

# 2018 WATER SYSTEM IMPROVEMENTS METER REPLACEMENT

## FINAL ENGINEERING REPORT

FOR

# ROWAN WATER, INC.

October, 2019



222 East Main Street, Ste. 1 • Georgetown, KY 40324



**ROWAN WATER, INC.**  
**Final Engineering Report**  
**2018 Water System Improvements – Meter Replacements**

**1. PROJECT PLANNING**

**a. Location**

Rowan Water, Inc. (RWI) is a water association that serves all of Rowan County, outside the city limits of Morehead, the northern portion of Elliott County, the western tip of Carter County, the northern edge of Morgan County and the southern portion of Fleming County.

This project is mostly defined by replacing all conventional meters' system wide with new radio read meters. A system map is attached to this Final Engineering Report as **Appendix A**.

**b. Environmental Resources Present**

Due to the fact that there will be no excavation on this project, and the project will consist of removing existing meters from the meter box and replacing them with the new more technologically advanced radio read meters, Rowan Water, Inc. will seek a categorical exclusion for this project.

**c. Population Trends**

The 2010 population for Rowan County was 23,333. The Kentucky State Data Center projects the County population to grow continuously over the next thirty years. By 2040 the population is estimated to be 28,982. The projections from the Kentucky State Data Center for the next twenty years are:

2020	2025	2030	2035	2040
24,879	25,809	26,953	28,023	28,982

In 1987 RWI had a customer base of approximately 2,022 customers. The customers have grown to an average of 7,000 today. The majority of the customers are residential with the balance being commercial customers. Rowan Water has two wholesale customers, Fleming County Water Association and the City of Olive Hill.

**d. Community Engagement**

Rowan Water, Inc. monthly board meetings are open to the public for open dialogue with the community. This project will also have an advertised public meeting that will encourage participation by the community for feedback on the project. This public meeting will be able to address concerns, funding and revenue strategies, and to address the needs of the project for public benefit.

## **2. EXISTING FACILITIES**

### **a. Location Map**

A system map is attached in **Appendix A**.

### **b. History**

RWI was established in 1968. Major expansions and renovations of its system were done in 1991, 1992, 1998, 2001, 2004, 2007, 2012, and 2016. RWI purchases 100 percent of its water from the Morehead Utility Plant Board. All expansions and renovations were on its distribution system.

### **c. Condition of Existing Facilities**

The existing system is in relatively good shape. Most recently Rowan Water, Inc. replaced an aging standpipe tank on 3-C Trail with a new 150,000-gallon elevated tank. Rehabilitation work was also completed on the following tanks: Sawmill, Rock Fork, Pond Lick, Frank Johnson and Maxey Flats. A new pump station replaced an aging facility on 3-C Trail as well as updates to the Old Hilda and Sawmill pump stations. Therefore, most all of the water storage facilities and pump stations have been updated. The one area that is aged and in need of updates or repairs are the water meters.

The pipe in the distribution system is in fairly good order as RWI reports a water loss of between 15 and 20 percent. This despite over 600 miles of water main in five counties serving almost 7,000 customers. Most of this pipe is in a mountainous and rocky terrain.

### **d. Financial Status of any Existing Facilities**

RWI submits an annual audit and PSC report to Rural Development and the Kentucky Public Service Commission.

Information regarding current rate structure, O&M cost, and user data will be compiled in the Summary Addendum to the PER.

### **e. Water/Energy/Waste Audits**

RWI has not had a water energy audit completed, but the new pump station on 3-C Trail and the addition of Variable Frequency Drives to the existing Old Hilda and Sawmill pump stations have provided energy cost savings due to the way the VFD's ramp up and down with the demand for service. The installation of drive-by meters will reduce the gasoline consumption of meter reading vehicles dramatically, as well as reducing the wear and tear on company vehicles.

## **3. NEED FOR THE PROJECT**

### **a. Health, Sanitation, and Security**

The need for the new radio read meters is to reduce liability, increase efficiency, and continue to work toward a more reliable system. Liability is a huge risk for all utilities in this day and age, and this will remove meter readers from having to pull on and off busy

roads every month to manually read meters. It reduces threats to the meter reading personnel from vicious dogs, climbing fences, inclement weather and risk of not properly reinstalling the meter box lid after manual readings. Radio read meters will also allow Rowan Water, Inc. to put less personnel on reading meters and more personnel on reducing water loss.

**b. Aging Infrastructure**

Most all of the tanks and pump stations have been rehabilitated or updated in the last few years and the distribution system serves all of the customers in the county that are remotely feasible. However, this project will allow Rowan Water, Inc. to replace the one thing that needs attention and that is to replace its aging water meters. Most all aging meters read at less than 95% accuracy. Historically, meters are found in systems that have read at considerably lower levels. Simply put, installing new meters should instantly reduce water loss as the new meters are consistently accurate and the savings from inaccurate (low) meter readings help to make payments on this investment.

**c. Reasonable Growth**

Rowan Water has seen a 244 percent growth in customers over the past 30 years. With the population projected to continue to increase over the next 20 years, it is reasonable to expect that Rowan Water's customer base will continue to increase making the drive by radio read system even more valuable in its efficiency.

**4. ALTERNATIVES CONSIDERED**

The only alternative considered to the drive by radio read meters would be the installation of a land-based radio read meter system. The land-based system is the latest in technology that allows the utility to read all meters from the office. This system is relatively new but is cost prohibitive for Rowan Water's application at this time. The drawback is the terrain in Rowan county and the surrounding counties is considered mountainous and the land-based system would require numerous antennas and repeaters to receive reliable signals to the office. In addition, the meters are very expensive. This option is not financially feasible.

**5. SELECTION OF AN ALTERNATIVE**

There is only one alternative and that is to install the new drive by radio read meters. As described in ALTERNATIVES CONSIDERED the cost of the land-based system is not feasible with the requirements of numerous antennas and repeaters to navigate the mountainous terrain. The drive by radio read meters will provide updated meter accuracy by replacing aged meters, and reduce liabilities to Rowan Water personnel and the general public as well.

## 6. PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

### a. Project Design

New drive-by radio read system will include replacing approximately 6,000 unreliable meters system wide with new well tested technology that allows the utility to increase accuracy in their billing and reduce liability issues with company personnel and the general public. Efforts shall be made to insure contractor is aware of the locations of all meters within the system for a timely and efficient change out. If contingencies are available at the end of construction, a new meter reading truck outfitted with the lap tops for reading and any updates to the software system is also requested.

### b. Project Schedule

1. Received Letter of Conditions on August 6, 2019
2. Land Purchases and Easements were not required.
3. Division of Water Submittal was not required.
4. Advertised for Bids on Wednesday, October 2, 2019
5. Opened Bids on Friday, October 18, 2019
6. Anticipated Contract Signing – December, 2019
7. Substantial Completion – July, 2020

### c. Permit Requirements

1. Kentucky Division of Water Approval – N/A
2. Rowan County Fiscal Court – N/A
3. Kentucky Department of Highways – N/A

## 7. PROJECT BUDGET AND FUNDING

The project was advertised on October 2, 2019 and construction bids were opened on Friday, October 18, 2019. There were three (3) bidders: G and W Construction, Morehead, Kentucky; Mabry Construction, Morehead, Kentucky; and Thompson Brothers Construction, Hillsboro, Kentucky. The low bidder was G and W Construction with a low bid of \$218,540.00. The engineers estimate was \$250,000.00. Rowan Water, Inc. has worked with G and W Construction on numerous contracts over the years and all the projects were completed in a satisfactory manner. Therefore, Bluegrass Engineering will provide a letter of recommendation to RWI to award this bid to G and W Construction. Please note the bids were for the installation of the meters only. Rowan Water will purchase the meters with project funds and provide to the contractor for installation. **Appendix B (Bid Tabulation and Letter of Recommendation)**

The funding for the project consists of the following:

Rural Development Loan	\$1,222,000
Rural Development Grant	<u>\$500,000</u>
<b>Total</b>	<b>\$1,722,000</b>

The revised budget for this project is as follows:

Legal and Administrative	\$15,000
Land	\$0
Pre-liminary Engineering Report	\$5,000
Additional Engineering Services (Rate Study)	\$5,000
Engineering Design	\$79,100*
Construction Inspection	\$0
Interest	\$25,000
Construction (installation)	\$218,540
Water Meter Purchase/Start-Up	\$1,208,238.35
Contingencies	<u>\$166,121.65</u>
<b>Total</b>	<b>\$1,722,000</b>

It is the recommendation of Bluegrass Engineering, PLLC to proceed with the construction phase of the project upon the completion of remaining Rural Development submittals and construction conferences.

\*Agreement between RWI and Bluegrass Engineering to reduce design fee due to the number of checklist items that were not required of this project.

**Annual Operating Costs and Proposed Rates**

The proposed rates will allow RWI to fully fund the debt service for this project. The project will allow RWI to realize a reduction in annual operating costs over the course of the term of the loan. With the installation of approximately 6,000 new radio read meters RWI will see a reduction in labor hours, fuel costs and vehicle expense required to read customer meters monthly. Additionally, RWI will see improvements in their annual water loss rate. With new, more accurate meters system wide, water sales that had not previously been captured due to aging meters will now be recorded.

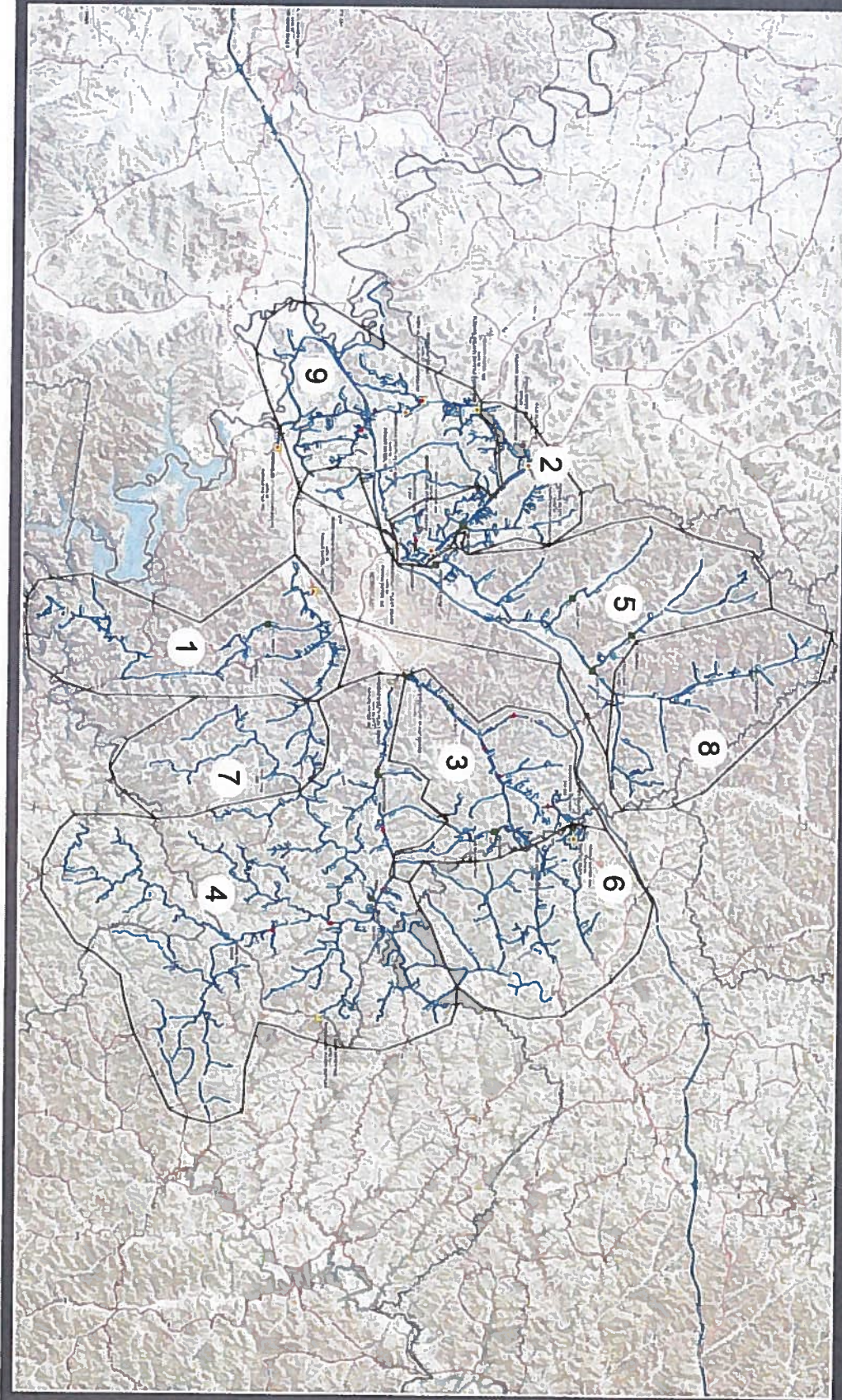
The combination of the proposed rates along with the operational efficiencies that are gained with this project will allow RWI to further strengthen their already robust financial position over the course of the loan.

## **8. CONCLUSIONS AND RECOMMENDATIONS**

Rowan Water, Inc. will replace approximately 6,000 of their 7,000 meters system wide. Approximately 1,000 radio read meters have been installed in recent projects allowing Rowan Water, Inc. to experience this technology and the benefits thereof first hand. The 6,000 old and unreliable meters will be replaced with the same radio read meters that they have currently in the system, so they can maintain the consistency with which they are accustomed. Due to the magnitude of the number of meters to be replaced, Rowan Water, Inc. bid out the installation of the meters over a six-month period and Rowan Water will purchase the meters from project funds. The start-up package shall also include training and software.

# APPENDIX A





**ROWAN WATER, INC.**  
 WATER DISTRIBUTION SYSTEM

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2018 WATER SYSTEM IMPROVEMENTS  
 METER REPLACEMENT

**BLUEGRASS ENGINEERING**  
 222 East Main Street, Ste. 1 - Georgetown, KY 40324

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2018 WATER SYSTEM IMPROVEMENTS  
 METER REPLACEMENT  
 WATER DISTRIBUTION SYSTEM MAP

NO.	DATE	REVISIONS	BY

**APPENDIX B**



**BID TABULATION**

2018 Water System Improvements - Meter Replacements  
 ROWAN WATER, INC.  
 MOREHEAD, KENTUCKY  
 BE PROJECT NO. 18023  
 BID OPENING: OCTOBER 18, 2019

Item No.	Description	Quantity	Unit	G&W Construction* Morehead, Kentucky		Mabry Construction* Morehead, Kentucky		Thompson Bros. Construction* Hillsboro, Kentucky	
				\$/unit	Bid Amount	\$/unit	Bid Amount	\$/unit	Bid Amount
1	Labor to Replace Existing Meters with New Radio Road Meters, Including Cutting Holes in Existing Meter Covers for AMR	6,000	EA	\$ 34.25	\$ 205,500.00	\$ 38.75	\$ 232,500.00	\$ 39.00	\$ 234,000.00
2	Replace Existing Setter with New Setter	20	EA	\$ 389.00	\$ 7,780.00	\$ 100.00	\$ 2,000.00	\$ 600.00	\$ 12,000.00
3	Replace Existing Meter Box with New Meter Box	20	EA	\$ 225.00	\$ 4,500.00	\$ 125.00	\$ 2,500.00	\$ 200.00	\$ 4,000.00
4	Replace Existing Meter Lid with New Meter Lid	20	EA	\$ 36.00	\$ 760.00	\$ 5.00	\$ 100.00	\$ 75.00	\$ 1,500.00
<b>TOTAL BASE BID AMOUNT - (ITEMS No. 1 - 4):</b>					<b>\$218,540.00</b>		<b>\$ 237,100.00</b>		<b>\$251,500.00</b>

\* Plan Holder

The above is a true and complete tabulation of the bids received on Friday, October 18, 2019, 10:00 am (EST). I certify that this is true and accurate tabulation of the bids

Bluegrass Engineering, PLLC

By:   
 Riley Sumner  
 Project Manager



October 21, 2019

Mr. Larry Johnson  
Rowan Water, Inc.  
1765 Christy Creek  
Morehead, Kentucky 40351

Re: 2018 Water System Improvements – Meter Replacements  
Recommendation of Award

Dear Mr. Johnson,

Bids for the above referenced project were opened on Friday, October 18, 2019 at 10 am EST at the Rowan Water office. There were three bidders: Thompson Brothers, G and W Construction, and Mabry Excavation. The low bidder was G & W Construction, Morehead, Kentucky with a bid of \$218,540. The engineer's estimate was \$250,000.

Since G & W Construction has completed several successful projects over the years with Rowan Water, Inc., Bluegrass Engineering would recommend that Rowan Water, Inc. accept the low bid of G and W Construction.

A copy of the bid tabulation is attached to this letter.

If you have any questions, please contact me at your convenience.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Riley Sumner', with a long horizontal flourish extending to the right.

Riley Sumner  
Project Manager