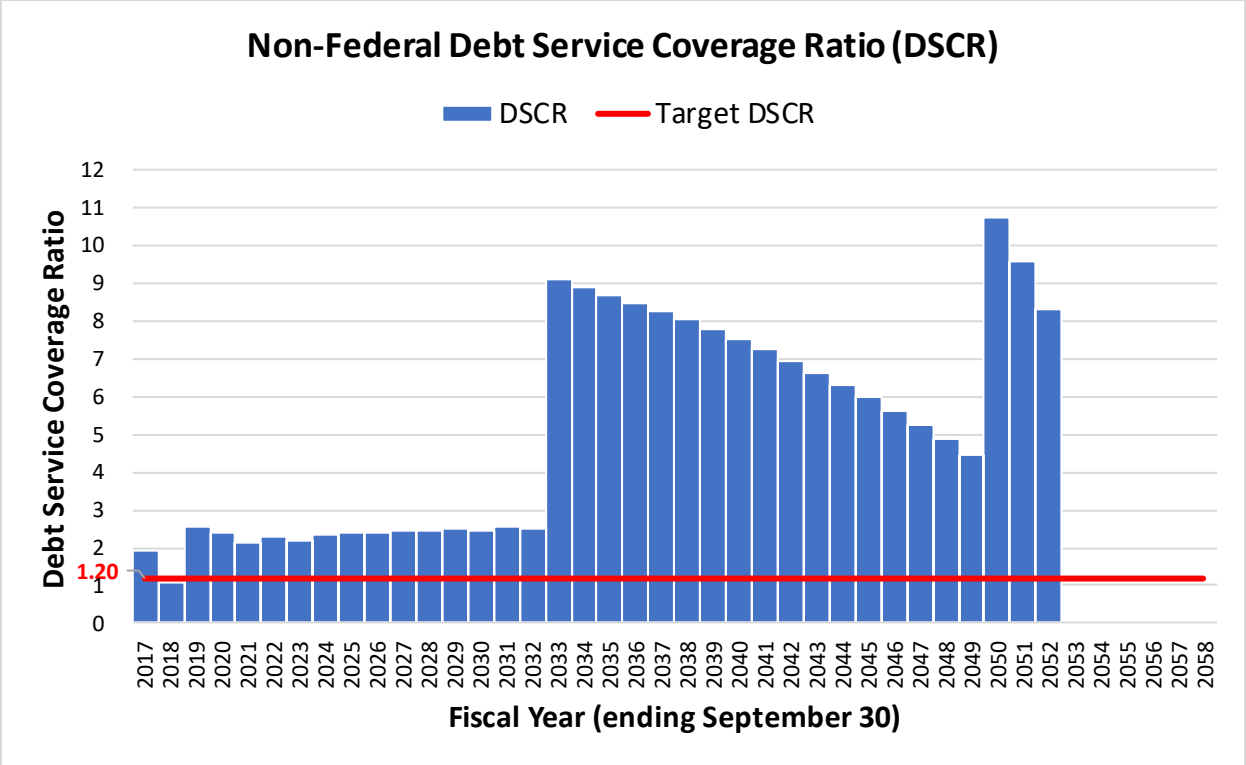



Figure #. Debt Service Coverage Ratio for non-Federal debt

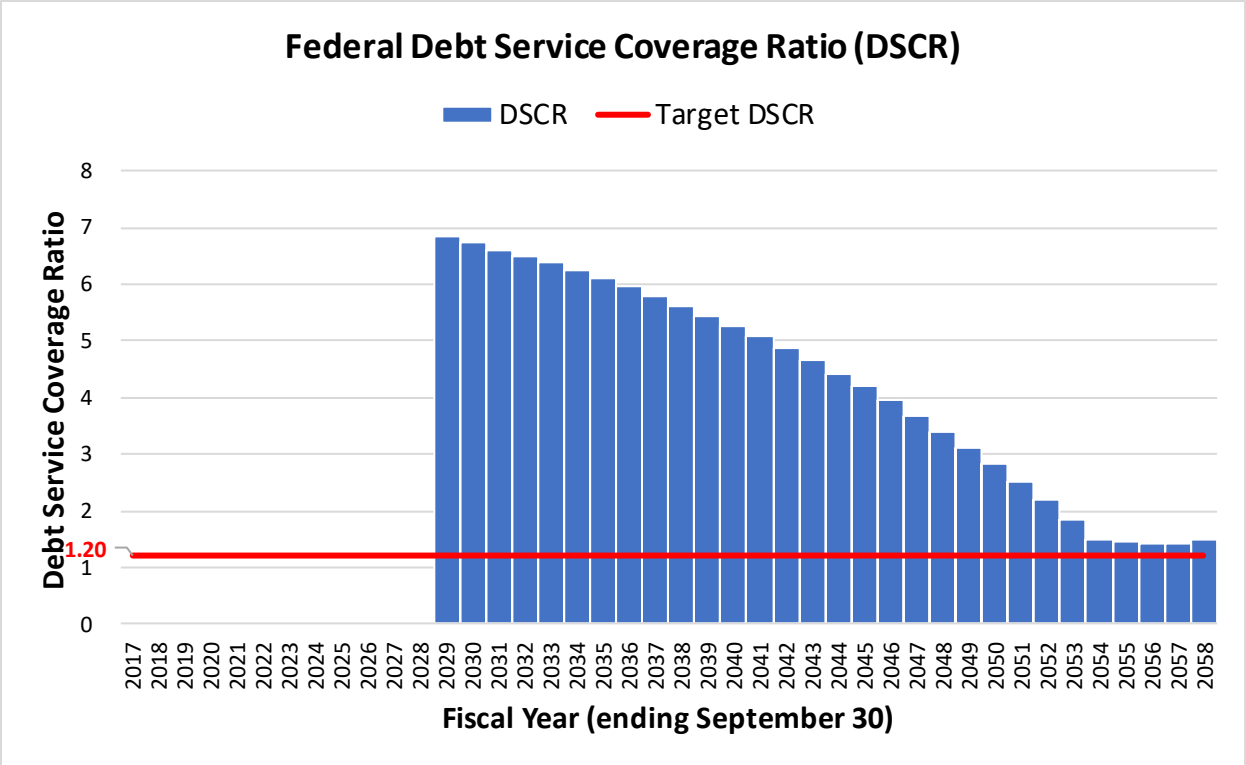



Figure #. Debt Service Coverage Ratio for Federal debt

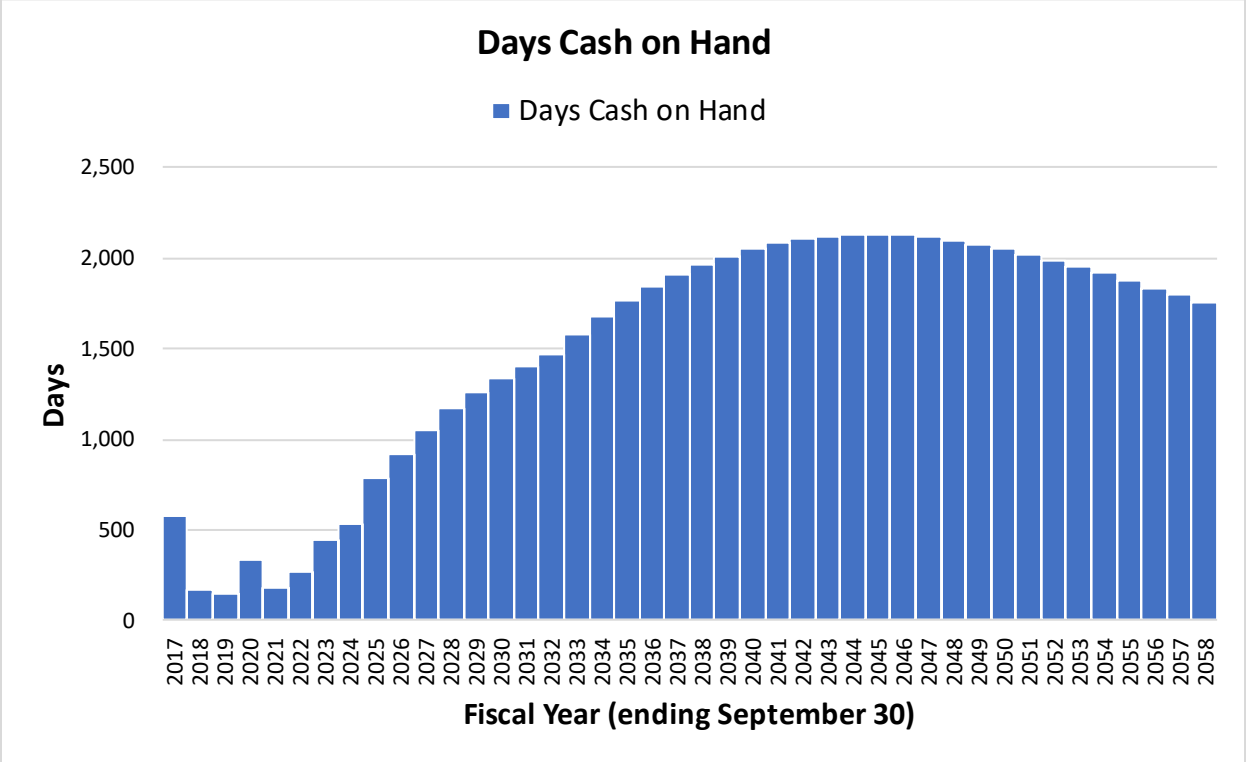



Figure #. Days Cash on Hand

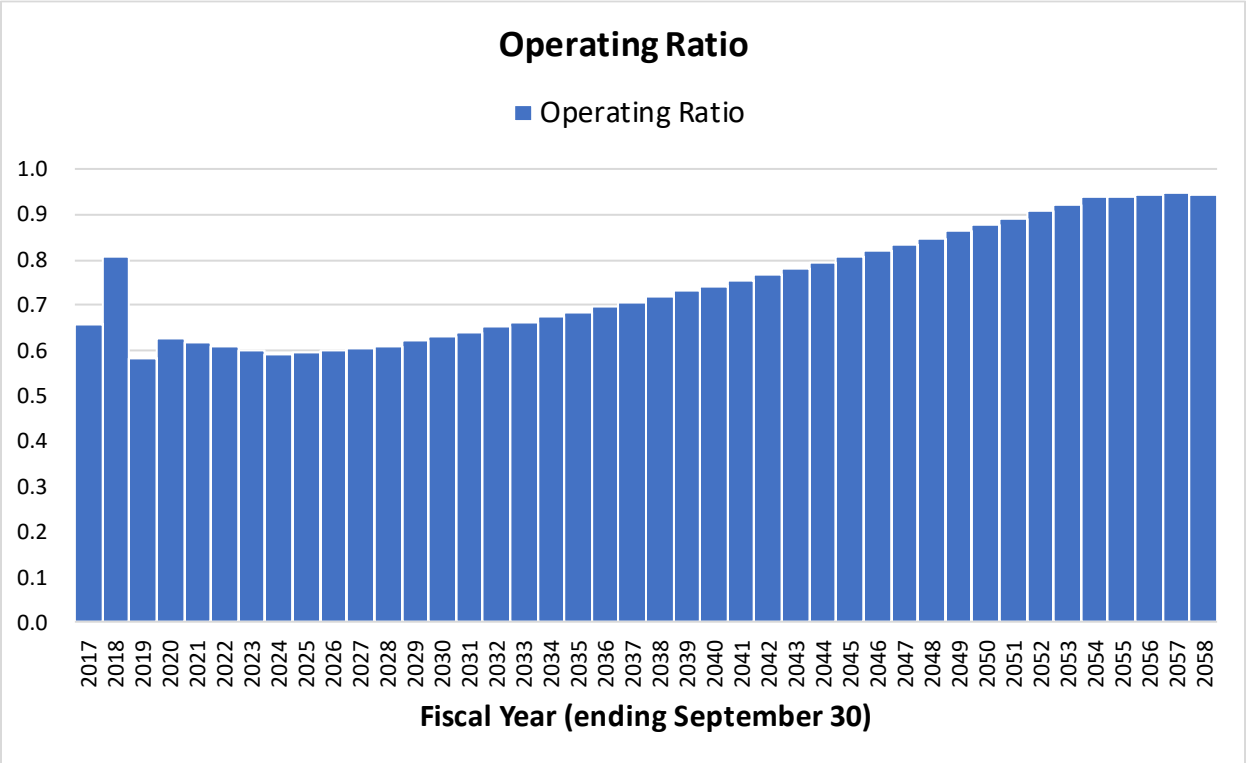
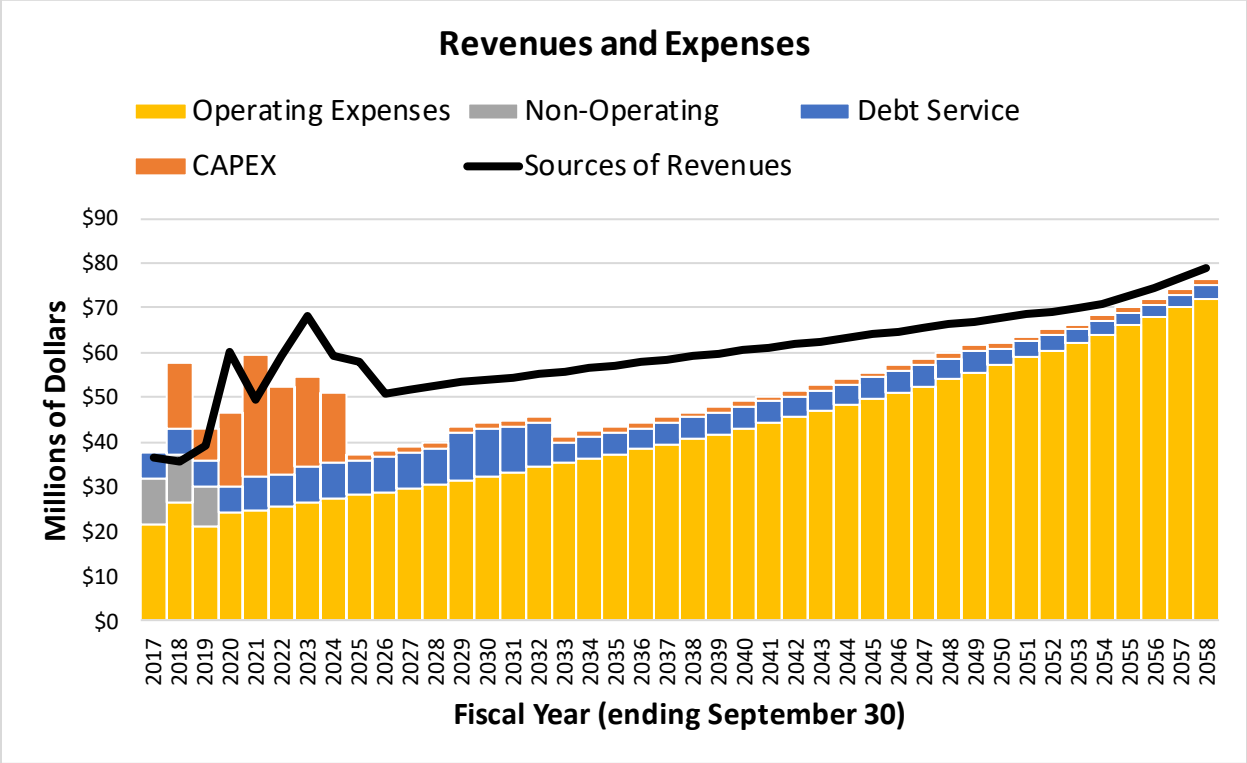


Figure #. Operating Ratio

## Pro Forma

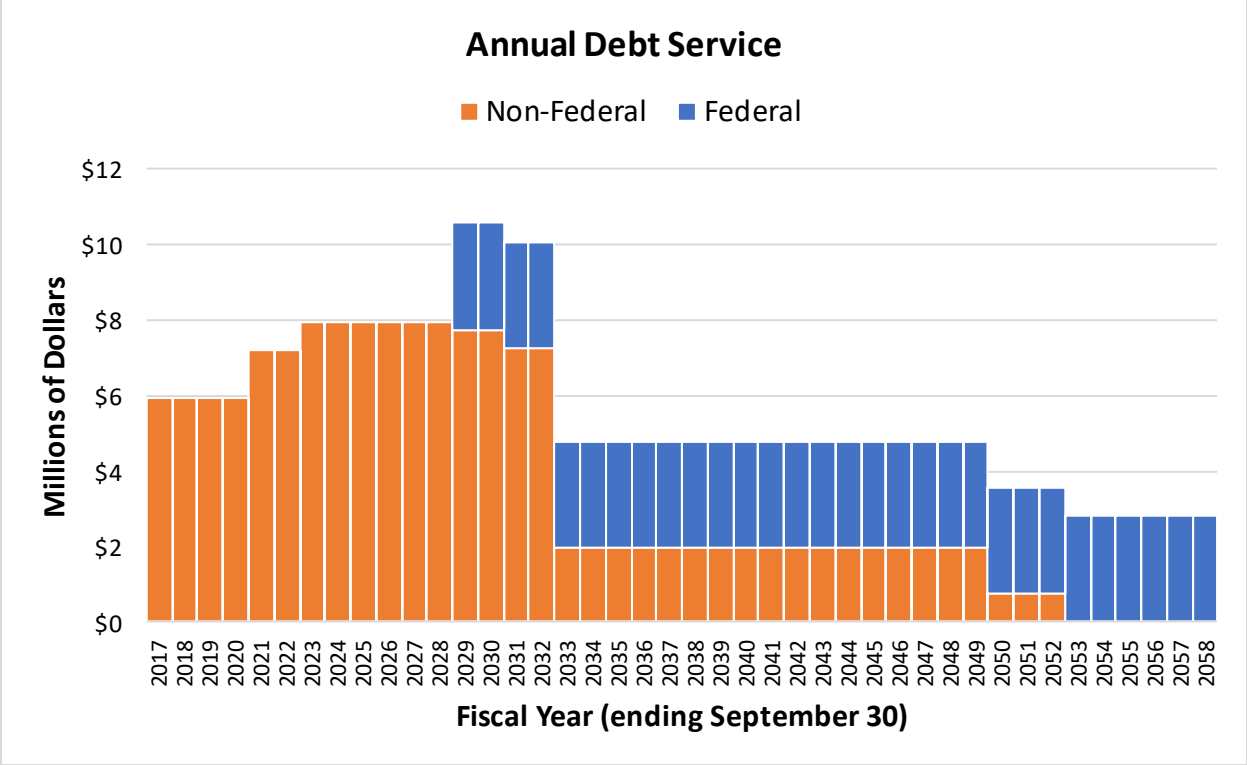
Exhibit IX provides a Pro forma that includes four key components: Operating performance, cash available for capital expenditures and other obligations, debt service coverage, and capital structure.

The following chart provides a summary of revenues and expenditures.




## Debt Service

The following chart summarizes the existing and projected debt service grouped by non-Federal and Federal. For the projects identified in Section #.#, 51 percent would be funded with non-Federal sources and 49 percent would be funded with Federal sources (i.e., WIFIA loan). NMB Water has consulted with the SRF program and is currently not applying for SRF funding.

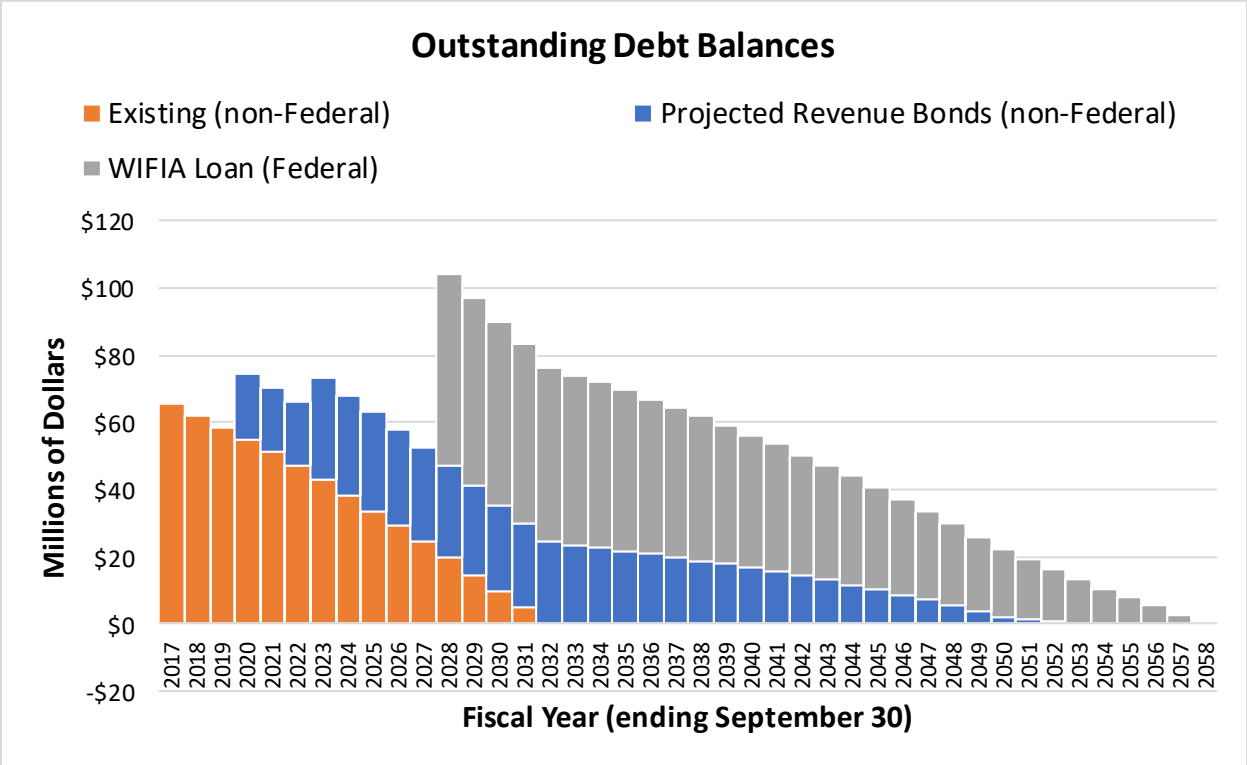



## Debt Balances

As of September 30, 2018, the outstanding balance of these obligations is approximately $62 Million. The following table summarizes principal and interest payments for the outstanding obligations. Current outstanding balance are projected to be retired by end of FY 2032.

| Fiscal Year Ending | Principal | Balance | Interest | Debt Service |
|---|---|---|---|---|
| 2017 | $3,213,617 | $65,357,774 | $2,721,418 | $5,935,035 |
| 2018 | $3,394,244 | $61,963,530 | $2,545,090 | $5,939,334 |
| 2019 | $3,487,792 | $58,475,738 | $2,456,184 | $5,943,976 |
| 2020 | $3,611,931 | $54,863,807 | $2,326,342 | $5,938,273 |
| 2021 | $3,788,678 | $51,075,129 | $2,191,244 | $5,979,922 |
| 2022 | $3,954,051 | $47,121,078 | $2,026,872 | $5,980,923 |
| 2023 | $4,125,060 | $42,996,018 | $1,854,863 | $5,979,923 |
| 2024 | $4,627,793 | $38,368,225 | $1,358,569 | $5,986,362 |
| 2025 | $4,627,793 | $33,740,432 | $1,358,569 | $5,986,362 |
| 2026 | $4,627,793 | $29,112,638 | $1,358,569 | $5,986,362 |
| 2027 | $4,627,793 | $24,484,845 | $1,358,569 | $5,986,362 |
| 2028 | $4,627,793 | $19,857,052 | $1,358,569 | $5,986,362 |
| 2029 | $5,202,791 | $14,654,261 | $572,796 | $5,775,587 |
| 2030 | $5,202,791 | $9,451,470 | $572,796 | $5,775,587 |
| 2031 | $4,725,735 | $4,725,735 | $559,363 | $5,285,098 |
| 2032 | $4,725,735 | $0 | $559,363 | $5,285,098 |

The following chart summarizes outstanding debt balances through the life of the WIFIA loan and Illustrates when existing and projected obligations will be retired.




## Assumptions

Appendix # provides list of assumptions used in developing the Pro forma that evaluate rate and financial plan.

The Financing Plan Model was developed using Microsoft Excel. Throughout the Financing Plan Model cells shaded orange are input values. The worksheet 'Assumptions' provides global inputs and can be changed to test sensitivity of key assumptions. Some input values / assumptions are located on separate worksheets.

| | |
|---|---|
| Growth in Customer Base | 0.2% |
| Transfer to General Fund (% Operating Revenues) | 4.90% |
| Inflation Rate | 3% |

| **Revenue Bonds** | |
|---|---|
| Interest Rate (%) | 4.75% |
| Term (year) | 30 |
| Cost of Issuance (%) | 1.351% |
| Capitalized Interest ($) | |

| **Timing of Revenue Bond Issuance** | **FY 2019** | **FY 2020** | **FY 2021** | **FY 2022** | **FY 2023** | **FY 2024** | **FY 2025** |
|---|---|---|---|---|---|---|---|
| Amount to Funded with Revenue Bonds | $0 | $5,519,776 | $9,447,838 | $6,605,414 | $6,926,146 | $5,329,726 | $0 |
| Issue Year to be Included | | FY 2020 | FY 2020 | FY 2020 | FY 2023 | FY 2023 | FY 2023 |

| Project Costs Funded by Bond Issue | Project Costs | Cost of Issuance ($) | Capitalized Interest | Estimate Revenue Bond Amount |
|---|---|---|---|---|
| FY 2019 | $0 | $0 | $0 | $0 |
| FY 2020 | $21,573,028 | $291,527 | $0 | $21,864,555 |
| FY 2021 | $0 | $0 | $0 | $0 |
| FY 2022 | $0 | $0 | $0 | $0 |
| FY 2023 | $12,255,872 | $165,620 | $0 | $12,421,492 |
| FY 2024 | $0 | $0 | $0 | $0 |
| FY 2025 | $0 | $0 | $0 | $0 |

**WIFIA Loan**

| | |
|---|---|
| Interest Rate (%) | 2.75% |
| Term (year) | 30 |
| Application Fee ($) | $300,000 |

| | |
|---|---|
| 5-years after following substantial completion of the project | 2029 |

NMB Water has consulted with the SRF program and is currently not applying for SRF funding.