

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF PEAKS MILL )  
WATER DISTRICT, A WATER DISTRICT )  
ORGANIZED PURSUANT TO CHAPTER 74 )  
OF THE KENTUCKY REVISED STATUTES, )  
OF FRANKLIN COUNTY, KENTUCKY, FOR )  
(1) A CERTIFICATE OF PUBLIC )  
CONVENIENCE AND NECESSITY, )  
AUTHORIZING AND PERMITTING SAID ) CASE NO. 9856  
WATER DISTRICT TO CONSTRUCT A )  
WATERWORKS CONSTRUCTION PROJECT, )  
CONSISTING OF EXTENSIONS, AD- )  
DITIONS, AND IMPROVEMENTS TO THE )  
EXISTING WATERWORKS SYSTEM OF THE )  
DISTRICT, AND (2) APPROVAL OF THE )  
PROPOSED PLAN OF FINANCING OF )  
SAID PROJECT )

O R D E R

IT IS ORDERED that Peaks Mill Water District ("Peaks Mill") 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 April 10, 1987. If the information cannot be provided by this date, Peaks Mill 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. Peaks Mill 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. Peaks Mill filed computer hydraulic analyses for the existing water distribution system with its application. These analyses only depicted a "tank full - pump on - FMHA demand" scenario. Unfortunately, these analyses did not depict the "on-off" operation of the existing pump, the "empty-fill" cycles of the existing tank and did not utilize actual customer demands. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the existing water distribution system. 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 proposed water distribution system to facilitate comparison).

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. Peaks Mill also filed computer hydraulic analyses for the proposed water distribution system with its application. Unfortunately these analyses did not depict the "on-off" operation of the existing pump, the "empty-fill" cycles of the existing or proposed tanks, etc. In addition the overflow elevation for the proposed tank was input as 855 feet Above Sea Level ("ASL") instead of 892 feet ASL as shown on the plans. Based on this, provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the proposed water distribution system. 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).

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 cali-

brating 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.

5. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on Peaks Mill'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 line on the Peaks Mill's water system at or near the connection point to the Frankfort water system.
- b. The water storage tank in the vicinity of junction 9.
- c. Water line in the vicinity of the proposed tank site.
- d. Water line in the vicinity of junction 13.
- e. Water line in the vicinity of junction 30.
- f. On the suction and discharge sides of the pump in line 5.

6. Provide a list of each of Peaks Mill's water storage tanks. Give the location, capacity, and overflow elevation of each tank. Explain how water is supplied to each tank.

7. Provide a list of each of Peaks Mill'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 characteristics (head/capacity) curve for each of Peaks Mill'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.

8. Provide the criteria used in determining the location, size, overflow elevation and head range for the proposed water storage tank.

9. 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.

10. The computer hydraulic analyses filed in this case for both the existing and proposed water distribution system depict the existing pump station "operating out of range." This would indicate that this pump is unable to satisfy the system's

hydraulic conditions as input. Operation at or near the right end of a pump's characteristics curve is generally inefficient and may lead to "cavitation" or other operating problems. State whether this type operation presently occurs, if this type operation is expected to occur after construction, and if it is expected, state what preventive measures or additional construction Peaks Mill intends to perform to protect against this type of occurrence.

11. The computer hydraulic analyses filed in this case for the proposed water distribution system indicate that the potential exists for the system to experience low pressure (less than 30 psig) at Nodes 13 and 30. 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 Peaks Mill intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements.

Done at Frankfort, Kentucky, this 16th day of March, 1987.

PUBLIC SERVICE COMMISSION

  
For the Commission

ATTEST:

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Executive Director