

GARRARD COUNTY WATER ASSOCIATION

2020 WATER SYSTEM IMPROVEMENTS

FINAL ENGINEERING REPORT

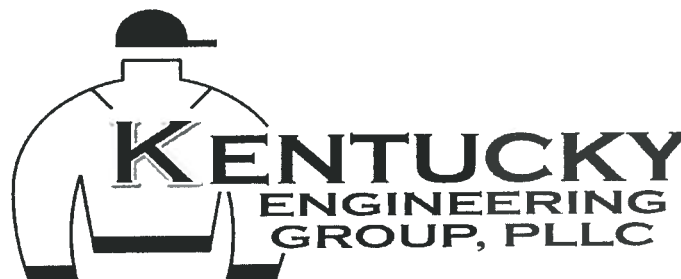


GARRARD COUNTY WATER ASSOCIATION

315 Lexington Road

Lancaster, KY 40444

JULY 2022



GARRARD COUNTY WATER ASSOCIATION FINAL ENGINEERING REPORT WATER SYSTEM IMPROVEMENTS

I. GENERAL

The Garrard County Water Association (GCWA) was formed in the late 1960's. The existing system consists of approximately 400 miles of water lines with 6 functioning water storage tanks and 6 booster pump stations that serve approximately 5,533 customers in Garrard County.

II. PROJECT PLANNING AREA

A. Location

The GCWA is located in Central Kentucky in Garrard County. With the exception of the City of Lancaster, the GCWA serves the majority of Garrard County along with a few customers in Lincoln, Madison and Rockcastle Counties. A map of the GCWA's service area is located at the end of this report.

The topography of Garrard County is a dissected upland with a gently rolling to hilly topography. The topography becomes more rugged near the deep valleys of the Kentucky River, which marks the northern boundary, and the Dix River, which forms the northwestern boundary. A nearly flat, slightly karstic, upland plain occupies part of northwestern Garrard County between U.S. 27 and Herrington Lake. Elsewhere, except locally in the vicinity of Lancaster, flat areas are rare. Local reliefs along the Kentucky River exceed 300 feet. Local reliefs along Herrington Lake are generally between 150 and 200 feet.

B. Environmental Resources

The major environmental features in the area are primarily gently rolling to hilly terrain. The gradual undulating terrain is the reason for a relatively few number of water storage tanks and pump stations. Water pressures range from below 30 psi to over 180 psi in sections of the system. Many of the hollows are in floodplains in particular along the Kentucky and Dix River. No known historic sites are noted in the planning area.

C. Growth Areas and Population Trends

A quick review of the census information shows a fairly significant increase in the population over the next twenty years. Since the establishment of the GCWA the population of Garrard County has continued to grow, in particular the northern

portion of the county. The water system has had rapid growth over the past 20 years because of numerous line extension projects. The population projections for Garrard County are shown below.

	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2040</u>	<u>2050</u>
Population	16,912	19,122	20,954	22,255	23,123

III. EXISTING FACILITIES

A. Location Map

A map of the county showing the extent of the water system is located at the end of this report.

B. History

The GCWA system was originally built in the late 1960's. The GCWA purchases the majority of its water from the City of Lancaster. Numerous water line extension projects have been developed over the past 40 years to establish the current GCWA customer base which serves approximately 95% of Garrard County.

C. Condition of Facilities

The GCWA system is in good to fair condition and work continues to improve the older, undersized sections of the GCWA.

Several of the original water mains in the GCWA system are class 160 PVC pipe and/or asbestos cement (AC) which has been a problematic source for line breaks and excessive maintenance industry wide. GCWA has experienced numerous line breaks which results in inadequate service to its customers and increased water loss. Several customers experience underserved water supply/pressure due to the excessive line breaks; in particular the northwestern and northern portion of the system which has experienced the most growth and the southern portion of the system which is some of the oldest sections of the system.

D. Financial Status

Annual audits will be submitted to Rural Development as required by the RD bond issue. A customer breakdown will be provided in the Summary Addendum.

As with the majority of utilities across the country, the GCWA has seen its operating expenses rise over the past several years. Fuel and health insurance are the expenses that have seen the largest increase. Because the GCWA covers a vast geographic area, the fuel cost has had a tremendous impact on cash flow. Also, the

recent COVID-19 pandemic has caused a substantial amount of lost revenue for the GCWA due to customers not paying their bill.

IV. NEED FOR THE PROJECT

A. Health and Safety

The proposed project to upgrade the water mains, extend service to unserved customers and provide one (1) new water tank for adequate storage and improved pressure will help to improve overall water quality. Improving storage capacity and hydraulic pressure by installing a new water storage tank to replace an existing undersized water storage tank will improve service to customers in the southeastern portion of Garrard County. Water turnover/water age by eliminating dead ends by looping some of the existing water lines will improve the quality of water for residents in these particular areas and also provide alternatives for service during emergency outages. Also, replacing existing class 160 and/or AC water mains with new class 200/class 250 water mains will drastically reduce the number of water main breaks in these areas, thus improving service to those customers and reducing water loss.

Some of the families living in the project areas currently rely on hauled water and cisterns for their drinking water. Most cisterns do not provide ample quantity and require the families to purchase water several times a month. This exposes some families to poor quality water and limits the amount of water available to them. Several residents in the various areas covered by this project have petitioned the GCWA for water service.

The proposed project will help to improve the overall service from a water quality and reliability standpoint to the GCWA customers.

B. System O&M

Upgrading water mains and replacing one water storage tank will reduce the amount of operation and maintenance budget required for the GCWA system. It will also improve the GCWA system by looping portions of the system that currently are dead-end lines.

V. ALTERNATIVES CONSIDERED

The only alternative considered for the water main upgrade was to do nothing in which case GCWA would continue to experience excessive maintenance cost to repair the class 160 water lines.

VI. PROPOSED ALTERNATIVE

The proposed project is to upgrade the existing class 160 and/or AC water mains that serve the multiple portions of the GCWA system, replace the existing Gabbard water storage tank and extend water lines to serve new customers. Due to recent price increases, inflation, etc. the project was bid with a base bid and alternates. Unless otherwise noted, those listed as “alternates” will not be part of the original project awarded to the contractor. Should contingency funds allow toward the end of construction, those alternate areas will be considered.

The KY 152 (US 27 to Buena Vista Church) and KY 52 portions of the project will replace problematic class 160 PVC water line with class 200 or class 250 water line.

The Eastland Acres portion of the project will replace AC water line with new class 200 water line. Research has shown the health risk of exposure to asbestos cement water line. (ALTERNATE)

The US 27 (Mt Hebron to Canoe Creek), Ky 1131 to Nina Ridge Road and Profit Road Extension portions of the project will help to loop the existing GCWA system and eliminate dead end sections of the water lines. The Profit Road Extension will also connect a section of the water system that has experienced periodic low pressure to a higher pressure zone, thus improving service to customers in this area. (ALTERNATE)

The Narrow Gap, Profit Road, Paper Mill Road, Sugar Creek Road, Bell Lane, Starnes Road (ALTERNATE), Boone Creek (ALTERNATE) and Ham Hill (ALTERNATE) portions of the project will extend water service to approximately 17 new customers.

Lastly, the project will include the addition of a new Gabbard water storage tank that will replace the existing Gabbard tank. The increased tank capacity at a higher elevation will increase hydraulic pressure thus improving service to the customers in this area.

Each of the items listed above will help to improve the overall service from a water quality and reliability standpoint to the GCWA customers.

Hydraulically the project takes advantage of elevations to reduce long-term pumping costs while also improving pressures to underserved areas.

The total project cost is shown on the detailed engineer estimate located at the end of the report. GCWA may also choose to purchase and install automatic radio read meters should contingency funds remain at the end of the project. GCWA has experienced trouble finding personnel to manual read existing meters.

The GCWA will institute a rate increase with this project. The proposed rates and additional financial data was presented in the Summary Addendum to the Preliminary Engineering Report. See attached Rate Summary for rate increase information.

VII. PROJECT BUDGET AND FINANCING

The project was advertised for construction bids on June 23, 2022 with a bid opening of July 14, 2022. There were four bidders on Contract 1 – Water Main Improvements and one bidder on Contract 2 - 50,000 Gallon Ground Storage Tank.

The low bidder on Contract 1 – Water Main Improvements was Akins Excavating Company, Inc. of Corbin, Kentucky with a low base bid of \$1,385,810. The total of the base bid plus all the alternates \$2,979,966.00. Kentucky Engineering Group, PLLC has worked with Akins and has found them to be a responsible and responsive bidder and contractor. Therefore, a letter of recommendation was provided to the Association. For purposes of staying within the budget Garrard County Water has elected to award a contract for the base bid plus alternates #7 & #9 in the total amount of \$1,613,030.00

The low bidder on Contract 2 – 50,000 Gallon Ground Storage Tank was Kentucky Glass Lined Tank Systems, Inc. of Lexington, Kentucky with a bid of \$361,972.00. Kentucky Engineering Group, PLLC has worked with Kentucky Glass Lined Tank Systems and has found them to be a responsible and responsive bidder and contractor. Therefore, a letter of recommendation was provided to the Association.

Both Contracts 1 (base bid) and 2 were below the engineers estimate for the project, therefore the Association has added the alternate areas as indicated above that will be included in the contractor’s contract.

The funding available for the project consists of the following source:

Rural Development	\$2,500,000
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The revised budget for the project is as follows:

Legal and Administrative	\$10,000
Land and Rights	\$10,000
Preliminary Engineering Report	\$10,000
Environmental	\$10,000
Rate Study	\$10,000
Geotechnical Report	\$5,000
AIS Certification	\$5,000
Basic Engineering Services	\$195,000
Construction Inspection	\$92,000
Construction – Contract 1	\$1,613,030
Construction – Contract 2	\$361,972

Owner Purchased Items	
Radio Read Meters	\$25,000
Contingencies	<u>\$152,998</u>
Total	\$2,500,000

It is the recommendation of Kentucky Engineering Group, PLLC to proceed to the construction phase of this project after submittal of Rural Development post bid documents and proceed with the pre-closing and pre-construction conferences.

VIII. PROPOSED PROJECT SCHEDULE

The proposed project schedule is:

1. Contract Award/Initiate Construction – October 2022
2. Substantial Completion – July 2022
3. Final Completion/Initiation of Operation – August 2022

ATTACHMENTS:

1. Rate Summary
2. Letter of Recommendations w/ Bid Tabulations – Contracts 1 and 2