DIRECT TESTIMONY
OF
KENNETH R. MASON, P.E.
ON BEHALF OF THE CITY OF NEWPORT, UTILITIES DEPARTMENT, WATER DIVISION

In re: City of Newport Utilities Department, Water Division

Docket No.

November 2, 2009

INTRODUCTION

Q. Please provide your full name, title and business address for the record.

A. Kenneth R. Mason, P.E. I am employed by the City of Newport where I serve as Deputy Director of Utilities, Engineering. My business address is 70 Halsey Street, Newport, RI.

Q. How long have you held this position?

A. I began my employment with the City of Newport on April 1, 2006 in my current position of Deputy Director of Utilities, Engineering.

Q. What are your responsibilities as Deputy Director of Utilities for engineering?

A. As Deputy Director of Utilities, Engineering, I am responsible for engineering duties for both the Water and Water Pollution Control Division with the City. For the Water Division I am responsible for supervising the day to day operations of the treatment plants, collection/distribution system, and the meter department, as well as regulatory reporting, and managing capital improvement projects.

Q. Can you provide a brief description of your work experience?

A. Prior to working for the City of Newport, I was employed for thirteen years with Lincoln Environmental Inc. of Smithfield, RI, as an environmental consulting engineer. Prior to my work with Lincoln Environmental I was a regional engineer for a national oil company, project manager for a general contractor, and construction engineer on a nuclear power plant.

Q. What is your educational background?

A. In 1979 I received a B.S. in Civil Engineering from the University of Rhode Island. I am a registered Professional Engineer in the State of Rhode Island.

Q. Do you have any professional affiliations?

A. I am a member of the New England Water Works Association, the American Water Works Association, and the Rhode Island Water Works Association.

NEWPORT WATER DEMAND STUDY

Q. The testimony of Harold Smith indicates that you will be providing information regarding the collection of daily usage data. Is this correct?

A. Yes it is.

Q. In Mr. Smith's testimony, he indicates that Newport's demand study used daily consumption data collected from a sampling of accounts. Is this correct?

A. Yes. It is my understanding that Mr. Smith, in consultation with representatives from the Division of Public Utilities and Carriers, the Portsmouth Water and Fire District and the Navy, proposed that daily usage data from 130 residential customers and 30 commercial customers be gathered by Newport. In addition, it was proposed that daily usage data be gathered from certain Navy meters.

Q. Can you describe how Newport proposed to gather this data?

A. Yes. In accordance with its approved Capital Improvement Plan, Newport has been in the process of converting its meter system to a radio read system. The Radio Read Meter Reading System Project, Contract 08-056, includes the replacement of approximately 10,000 meters in the Newport system and the installation of radio read transceivers on all the meters. The intent of this project was to replace meters and install radio read devices on equipment that were over five years in age and retrofit the newer meters with the radio read technology only. As part of the contract requirements, the chosen system was required to be compatible with all meter manufacturers. Badger Meter, Inc. was chosen for the project, which began in December, 2008.

In working with our vendor on the radio read project, we became aware of technology that would allow us to obtain daily usage without having to physically read meters on a daily basis. This technology from Badger Meter, Inc. is called Orion Remote Data Profiler ("Orion Profiler"), and it allows for the connection of a special data storing transceiver to meters. Daily usage data can then be downloaded from the transceiver. The technology does require a meter reader to physically connect a handheld device to the transceiver via a hard wire connection to download the daily data. However, each

transceiver is capable of storing up to 21,000 consumption data readings. Thus, the meters did not have to be read each day. By way of example, a meter reader could connect to the meter once a week and download the daily usage for each day of that week.

In evaluating this technology, we wanted to make sure that it would work with the different types of meters in our system. As part of Newport's conversion to a remote radio read system, we have been switching over to the meters produced by Badger Meter, Inc. However, as set forth above, not all of the meters in our system have been switched out yet. We still have a significant number of accounts that use Neptune meters, including some of the 160 accounts from which we were going to obtain daily usage data.

Because the Orion Profiler is manufactured by Badger Meter, Inc., we asked if it would work with both Neptune meters and Badger meters because the 160 accounts identified by Mr. Smith used both Badger and Neptune Meters. We were assured that the Orion Profiler would work with the Neptune Meters. In fact, the ability to read meters other than those produced by Badger Meter, Inc. is a selling feature for this product. (See Exhibit A).

Q. Did Newport encounter and difficulties with this technology?

A. Yes there were problems that affected the specific accounts from which we obtained daily data. The Orion Profiler transceivers worked well when connected to Badger meters. However, problems were encountered when connecting them to Neptune meters. The Orion Profiler transceivers were installed in March and during the initial phase of the installation, the transceivers worked well. At the end of April, during routine reading of the meters, it was noted that an extremely high failure rate of the Neptune meter heads was occurring, At this point it was determined that Newport Water would not attempt to use the Orion Profilers on the Neptune meters, which had shown the high failure rate.

Q. What did Newport do to address this issue?

A. Alternate commercial sites that had the new Badger meters were chosen to be read on a daily basis. Of the original thirty (30) commercial accounts identified for the demand study, seven (7) were used in the study because they had Badger meters. An additional thirty-one (31) commercial accounts with Badger meters were chosen to replace the accounts that could not be included in the sample because they had Neptune meters. Readings of daily usage, including weekend and holiday usage, were obtained from these thirty-eight (38) accounts.

Q. Were there also problems encountered with the residential accounts?

A. Yes, but to a lesser extent than the commercial accounts. Of the original 130 residential accounts chosen for the study, 80 were ultimately included in the study because they had Badger meters. Newport Water then installed the Orion Profilers on 27 similar accounts that had Badger meters, and which were in close proximity to the accounts we were unable to use. Daily usage data, including weekends and holidays was collected from one hundred seven (107) residential accounts.

Q. Were there also problems encountered with the Navy accounts?

A. No. Nine of the Navy meters were read manually. One of the meters used to serve the Navy is inaccessible for daily reads, and the Navy did not give Newport Water approval to install a new meter prior to the commencement of the daily read study.

Q. Did any of the accounts that were read register little or no consumption over the data collection period?

A. Yes. The Lawton Valley Navy account indicated little or no consumption. The low consumption noted at the Lawton Valley Navy meter is most likely attributable to the temporary service connection provided by Portsmouth Water and Fire District due to the Navy storage tank at Melville.

STATION ONE PUMPING COSTS

Q. Mr. Smith's testimony indicates that some of the costs associated with the Station One treatment plant are allocated to Portsmouth. Can you please describe the operation of the pump stations required to fill and maintain the 2MG storage tank at the Lawton Valley treatment plant?

A. Yes. The 2MG water storage tank can be filled by two methods. The first is to operate the 6MG/day pumps at the Lawton Valley treatment plant, which draws water from the 4MG reservoir and pumps to the tank. There are two identical pumps at this pump station operated as a primary and backup, both rated at 125 horsepower, and the station is equipped with its own emergency generator.

The second method is to operate the booster pump at Station 1 which fills the tank at a rate of approximately 2.3 MG/day. There are two identical pumps operated as a primary and a backup, both rated at 60 horsepower.

The 2MG tank is normally filled using the 6MG pumps at the Lawton Valley treatment plant. However in accordance with the February 2007 Rhode Island Department of Environmental Management Consent Agreement OC&I/WP/04-07, Newport Water operates the booster pumps in order to minimize production at the Lawton Valley treatment plant. This is required to minimize discharges of filter backwashes to the Lawton Brook in accordance with the RIPDES discharge permit for the plant. This is accomplished by maximizing production of water at the Station 1 plant and pumping water up to the 2MG standpipe at Lawton Valley, thus minimizing the operations at the Lawton Valley plant. This mode of operations is run when the demand for water on Aquidneck Island allows, during the off peak seasons.

Q. Could the amount of water pumped from Station One to the 2MG standpipe be reduced if Portsmouth did not take any water from the 4 MG tank?

A. Yes. If the water that Portsmouth currently takes from the 4MG tank were available, it could be pumped to the 2MG standpipe thereby reducing the need to pump from Station One during certain periods during the year. However, due to the residuals

management issues at Lawton Valley it is likely that production at Lawton Valley would be reduced if there was no demand from Portsmouth. Additionally, as detailed in Julia Forgue's testimony, decisions regarding production at each of Newport Water's treatment plants are driven in part by the quantity and quality of the raw water in each of Newport Water's nine reservoirs such that the availability of water in the 4MG tank at Lawton Valley becomes less of a factor in determining how much water is pumped from Station One to the 2MG standpipe.

Q. In the event of an emergency shut down of the Lawton Valley treatment plant, could at least a portion of Portsmouth's demand be met by pumping water from Station 1?

A. Yes, water produced at Station One can either be pumped to the 4 million gallon tank at Lawton Valley via the 2 MG standpipe or water can be delivered to Portsmouth from the 1.5 MG tank at Goulart Lane. Obviously, an emergency shut down of Lawton Valley would result in a significant reduction in production capacity so it is likely that all of Newport's customers would be asked to reduce demand in such an event. However, the redundancy provided by having two treatment plants would ensure that some water would be available in an emergency.

PUMPING COST ANALYSIS

Q. In Mr. Smith's testimony, he indicated that an analysis was performed to determine costs associated with pumping. Is this correct?

A. Yes it is.

Q. Please describe how costs were determined for the operation of the 6MG pumps at Lawton Valley and the Booster pumps at Station 1.

A. Costs for these pumps were broken down into electricity, labor, and repair/maintenance. Costs expended for FY 09 were determined for these attributes as follows:

- Electricity – Electrical costs were determined for each pump by determining the number of hours each pump was operated over the course of a year, determining the actual motor horsepower, motor efficiency, and cost of energy ($/KWh).

  For Station 1, the booster pump was operated for 1,479 hours, the pump is rated at 60 horsepower, with an efficiency rating of 95%, and the average cost of energy for the fiscal year was $.10457/KWh. Total electrical costs to operate this pump station were $7,193 for FY09.

  For the 6MG pump station at Lawton Valley, the pump was operated for 2,188 hours, the pump is rated at 125 horsepower, with an efficiency of 95%, and the average cost of energy for the fiscal year was $.101/KWh. Total electrical costs to operate this pump station was $21,711 for FY09

- Labor – Costs for labor include daily inspection and maintenance for the pumps at Lawton Valley and Station 1. Inspections include checking pressures, bearing temperatures, couplings, and observing the pump for unusual noises or vibrations. Yearly labor costs for these inspections are based upon the number of hours expended at each plant multiplied by the hourly wages with benefits. Yearly costs for this activity total $4,829 for Station 1 and $1,637 for Lawton Valley.

- Repair/Maintenance – Activities included in repairs and maintenance to the booster pumps at Station 1 and the 6MG pumps at Lawton Valley include yearly maintenance contracts for the pumps and switchgear and repairs to the pumps. Repairs and maintenance to the booster pumps at Station 1 totaled $300 for FY09 Repairs and maintenance to the 6MG pumps at Lawton Valley totaled $8,332.66 for FY09.

CONCLUSION

Q. Does this conclude your testimony?

A. Yes it does.