

**P. O. BOX 3157  
PIKEVILLE, KY 41502  
PHONE: (606) 631-9162  
FAX: (606) 631-3087  
TDD: (606) 631-3711**

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April 4, 2016

Kentucky Public Service Commission  
211 Sower Blvd.  
Frankfort, Ky. 40601

RECEIVED

APR 07 2016

PUBLIC SERVICE  
COMMISSION

RE: Case No. 2014-00342  
Response to Order No. 3(a)

Dear Commission:

In accordance with the issued order in Case No. 2014-00342, Mountain Water District is submitting the following report and attachments in compliance with Order No. 3(a) of the Commission's Order in the above referenced case.

SYSTEM DESCRIPTION

The Mountain Water District system is comprised of over 1,000 miles of water main, approximately 190 miles of service line, approximately 17,000 meter installations, 26 master meters, 42 main line pressure regulator stations with in-coming pressures ranging from 300 psi to 120 psi, 108 water storage tanks ranging in capacity from five thousand (5,000) gallons to one million (1,000,000) gallons with total storage capacity of eight million, six hundred and sixty-two thousand (8,662,000) gallons, 138 booster pumping stations and one (1) three million (3,000,000) gallon per day water treatment plant located at Harless Creek at Marrowbone. In addition, the District purchases an average of one million, four hundred thousand (1,400,000) gallons per day from the City of Pikeville, Ky. from nine (9) locations, as well as an average of eight hundred thousand (800,000) gallons per day at two (2) locations from the City of Williamson, WV. The District's system is hydraulically complex, larger than most systems in the state of Kentucky and topographically challenging. The District's aging system is also comprised of entire areas of infrastructure that are forty (40) to fifty (50) years old and have reached or exceeded their expected life and are still in operation and subjected to daily pressures that are often beyond their rated capacity due to the expansion of the system over the last three (3) decades. Please find enclosed a map of the Mountain Water District's water system demonstrating its size and complexity (**Exhibit A**).

**2014-0342**

**CONTAINS**

**LARGE OR OVERSIZED**

**MAPS**

**RECEIVED ON:**

**April 7<sup>th</sup>, 2016**

## SOURCE IDENTIFICATION

The Public Service Commission has ordered the Mountain Water District to identify sources of water loss within its system in an effort to reduce the average water loss percentage from approximately thirty percent (30%) to an eventual compliance level of below fifteen percent (15%). In an effort to be proactive with regard to controlling and reducing the District's water loss levels, the Board of Commissioners of the Mountain Water District appointed a committee in July, 2015 to begin the process of evaluation and analysis of the District's water loss issue. Please find enclosed a Summary and Time Line of the meetings held by the Leak Detection/Water Loss Committee since its inception in July, 2015 (**Exhibit B**).

### **Steps Taken to Identify Sources of Water Loss Within the Mountain Water District System:**

- Overall system review was performed to identify current master meter locations and miles of water line associated in those zones.
- Selection of zones with static master meters (those under the influence of sole source/unidirectional flow). A consumption analysis of these locations was initiated to determine the sources of water loss within these areas. See attached Analysis. (**Exhibit C**)
- This revealed locations that warranted additional sub-master meter sites for zones that are subjected to routine daily/weekly source water changes due to system hydraulic demands. See Attached Sub-Meter Mapping. (**Exhibit D**)

## CONCLUSION

The Board of Commissioners of the Mountain Water District has been proactive in the identification of water loss sources, analysis of infrastructure improvement needs, and have made strides toward the goal of water loss reduction. A collaborative effort between the District, Utility Management Group, LLC personnel, Environmental Design Consultants, Inc., and Summit Engineering has provided the District with a clearer picture of where the highest rate of loss is occurring, as well as the areas where infrastructure investment is most necessary to reduce the percentage of water loss within the system. Now that sources of water loss have been and are continuing to be identified, we remain committed to the process of moving forward to quantify the water loss within the next thirty (30) days for submission to the Public Service Commission and to seeking funding opportunities for much needed infrastructure repair and replacement.

**EXHIBIT B**  
**MOUNTAIN WATER DISTRICT**  
**WATER LOSS COMMITTEE**  
**SUMMARY REPORT / TIME LINE**

**JULY, 2015**

MWD formed a Water Loss Committee at the July 29, 2015 regular Board Meeting. Commissioner Blackburn and Commissioner Hurley were appointed to the committee, along with Roy Sawyers, Grondall Potter and David Taylor.

Water loss information at this time was covered under the Operations Committee Meeting. The main points discussed at those meetings are areas that require replacement due to infrastructure deterioration. Attention was also drawn to the information packets given to Board Members prior to MWD Board Meetings containing leak info/type/location, etc. Board members requested that the provided information may need to be restructured so they can visualize it better. Discussion was held concerning sub-metering within the 27 master meter locations currently monitored.

Current unaccounted for water loss ~ 29.49% (June).

**AUGUST, 2015**

Information was correlated and distributed showing water loss in the “static” master meter zones and information of ¾” service line leaks in the Marrowbone and older areas warranting a service line replacement program. UMG will begin a system analysis to determine potential sub-meter zone locations.

Current unaccounted for water loss  $\simeq$  36.97% (July).

## **SEPTEMBER, 2015**

UMG and Roy Sawyers have examined the work order leak generated information and have identified Marrowbone Creek zone as one of the priority potential service line replacement areas. They will continue an in-depth review to narrow an area within Marrowbone Creek with the most ¾" line issues and attempt to prepare a "Repair vs. Replacement" cost. Dan Stratton suggested to keep a record of the Water Loss Committee with sign-in sheets and notes. Mr. Sawyers said we would and that is also why updates were given in the regular Board Meeting to enter into the minutes.

Current unaccounted for water loss  $\simeq$  30.11% (August).

## **OCTOBER, 2015**

1<sup>st</sup> sign-in sheet generated for the Leak Detection Committee Meeting.

Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) Dan Stratton – MWD Legal Counsel
- 3) David Taylor – UMG/MWD Operations Manager
- 4) Roy Sawyers – MWD Administrator
- 5) Tim Campoy – Engineer, EDC, Inc.
- 6) Jody Hunt – Engineer, Summit Engineering
- 7) Grondall Potter – UMG/MWD Project Manager

Additional information is being obtained on the leaks within the "static" master meter zones by size and material. Also, reviewed overall system map and potential sub-metering zones. UMG and Roy Sawyers will begin researching additional funding sources for sub-meter vault installations. Dan Stratton will request MWD approval to send motion for time extension with PSC.

Current unaccounted for water loss  $\sim$  30.33% (September).

## **NOVEMBER, 2015**

### Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) Dan Stratton – MWD Legal Counsel
- 3) David Taylor – UMG/MWD Operations Manager
- 4) Tim Campoy – Engineer, EDC, Inc.
- 5) Jody Hunt – Engineer, Summit Engineering
- 6) Grondall Potter – UMG/MWD Project Manager
- 7) Roy Sawyers – MWD Administrator

MWD and UMG personnel, after review of system map, agreed to engage Tim Campoy, EDC, Inc. and Jody Hunt, Summit Engineering, to perform main line miles breakdown of original master meter locations. Meetings with these firms will be held to assign areas to analyze along with consumption figures to utilize to select sub-meter locations and areas to achieve predicted “best” result water loss reduction projects. Preliminary mapping of main line miles was provided by Summit Engineering.

Current unaccounted for water loss  $\simeq$  34.77% (October).

## **DECEMBER, 2015**

### Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) David Taylor – UMG/MWD Operations Manager
- 3) Tim Campoy – Engineer, EDC, Inc.
- 4) Jody Hunt – Engineer, Summit Engineering
- 5) Grondall Potter – UMG/MWD Project Manager
- 6) Roy Sawyers – District Administrator
- 7) Johnny Tackett – MWD Board Commissioner
- 8) Eddie Hurley – MWD Board Commissioner
- 9) Dan Stratton – MWD Legal Counsel

UMG will continue collecting additional info on test point locations and service line replacement areas. Mapping for each engineering firm has been completed, each map was reviewed and will be combined before next meeting to achieve an overview, after which locations for sub-metering will be selected. Current unaccounted for water loss  $\simeq$  33.22% (November).

### **JANUARY, 2016**

#### Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) Dan Stratton – MWD Legal Counsel
- 3) Tim Campoy – Engineer, EDC, Inc.
- 4) Jody Hunt – Engineer, Summit Engineering
- 5) Grondall Potter – UMG/MWD Project Manager
- 6) Roy Sawyers – District Administrator
- 7) Eddie Hurley – MWD Board Commissioner
- 8) David Taylor – UMG/MWD Operations Manager

Engineering maps were reviewed along with consumption analysis, 12 locations were identified for sub-metering and selected to be put on mapping for the next meeting. Drawings for sub metering vault design were presented along with an anticipated part list and estimated budget numbers for installation.

Current unaccounted for water loss  $\sim$  35.51% (December).

## **FEBRUARY, 2016**

### Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) Dan Stratton – MWD Legal Counsel
- 3) Tim Campoy – Engineer, EDC, Inc.
- 4) Jody Hunt – Engineer, Summit Engineering
- 5) Grondall Potter – UMG/MWD Project Manager
- 6) Roy Sawyers – District Administrator
- 7) Eddie Hurley – MWD Board Commissioner
- 8) David Taylor – UMG/MWD Operations Manager

Mapping was presented identifying 12 sub-meter locations based on water loss analysis within these zone areas. A bid list will be prepared for the parts of the sub meter vaults. MWD is to purchase 2 replacement master meters and UMG will install prior to next meeting. MWD will continue to look for funding sources to assist in the water loss reduction project.

Current unaccounted for water loss ~ 31.07% (January).

## **MARCH, 2016**

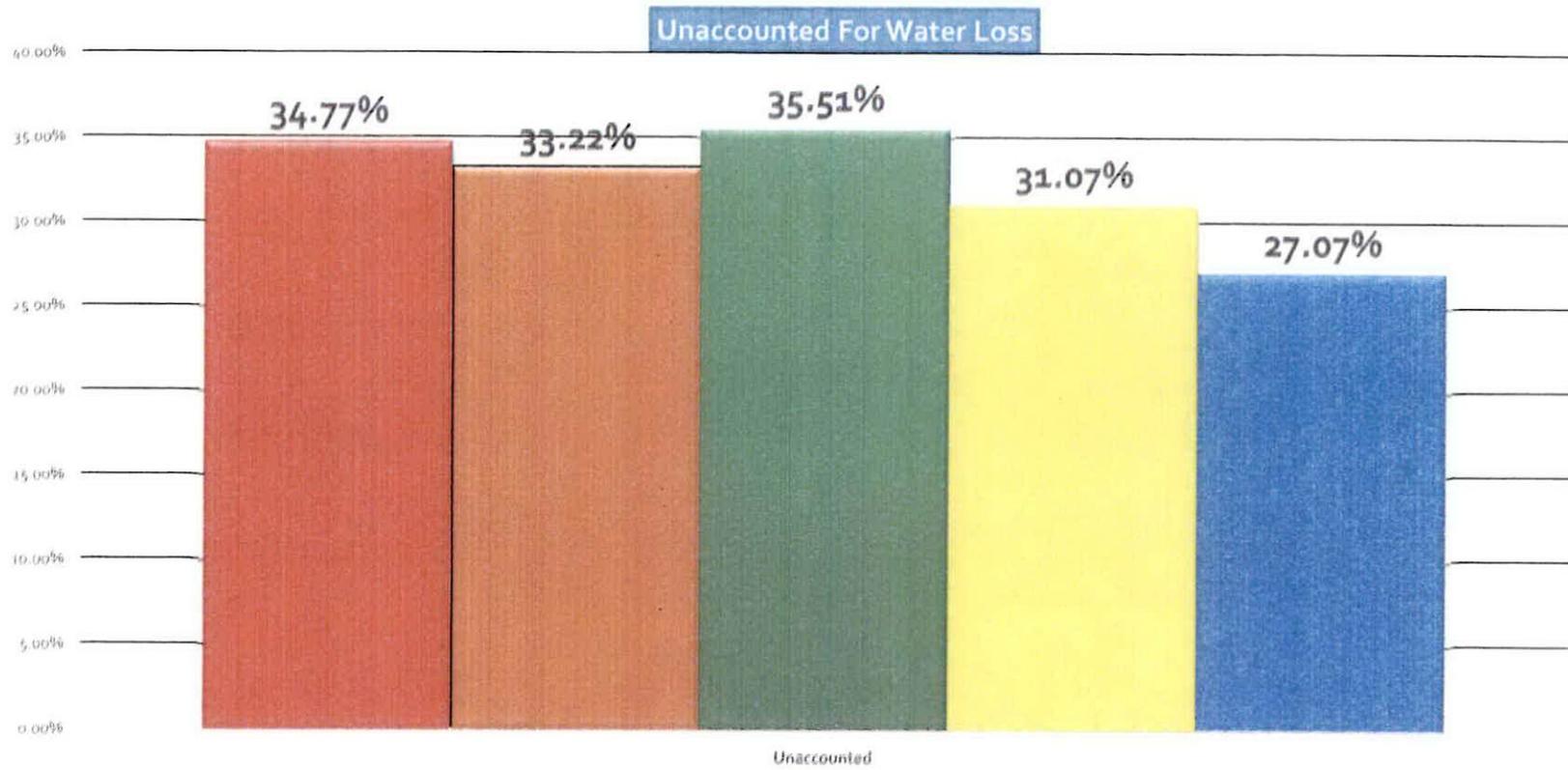
### Attendees:

- 1) Mike Blackburn – MWD Board Commissioner
- 2) Dan Stratton – MWD Legal Counsel
- 3) Tim Campoy – Engineer, EDC, Inc.
- 4) Jody Hunt – Engineer, Summit Engineering
- 5) Grondall Potter – UMG/MWD Project Manager
- 6) Roy Sawyers – District Administrator
- 7) Eddie Hurley – MWD Board Commissioner
- 8) David Taylor – UMG/MWD Operations Manager

The meeting opened with review of progress to date: mapping, consumption analysis and current water loss (February). Reports were given identifying areas of repeated leaks -Burning Fork and Marrowbone. Replacement costs are to be estimated to justify repair vs. replacement. MWD and UMG personnel will prepare a report to comply with the PSC Order Section 3(a), to be forwarded to the Dan Stratton and Committee members prior to submittal. (System Map and generated information to be included.)

Current unaccounted for water loss ~ 27.07% (February).

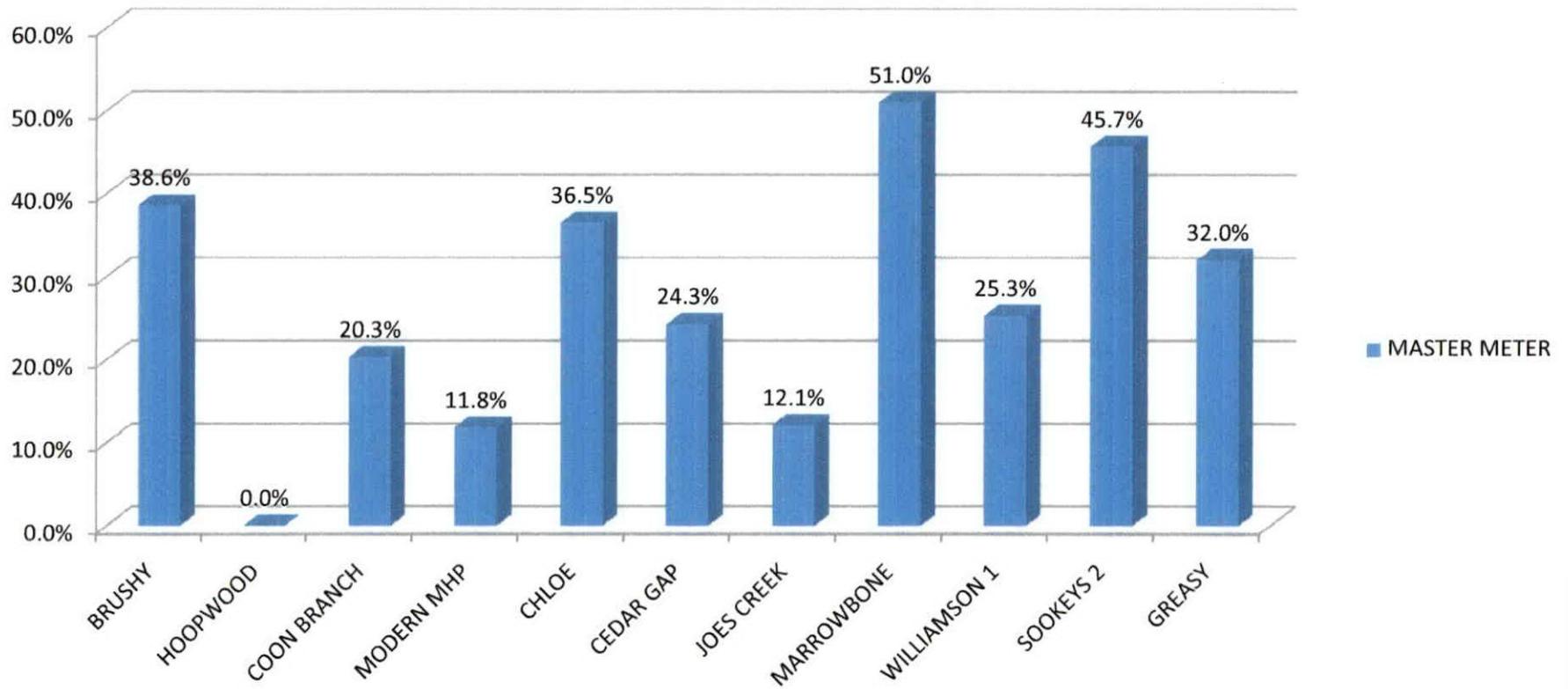
OCT, 2015 NOV, 2015 DEC, 2015 JAN, 2016 FEB, 2016



## EXHIBIT C

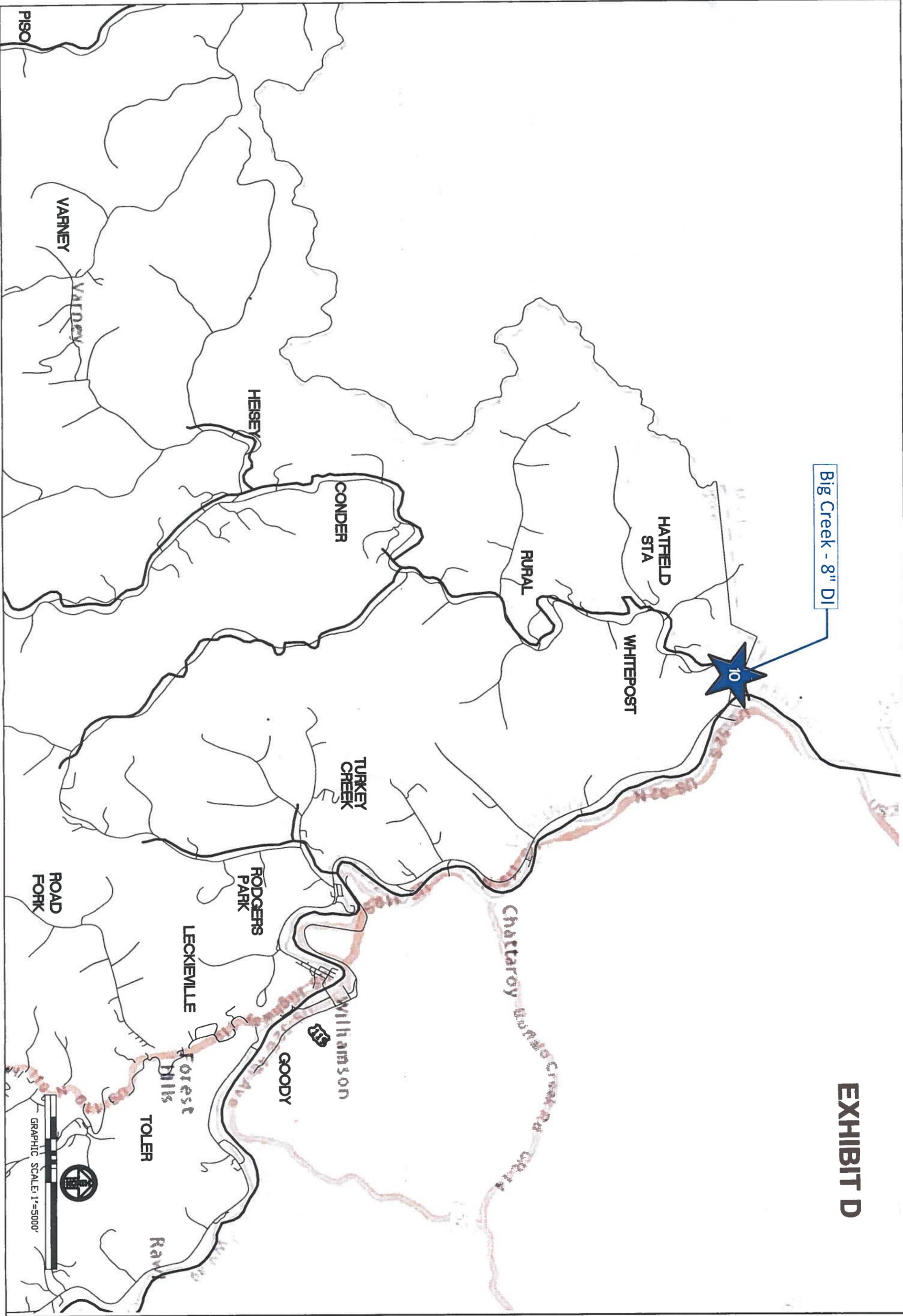
<b>MASTER METER</b>	<b>PERCENTAGE LOSS - JULY 2015</b>	<b>MILES OF LINE</b>
BRUSHY	38.6%	15.7
HOOPWOOD	0.0%	1
COON BRANCH	20.3%	0.7
MODERN MHP	11.8%	0.5
CHLOE	36.5%	8.1
CEDAR GAP	24.3%	12.2
JOES CREEK	12.1%	3.2
MARROWBONE	51.0%	25.8
WILLIAMSON 1	25.3%	74.2
SOOKEYS 2	45.7%	101.8
GREASY	32.0%	7.5

## WATER LOSS % BY MASTER METER - JULY, 2015



Big Creek - 8" DI

# EXHIBIT D



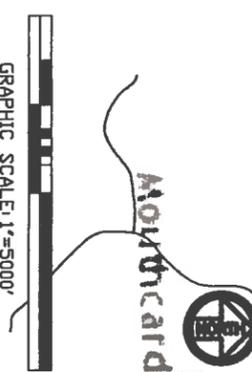
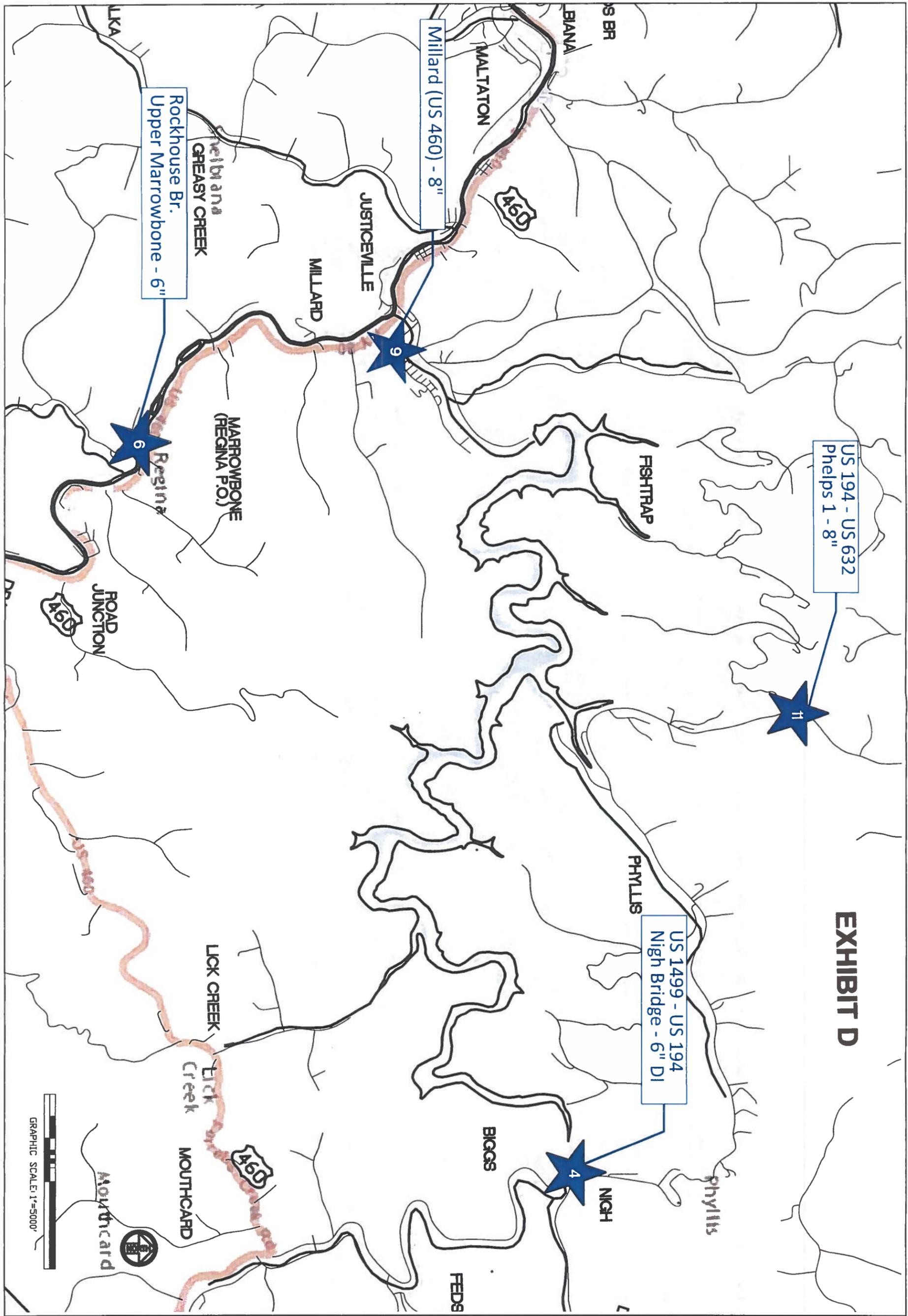
DATE	DESCRIPTION OF REVISION

**SUMMIT ENGINEERING, INC.**  
 LEXINGTON, KY  
 PIKEVILLE, KY  
 HENDERSON, KY  
 SOUTH CHARLESTON, WV

**MOUNTAIN WATER DISTRICT**  
 PIKE COUNTY, KENTUCKY  
**WATER LOSS PREVENTION PROGRAM**  
 LOCATION MAP

DATE: 12/17/2015  
 SCALE: 1" = 5000'  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 PROJECT NO.: [Number]  
 SHEET: **W-4**  
 OF: [Total]

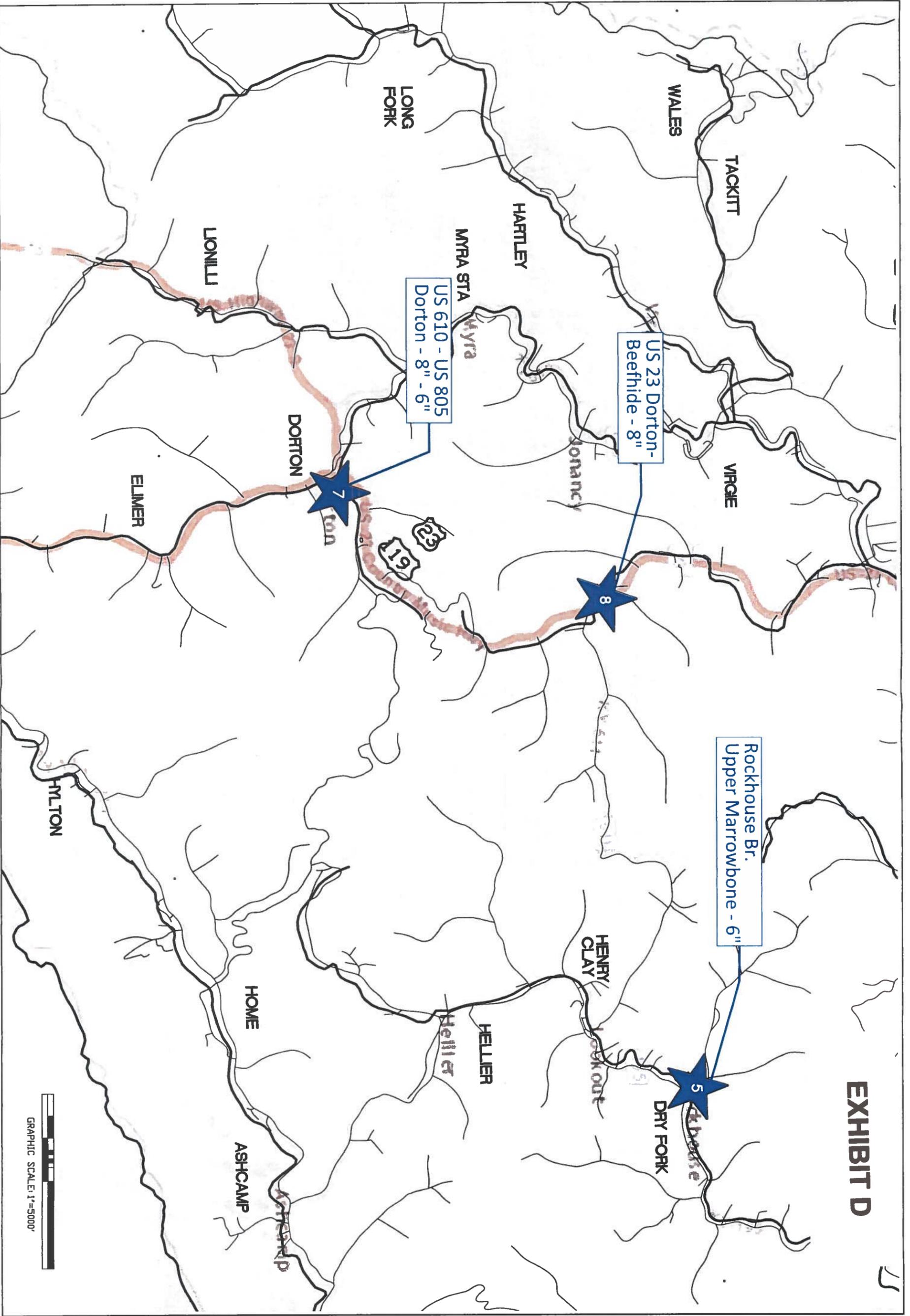
# EXHIBIT D



MOUNTAIN WATER DISTRICT PIKE COUNTY, KENTUCKY WATER LOSS PREVENTION PROGRAM LOCATION MAP	SUMMIT ENGINEERING, INC. LEXINGTON, KY PIKEVILLE, KY HENDERSON, KY SOUTH CHARLESTON, WV	DATE	DESCRIPTION OF REVISION

DATE: 12/17/2015  
 SCALE: 1" = 5000'  
 DRAWN BY: PE  
 CHECKED BY: PE  
 PROJECT NO:  
 SHEET:  
 OF:

# EXHIBIT D



<p>DATE: 12/17/2015 SCALE: 1" = 5000' DRAWN BY: PH CHECKED: PH PROJECT NO:</p>	<p>MOUNTAIN WATER DISTRICT PIKE COUNTY, KENTUCKY</p>	<p>SUMMIT ENGINEERING, INC. LEXINGTON, KY PIKEVILLE, KY HENDERSON, KY SOUTH CHARLESTON, WV</p>	<p>DATE</p>	<p>DESCRIPTION OF REVISION</p>
	<p>WATER LOSS PREVENTION PROGRAM LOCATION MAP</p>	<p>W-3</p>		

