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**Final Engineering Report
Rattlesnake Ridge Water District
2016 Water System Improvements
October 2018**

prepared by:



Submitted By:

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RATTLESNAKE RIDGE WATER DISTRICT

FINAL ENGINEERING REPORT

PROJECT PLANNING

Rattlesnake Ridge Water District is located in northeastern Kentucky in Carter County. Its territory includes portions of Carter, Elliot, Lawrence, Lewis, and Morgan Counties. The District was organized in 1961 but did not commence operations until 1983. It currently serves approximately 4,029 customers.

RRWD's service area is a rural area with scattered residences, some agriculture, and state park land.

The calculated population based on the 2010 Census and the number of customers in each county was 10,054. The Kentucky State Data Center currently projects that all five counties will lose population over the next 35 years. The table below shows the total number of customers by county and the estimate of county population served by Rattlesnake Ridge.

County	Total Population	No. Customers	Population Served
Carter	27,720	2,558	6,421
Elliott	7,852	1,049	2,570
Lawrence	15,860	398	1,003
Lewis	13,870	0	0
Morgan	13,923	24	60
TOTALS:	79,225	4,029	10,054

EXISTING FACILITIES

Rattlesnake Ridge has a water treatment plant and a distribution system. The source of water is Grayson Lake. It also purchases a small amount of water from the City of Grayson.

The distribution system consists of eleven storage tanks with a combined capacity of 1,046,000 gallons; 700 miles of 8", 6", 4", 2", and 1.5" PVC water mains and 1.3 miles of ductile iron water mains, and ten booster pump stations.

The District does have an extremely high water loss. Currently the estimated water loss is 53 percent.

The financial status of the District is reasonable. They do have a positive cash flow if depreciation is taken out of the calculations. Preliminary calculations point to the need to make an adjustment to rates in order to maintain debt coverage ratios and to cover more of depreciation. By covering depreciation all or at least in part, the District will be in a more healthy position to do improvement projects in the future in house without the need to borrow money.

NEED FOR PROJECT

The 2016 Water System Improvements project is primarily an upgrade project, necessary to keep facilities of the District in good operating condition for the foreseeable future.

ALTERNATIVES CONSIDERED

Alternatives considered include:

- For the new water storage tank – construct a ground storage and a larger pump station. For the rehab of two existing tanks; defer rehab and wait until they are beyond repair and replace.
- For the water line replacement - replace with a different material; however PVC pipe is proposed and that is less expensive than ductile iron pipe.
- For the remaining activities the main alternative is to do nothing but this would not enable the District to provide quality service now and into the future.

SELECTED ALTERNATIVE

The project selected includes numerous items necessary to improve conditions in the distribution system and at the water treatment facility. The improvements include:

1. Purchase an existing facility and retrofit as office building. Move office to new location.
2. Purchase portable generator to use throughout the system in times of power failures
3. Upgrade the Diamond Ridge pump station
4. Install a new PRV station at Huff Run Road
5. Upgrade the WTP SCADA system
6. Construct new 100,000 gallon and 75,000 gallon elevated storage tanks
7. Upgrade KY 504 pump station
8. Rehab Diamond Ridge, Gregoryville No.2, and Route 7 storage tanks
9. Demolition of two KY 504 standpipe storage tanks
10. Purchase Equipment – mini excavator
11. New RTU at Diamond Ridge PS/Tank and 504 Tanks
12. Upgrade motors and drives at Rattlesnake Ridge Pump station
13. Replace Big Run Pump Station
14. Various Line extensions along Hardy Branch, Parker Hollow Road, Dehart Road, Ison Creek, Glen Lawson Road, Cave Road, and Brownie Cox Road

PROPOSED PROJECT

The proposed project includes multiple items. Included in the project are repainting and rehab of three storage tanks; the Diamond Ridge, Gregoryville No.2, and Route 7 tanks. Water lines will be extended on the following roads: Hardy Branch, Parker Hollow Road, Dehart Road, Ison Creek, Glen Lawson off KY 504, Cave Branch, and B.

The District proposes to purchase an existing facility and retrofit for a new office. Its existing office is in poor condition with minimal parking. Other improvements proposed are the purchase of a portable generator that can be moved to any of the pump stations in the system during emergency power outages, upgrade of the Diamond Ridge pump station, install a new PRV station at Huff Run Road, upgrade the WTP SCADA system, construct a new 100,000 gallon and 75,000 gallon elevated storage tank and new pump station on KY 504, rehabilitate the Diamond Ridge, Gregoryville No.2, and Route 7 storage tanks, demolition of two tanks on KY 504, purchase a mini excavator, install new RTUs at the Diamond Ridge PS and tank and the 504 tanks, upgrade the motors at the Rattlesnake Ridge Pump Station, and replace the Big Run Pump Station.

Annual Operating Costs

Per the 2014 audit, the District had income of \$2,430,991; the majority of this income was from water sales - \$2,414,671 while the balance was for service charges and other revenue.

The District's operating expenses totaled \$2,542,810 (depreciation was \$965,502 of this amount) for the same period. They had interest expense; bond principal payments, and note payments of \$291,270, \$321,396, and \$89,609 respectively.

For the year 2014 they had positive cash flow. However, the most glaring problem is that the District has not funded its Sinking Fund nor its Depreciation Fund as required by previous RD bond issues. The Sinking Fund is under funded by \$332,310 and the Depreciation Fund by \$221,245. Although the 2015 audit isn't available at this date, Kentucky Engineering Group has been assured by Rural Development

This proposed project will increase their annual debt payment by approximately \$165,000 per year. It is anticipated that a rate increase will be required to ensure that the District covers all expenses, brings its Reserve requirements up over a period of years, contributes the monthly Reserve requirements, and maintains at least a 1.2 debt coverage ratio. It is also expected that the District will cover a portion of its depreciation expense so that it has adequate revenues to do future maintenance in house or at least without incurring additional debt.

The proposed rates are:

5/8 Inch

First 1,000 gallons	\$19.32 minimum
Next 4,000 gallons	\$14.40 per 1000 gallons
Next 5,000 gallons	\$12.40 per 1000 gallons
Next 10,000 gallons	\$11.10 per 1000 gallons
Next 20,000 gallons	\$7.90 per 1000 gallons
Over 40,000 gallons	\$6.30 per 1000 gallons

¾ Inch

First 5,000 gallons	\$76.92 minimum
Next 5,000 gallons	\$12.40 per 1000 gallons
Next 10,000 gallons	\$11.10 per 1000 gallons
Next 20,000 gallons	\$7.90 per 1000 gallons
Over 40,000 gallons	\$6.30 per 1000 gallons

One Inch

First 10,000 gallons	\$138.92 minimum
Next 10,000 gallons	\$11.10 per 1000 gallons
Next 20,000 gallons	\$7.90 per 1000 gallons
Over 40,000 gallons	\$6.30 per 1000 gallons

1.5 Inch

First 30,000 gallons	\$328.92	minimum
Next 10,000 gallons	\$7.90	per 1000 gallons
Over 40,000 gallons	\$6.30	per 1000 gallons

Two Inch

First 50,000 gallons	\$470.92	minimum
Over 50,000 gallons	\$6.30	per 1000 gallons

Three Inch

First 100,000 gallons	\$785.92	minimum
Over 100,000 gallons	\$6.30	per 1000 gallons

Four Inch

First 200,000 gallons	\$1,415.92	minimum
Over 200,000 gallons	\$6.30	per 1000 gallons

Six Inch

First 500,000 gallons	\$3,305.92	minimum
Over 500,000 gallons	\$6.30	per 1000 gallons

No changes to wholesale rates.

PROJECT BUDGET AND FINANCING:

The project was advertised for construction bids on August 22, 2018 with a bid opening of September 10, 2018. The project is comprised of five contracts.

The contracts, number of bidders and low bidder are:

- Contract 1 – Water Lines, five bidders. Northeast KY Excavating is the low bidder at \$626,250.00.
- Contract 2 – 100,000 and 75,000-gallon elevated storage tanks, 2 bidders. Caldwell Tanks is the low bidder at \$945,000.00.
- Contract 3 – Tank Rehab, 4 bidders. PTTMCO is the low bidder at \$147,100.00.
- Contract 4 – Booster Station Improvements, 3 bidders. Jones Contracting was the low bidder but he did not specify the correct equipment and requested to withdraw his bid. The District accepted this and the next lowest bidder is Straeffer at \$348,850.00.
- Contract 5 – Office, 3 bidders. Allen Construction is the low bidder at \$679,004.75.

Kentucky Engineering has experience and/or knowledge of all the contractors and will make a recommendation to the District for award.

The funding available for the project consist of the following sources:

RUS Loan	\$2,490,000
RUS Grant	\$831,400
CDBG Grant	<u>\$800,000</u>
	\$4,121,400

The revised budget for the project is as follows:

CONSTRUCTION

Contract No. 1 - Water Main Extensions	\$626,250.00
Contract No. 2 - Water Storage Tanks	\$945,000.00
Contract No. 3 - Tank Rehabilitation	\$147,100.00
Contract No. 4 - Booster Station Improvements	\$348,850.00
Contract No. 5 - New Office Building	\$679,004.75
Contingency (10.0%)	\$274,620.00

OTHER CONSTRUCTION

Property for Office Building	\$160,000.00
Mini Excavator	\$70,000.00
Interest on Property for Office Building	\$2,500.00
Installation of Septic System at New Office	\$10,000.00
Office Furnishings	\$15,000.00
Reimbursement for Project Expenses	\$11,500.00

TOTAL ESTIMATED CONSTRUCTION COST \$3,289,824.75

ENGINEERING

Basic Engineering Services	\$261,700.00
Resident Inspection	\$141,500.00
Preliminary Engineering Report	\$15,000.00
Environmental	\$7,500.00
Easements	\$10,000.00
Geotechnical Reports (3)	\$15,000.00
Additional Engineering for Project Transfer	\$4,310.00

TOTAL ENGINEERING COST \$455,010.00

OTHER ADMINISTRATION

CDBG Administration	\$50,000.00
Legal and Administration	\$25,000.00
Interim Financing Interest	\$70,000.00

TOTAL OTHER COST	\$145,000.00
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ADDITIONAL FUNDS AVAILABLE	\$231,565.25
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TOTAL PROJECT COST	\$4,121,400.00
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It is the recommendation of Kentucky Engineering Group, PLLC to proceed to construction with the five contractors.

ATTACHMENTS:

Bid Tabulations

Letters of Recommendation