

January 22, 2013

Mr. Jeff Derouen  
Executive Director  
KY Public Service Commission  
211 Sower Blvd.  
PO Box 615  
Frankfort, Kentucky 40602-0615

Re: Western Pulaski County Water District  
Case No. 2012-00582  
Preliminary Engineering Report

RECEIVED

JAN 25 2013

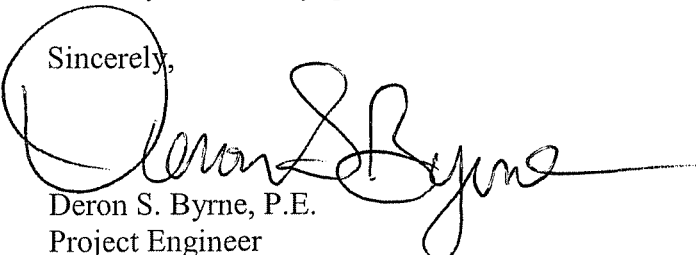
PUBLIC SERVICE  
COMMISSION

Dear Mr. Derouen:

Please find enclosed two signed and dated copies of the Preliminary Engineering Report for the above referenced project.

Should you have any questions or need additional information, please advise.

Sincerely,

  
Deron S. Byrne, P.E.  
Project Engineer

/dsb

Enclosures

cc: Mr. W. Randall Jones (One (1) Copy)  
Rubin & Hays

**PRELIMINARY ENGINEERING REPORT  
FOR THE  
WESTERN PULASKI COUNTY WATER DISTRICT  
BROWNS RIDGE WATER LINE EXTENSION  
BOURBON PUMP STATION AND WATER LINE  
KY 80 TRANSMISSION MAIN AND PUMP STATION**

**RECEIVED**

JAN 25 2013

PUBLIC SERVICE  
COMMISSION

**MAY 2011**

**M**  
**Monarch Engineering, Inc.**

*[Handwritten Signature]*  
DERON S.  
BYRNE  
23127  
KENTUCKY  
LICENSED  
PROFESSIONAL ENGINEER  
1/22/2013

**PRELIMINARY ENGINEERING REPORT  
FOR THE  
WESTERN PULASKI COUNTY WATER DISTRICT  
BROWNS RIDGE WATER LINE EXTENSION  
BOURBON PUMP STATION AND WATER LINE  
KY 80 TRANSMISSION MAIN AND PUMP STATION**

**MAY 2011**

# **PRELIMINARY ENGINEERING REPORT**

## **WESTERN PULASKI COUNTY WATER DISTRICT BROWNS RIDGE WATER LINE EXTENSION BOURBON PUMP STATION AND WATER LINE KY 80 TRANSMISSION MAIN AND PUMP STATION**

### **WESTERN PULASKI COUNTY WATER DISTRICT PULASKI COUNTY, KENTUCKY**

#### **I. GENERAL**

This Preliminary Engineering Report is intended to analyze the proposed water system extensions and improvements that is being planned by the Western Pulaski County Water District to serve residential customers in Western Pulaski County with potable drinking water. The Western Pulaski County Water District (WPCWD) desires to provide more reliable water service to the Southeastern pressure zone of the service area. The pump station and transmission main is undersized and in need of an upgrade. This part of the project is related to capacity and reliability which has an indirect effect on the health and safety of the customer base.

Water service is needed for the Brown's Ridge and Finley Owens Road section of the WPCWD service area. There are currently approximately forty (46) new customers in the Brown's Ridge and Finley Owens Road community of Western Pulaski County that do not have access to public water supplies. This part of the project is directly related to health and safety of the residents of Brown's Ridge that currently use wells and cisterns for their potable water source. The new water line on Hendricks Road will serve Three (3) new customers whose current water source is Fishing Creek.

The water line along KY 80 to the western part of the WPCWD distribution system is near capacity and an additional 10-inch water line is proposed to supplement the existing 8-inch water line. A new pump station, which will draw from the new 10-inch water line along KY 80, is proposed that will fill the existing Denham Knob tank. The existing Denham Knob ground storage tank will not fill because of the current system hydraulics.

#### **II. PROJECT PLANNING AREA**

The WPCWD service area is in the South Western Pulaski County, and covers area that is generally south of the Louie B. Nunn Parkway. This project area is spread over the southeastern and western most portions of the service area. The entire service area is

broken into pressure zones as shown on the attached system map. System schematics were developed from information received from the Lake Cumberland Area Development District (LCADD) and further refined from discussions with the WPCWD staff.

### III. EXISTING FACILITIES

The WPCWD service area is comprised of approximately 350 miles of water lines consisting of 155 miles of 3-inch, 53 miles of 4-inch, 121 miles of 6-inch, 18 miles of 8-inch, and less than 1 mile of 10-inch water lines. The WPCWD has five pump stations and six water storage tanks. The system is served from the City of Somerset through four master meters supplied from both the Somerset high and low level pressure zones. The system provides water service to approximately 8,500 customers.

The distribution system with water line sizes is shown on attached system map. The WPCWD is generally in good repair; however, some components were installed when the system was much smaller and in need of upgrading and others are showing signs of wear because of many years of use.

The WPCWD is currently in compliance with all Federal and State Regulations regarding the sanitary features of the distribution system. In addition the WPCWD is governed by the Public Service Commission, and they have no current violations of PSC regulations.

### IV. NEED FOR THE PROJECT

The pump station currently on the Southeastern pressure zone is undersized for the growing customer base in the pressure zone. During the hot dry periods, the pump station is unable to keep up with the demand and the elevated tank goes “dry” or nearly empty which leaves the customers in the pressure zone with low pressure and sometimes completely without water. A new and larger pump station is needed to adequately serve the area. The water lines from the existing pump station are inadequate for the new Booster station, and will need to be upgraded. The new transmission main will consist of approximately 6,500 LF of 10-inch PVC pipe and associated appurtenances. This part of the project will improve water service to approximately 3,000 existing customers in the Southeastern section of the WPCWD service area. The location of the pump station and transmission main are shown on the attached system maps.

New water service is needed for the Brown’s Ridge and Finley Owens Road section of WPCWD service area. The Browns Ridge portion of the project will be served through a master meter from Russell County. The Browns Ridge and Finley Owens water line extensions are shown on attached topographic maps. The Hendricks Road area in the Northeastern section of the WPCWD service area is also in need of public water. There are three potential customers in the Hendricks Road areas that are currently using water

from wells or cisterns. The water line extension will serve three (3) additional customers. The Hendricks Road water line extension is shown on an attached topographic map.

System changes are proposed that will create a pressure zone north of the Louie B. Nunn Parkway that will be supplied by the Denham Knob tank. These changes will improve the reliability of the Northern portion of the WPCWD distribution system north of the Parkway. The water line along KY 80 to the western part of the WPCWD distribution system is near capacity and an additional 10-inch water line is proposed to supplement the existing 8-inch water line. A new pump station, which will draw from the new 10-inch water line along KY 80, is proposed that will fill the existing Denham Knob tank. The existing Denham Knob ground storage tank will not fill because of current system hydraulics. The location of the KY 80 water line extension and Denham Knob pump station are shown on attached maps.

## V. ALTERNATIVES CONSIDERED

### **SOUTH PRESSURE ZONE**

Alternate No. 1: Increase the size of the existing pump station that currently supplies the South pressure zone of the service area

Alternate No. 2: Provide additional storage for the South Zone.

Alternate No. 3: Provide both additional storage and increase the size of the pumping station.

### **BROWNS RIDGE AND FINLEY OWENS ROAD WATER LINE EXTENSIONS**

Alternate No. 1: Provide water service to this area from the Western Pulaski County Water District distribution system.

Alternate No. 2: Provide water service to the Brown's ridge from the Russell County through the City of Russell Springs distribution system.

### **KY 80 WATER LINE AND DENHAM KNOB PUMP STATION**

Alternate No. 1: Add a new water line along KY 80 from the Somerset High pressure Zone and add a pump station to fill the Denham Knob tank near the Denham Knob Tank on property owned by the WPCWD.

Alternate No. 2: Fill the Denham Knob tank from WPCWD Northeast pressure Zone with a new pump.

## VI. PROPOSED PROJECT

### **NEW BOURBON PUMP STATION AND TRANSMISSION MAIN**

The pump station currently on the Southeastern pressure zone is currently undersized for the growing customer base in the pressure zone. During hot dry periods the pump station is unable to keep up with the demand and the elevated tank goes “dry” or nearly empty which leaves the customers in the pressure zone with low pressure and sometimes completely without water. A new and larger pump station is needed to adequately serve the area. The water lines from the existing pump station are inadequate for the new Booster station and will need to be upgraded. The new water line will consist of approximately 6,500 LF of 10-inch PVC pipe and associated appurtenances. This part of the project will improve water service to approximately 3,000 existing customers in the Southeastern section of the WPCWD service area. The new pump station will have a capacity of 750 GPM at 185 feet of total dynamic head.

### **BROWNS RIDGE AND FINLEY OWENS ROAD WATER LINE EXTENSIONS**

The new water main on Browns Ridge will serve approximately forty (40) unserved residences in the Brown Ridge section of Pulaski County. The finely Owens Water Line extension will connect Brown’s Ridge Extension and Service approximately six (6) new customers. The new main will be supplied from Russell County through the City of Russell Springs through a master meter located near the Russell/Pulaski county line. Some new customers from Russell County may be included in the project if they choose to take the water service. The new water line will consist of approximately 11,000 feet of 6-inch PVC pipe and associated appurtenances. A map of the Brown Ridge and Finley Owens Water Line project is included on the attached topographic maps.

### **KY 80 WATER LINE AND DENHAM KNOB PUMP STATION**

The water line along KY 80 to the western part of the WPCWD distribution system is near capacity and an additional 10-inch water line is proposed to supplement the existing 8-inch water line. A new pump station, which will draw from the new 10-inch water line along KY 80, is proposed that will fill the existing Denham knob tank. The existing Denham Knob ground storage tank will not fill because of current system hydraulics.

An itemized cost estimate is included in this report and it outlines all of the individual construction items along with their associated unit costs. A summary cost estimate summarizes all of the project costs and outlines the funding scheme for the project which is also included in this report.

The project cost has been estimated to be \$1,922,000 and it is to be financed by a grant from USDA Rural Development for \$522,200 and a loan from USDA Rural Development for \$1,400,000.

## VII. CONCLUSIONS AND RECOMMENDATIONS

The distribution system upgrades listed in this report will substantially increase the reliability and capacity of the WPCWD distribution system. The increased pump capacity of the bourbon pump station and transmission main will double the capacity of the South pressure zone which is desperately needed during the summer months. The new pump station and transmission main along KY 80 will improve the reliability of the Northwestern pressure zone by allowing the use of the Denham Knob tank which has not been useful since it was constructed because of system hydraulics.

The water line extensions to the Browns Ridge, Finley Owens, and Hendricks Road areas will supply water to approximately 49 households which do not currently have access to public water supplies. The Browns Ridge area will be supplied through a master meter from Russell County through the City of Russell Springs.



**PRELIMINARY COST ESTIMATE  
WATER TRANSMISSION MAIN - PHASE 1  
WESTERN PULASKI COUNTY WATER DISTRICT  
MAY 2011**

**PROJECT COSTS**

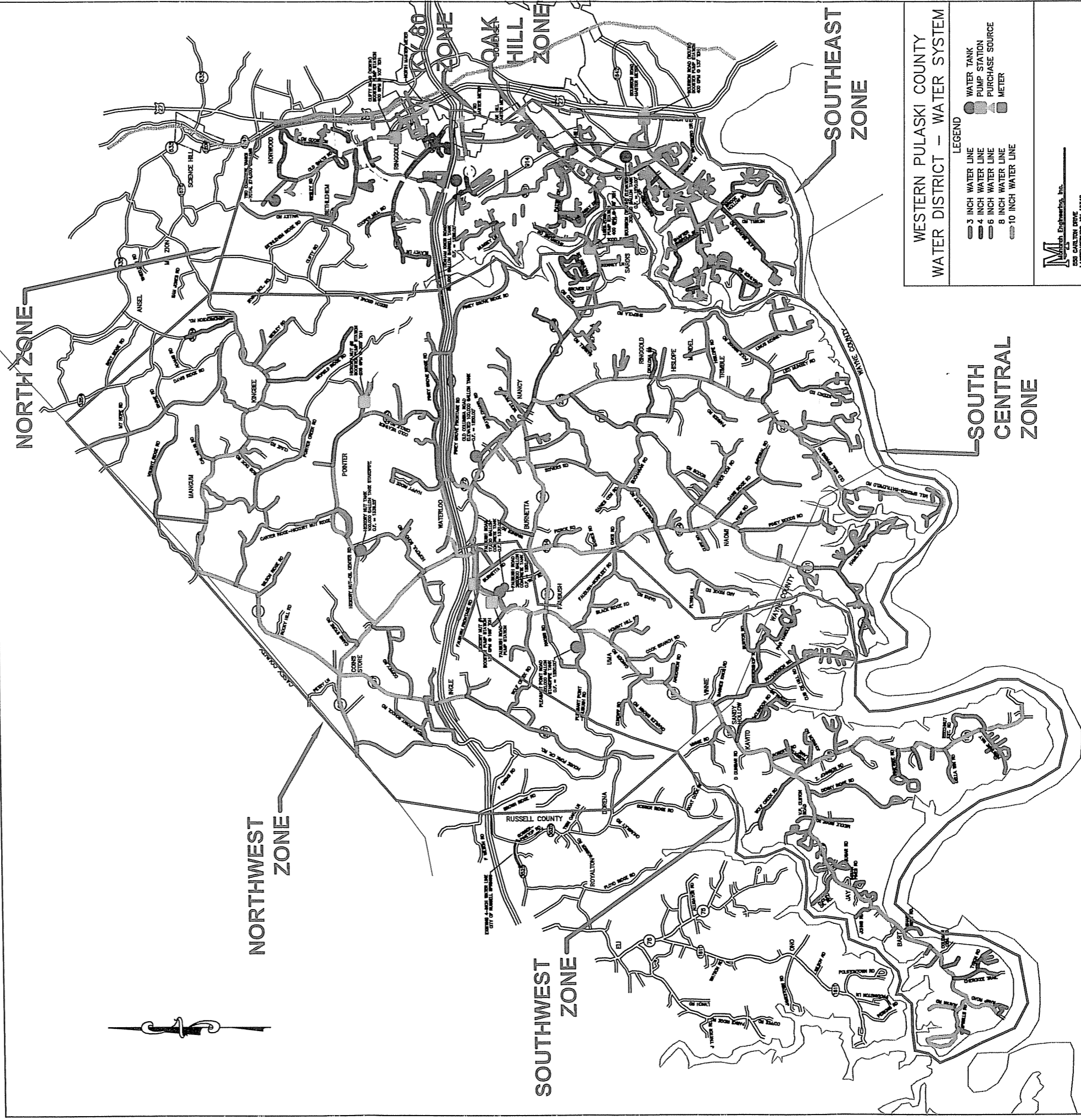
DEVELOPMENT	\$1,523,100.00
CONTINGENCY	152,000.00
ENGINEERING DESIGN	125,000.00
CONSTRUCTION INSPECTION	77,000.00
LEGAL & ADMINISTRATION	12,500.00
PRELIMINARY ENGINEERING REPORT	10,000.00
LAND, APPRAISALS, EASEMENTS	12,400.00
INTEREST	<u>10,000.00</u>
<b>TOTAL PROJECT COSTS</b>	<b>\$1,922,000.00</b>

**PROJECT FUNDING**

USDA RURAL DEVELOPMENT LOAN	\$1,400,000.00
USDA RURAL DEVELOPMENT GRANT	<u>522,000.00</u>
<b>TOTAL PROJECT FUNDING</b>	<b>\$1,922,000.00</b>










**PRELIMINARY COST ESTIMATE  
WATER LINE EXTENSIONS & IMPROVEMENTS  
WESTERN PULASKI COUNTY WATER DISTRICT  
MAY 2011**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
1	10-Inch Transmission Main Inner Loop	6,500 LF	\$48.31	\$314,000.00
2	4-Inch Water Line to Browns Ridge	16,000 LF	17.72	283,550.00
3	10-Inch WL along KY 80	8,200 LF	50.40	413,250.00
4	3-Inch Water Line to Finley Owens Road	6,400 LF	10.22	65,425.00
5	3-Inch Water Line to Hendricks Road	3,200 LF	13.09	41,875.00
6	Bourbon Booster Pump Station	1 LS	210,000.00	210,000.00
7	Denham Booster Pump Station	1 LS	195,000.00	195,000.00
	<b>TOTAL CONSTRUCTION COST</b>			<b>\$1,523,100.00</b>



**WESTERN PULASKI COUNTY  
WATER DISTRICT - WATER SYSTEM**




**LEGEND**

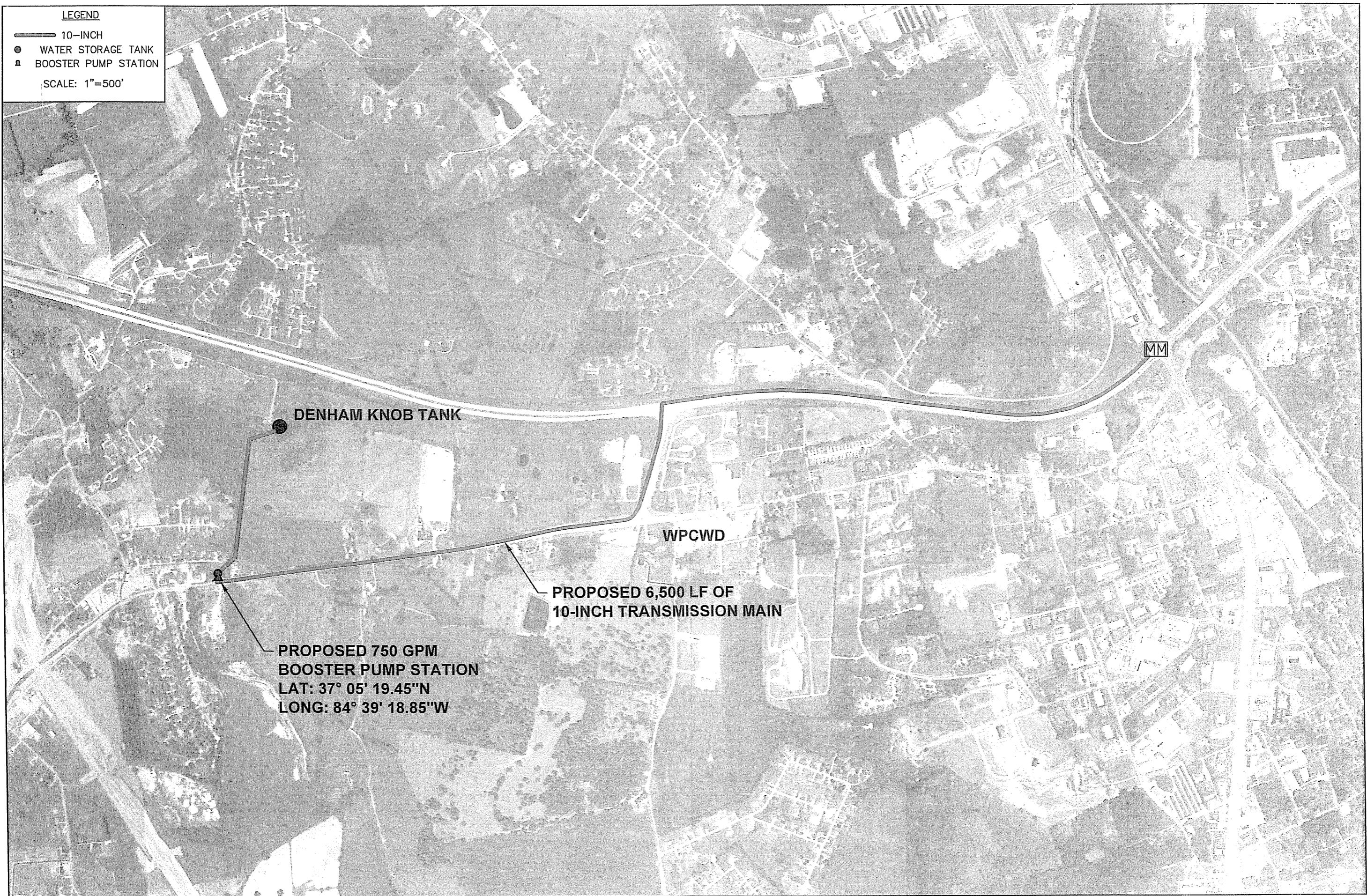
-  3 INCH WATER LINE
-  4 INCH WATER LINE
-  6 INCH WATER LINE
-  8 INCH WATER LINE
-  10 INCH WATER LINE
-  WATER TANK
-  PUMP STATION
-  PURCHASE SOURCE
-  METER

**M** Match Engineering, Inc.  
 1000 W. MAIN ST.  
 LAWRENCE, KY 40302

REVISED: FEBRUARY 2012

**LEGEND**

-  10-INCH
  -  WATER STORAGE TANK
  -  BOOSTER PUMP STATION
- SCALE: 1"=500'



ELI  
QUADRANGLE



FINLEY OWENS ROAD WATER  
LINE EXTENSION 7,000 LF OF  
3-INCH PVC SDR 21 WATER LINE

LAT: 37°04'43"N  
LONG: 84°55'09"W

BROWN RIDGE ROAD  
WATER LINE EXTENSION  
15,065 LF OF 3-INCH PVC  
SDR 21 WATER LINE

EXISTING 4-INCH  
WATER LINE

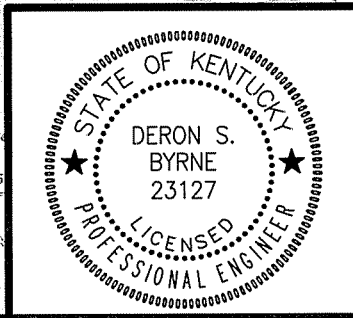
SEELYE ROAD WATER LINE  
EXTENSION 950 LF OF 3-INCH  
PVC SDR 21 WATER LINE

DAVIS ROAD WATER LINE  
EXTENSION 2,600 LF OF 3-INCH  
PVC SDR 21 WATER LINE

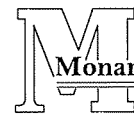
BLOWOFF ASSEMBLY (TYP.)

R  
I  
D  
G  
E

SCALE 1"=2,000'

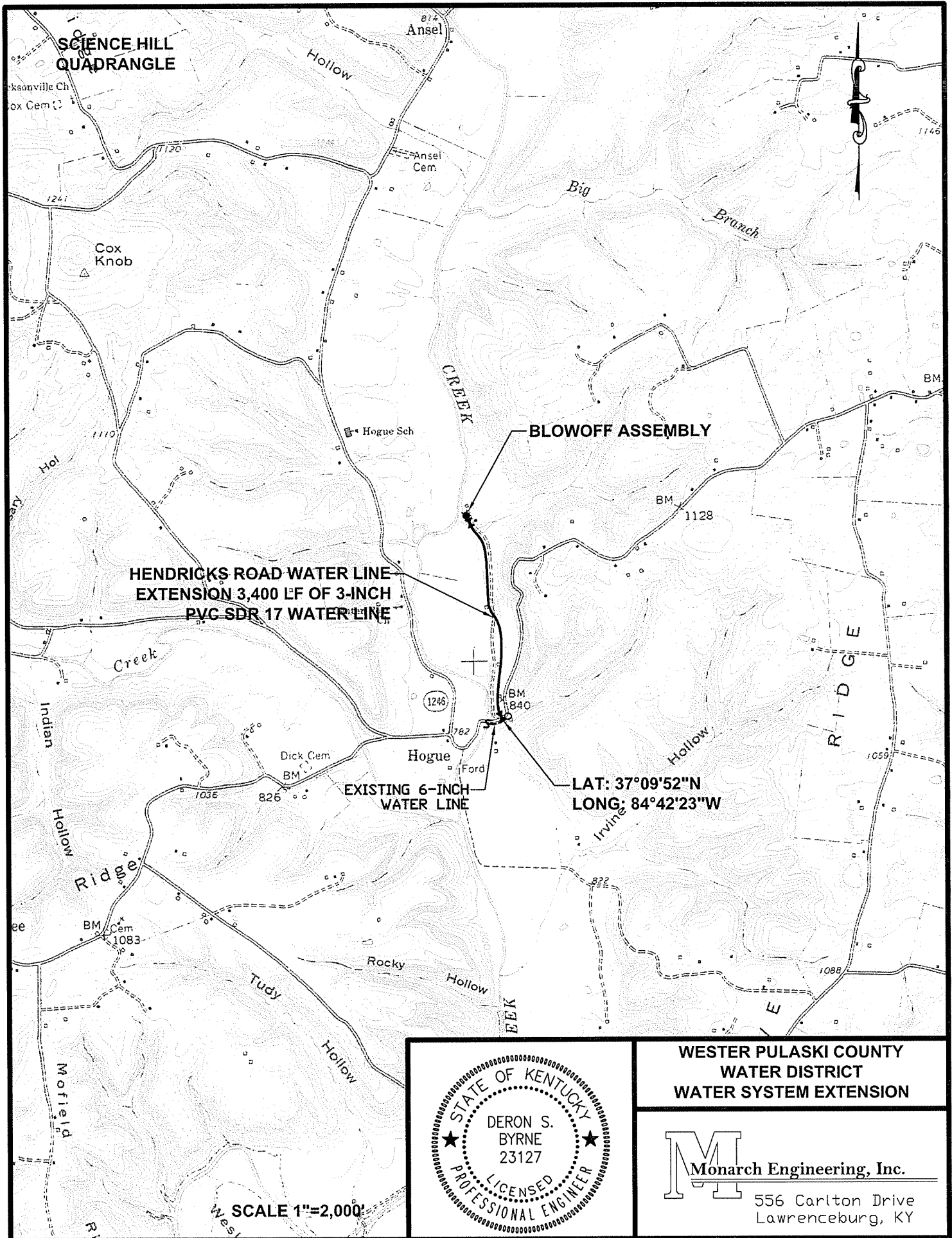


WESTER PULASKI COUNTY  
WATER DISTRICT  
WATER SYSTEM EXTENSION

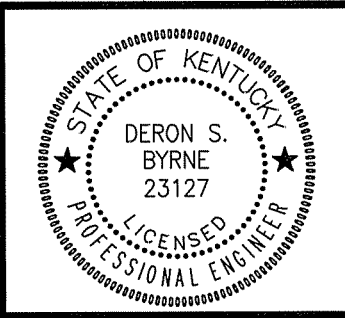


Monarch Engineering, Inc.

556 Carlton Drive  
Lawrenceburg, KY



SCALE 1"=2,000'



WESTER PULASKI COUNTY  
 WATER DISTRICT  
 WATER SYSTEM EXTENSION

**M** Monarch Engineering, Inc.  
 556 Carlton Drive  
 Lawrenceburg, KY

