

**PRELIMINARY ENGINEERING REPORT**

**CAROLYN LANE AND VINCEWOOD DRIVE  
WATER LINE UPGRADE PROJECT  
JESSAMINE COUNTY WATER DISTRICT #1  
JESSAMINE COUNTY, KENTUCKY**

**December 2018**

**Prepared By:**



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Date: 2022.05.02 13:41:44 -04'00'*

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## **I INTRODUCTION**

This Preliminary Engineering Report will examine the proposed Carolyn Lane & Vincewood Drive Water Line Upgrade Project for the Jessamine County Water District No.1 (JCWD1). This project will also include the replacement of approximately 500 existing meters with radio read meters. It is estimated that the proposed project will have a construction cost of \$1,200,000 and a project cost of \$1,452,000.

## **II DESCRIPTION OF WATER DISTRICT**

Jessamine County is located in central Kentucky along the Kentucky River. Nicholasville is the county seat, and is located approximately 10 miles south of Lexington. The project lies in northern Jessamine County. The economy is based on agriculture and manufacturing. The people derive their income primarily from farming, commercial and/or factory work in Nicholasville or Lexington.

The region has great potential for future industrial, commercial and residential growth because of the availability of suitable sites, reasonable transportation infrastructure, relatively inexpensive and plentiful electricity and close proximity to employment and amenities. Jessamine County in general, and the US 27 corridor specifically, has grown dramatically over the last 20 years. This growth has stretched the existing infrastructure to its limit. Transportation facilities into and out of the area are currently in the process of upgrading to accommodate the increased traffic. Major Kentucky highways providing access to the area are US 27 and US 68, both of which are scheduled for or are currently being upgraded by the Kentucky Transportation Cabinet.

Nicholasville, the county seat, is governed by a Mayor and City Council. The County is governed by a Fiscal Court comprised of a Judge/Executive and Magistrates. The water system is directly under the supervision of the Jessamine County Water District No. 1. The Judge/Executive nominates the Commissioners, and each must be approved by Fiscal Court. These Water Commissioners vote on all actions governing the water system at its monthly meeting. The District operates and maintains the system.

### **III EXISTING WATER SYSTEM**

Jessamine County Water District No. 1 currently serves approximately 2,300 residential and commercial customers. The current water distribution system is in fairly good shape, except for the enormous amount of growth this area is seeing. Currently there are plans for new commercial and residential developments along the US 27 corridor and E. Brannon road that will place demands on JCWD #1 that will need to be met.

The system consists of two 1,000,000 and one 250,000 gallon storage tanks, along with one 350 GPM pump station and one 600 GPM pump station. The Water District also has water lines ranging in size from 3" to 12" that supply the existing customers. The District currently purchases all water from the City of Nicholasville and KY American Water. All of the ongoing residential and industrial development requires fire protection, which JCWD #1 cannot currently provide in many areas.

### **IV NEED FOR PROJECT**

#### **A. Carolyn Lane and Vincewood Road Water Line Upgrades**

The existing project area has problems with water line breaks and restrictive flows. Additionally, the existing lines consist of lead and/or asbestos cement (AC) lines that are inadequately sized. This project will serve to improve loop line, allow adequate flow, and provide fire protection to the area served.

#### **B. Automated Meter Reading System**

JCWD1 currently subcontracts the operations and maintenance of the entire distribution system. These subcontractors are currently required to manually read all +/- 2,300 water meters monthly. This task takes approximately two and half days. With the installation of an automated meter reading (AMR) system, meters could be read in a fraction of the time allowing the subcontractors to focus on maintaining the remainder of the system. An AMR system is also helpful in identifying water leaks on the customer side of the meter.

## V ALTERNATIVES

Alternative No.1 - Replace the existing 3-inch water mains with new 3-inch PVC water mains.

The replacement of existing water mains would eliminate leaks in the main along the project area in addition to removing any existing asbestos cement lines. The downside is that customers within the service area would only experience a small increase in water service and the smaller diameter lines do not allow for fire protection.

Alternative No. 2 - Upgrade the existing 3-inch water line along Carolyn Lane to 6-inch, upgrade the existing 3-inch water line along Vincewood Road to 8-inch, and replace approximately 500 existing water meters with radio read meters.

Upgrading to larger diameter mains will serve to eliminate leaks and asbestos cement lines while also improving the water service and allowing for fire flow. Additionally, the installation of radio read meters would allow for field personnel to spend less time manually reading meters and more time maintaining the system.

Alternative No. 3 – Do nothing.

Since the “do nothing” approach will not serve to improve service or eliminate any problem areas within the project area, I do not believe that it is a viable option.

## VI THE PROPOSED PROJECT

In order to improve the level of service to their customers, JCWD1 will pursue Alternative No.2 and will upgrade the existing 3-inch water line along Carolyn Lane to 6-inch, upgrade the existing 3-inch water line along Vincewood Road to 8-inch, and replace approximately 500 existing water meters with radio read meters.

## VII COST SUMMARY

The estimated construction cost for the Water System Improvements Project is \$1,200,000 and is summarized in Table 1. The estimated project cost is \$1,452,000 and is summarized in Table 2.

**Table 1: Opinion of Probable Construction Cost**

### **Carolyn Lane Upgrade**

<b>Item No.</b>	<b>Item Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
1.	6" PVC SDR-21 Water Line	7,500	LF	\$ 20.00	\$150,000.00
2.	12" Steel Casing by Bore	750	LF	\$ 150.00	\$112,500.00
3.	6" Gate Valve & Box	20	EA	\$ 1,250.00	\$ 25,000.00
4.	Fire Hydrant Assembly	10	EA	\$ 3,500.00	\$ 35,000.00
5.	Customer Service	85	EA	\$ 1,250.00	\$106,250.00
6.	Additional 1" Service Tubing	800	LF	\$ 5.00	\$ 4,000.00
7.	#57 Crushed Stone	750	LF	\$ 15.00	\$ 11,250.00
8.	#9M Crushed Stone	250	TN	\$ 20.00	\$ 5,000.00
9.	Bituminous Paving Replacement	1,500	SF	\$ 20.00	\$ 30,000.00
10.	Concrete Pavement Replacement	150	CY	\$ 250.00	\$ 37,500.00
11.	Videotaping	1	LS	\$ 3,500.00	\$ 3,500.00
12.	#10 Tracer Wire & Tape	7,500	LF	\$ 1.50	\$ 11,250.00
13.	Clean-up Allowance	1	LS	\$ 20,000.00	\$ 20,000.00
				Subtotal	\$551,250.00

### **Vincewood Road Upgrade**

<b>Item No.</b>	<b>Item Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
1.	8" PVC SDR-21 Water Line	3,500	LF	\$ 25.00	\$ 87,500.00
2.	16" Steel Casing by Bore	500	LF	\$ 175.00	\$ 87,500.00
3.	8" Gate Valve & Box	10	EA	\$ 1,400.00	\$ 14,000.00
4.	Type "A" Creek Crossing	40	LF	\$ 125.00	\$ 5,000.00
5.	Fire Hydrant Assembly	5	EA	\$ 3,500.00	\$ 17,500.00
6.	Customer Service	38	EA	\$ 1,250.00	\$ 47,500.00
7.	Additional 1" Service Tubing	950	LF	\$ 5.00	\$ 4,750.00
8.	#57 Crushed Stone	500	LF	\$ 15.00	\$ 7,500.00
9.	#9M Crushed Stone	250	TN	\$ 20.00	\$ 5,000.00
10.	Bituminous Paving Replacement	100	SF	\$ 20.00	\$ 2,000.00
11.	Concrete Pavement Replacement	100	CY	\$ 250.00	\$ 25,000.00
12.	Videotaping	1	LS	\$ 3,500.00	\$ 3,500.00
13.	#10 Tracer Wire & Tape	3,500	LF	\$ 1.50	\$ 5,250.00
14.	8" Connection to Existing	1	LS	\$ 3,500.00	\$ 3,500.00
15.	10" Connection to Existing	1	LS	\$ 4,000.00	\$ 4,000.00
16.	Clean-up Allowance	1	LS	\$ 15,000.00	\$ 15,000.00
				Subtotal	\$334,500.00

**Table 1 cont.**  
**AMR Upgrade**

Item No.	Item Description	Quantity	Unit	Unit Cost	Total
1.	5/8"x3/4" BLMJ MTR USG w/ wireless ALLEGRO AMR/AMI Register	500	EA	\$ 250.00	\$125,000.00
2.	ALLEGRO Mobile Laptop Sys.	1	EA	\$ 15,000.00	\$ 15,000.00
3.	2-Day On-Site Training w/ System Configuration and Training	1	EA	\$ 7,500.00	\$ 7,500.00
4.	Harmony Mobile Hosting/Support (1,501 to 10,000 accounts)	1	EA	\$ 2,500.00	\$ 2,500.00
5.	Installation	500	EA	\$ 50.00	\$ 25,000.00
6.	Misc. Repair Allowance	1	LS	\$ 25,000.00	\$ 25,000.00
Subtotal					\$200,000.00
Total					\$1,085,750.00
Construction Contingencies (10%)					\$ 108,575.00
Construction Grand Total					\$1,194,325.00
<b>USE</b>					<b>\$1,200,000.00</b>

**Table 2: Opinion of Probable Project Cost**

Construction:		\$ 1,200,000
Engineering:		\$ 169,000
	Preliminary Engineering	\$ 15,000
	Design	\$ 66,500
	Advertise/Bidding	\$ 9,500
	Construction Admin.	\$ 19,000
	Resident Observation	\$ 59,000
	Subtotal	\$ 169,900
Legal/Admin		\$ 16,000
Environmental (Categorical Exclusion)		\$ 10,000
Archaeological		\$ 15,000
PSC (RD Submittal)		\$ 3,000
Miscellaneous (AIS, etc.)		\$ 15,000
	SUBTOTAL	\$ 228,900
Project Contingencies (10%)		\$ 22,890
	TOTAL	\$ 251,790
	<b>GRAND TOTAL</b>	<b>\$ 1,451,790</b>
	<b>USE</b>	<b>\$ 1,452,000</b>

## VIII FUNDING

Proposed funding for this project is being made available by the following:

**TABLE 3: PROPOSED FUNDING**

Owner Contribution <sup>(1)</sup>	\$ 452,000
RUS Loan <sup>(2)</sup>	\$1,000,000
<b>TOTAL PROJECT FUNDING</b>	<b>\$1,452,000</b>

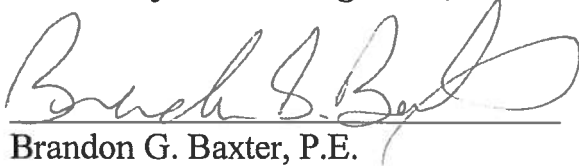
- (1) Owner shall pay ALL Non-Construction Costs and AMR Construction Contract.
- (2) 4.00% loan for 40 years with principal deferred for 2 years.

## IX RECOMMENDATIONS

It is recommended that the project be funded by Rural Development and a Letter of Conditions be issued as soon as possible.

Prepared By:

***HMB Professional Engineers, Inc.***

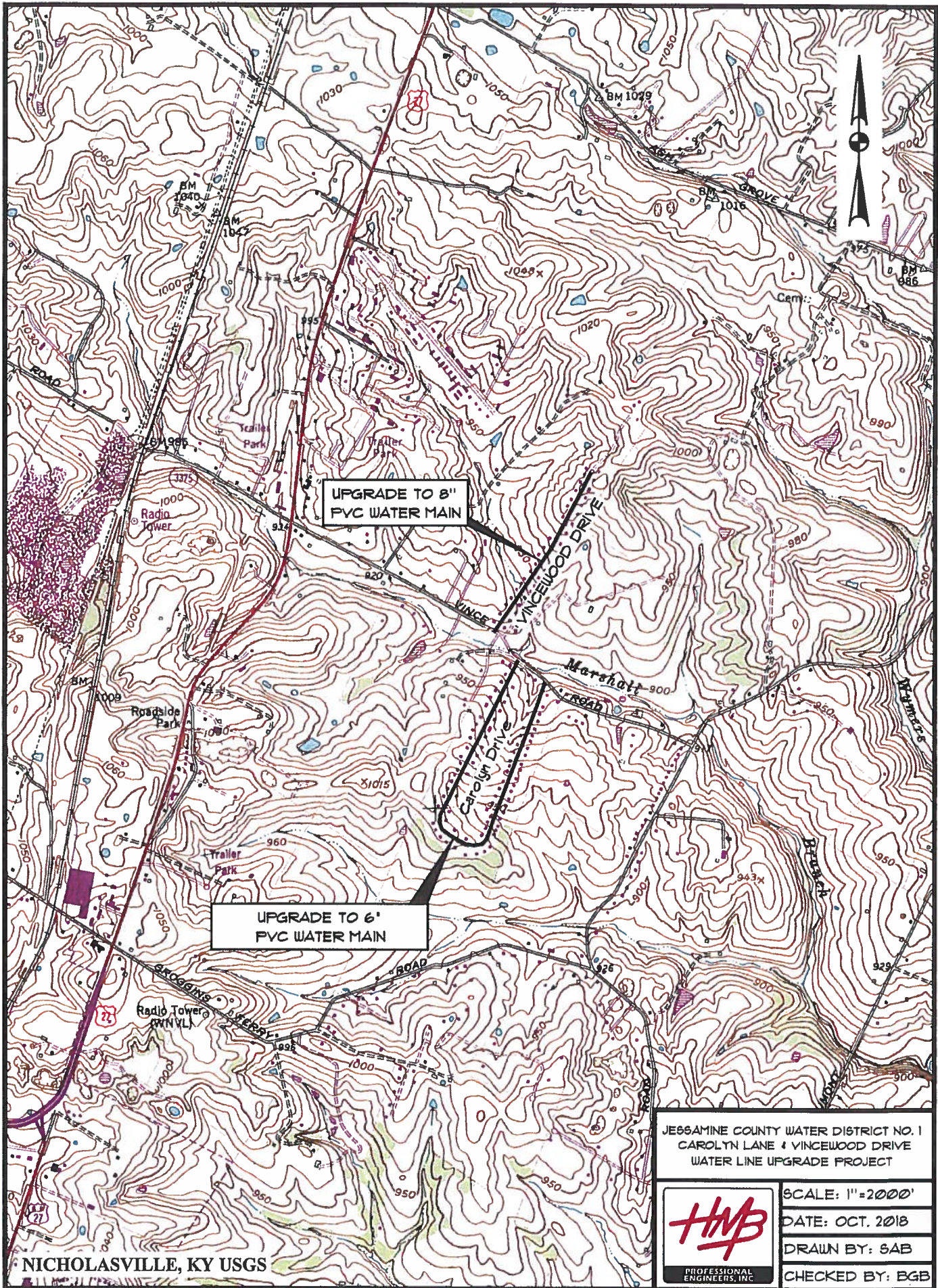


Brandon G. Baxter, P.E.  
Project Manager



# **Appendix A**

## **PROJECT MAP**



JESSAMINE COUNTY WATER DISTRICT NO. 1  
 CAROLYN LANE & VINCEWOOD DRIVE  
 WATER LINE UPGRADE PROJECT



PROFESSIONAL  
 ENGINEERS, INC.

SCALE: 1"=2000'

DATE: OCT. 2018

DRAWN BY: SAB

CHECKED BY: EGB

NICHOLASVILLE, KY USGS