

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF HENDERSON COUNTY)
WATER DISTRICT FOR (1) CERTIFICATE)
OF CONVENIENCE AND NECESSITY AND) CASE NO. 91-085
(2) AUTHORIZATION TO BORROW FUNDS)
AND TO ISSUE ITS EVIDENCE OF)
INDEBTEDNESS THEREFOR AND (3) FOR)
AUTHORITY TO ADJUST RATES)

O R D E R

IT IS ORDERED that Henderson County Water District ("Henderson Water") shall file an original and seven copies of the following information with the Commission with a copy to all parties of record no later than May 20, 1991. If the information cannot be provided by this date, Henderson Water should submit a motion for an extension of time stating the reason a delay is necessary and include a date by which it will be furnished. Such motion will be considered by the Commission. Henderson Water shall furnish with each response the name of the witness who will be available at the public hearing for responding to questions concerning each item of information requested.

1. The hydraulic analyses provided by Henderson Water did not depict the "on-off" operation of the existing pumps nor the "empty-fill" cycles of the existing tanks and apparently did not utilize actual customer demands. The analyses also did not have all pumps, tanks, and proposed lines (e.g. pressure system 3 analyses did not include Pump #6 on Highway 60 West, Tank #13 in

Corydon, and most of the proposed lines in the city of Corydon) as shown on the plans and schematic map. Flows used in these analyses need to be identified as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. If the flows used in these analyses are documented by actual field measurements or customers' use records, provide copies of such documents or measurements. In addition, plainly state and fully justify all assumptions used in the analyses themselves.

2. 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.

3. 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. As a minimum, this should include average and maximum water consumption periods as well as "fire flow" or 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.

4. The computer hydraulic analyses filed in this case are based on a demand of approximately 0.22 gallons per minute per customer.

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.

Based on the above information, state exactly what measurements were made of Henderson Water's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

In addition, describe the diurnal demand pattern for Henderson Water's system. Discuss in detail why the analyses in this case were based on approximately 0.22 gpm per customer. This response should be documented by appropriate field measurements.

5. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Henderson 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. Water storage tanks No. 8, 9 and 12 on Henderson Water's system.

b. On the suction and discharge sides of pumps No. 3, 4 and 6 on Henderson Water's system.

c. Junctions 10, 27, 95, 97 and 170 on Henderson Water's system.

6. Provide a list of each of Henderson Water's existing pump stations. Give the location, number of pumps and their rated capacities, and the purpose of each pump station. Explain how the operation of each pump station is controlled. Provide a copy of the pump manufacturer's characteristic (head/capacity) curve for each of Henderson Water's existing pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state if pump is in use and if pump will remain in use, will be abandoned or will be replaced.

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 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 Henderson Water's existing and proposed systems. The map of the systems shall show pipeline sizes, location, and connections as well as pumps, water storage tanks and sea level elevations of key points. The map shall also be marked to show the location of the water district's boundaries and labeled to indicate the appropriate court order from which each boundary was determined.

9. The computer hydraulic analyses filed in this case for the existing and proposed water distribution system indicate that the potential exists for the system to experience low pressure (less than 30 psig) at Nodes 10, 27, 52, 76, 88, 93, 95, 97, 110, 136, 137, 170, 180, 182, 184 and 229. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6 (1). Provide details of any preventive measures or additional construction Henderson Water intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements. In addition, state whether any complaints of low pressure have been received at these locations.

10. The Bid Tabulation and Final Engineering Report submitted by Henderson Water contained tabulations for contracts B, C and D. Explain why contract A is not included in the Bid Tabulation and Final Engineering Report.

Done at Frankfort, Kentucky, this 1st day of May, 1991.

PUBLIC SERVICE COMMISSION


For the Commission

ATTEST:



Executive Director