COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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| THE APPLICATION OF WACO WATER DISTRICT, MADISON COUNTY, KENTUCKY, FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY | ) ) ) | CASE NO. 92-117 |

O R D E R

IT IS ORDERED that Waco Water District ("Waco") shall file an original and one copy of the following information with the Commission, with a copy to all parties of record by May 15, 1992. If the information cannot be provided by this date, Waco 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. Waco 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. Provide a copy of the input data used in the computer-generated hydraulic analyses filed in this case 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 shall 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, 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 shall use the same schematic as the analyses of the proposed water distribution system to facilitate comparison.)

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. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the proposed water distribution system. These hydraulic analyses shall 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, 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 shall use the same schematic as the analyses of the existing water distribution system to facilitate comparison.)

5. 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 shall 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 shall be documented by field measurements, hydraulic calculations, etc.

6. 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 Waco's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

In addition, state exactly how the diurnal pattern for Waco's system was determined. Also detail how the diurnal demand

multipliers for the computer model were determined. This response shall be documented by appropriate field measurements.

7. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available that is taken simultaneously at the locations listed below on Waco'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 proposed tank site.

b. On the suction and discharge sides of all pump stations.

c. At or near all existing tank sites and several representative points throughout the water distribution system.

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

9. Provide a list of Waco's existing and proposed 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 Waco's existing and proposed pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state if pump is in use, will remain in use, will be abandoned, or will be replaced.

10. Provide the criteria used in determining the location, size, overflow elevation, and head range for the proposed water storage tank. Provide detailed information on how the sea level elevation for the proposed tank site was determined. Identify the particular methods and specific vertical datum and bench marks used in this effort. In addition, state what other sites were considered and why they were not selected.

11. Provide a narrative description of the proposed daily operational sequences of the water system. Documentation shall include the methods and mechanisms proposed to provide positive control of all storage tank water levels. The description shall 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 shall be fully supported by appropriate field measurements and hydraulic calculations.

12. Explain and fully justify using 3,172 feet of polyethylene pipe as a pressure control device for the proposed tank. Explain why a conventional telemetric system was not proposed. Also explain if any other type of control device was considered by Waco before choosing polyethylene pipe. Provide information on the advantage of using this method over any other. Also provide a list of places in Kentucky that have used this type of pressure control device.

13. Provide a highway map at a scale of at least one inch equals two miles marked to show Waco's water distribution system.

The map of the system shall show pipeline sizes, location, and connections as well as pumps, water storage tanks, and sea level elevations of key points.

14. KRS 322.340 for registered engineers states "Plans, specifications, plats and reports approved by a registrant shall be signed and dated by the registrant and stamped with the seal when filed with public authorities." The specifications, preliminary and final engineering reports filed in this case do not comply with this statute.

Provide appropriate documents which comply with KRS 322.340 or, in the alternative, the documents on file in this case may be signed, sealed, and dated by the registered engineer.

Done at Frankfort, Kentucky, this 29th day of April, 1992.

PUBLIC SERVICE COMMISSION

For the Commission

ATTEST:

Executive Director