PAW STATEMENT NO. 2

DIRECT TESTIMONY
OF
DAVID R. KAUFMAN

WITH REGARD TO
PENNSYLVANIA AMERICAN WATER
NORTHEAST WASTEWATER OPERATIONS
CLAIMED PLANT ADDITIONS

DOCKET NO. R-2010-2166214

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DIRECT TESTIMONY OF DAVID R. KAUFMAN

I. INTRODUCTION

1. Q. Please state your name and business address.

A. My name is David R. Kaufman, and my business address is 800 West Hershey Park Drive, Hershey, Pennsylvania 17033.

2. Q. By whom are you employed and in what capacity?

A. I am employed by Pennsylvania-American Water ("PAW" or the "Company") as Vice President of Engineering.

3. Q. Please describe your educational background and business experience.

A. In 1975, following graduation from Pennsylvania State University with a Bachelor of Science Degree in Civil Engineering, I accepted an engineering position with Pennsylvania Gas and Water Company ("PG&W") in Wilkes-Barre, Pennsylvania. I remained in that position until 1989, when I was promoted to Manager of Water Engineering for PG&W. In August 1991, I was promoted to Vice President of Water Resources for PG&W. In that position, I was responsible for PG&W's water operations relating to water supply, water quality and treatment, water engineering and planning. When the water assets of PG&W were acquired by PAW in February 1996, I accepted an Operations Manager position with the Company in its Northeast Region. I remained in that position until February 2001, when I was promoted to Manager of Northeast Operations. In 2004, I accepted the position

of Director of Engineering – Southeast Region with American Water Works Service Company and remained in that position until I accepted the position of Vice President of Engineering for PAW. I am a registered Professional Engineer in Pennsylvania and hold a Class A1 water treatment plant operator's license.

4. Q. Do you belong to any professional or industry associations?

A. Yes, I am a member of the American Water Works Association, the American Society of Civil Engineers and the Water Environmental Federation.

5. Q. What are your duties and responsibilities in your current position?

A. As Vice President of Engineering for PAW, I am responsible for the administration of engineering services, including the planning, design and construction of water and wastewater capital investment projects, for all of PAW's systems and facilities.

6. Q. What is the purpose of your testimony?

A. I will describe the major plant additions included in the Company's claimed rate base for its Northeast Wastewater Operations. I will also explain the Company's capital investment planning process.

7. Q. Please describe the service territory of the Company's Northeast Wastewater Operations.

The Northeast Wastewater Operations consist of the districts of Lehman Pike, Winona Lakes and Blue Mountain Lakes. The Lehman Pike wastewater system (LP wastewater system) encompasses both the Lehman Pike and Winona Lakes districts and serves Saw

Creek Estates, the Mill Pond Townhomes, the Falls Townhomes, Winona Lakes (also known as Stony Hollow Village), Timothy Lake North and Timothy Lake South Campgrounds, the Magic Valley property, the Harry Lee Tract (also known as Falling Creek Estates), the Pocono Renaissance Faire and the Hugh Beaver Recreational Area, all of which are located in Middle Smithfield Township, Monroe County, and Lehman Township, Pike County. The Blue Mountain wastewater system serves Blue Mountain Lake Estates, the Cornerstone Conservancy (previously, Stony Brook Commons), Cornerstone Village, Mountain Hollow, and Mountain View, all of which are residential developments located in Smithfield and Stroud Townships, Monroe County.

II. DESCRIPTION OF CLAIMED PLANT ADDITIONS

8. Q. Please provide an overview of the major plant additions the Company had made, and is currently making, in its Northeast Wastewater Operations.

A. The Company is currently making substantial upgrades to the Blue Mountain Wastewater Treatment Plant at an estimated total cost of $2.9 million, which are expected to be in service by the end of 2010. Between 2004 and 2006, the Company made significant improvements in the collection system that serves the Lehman Pike and Winona Lakes districts, which included upgrading or replacing lift stations and installing a new force main, at a cost of more than $1.62 million. The Company is making additional improvements to the LP wastewater collection system in 2010. Also, in 2009, the Company substantially upgraded the Lehman Pike Wastewater Treatment Plant at a total cost of $2.7 million. I describe all of these additions in more detail below.

A. Blue Mountain Wastewater Treatment Plant

9. Q. Why is it necessary to upgrade the Blue Mountain Treatment Plant?

A. The upgrades are needed for three reasons. First, the plant is in poor physical condition and its existing treatment process is not adequate to reliably meet the effluent limitations in the plant's existing National Pollutant Discharge Elimination System (NPDES) permit. Second, new effluent limitations have been imposed by the Delaware River Basin Commission (DRBC), which will likely also be adopted by the Pennsylvania Department of Environmental Protection (DEP) at renewal of the plant's existing NPDES permit, currently slated for November 2011. Without upgrading, those limitations could not be met. Third, an increase in plant capacity is needed to serve projected flows.

10. Q. Explain the physical condition of the plant and its existing process deficiencies.

A. The existing plant is located approximately 2,000 feet east of Blue Mountain Lake in Stroud Township and discharges into a tributary of Brodhead Creek, which is a high-quality, cold-water fishery. The developer of Blue Mountain Lake Estates installed the plant in the early 1990s. The major components of the plant (rotating biologic contactors (RBCs) and rapid sand filter) were purchased used from an industrial site in up-state New York where, existing reports indicate, they had been in service for several years in the early 1980s before being decommissioned and eventually sold to the developer. The plant had an initial capacity of 75,000 gallons per day (gpd), which, through selected improvements made before PAW acquired the system, increased the capacity to 135,000 gpd.

Shortly after PAW acquired the Blue Mountain Lake system in October 2005, numerous mechanical and structural failures began to occur in the RBC units. For example, the

brackets that secure the fixed film media to the rotating shaft of the lead RBC unit failed on ten separate occasions, and bearings failed on all three RBC units. RBC failures that require a prolonged repair period would put the plant at risk of exceeding its NPDES permit limits.

11. Q. Please explain the plant's process limitations.

A. Process limitations became apparent during the first year of operation after PAW acquired the system. Process performance diminished when wastewater flows exceeded 110,000 gpd, which typically occurs on weekends and holidays. The higher flow rates disrupt the plant's ability to effectively remove total suspended solids and other nutrients that increase biochemical oxygen demand (BOD). As a consequence, during higher flow events, the plant struggles to reliably meet its current NPDES effluent limitations.

12. Q. Please explain the new effluent limitations imposed by the DRBC.

A. On May 8, 2009, the DRBC established new effluent limits to become effective when the flow exceeds the plant's existing capacity of 135,000 gpd or when a plant upgrade occurs, whichever occurs sooner. Consistent with past practice, DEP would incorporate the new effluent limits upon renewal of the plant's NPDES permit, which, as previously noted, is scheduled to occur in November 2011. The existing plant process cannot consistently produce effluent that meets the new standards.

13. Q. Why is an expansion of plant capacity needed?

A. Within the next five years, average daily flow is projected to be 137,000 gpd, which exceeds the plant's current capacity. At full build-out of the developments within the

service territory, the flow is projected to be approximately 170,000 gpd. Given these projections, an expansion in plant capacity above the existing capacity of 135,000 gpd is needed.

14. Q. Explain generally the improvements that are being made to the Blue Mountain Wastewater Treatment Plant.

A. For the reasons I previously discussed, the existing treatment process at the plant, which uses RBC units, is inadequate to reliably meet either existing or expected future effluent limits. Moreover, as I also explained, those units are in poor condition and prone to mechanical failure. Accordingly, the Company decided to change the treatment process from RBC units to sequencing batch reactor (SBR) technology, which is capable of reliably meeting the new effluent limits. Additionally, the proposed improvements will increase the plant's capacity to 183,000 gpd.

The existing aerated 45,000 gallon concrete equalization basin will be retained and will continue to be used as the influent tank for the redesigned plant. It was not necessary to install screening and grinding facilities upstream of the equalization basin because 100% of the wastewater entering the plant is pumped from individual residential grinder pumps. From the equalization basin, wastewater will flow by gravity into the SBRs. Flow from the equalization basin to the SBRs will be controlled by automatic influent valves on the SBR's.

The SBR system will consist of two parallel rectangular concrete tanks. Each tank will contain an aeration system, a mixing system, and a floating decanter. Sludge from each SBR basin will be discharged to waste into the existing sludge digester. From the SBR

basins, the wastewater will decant into a new aerated equalization tank with an approximate volume of 48,000 gallons. The decanted wastewater will be pumped from the equalization tank to the existing three-cell rapid sand filters. The sand filters have been upgraded with a new control panel and cleaning system to improve their performance. After filtration, the water will flow through an ultra-violet (UV) disinfection system into the existing backup chlorine disinfection contact tank. The treated wastewater will pass through a new post-aeration tank to the plant's outfall into a nearby creek.

New office and laboratory space are also being constructed within the existing building in the location of the existing primary and secondary clarifiers. The new office and laboratory will contain SCADA (supervisory control and data acquisition) and computer/network equipment as well as desk space for plant operators. The new SCADA and computer equipment will monitor the plant facilities for process control and regulatory reporting purposes.

15. Q. What is the current status of the plant upgrade?

A. The design of the wastewater treatment upgrade was performed by Milnes Engineering of Tunkhannock, Pennsylvania. A Water Quality Management Part 2 (WQM Part 2) permit application for the upgrade and expansion of the plant was submitted to DEP in October 2008. DEP approved the design and issued the Water Quality Management Part 2 permit to construct the plant on May 18, 2009. The DRBC approved the project and issued new effluent limits on May 8, 2009, pursuant to its prior order at Docket D-91-14-2 that established the new limits. The Company issued a notice to proceed for plant construction to Worth and Company, Inc. on December 15, 2009. The Company expects the project to

be completed and placed in service by December 31, 2010. The estimated capital additions for this project are approximately $2.9 million, as shown in Exhibit 3-B.

B. Lehman Pike Collection System Improvements

16. Q. Please explain the major improvements PAW has made to the Lehman Pike collection system.

A. PAW acquired the LP wastewater system in April 2002 and the Winona Lakes wastewater system in January 2006. The Winona Lakes system was physically interconnected with Lehman Pike collection system upon original construction in 1976. The mains within the collection system were generally in good condition. However, many of the lift stations were unreliable and experienced repeated failures of their electrical and mechanical components. Additionally, their poor physical condition permitted excessive groundwater infiltration. Consequently, the Company had to upgrade a number of lift stations and, when it did so, it installed new pumps properly sized to handle the sewage flows that were being experienced. Between 2004 and 2006, Lift Station Nos. 2, 3, 5, 6 and 9 were upgraded at a combined cost of $721,000. Lift Station No. 11 was upgraded in 2004 and, in connection with that upgrade, the Company installed 5,000 feet of new force main to bypass three lift stations that were in poor condition. The combined cost of that project was approximately $700,000. The Winona lift station, which had reached the end of its useful life and experienced flows that exceeded available pump capacity was replaced in 2009 at a cost of approximately $201,000.

17. Q. Is the Company making additional improvements to the Lehman Pike collection system in 2010?

A. Yes, the Company will either replace or install new a number of valves and service laterals throughout its collection system in 2010. Specifically, we anticipate the installation of 25 new service laterals and six valves at a cost of approximately $50,000 and $18,000, respectively. The Company will also make a number of additional smaller improvements, which are detailed in Exhibit 3-B. Total future test year additions for the LP wastewater system are $100,500.

C. Lehman Pike Wastewater Treatment Plant Upgrade

18. Q. Why was it necessary to upgrade the Lehman Pike Wastewater Treatment Plant?

A. The Lehman Pike Wastewater Treatment Plant was constructed in 1976 and upgraded by the previous owners more than 20 years ago. PAW acquired the assets of the LP wastewater system in April 2002. The plant treats wastewater from approximately 3,200 customers located in Middle Smithfield Township, Monroe County, and Lehman Township, Pike County.

In 2006, the Company commissioned Quad 3 Group, Inc. to assess the condition of the Lehman Pike Wastewater Treatment Plant. This assessment uncovered numerous deficiencies including: (1) the poor condition of the steel tankage and the poor conditions of air piping systems associated with the equalization, SBR, and solids holding tanks; (2) pumps and blowers that were oversized and needed to be replaced to achieve more efficient operation; (3) the use of chlorine gas in the post-disinfection process, which raised safety issues as compared to the use of liquid hypochlorite; (4) the need to upgrade and expand the existing control building and laboratory to provide space for necessary analytical and

control equipment; (5) the need to replace and/or upgrade various air, chemical and sludge piping systems to correct their poor physical condition and increase their efficiency.

Subsequently, PAW engaged Buchart Horn Engineering of York, Pennsylvania, to review the Quad 3 recommendations and to design the plant improvements that were needed. PAW independently evaluated the demand projections for the LP wastewater system's service territory and concluded that it did not need to expand the plant's capacity at this time. The Company also concluded that the recommended upgrades should be made to correct known deficiencies and, as appropriate, provisions could be made to facilitate future expansion.

Buchart Horn's design work focused on the rehabilitation and re-use of the plant's existing facilities, where appropriate, and included draining, sandblasting and re-coating all of the steel tanks at the plant; installing new process equipment, including pumps, blowers, piping and air diffusers; writing and implementing a new plant operating program; installing improved sampling, metering and instrumentation equipment; and installing a new liquid chlorine disinfection system to replace the old chlorine gas system. Also, new laboratory space was constructed, the maintenance and storage areas were improved, and the majority of the plant's electrical system was replaced.

19. Q. Were the improvements constructed as planned?

A. Yes, they were. DEP approved the design and issued a Water Quality Management Part 2 permit on February 28, 2008. The Notice to Proceed for plant construction was issued to Worth and Company, Inc. on March 12, 2008. The project was completed and placed in service in July 2009. The capital cost of this project totaled approximately $2.7 million.

Since this project was completed, the plant has become more reliable and is safer, more efficient and has improved treatment capabilities.

III. CAPITAL INVESTMENT PLANNING

20. Q. Please explain the Company's capital investment planning and governance process.

A. The Company uses a standardized Capital Investment Management (CIM) process to manage all of its capital investment. All capital investment programs and projects are prioritized within an overall strategic planning process, utilizing drivers associated with various asset investment strategies (such as regulatory compliance, capacity, customer satisfaction, etc.) to formulate a five-year Strategic Capital Expenditure Plan (SCEP). More detailed design engineering is conducted, and implementation plans are developed for those projects contained in the SCEP. The Company's annual capital construction plan is based upon projects and programs contained in the SCEP. The governance process provides for formal approvals and consistent controls that optimize the effectiveness of asset investment and ensures that the capital investment meets the strategic intent of the business.

21. Q. How does the Company's construction planning process impact its claim for future test year plant additions?

A. All of the Company's claimed plant additions are expected to be completed during 2010. As the year progresses, some adjustments to the capital program may be required due to unanticipated events requiring an immediate action, such as plant or equipment that has experienced failure and needs to be replaced. In general however, the overall cost of plant construction will remain stable.

22. Q. Does this conclude your testimony?

A. Yes, It does.