

SYSTEM ID: KY 4

NARRATIVE DESCRIPTION

KY 4 is primarily a loop system in Kentucky with the following assets 4 Tanks, 2 Pumps, and approximately 854446 feet of pipe. KY 4 provides 1.51 million gallons of water per day to its 9,020 customers at a rate which ranges between \$6.46 and \$7.65 per 1,000 gallons of water. Water loss for KY 4 is estimated at 12% of the water produced.

NETWORK SCHEMATIC:



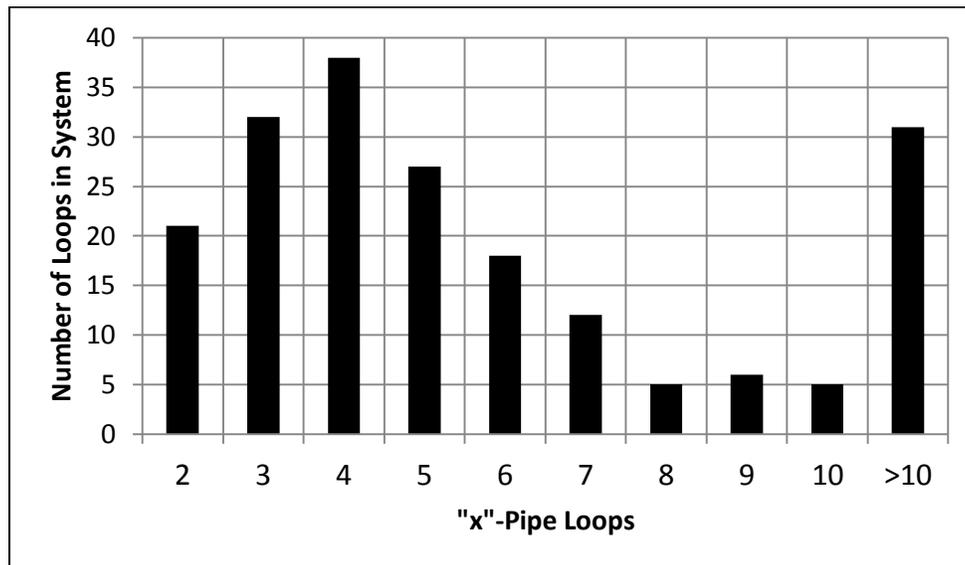
HISTORY OF THE NETWORK FILE

KY 4 was originally created by Matthew Jolly and Amanda Lothes in 2012 as part of the journal article “Research Database of Water Distribution System Models” which was published in 2014 in the *Journal of Water Resources Planning & Management*. This model was updated by Stacey Schal in 2013, and then updated again by Steven Hoagland in 2014.

AVAILABLE INFORMATION

| | |
|---|-----|
| Physical attributes | YES |
| Schematic diagram | YES |
| Network geometry data | YES |
| GIS data file | YES |
| Background map | YES |
| Elevation data | YES |
| Pipe data | YES |
| <i>Pipe material</i> | YES |
| <i>Pipe age</i> | YES |
| <i>Pipe pressure class</i> | NO |
| <i>Nominal or actual diameters</i> | YES |
| Pump data | YES |
| <i>Useful horsepower</i> | YES |
| <i>Pump operating curves</i> | NO |
| Tank data | YES |
| <i>Elevation data</i> | YES |
| <i>Stage storage curves</i> | NO |
| <i>Water quality information</i> | NO |
| Valve data | NO |
| <i>PRV/FCV data</i> | NO |
| <i>Isolation valve data</i> | NO |
| <i>Hydrant data</i> | NO |
| Demand data | YES |
| <i>Total system demand</i> | YES |
| <i>Nodal demand data</i> | YES |
| <i>Temporal data demands</i> | YES |
| <i>System leakage</i> | NO |
| Hydraulic data | YES |
| <i>Hydraulically calibrated model</i> | NO |
| <i>Field hydraulic calibration data</i> | NO |
| Water quality data | NO |
| <i>Disinfection method</i> | NO |
| <i>Chlorine residual data</i> | NO |
| <i>Booster station data</i> | NO |
| <i>Fluoride/Chloride field data</i> | NO |
| <i>Water quality calibrated model</i> | NO |
| Operational data | NO |
| <i>SCADA datasets</i> | NO |
| <i>Operational rules</i> | NO |

PIPE/LOOP HISTOGRAM:



REFERENCES:

Jolly, M. D., Lothes, A. D., Bryson, L. S., & Ormsbee, L. (2014). Research Database of Water Distribution System Models. *Journal of Water Resources Planning and Management*, 410-416.

DETAILED DATA SUMMARIES

PHYSICAL ASSETS:

| Asset Type: | # of Assets |
|------------------------|--------------------|
| Master Meters | - |
| Tanks | 4 |
| Pumps | 2 |
| Pump Stations | NA |
| Water Treatment Plants | - |

NETWORK CHARACTERISTICS:

| | |
|-------------------------------------|---------|
| # Total Pipes: | 1156 |
| # Branch Pipes: | 368 |
| Ratio (Branch Pipes / Total Pipes): | 0.318 |
| # Junction Nodes | 962 |
| # Reservoirs | 1 |
| # Tanks | 4 |
| # Regulating Valves | 0 |
| # Isolation Values | Unknown |
| # Hydrants | Unknown |
| Elevation Data | YES |

PIPE DATA:

| Diameter (in) | Length (ft) |
|----------------------|--------------------|
| 1 | |
| 1.3 | - |
| 1.5 | - |
| 2 | - |
| 3 | 27,581 |
| 4 | 171,782 |
| 6 | 224,916 |
| 8 | 331,651 |
| 12 | 88,626 |
| 16 | 9,890 |
| 18 | - |
| 20 | - |

PUMP DATA:

| | |
|-----------------|-----|
| Pump Horsepower | YES |
| Pump Curves: | NO |

DEMAND STATISTICS:

| Demographic Type | Population | Households |
|-------------------------|------------|------------|
| Directly Serviceable: | 19,320 | 7,681 |
| Indirectly Serviceable: | | |
| Total Serviceable: | 19,320 | 7,681 |

| Production Statistics | |
|-------------------------------------|---------|
| Total Annual Volume Produced (MG): | |
| Total Annual Volume Purchased (MG): | 627.760 |
| Total Annual Volume Provided (MG): | 627.760 |
| Estimated Annual Water Loss: | 12% |

| Water Costs | |
|------------------------------------|-----------------------|
| Customer Type | Cost per 1000 gallons |
| Customers within the municipality | \$6.46 |
| Customers outside the municipality | \$7.65 |

CUSTOMERS AND USAGE:

| Customer Type | Customer Count | Average Demand (MG) |
|---|----------------|---------------------|
| Wholesale: | | |
| Residential: | 8,621 | 482.980 |
| Commercial: | 399 | 68.612 |
| Institutional: | | |
| Industrial: | | |
| Other: | | |
| Total Customers: | 9,020 | |
| Flushing, Maintenance & Fire Protection: | | |
| Total Water Usage: | | 551.592 |

DATA FILE ATTRIBUTES:

| ATTRIBUTE | | UNITS |
|------------------------|---|---------------|
| Pipe Length & Diameter | X | Feet |
| Pipe Age | X | Yr. Installed |
| Node Elevation | X | Feet |
| Node Demand | X | GPM |
| Valves | | |
| Hydrants | | |
| Tank Levels | X | Feet |
| Tank Volume | X | Cubic Feet |
| PRVs | | |
| WTP | X | |
| WTP Capacity | X | GPD |
| Pump Data | X | HP |