

LEVEE ROAD WATER ASSOCIATION
WATER SYSTEM IMPROVEMENTS
PRELIMINARY ENGINEERING REPORT



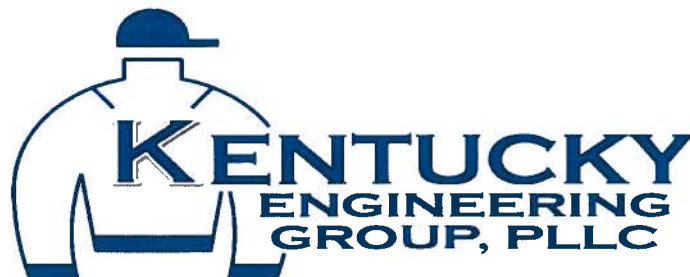
LEVEE ROAD WATER ASSOCIATION

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July 2019



LEEVE ROAD WATER ASSOCIATION PRELIMINARY ENGINEERING REPORT WATER SYSTEM IMPROVEMENTS

I. GENERAL

The Levee Road Water Association (LRWA) was formed in the late 1970's. The existing system consists of approximately 39.6 miles of water lines with 2 functioning water storage tanks that serve approximately 852 customers in Montgomery and Powell County.

II. PROJECT PLANNING AREA

A. Location

The LRWA is located in Central Kentucky in Montgomery County. The LRWA serves the area South of the City of Mount Sterling in Montgomery County as well as a small section of Powell County. A map of the LRWA's service area is located at the end of this report.

The topography of the LRWA service area is a dissected upland with a gently rolling to hilly topography. The topography becomes more rugged towards the southern reaches of the LRWA service area. A relatively flat, meadow occupies part of central service area running along U.S. 11. The majority of the LRWA service area is prone to Karst conditions except the southern reaches.

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 45 psi to over 135 psi in sections of the system. Many of the hollows are in floodplains in particular along the Hog Creek. 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 LRWA the population of Montgomery County has continued to grow. The population projections for Montgomery County are shown below.

	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2040</u>	<u>2050</u>
Population	26,449	29,421	33,051	36,571	39,941

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 LRWA system was originally built in the late 1970's. The LRWA purchases its water from the City of Mount Sterling, however portions of the proposed project would allow purchasing water from Jeffersonville in case of emergency. Numerous water line extension projects have been developed over the past 40 years to establish the current LRWA customer base.

C. Condition of Facilities

LRWA currently purchases an average of 131,000 gallons a day from the City of Mount Sterling. The system is in good to fair condition and work continues to improve the older sections of the LRWA system.

Several of the original transmission watermains that connect to the City of Mount Sterling water system and transport the majority of the LRWA water suffer from improper installation. Failure to properly bed the lines during initial installation has caused stresses to occur within the pipe that have caused reoccurring failures of lines in various points. LRWA bears a significant expense in materials and manpower fixing these failures as well as a disproportionate amount of the system wide water loss

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 LRWA 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 LRWA covers a vast geographic area, the fuel cost has had a tremendous impact on cash flow.

IV. NEED FOR THE PROJECT

A. Health and Safety

The proposed project to upgrade the transmission mains, providing flushing hydrants, providing a new Chlorine Booster Station, and repairs to the Mckee Storage Tank will help to improve overall water quality while reducing water loss. There are several dead-end

lines within the LRWA water system. Regular flushing of these lines can help improve water quality in these areas. The installation of a Chlorine Booster Station will provide proper chlorine residual for disinfection. Additionally, the installation of a connection to the Jeffersonville water system will help improve the overall reliability of the system and provide alternatives for service during emergency outages.

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

B. System O&M

Upgrading transmission mains, replacing creek crossings, and repairs to both water storage tanks will reduce the amount of operation and maintenance budget required for the LRWA system. It will also reduce water loss in the LRWA distribution system.

V. ALTERNATIVES CONSIDERED

The only alternatives considered for the project was to complete the project in several phases. Each item within this project is vital to maintaining the overall health and operation of the LRWA system for the foreseeable future.

VI. PROPOSED ALTERNATIVE

The proposed project centers around replacing older sections of the transmission mains that serve as the backbone of the LRWA system and providing additional operational flexibility. The main sections were installed with improper bedding causing stresses to build over time which cause numerous leaks within the sections of these pipes. Due to the location of these lines within the system and lack of adequate valving, any shutdowns for repairs can have a large effect upon the system. The project will replace approximately one mile of water main and an approximate 700 LF of creek crossings in various locations. Additionally, the project will include the installation of new meter setters and radio read meters to help reduce water loss. These sections of line as well as the aging meters are thought to account for a disproportionate volume of water loss. The project will also include the addition of ten (10) gate valves at strategic locations and a connection to the City of Jeffersonville's Water System to increase the operational flexibility during inevitable shutdowns for repairs.

A second part of this project is to rehabilitate the two tanks within the Levee Road Water System. The McKee Water Storage Tank and access road have reached a point of disrepair that rehabilitation of the complete tank, site, and road are necessary. Rehabilitation is a normal part of the tank life cycle however if delayed for too long, tank failure can become a potential. Additionally, modifications at the Oldham Road Tank Site and valving will be completed to reduce pressure spikes seen within the distribution system during cycling and maintain proper operation.

The project will also include one (1) new Chlorine booster station, twelve (12) new flush hydrants, four (4) new Auto-Flush Units, and two (2) new fire hydrants. The minimum residual per state regulations is 0.2 mg/l. During warm weather an excessive amount of flushing is required to maintain the required residual within the system. LRWA is limited by their staff size to complete all necessary flushing while still completing normal O&M. This new Chlorine booster station will provide the required residual in the outermost regions of the service area regardless of weather with proper flushing and the addition of new auto-flush units, flush hydrants, and fire hydrants will allow LRWA staff to complete this flushing while still completing other necessary O&M requirements to properly maintain the system.

Lastly, the project will include purchasing property for a new building and garage for the LRWA office. The LRWA currently rents a building along Rt. 11. The new office building will allow the LRWA a permanent place with proper facilities to operate a water system as well as provide ADA compliance.

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

A summary of the proposed project is as follows:

	Descriptions	Quantity
Miscellaneous Work Within the system	New Auto-flush Units	4
	New Flush Hydrants	12
	New Gate Valves	9
	New Radio Read Meters	850+
	New Fire hydrant	2
	Replace Creek Crossing by Directional Bore	6
	New Building and Garage	1
	New Chlorine Booster Station	1
	Connection to the City of Jeffersonville Water System	1

		Approximate Year in Service	Approximate Age
Rehabilitation of water storage tanks	Oldham Road	1986	33
	Mckee	2007	12
Rehabilitation of Pressure Reducing Stations	Cream Alley	1986	33
	Kiddville Rd	1997	22

The total project cost is shown on the detailed engineer estimate located at the end of the report.

It is expected that the LRWA will institute a rate increase with this project. The proposed rates and additional financial data will be presented in the Summary Addendum to the Preliminary Engineering Report that follows this report.

VII. PROPOSED PROJECT SCHEDULE

The proposed project schedule is:

1. Secure Letter of Conditions from USDA RD – September 2019
2. Secure Land/Easement/Encroachment Permits – October 2019
3. Division of Water Submittal – September 2019
4. Advertise for Bids – December 2019
5. Contract Award/Initiate Construction – March 2020
6. Substantial Completion – October 2020
7. Final Completion/Initiation of Operation –November 2020

