

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF THE OHIO COUNTY )  
WATER DISTRICT FOR AUTHORIZATION TO )  
CONSTRUCT A WATER MAIN EXTENSION ) CASE NO. 93-216  
TO SERVE ARNOLD, DOGWALK AND NEAFUS )  
COMMUNITIES )

O R D E R

IT IS ORDERED that Ohio County Water District ("Ohio Water") shall file an original and 10 copies (two copies of engineering-related materials) of the following information with the Commission, with a copy to all parties of record within 14 days from the date of this Order. If the information cannot be provided by this date, Ohio Water should submit a motion for an extension of time stating the reason for which a delay is necessary and include a date by which the information will be furnished. Such motion will be considered by the Commission. Ohio Water shall furnish with each response the name of the witness who will be available at the public hearing, if one is held, for responding to questions concerning each item of information requested.

1. If the hydraulic analyses which are provided in response to this information request are computer-generated, provide a copy of the input data on an IBM compatible 5 1/4-inch or 3 1/2-inch floppy disk.

2. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the

existing water distribution system as presently configured and operated. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks. Computations are to be documented by a labeled schematic map of the system that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. State whether flows used in the analyses are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - if the proposed construction is in an area of the water distribution system which can be hydraulically isolated or separated from the rest of Ohio Water's system, only hydraulic analyses for the isolated portion of the system in question need be filed.)

3. Provide a summary of any operational deficiencies of the existing water system that are indicated by the hydraulic analyses or that are known from experience.

4. In order to obtain realistic results when utilizing computer hydraulic analyses to predict a water distribution system's performance, engineering references stress the importance of calibrating the results predicted to actual hydraulic conditions. This calibration process should include matching field measurements to the results predicted by the computer over a wide

range of actual operating conditions. At a minimum this should include average and maximum water consumption periods, as well as "fire flow" situations and very high demand periods.

Based on the above, explain the procedures used to verify the computer hydraulic analyses filed in this case. This explanation should be documented by field measurements, hydraulic calculations, etc.

5. Most engineering references state that instantaneous customer demands can peak at 3 to 15 times the 24-hour average demand. In addition, most engineering references also state that a water distribution system should be designed to meet at least the maximum hourly demand of its customers.

a. State exactly what measurements were made of Ohio Water's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

b. State exactly how the diurnal pattern for Ohio Water's system was determined. Also detail how the diurnal demand multipliers for any hydraulic analyses were determined. This response should be documented by appropriate field measurements.

6. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Ohio Water's system. Identify the 24-hour period recorded, the exact location of the pressure recorder, and the sea level elevation of the recorder. Also state the schematic junction number nearest the location of the pressure recorder:

a. In the vicinity of the existing water storage tank near Rosine.

b. In the vicinity of the proposed connection points of the proposed water line extensions to the existing water mains.

c. Any other locations necessary to provide a complete understanding of the existing system operation in the proposed construction area.

7. Provide a narrative description of the proposed daily operational sequences of the water system. Documentation should include the methods and mechanisms proposed to provide positive control of all storage tank water levels. The description should also include an hourly summary of how all tanks (existing and proposed) will "work" (expected inflow or outflow of water) and how all pumps will function. The description should be fully supported by appropriate field measurements and hydraulic calculations.

8. Provide a highway map at a scale of at least one inch equals two miles marked to show Ohio Water's distribution system. The map of the system shall show pipeline sizes, location, and connection as well as pumps, water storage tanks, and sea level elevations of key points.

9. Ohio Water filed computer hydraulic analyses for the proposed water distribution system with its application. These analyses did not depict the "on-off" operation of the existing pumps, the "empty-fill" cycles of the existing tanks, etc. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the

water distribution system with the improvements proposed in this case in place. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks. Computations are to be documented by a labeled schematic map of the system that shows pipeline sizes, lengths, connections, pumps, water storage tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. Flows used in the analyses shall be identified as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - these analyses should use the same schematic as the analyses of the existing water distribution system to facilitate comparison.)

10. The hydraulic analyses and additional information filed in this case for the proposed water distribution system indicate that low pressure (less than 30 psi) occurs and will continue to occur at Node 16 after the proposed construction is complete. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 5(1). Provide details of any preventive measures or additional construction Ohio Water intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements. Also provide the exact location of Node 16, the number of customers served, the lowest

pressure experienced and whether any complaints of low pressure have been received.

11. Provide a copy of the Bid Tabulation when the bids are received.

12. Provide a copy of the final summation of the total cost of construction and funding arrangements referred to as the Final Engineering Report.

Done at Frankfort, Kentucky, this 23rd day of July, 1993.

PUBLIC SERVICE COMMISSION

  
For the Commission

ATTEST:

  
Executive Director