BEFORE THE
STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES
OFFICE OF ADMINISTRATIVE LAW

In the Matter of:

THE PETITION OF NEW JERSEY AMERICAN WATER COMPANY, INC. FOR APPROVAL OF INCREASED TARIFF RATES AND CHARGES FOR WATER AND SEWER SERVICE; CHANGE IN DEPRECIATION RATES; AND OTHER TARIFF MODIFICATIONS	**BPU Docket No. WR11070460** **OAL Docket No. PUC09799-2011N**

DIRECT TESTIMONY AND EXHIBITS OF

HOWARD J. WOODS, JR., P.E.

ON BEHALF OF THE
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DIVISION OF RATE COUNSEL

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New Jersey American Water Company, Inc.
BPU Docket No. WR11070460
Direct Testimony of Howard J. Woods, Jr., P.E.

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1. STATEMENT OF QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Howard J. Woods, Jr. and my address is 138 Liberty Drive, Newtown, Pennsylvania 18940-1111.

Q. BY WHOM ARE YOU EMPLOYED?

A. I am an independent consultant and the New Jersey Division of Rate Counsel ("Rate Counsel") has engaged me in this matter.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

A. I hold a Bachelor of Civil Engineering from Villanova University (1977) and a Master of Civil Engineering with a concentration in water resources engineering also from Villanova University (1985). I am a registered professional engineer in New Jersey, New York, Maryland, Pennsylvania, Delaware and New Mexico. I am also licensed to perform RAM-W^{SM} security assessments of public water systems. I am an active member of the American Society of Civil Engineers, the National Ground Water Association, the American Water Works Association, the Water Environment Federation and the International Water Association.

Q. HAVE YOU PROVIDED TESTIMONY IN UTILITY MATTERS ON PRIOR OCCASIONS?

A. Yes. I have testified in numerous rate setting proceedings and quality of service evaluations in matters before the Public Utility Commissions in New Jersey, New York, Connecticut, Delaware and Kentucky. The focus of my testimonies is on matters involving utility operations, planning and engineering.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. A detailed description of my professional experience is provided in Appendix A of this Testimony. In summary, I have over 34 years experience in the planning, design, construction and operation of water and wastewater utility systems. I have worked for a Federal regulatory agency, a large investor-owned water and wastewater utility, a firm engaged in contract operations of municipally owned water and wastewater utilities, and in engineering and operational consulting for the water and wastewater industry. During my career, I have been responsible for all operations functions including regulatory compliance, water production, distribution and maintenance services as well as wastewater collection and treatment.

2. SCOPE AND PURPOSE OF TESTIMONY

Q. MR. WOODS, PLEASE DESCRIBE YOUR AREA OF RESPONSIBILITY IN THIS MATTER.

A. Rate Counsel engaged me to review New Jersey American Water Company, Inc.'s ("Company") Petition with specific attention to the following areas:

1. The Company's analysis of residential and commercial water use trends in its SA-1 and SA-2 service areas;
2. The Company's proposed water conservation programs;
3. The Company's capital construction program and the items of work classified as utility plant in service following the close of the Test Year; and
4. The expenses that may be incurred by the Company in complying with the Board of Public Utilities customer service mark-out rule.

Q. WHAT MATERIALS HAVE YOU REVIEWED IN DISCHARGING THIS ASSIGNMENT?

A. I have reviewed the Company's initial filing and responses to discovery requests in this matter. I have also reviewed the Company's supplemental testimony and its 9+3 Update to its initial schedules and discovery responses. In addition, I have also reviewed various New Jersey Department of Environmental Protection and New

Jersey Board of Public Utilities rules applicable to specific aspects of the Company's proposals.

3. SUMMARY OF FINDINGS AND CONCLUSIONS

Q. HAVE YOU REVIEWED NEW JERSEY AMERICAN WATER COMPANY'S FILING FOR A RATE ADJUSTMENT?

A. Yes, I have.

Q. WHAT DOES THE COMPANY'S FILING AND THEIR PRE-FILED TESTIMONY REQUEST?

A. The Company's November 11, 2011 update to its filing proposes to increase operating revenues by $99,307,784 or roughly 17.6% more than adjusted test year revenues at current rates.[1] The Company has proposed a Test Year ending January 31, 2012.[2] The Company has requested a post Test Year adjustment to plant in service amounting to $218,549,589 for construction anticipated to be completed by July 31, 2012, a date six months beyond the close of the Test Year.[3]

[1] Exhibit P-2, Schedule 4, Page 1 of 1 dated November 11, 2011.

[2] Exhibit PT-6, Simpson, p.4, lines 10-11.

[3] Company response to RCR-A-11.

Q. DO YOU BELIEVE THAT THIS RATE INCREASE SHOULD BE GRANTED?

A. No. The Company's estimate of pro forma revenues for its SA-1 and SA-2 underestimates the amount of revenues that will most likely be derived from residential and commercial sales in these areas. Per customer water use has been declining over the past ten years and this trend should be reflected in rate making in this proceeding. However, it is my opinion that the Company has overestimated the impact of this trend.

The Company has proposed an extensive conservation program that includes rebates for customers who purchase water efficient plumbing devices and a greatly expanded customer education and outreach program. The expenses reflected in the Company's base rate proposal and the associated Conservation Plan Tracker and Water Efficiency Tracker should not be allowed.

The Company has requested a substantial adjustment to rate base to reflect construction that will be completed after the close of the Test Year. Much of this work is routine and recurring in nature and not normally afforded post Test Year inclusion in rates by this Board. Many of the individual investment projects included in the Company's request for a post Test Year adjustment to rate base are small relative to the Company's utility plant in service balance and have a small impact on the Company's revenue requirement. To the extent that any post Test Year adjustments are permitted, such adjustments should reflect only projects that are major in nature and consequence.

In prior cases, the Company has requested deferred accounting treatment for expenses related to mark-outs of privately owned service lines. I continue to support this approach once the Board renders a decision in the Company's still pending petition for relief from the mark-out rule. At this point, the Board has not rendered a decision on the Company's request for relief and no such expenses have yet been deferred by the Company.

4. SA-1 AND SA-2 WATER USE ANALYSIS

Q. HAVE YOU REVIEWED THE COMPANY'S TESTIMONY AND WORKPAPERS THAT SUPPORT THE PROPOSED NORMALIZATION ADJUSTMENTS FOR RESIDENTIAL AND COMMERCIAL WATER USE IN THE SA-1 AND SA-2 SERVICE AREAS?

A. Yes. The Company has identified a decline in use in these two service areas and they have developed a use normalization method to reflect this trend.

Q. PLEASE DESCRIBE THE COMPANY'S TREND ANALYSIS.

A. Let me summarize the analysis described in the Direct Testimony of Gary Naumick presented in Exhibit PT-15. The Company focused on the months of December through April over the last six years and identified the average use per customer for each month during this period. They calculated a five-month running average for

the average use per customer and used these data to perform a linear trend analysis. The linear trend analysis is a least-squares method of fitting a straight line to the data. The trend that best fits these data can then be used to project the monthly average use for some future period of time. The monthly average use per customer for the five-month period estimate was extrapolated to project normalized use over a twelve-month period and this is referred to in the Company's analysis as the base use. The Company took the average monthly use per customer identified in the linear trend analysis and multiplied that value by twelve to arrive at base use for the year. The Company then performed an additional analysis to identify the average amount of water used in excess of the base use in each of the last ten years. This was done by assuming that the use in the December through April period would be constant over the course of the year and would reflect the actual base use in any one year. The Company then subtracted the extrapolated base use value from the total use for the year to calculate the non-base or seasonal use. The ten-year average of the non-base use volumes for the ten-years was then added to the normalized base use to arrive at total normalized use for the year.

Q. DO YOU AGREE THAT THERE IS A DECLINING USE TREND AND DO YOU BELIEVE THAT THE IMPACT OF THIS TREND SHOULD BE REFLECTED IN RATES DEVELOPED IN THIS PROCEEDING?

A. Yes. With respect to changes in residential use, I believe there is a clear trend toward lower per customer use. This is partially offset by customer additions in the

Company's service areas. In the SA-1 service area, the Company has demonstrated that indoor uses represented by metered sales to residential customers in the "winter period" of each year have been declining steadily over at least the last six years.[4] Similar declining use trends are present in the Company's data for residential use in the SA-2 service area and in the Commercial classes in both SA-1 and SA-2.[5]

Q. DO YOU BELIEVE THAT THE COMPANY'S ANALYSIS PROPERLY IDENTIFIES THE NORMALIZED ANNUAL LEVEL OF WATER SALES IN THESE CUSTOMER CLASSES FOR USE IN RATE SETTING PURPOSES?

A. No. I believe that the data set used in the Company's analysis is too short to fully identify the trend. Furthermore, the Company has combined a six-year trend to define the base use with a ten-year average for the non-base use. This is an inconsistent matching of data sets and I believe it results in a low estimate of normalized annual use. If Mr. Naumick had used a six-year average for non-base use the resulting normalized annual use for SA-1 Residential, SA-1 Commercial, SA-2 Residential and SA-2 Commercial would all be higher.[6] For example, if a

[4] PT-15, Naumick; Schedule GAN-1 and response to RCR-E-1.

[5] Ibid.

[6] The average non-base use for the last six years shown in GAN-2, page 3 is 17,999 thousand gallons per year as opposed to 16,989 thousand gallons per year for the ten year period. For SA-1 commercial, the six-year average non-base use is 63,100 thousand gallons per year as opposed to the ten-year average of 59,142 thousand gallons per year shown in Schedule GAN-3, page 3. For SA-2 residential, the six-year average non-base use is 12,421 thousand gallons per year as opposed to the ten-year average value of 11,346 thousand gallons per year shown in Schedule GAN-4, page 3. For SA-2 Commercial, the six-year average non-base use is 80,679 thousand gallons per year as opposed to 73,228 thousand gallons per year shown on Schedule GAN-5, page 3.

six-year average for SA-1 non-base use were calculated, the non-base average would be 17,999 gallons per year as opposed to 16,989 gallons per year.[7] This would increase the per customer use shown on GAN-1 from 76,429 gallons per year to 77,439 gallons per year, an amount 1,010 gallons per year higher than the normalized use claimed by the Company. Total annual water use, as opposed to the "winter" use, is the value that we are attempting to normalize. The Company also based its water sales adjustment on the trended value of water use at a point eighteen months after the close of the Test Year[8] rather than using a normalized value more closely representing Test Year use. Finally, the analysis is focused on the average use per customer in each class with "time" as the only independent variable. While it is useful to track average use per customer in any one class for planning purposes, a normalization analysis based on this alone fails to reflect the impact of customer growth on total water use.

Q. PLEASE EXPLAIN THE METHOD OF ANALYSIS YOU USED FOR THE SA-1 RESIDENTIAL CLASS.

A. I analyzed the total sales to this class over a period of ten years from 2001 through 2010. I used "time" and the "number of customers" as two independent variables to determine the relationship between these variables and the total amount of water use in any year. By using two independent variables in the analysis we are able to

[7] PT-15, Naumick, Schedule GAN-2, Page 3.

[8] SIR-14, Updated 11/11/2011, Workpaper 5B, Page 1 of 8, Columns 6 and 7.

separately account for the impact of customer additions on the amount of water sales for the class. The number of customers is a strong variable because it can be directly measured with certainty and the addition or subtraction of customers will have a direct impact on the volume of water sold. The number of customers used in this analysis is the average number of customers for 12 months ending September 2011. This more closely represents the average number of customers for the Test Year than the number of customers for the Base Year used by the Company in its 9+3 update to SIR-14. The Company's workpapers use the trend value for average use per customer advanced to July 2013 and they apply this average use to the Base Year (i.e., December 2010) average number of customers instead of the Test Year number of customers. As an independent variable, "time" is a catch-all for things that influence water use that cannot be directly measured with certainty but are nevertheless likely to influence water use. These things could include the penetration of water efficient plumbing devices in the service area, age of housing stock, demographics like family size, economic conditions or weather. Obviously, the simple passage of time has no direct impact on water sales but rather, the impact of these other events or factors that change over time is what directly influences water use.

Q. DID YOU USE THIS METHOD CONSISTENTLY FOR RESIDENTIAL USE IN SA-2 AND THE COMMERCIAL USE IN SA-1 AND SA-2?

A. Yes.

Q. WHY DIDN'T YOU ATTEMPT TO SEPARATE SEASONAL AND NON-SEASONAL USE?

A. The relationship between base use and annual use is not well defined. While it is very interesting to see the declining trend in base use illuminated in the Company's testimony, what we are trying to normalize is annual use, not base use. Once the Company developed a trend normalized base use value, it was left with the problem of having to convert the base use amount to annual use. Mr. Naumick developed a ten-year average of non-base use and added the average back to the trend-normalized base to get total annual use.[9] As I noted earlier, this method uses an inconsistent time period (e.g., six years for the trend for base use and ten years for the average non-base use) and it does not recognize trends that are occurring with respect to the relationship between total and base use over time. I compared total use for the December to April period to total use in the months of May through November and total use for the full twelve-month period for the SA-1 residential group in Schedule HJW-1. The ratio of total annual use to the base period use is growing over time. In other words, seasonal uses that are most likely influenced by changes in weather conditions are becoming a bigger portion of total use as customers take advantage of more efficient appliances and plumbing devices or change their behaviors toward indoor use. Using a simple average to reflect non-base use would not account for this trend and this should be accounted for in the annual normalization.

[9] PT-15, Naumick; Schedule GAN-2, page 3; and PT-15 Naumick; Schedule GAN-1.

Mr. Naumick's method assumes that base use would be consistent throughout the year and would not be influenced by seasonal factors. His method also assumes that the non-base use is a constant while the data in GAN-2, GAN-3, GAN-4 and GAN-5 clearly show a wide variation in non-base use. Furthermore, annual use is almost certainly impacted by weather conditions, the economy and other factors that may be obscure. It has been my experience that customer use patterns, once established persist for some time and only change gradually. After drought restrictions are imposed or after an extremely wet or cool year, customer use tends to be depressed and recovers gradually once restrictions are lifted or more typical weather patterns return. Similarly, use accelerates in hot, dry periods and takes some time to decline to more typical use patterns when normal conditions reappear. For these reasons, it is my conclusion that annual data should be used in analyzing the trends in annual use. The effort to extract the base use by analyzing the winter period used by Mr. Naumick introduces an additional level of uncertainty and possible error into the analysis. Nevertheless, it is clear that residential water use is declining and this must be addressed in developing an estimate of normal use.

Q. WHY DID YOU USE THE DATA FOR THE YEARS 2001 THROUGH 2010 FOR YOUR ANALYSIS RATHER THAN THE SHORTER PERIOD OF TIME ANALYZED BY THE COMPANY?

A. My analysis is attempting to identify trends in total water sales over time. The theory that the analysis is attempting to test is that customer use is declining over

time even though the number of customers served may be growing. Customers may be adopting a conservation ethic or otherwise becoming more efficient in the way they use water. The Company's winter period analysis demonstrates a very strong trend toward lower use. However, at the same time the Company is adding new customers. Even though these customers may benefit from the latest in efficient plumbing devices and appliances, the fact that the service area is growing means that the Company will need to supply more water. A larger data set is better for this analysis because it minimizes that chances that any one unusual year (e.g., a wet year, a dry year or a year in which drought restrictions are imposed on customer use) could influence the results of the analysis. Extremely low use or extremely high use in any one year could exert a great deal of influence on a trend analysis depending on when the extreme occurred. A high use period at the beginning of a short trend period could unduly skew the results of the analysis. By using a longer term these effects are minimized. In my analysis, I calculated the total use for the customer group using "time" and the "average number of customers served" as two independent variables. The analysis directly estimates total annual water use without the need to extrapolate total use from a trend that covers only selected months out of the entire year.

Q. WHAT WERE THE RESULTS OF YOUR ANALYSIS?

A. The results of the analysis are shown in Schedules HJW-2 through HJW-5 and in Exhibits HJW-1 through HJW-4. I have also summarized the revenue adjustments

at present rates and the normalized use for SA-1 and SA-2 residential and commercial customers in Schedules HJW-6 and HJW-7. In addition, in Schedule HJW-7, I have presented a comparison of the results of my analysis to the base year actual use, the 5-year average use, and the normalized water use estimates presented in the Company's 9+3 update to SIR-14 dated November 11, 2011. The Test Year normalized use is higher in all four customer classes than the forecasted 2013 use presented in the Company's normalization workpapers. With the exception of SA-2 Commercial, the normalized annual use estimates are lower than the 5-Year Average and the actual base year use. These results are also presented graphically in Exhibits HJW-1 through HJW-4. The graphs show that SA-1 residential use is growing modestly as the service area grows even though customer use is declining over time. The normalized use is lower than the Base Year use by 1.9% and lower than the 5-Year average use by 0.7%. SA-1 Commercial Use is consistently declining and this is reflected in the graph shown in Exhibit HJW-2. The normalized use is 5.8% below the Base Year use and 7.9% below the 5-Year Average. For SA-2 residential, use is declining as shown in Exhibit HJW-3. The normalized use is 4.7% less than the Base Year use and 3.9% below the 5-Year Average use. SA-2 Commercial use is growing consistently and this is shown in the graph in Exhibit HJW-4. Normalized use is 0.5% more than the Base Year use and 6.1% greater than the 5-Year Average use.

In Exhibits HJW-1 through HJW-4, I have also shown the Company's normalized use volumes in comparison to my estimates for normalized use and the actual historical use values for the past 10 years. The normalized use volumes for

these four customer groups translate to a total adjustment to present rate revenues of $20,181,688 as summarized in Schedule HJW-6.

Q. IS IT YOUR CONCLUSION THAT CUSTOMER USE IS DECLINING OVER TIME?

A. Yes. In the two variable analysis presented in Schedules HJW-2 through HJW-5, it is possible to see the impact that "time" as a variable has on overall water use in each class. With the exception of SA-2 Commercial, all of the slope coefficients are strongly negative indicating that use is declining as time passes. By contrast, all of the slope coefficients associated with the number of customers served are positive with the exception of SA-2 Commercial. This confirms that the addition of customers results in higher water sales. The results for SA-2 Commercial are counter to the trend for the other customer groups and this may suggest a shift in the type of customer served in the SA-2 Commercial group or some other physical change in the service area that is not readily apparent. That is, there may be fewer customers in the group but those customers are larger users with a higher average use per customer as shown in the Supplemental Response to RCR-A-80.

I agree completely with Mr. Naumick that base customer use is declining for all of the reasons noted in his testimony. Plumbing code changes, Federal legislation, and a variety of "green" initiatives have brought more efficient consumer appliances and plumbing devices to the market place and these have replaced significantly less efficient devices available in the past. All new

construction benefits from these devices as do retrofits, replacements and remodeling efforts undertaken by individual customers. As these devices become more and more prevalent in the service area, there is no doubt that base use per customer will continue to decline. Growth in the Company's service area will partly offset the reduction in sales. As noted in Ms. Chiavari's responses to various data requests, the addition of new customers will require the Company to invest in new plant capacity to maintain safe and reliable service. [10]

5. WATER CONSERVATION

Q. HAVE YOU REVIEWED THE COMPANY'S PROPOSAL TO IMPLEMENT A WATER CONSERVATION PLAN?

A. Yes, I have. The Company is proposing to implement a comprehensive water conservation program directed at reducing residential sales.[11] The proposed program includes direct rebates to customers who install water efficient plumbing devices and a greatly expanded customer education program. The Company has also proposed to continue its Low Income Payment Program ("LIPP") Conservation Plan and has made adjustments to the program based on knowledge gained since it was first implemented. In addition, the Company has proposed a seasonal and inclining block tariff structure for residential customers in all of its

[10] Responses to RCR-E-49, RCR-E-50, RCR-E-51, RCR-E-53, RCR-E-54

[11] PT-13, Curtis; p. 4, lines 16-17.

service areas. The proposal also includes two tariff clauses, a Conservation Plan Tracker ("CPT") and a Water Efficiency Tracker ("WET") to track costs and impacts of the conservation program. Finally, the Company has also proposed to establish a water reuse tariff and a developer incentive program for the installation of WaterSense homes.[12]

Q. IF THE REBATE AND RETROFIT PROGRAMS ARE APPROVED ALONG WITH THE EXPANDED CUSTOMER EDUCATION PROGRAM, HOW MUCH WATER DOES THE COMPANY EXPECT TO SAVE?

A. The toilet rebate programs are expected to save 79,020,707 gallons per year, or 0.22 million gallons per day (MGD).[13] The rain sensor program is expected to save 2,094,667 gallons per year or 0.006 MGD and the smart controller program is expected to save 5,984,763 gallons per year or 0.016 MGD.[14] The sum of these three elements of the program amounts to an annual savings in water use of 0.24 MGD. Given the Company's annual average daily system delivery of 287 MGD,[15] this amounts to an annual savings of 0.08% of the system output. On an average basis for the Company's 557,500 residential customers[16] the anticipated savings amount to 156 gallons per customer per year.

[12] Ibid; p.6, lines 3-7.

[13] Exhibit PT-21, Quilici; Schedule LMQ-5.

[14] Ibid.

[15] Exhibit PT-2, Tambini; p. 4, line 20.

[16] Op.cit., Quilici; p. 20, line 11.

Q. HOW DOES THIS SAVINGS COMPARE TO THE ANNUAL TREND FOR SA-1 AND SA-2 RESIDENTIAL CUSTOMERS DEFINED BY MR. NAUMICK?

A. For the SA-1 Residential customer group, Mr. Naumick has estimated an annual reduction in water use based on his trend analysis of 1,007 gallons per customer per year[17] while the SA-2 Residential customer group is projected to decline at a rate of 1,702 gallons per customer per year.[18] In comparison to the SA-1 service area, the proposed conservation program will generate savings amounting to only 15% of the trend rate of decline identified by Mr. Naumick. In SA-2, the conservation program savings amount to only 9% of the trend rate of decline.

Q. MR. WOODS, YOUR TESTIMONY REGARDING THE TREND IN TOTAL WATER USE SUGGESTS A RATE OF DECLINE IN RESIDENTIAL CONSUMPTION THAT IS LESS THAN THE AMOUNT CLAIMED BY MR. NAUMICK, CORRECT?

A. Yes. In the SA-2 service area, for example, the rate of decline in water use per customer amounts to 1,070 gallons per customer per year. This value is calculated in Schedule HJW-8 using the constants derived in Schedule HJW-4. The number of customers served is held constant. The savings offered by the conservation program represents only 14% of the trend rate of decline for a constant number of

[17] SIR-14 Update 11/11/11; Workpaper 5B, Page 1 of 8; Column 5.

[18] SIR-14 Update 11/11/11; Workpaper 5B, Page 2 of 8; Column 5

existing customers. In other words, the actual rate of decline in average use per customer is nearly 7 times greater than the reductions in use anticipated as a result of implementing the rebate program.

Q. WHAT IS THE SIGNIFICANCE OF HOLDING THE NUMBER OF CUSTOMERS SERVED CONSTANT IN YOUR ANALYSIS?

A. Holding the number of customers served constant isolates the effect of the trend on existing customers. In other words, this shows the effect of ongoing conservation efforts on the average use per customer for only existing customers. If the number of customers were increased, the decline in the average use per customer would be greater. Since we can assume that new customers would benefit from all of the latest plumbing devices and appliances on the market, these customers would naturally use less water then existing customers and thus lower the average use per customer even further. This effect is shown in Schedule HJW-9 where I have assumed that the Company will add 500 customers per year in the SA-2 residential service area. This results in a decline in the average use per customer of 1,170 gallons per year. The proposed conservation program would produce only 13% of this hypothetical trend rate of decline in average use.

Q. WHAT IS THE ANNUAL COST OF THE PROPOSED PROGRAM?

A. The expenses associated with this program are summarized in Ms. Quilici's testimony and amount to $966,141 per year.[19] This expense is intended to be recovered through the proposed Conservation Plan Tracker (CPT) clause as opposed to general metered service revenues. In addition, the Company has proposed a public education effort costing $1.1 million,[20] which would be recovered in general metered service rates.

Q. DO YOU BELIEVE THAT THE COMPANY SHOULD BE ALLOWED TO INCLUDE THESE EXPENSES IN RATES RESULTING FROM THIS PROCEEDING?

A. No. The expenses add $2.1 million to the cost of service before taxes but do not produce meaningful results. The trend toward lower residential water use identified by Mr. Naumick and by me greatly exceeds the savings likely to be generated by the proposed conservation program. Apparently, customers have adopted conservation on their own and I do not believe there is a need to spend ratepayer money for a general rebate program or an enhanced education program. Use is declining without these additional expenditures of ratepayer dollars. The benefits of conservation defined by Mr. Curtis, including reductions in the volume of chemicals used to treat water, the amount of residual waste to be managed, the

[19] Op.cit., Quilici; Schedule LMQ-7.

[20] Response to RCR-A-186; Exhibit PT-13, Curtis, p. 10, lines 18-12; PT-2, Tambini, p.8, line 19 through p. 9, line 16; and PT-2, Schedule 46, line 12.

energy consumed in pumping water, and the effort to collect and treat wastewater[21] are all being realized without a $2.1 million ratepayer funded program.

Q. DO YOU BELIEVE THAT ANY ELEMENTS OF THE EXISTING COMPANY CONSERVATION PROGRAM SHOULD BE MAINTAINED?

A. Yes. I believe that the LIPP conservation program implemented by the Company after its last rate Order should be continued. This program has only been in effect for a limited period of time and I believe more experience is needed with this effort to properly judge the effectiveness of the program. Customers who qualify for the LIPP program are at the low end of the economic spectrum. It is unlikely that customers who qualify for the LIPP program have the ability to dedicate their very limited financial resources to plumbing repairs and conservation activities that could actually save them money in the long run. The Company has proposed to continue the LIPP conservation program at the same level of funding approved in its last rate Order.[22] This amount is $250,000 per year and I agree with this recommendation.

Q. IF YOU DO NOT BELIEVE THAT THE REBATE PROGRAM SHOULD BE IMPLEMENTED DO YOU FEEL THERE IS A NEED FOR THE "CPT" OR THE "WET" CLAUSES?

[21] Exhibit PT-13, Curtis; p. 4, lines 8-11.

[22] Exhibit PT-13, Curtis; p. 14, lines 1-4.

A. If the Company is not going to incur extraordinary costs for the proposed conservation program, the CPT clause is unnecessary. The decline in residential use represented by the long-term trend is being partially offset by changes in commercial customer use and customer growth in nearly all classes. While seasonal variations in use will most certainly occur in the normal course of events, the long-term trend is toward lower residential use. This is a change that can be anticipated and addressed in periodic rate adjustments sought by the Company and granted by this Board. The Company has filed for and been granted rate relief periodically in the past and there is no reason to suspect that they will not request periodic rate adjustments in the future. As a result, I do not feel the WET clause, which would allow for rate adjustments between rate cases, is necessary.

Q. HAVE YOU REVIEWED THE COMPANY'S PROPOSAL TO PROVIDE INCENTIVES TO DEVELOPERS WHO CONSTRUCT WATERSENSE CERTIFIED HOMES?

A. Yes. I do not feel that this program should be implemented.

Q. WHY IS THAT?

A. First, if we refer back to Schedules HJW-8 and HJW-9, we can see that the addition of new residential customers is resulting in additional erosion of the average use per customer. That is, as the Company adds new customers, the

average use per residential customer is declining. This trend suggests that there is no reason to incentivize the construction of water efficient homes because growth is already contributing to a lower average use per customer. In addition, the revenue refund formula proposed by the Company cannot be supported by present rate revenues. For each additional WaterSense certified home connected to the system, the Company will be collecting revenues that will be insufficient to support the rate base addition represented by the refund while simultaneously recovering the cost of operations and maintenance to produce and deliver the water to these homes. The revenues generated from the lower level of sales at present rates will not be adequate to cover the rate of return and depreciation on the investment and the related operating costs incurred to provide service. I have illustrated this point in Schedule HJW-10. At the proposed refund rate of 10 times revenue, the Company would not have the opportunity to earn its authorized rate of return on these investments. Even at the rates proposed by the Company in this proceeding, the likely rate of return on the investment (e.g. the developer refund amount) per customer for a WaterSense home is on the order of 3%. In fact, the maximum refund multiplier for a WaterSense home should be closer to the 2.5 times revenue rate for general refunds suggested by Ms. Chiavari in her response to RCR-E-57. At a 10 times revenue refund rate, the construction of WaterSense homes will put upward pressure on rates.

Q. HAVE YOU ALSO REVIEWED THE COMPANY'S PROPOSAL TO ESTABLISH A REUSE TARIFF TO PROMOTE CONSERVATION?

A. Yes. The Company has proposed to establish a tariff for the delivery of reuse water at either a negotiated rate or a set discount to the SA-1 general metered service tariff rate.[23]

Q. HAS THE COMPANY IDENTIFIED ANY POTENTIAL REUSE CUSTOMERS AT THIS TIME?

A. No.[24] However, there is an existing reuse customer in the Company's Homestead system and the infrastructure required to accommodate this use is already factored into the Company's rates.[25]

Q. DO YOU BELIEVE THAT THE COMPANY'S REUSE TARIFF PROPOSALS SHOULD BE ADOPTED AT THIS POINT IN TIME?

A. No, I do not. There is insufficient information available at this time to make a rational decision regarding reuse. There are no prospective reuse customers, the source of reuse water and any costs associated with developing that source are unknown, and the cost of infrastructure needed to deliver the reuse water to a prospective customer is also unknown at this time. If a project were to materialize,

[23] Exhibit PT-13, Curtis; p. 15, lines 11-13 and Exhibit PT-7, Rex; p. 52, line 3 through p. 53, line 5.

[24] RCR-E-23.

[25] RCR-E-36.

the Company could easily petition the Board to consider the specifics of the project and its rate-making implications. The alternative approach that would establish a fixed discount from the SA-1 GMS rate is an open-ended proposal that could have unquantifiable rate making consequences. Even the Company anticipates that the cost of providing reuse water will exceed the amount that can be supported by the discounted SA-1 rate.[26] This shortfall is not fixed, known or measureable at this point. The Company's proposal is to reallocate any expense not recovered through revenues generated by the reuse tariff to other customers.[27] At this point, the significance of the reallocation is unknown. It is my opinion that this proposal is premature.

6. POST TEST YEAR ADDITIONS

Q. HAS THE COMPANY REQUESTED A POST TEST YEAR ADJUSTMENT TO RATE BASE TO REFLECT CONSTRUCTION THAT WILL BE COMPLETED AFTER THE END OF THE TEST YEAR?

A. Yes. Exhibit PT-3S, Schedule SGC-1S identifies a number of projects that will not be complete before the end of the Test Year. The Company claims that all of the work shown on this exhibit will be complete and represent plant in service prior to July 31, 2012, a point six months beyond the end of the Test Year. Schedule SGC-

[26] Exhibit PT-13, Curtis; p. 15, lines 18-20.

[27] Exhibit PT-7, Rex, p. 52, lines 14-16 and p. 53, line 1.

1S also includes work that will be completed by the end of the Test Year and it also includes numerous routine and recurring construction projects.

Q. DO YOU AGREE THAT THIS POST TEST YEAR ADJUSTMENT SHOULD BE ALLOWED?

A. No. Many of the items included in the Company's claim represent routine and recurring construction that this Board has not allowed in post Test Year adjustments. Schedule SGC-1S identifies a group of projects classified as Recurring & Developer Funded Projects. In aggregate, these projects have a total value of $107,988,500. Only the work actually completed and placed in service prior to the end of the Test Year should be reflected in rates resulting from this proceeding.

Q. HAS THE BOARD PERMITTED THE INCLUSION OF POST TEST YEAR CAPITAL ADDITIONS IN THE PAST?

A. In the past, the Board has recognized inclusion of post-test-year adjustments to rate base when they are known and measurable and of major consequence. In *In re Elizabethtown Water Company Rate Case*, Docket No. WR85040330 (May 23, 1985), the Board stated that the test year to be used in a base rate proceeding must be fully historical prior to the close of record in the proceeding, but that such historical test year data may be adjusted for "known and measurable" changes. Known and measurable changes to the test year must be (1) prudent and major in

nature and consequence, (2) carefully quantified through proofs which (3) manifest convincingly reliable data.

In fully litigated proceedings, such as the September 13, 2006 decision in Parkway Water Company (Docket No. WR05070634), the Board has continued to maintain the standard established in *In re Elizabethtown Water Company Rate Case*.

Q. IN YOUR OPINION, ARE THERE ANY PROJECTS THAT SATISFY THE QUALIFICATIONS OF THE BOARD'S *ELIZABETHTOWN* DECISION?

A. Yes. I have also identified these on Schedule HJW-11. On this schedule, I have excluded the projects identified on SGC-1S as Recurring & Developer Funded Projects. Using the projected In-Service Date in the fourth column from the left, I identified those projects that will be completed in the six-month period following the close of the Test Year. As I noted earlier, some of the work shown on Schedule SGC-1S will be complete prior to the end of the Test Year and this work should be reflected in the Company's Utility Plant in Service balance at January 31, 2012 and reflected in rates developed in this proceeding. For those projects that will be completed in the six-month period after the close of the Test Year, I calculated the relative magnitude of the project with respect to the total Utility

Plant in Service at December 31, 2010,[28] the end of the Base Year. In addition, I estimated the revenue requirement associated with each capital addition and compared this to the total operating revenues presented in the Company's 9+3 update in this proceeding.[29] Finally, I identified those projects with estimated construction costs that represent more than 0.5% of either the Base Year UPIS value or those projects with an estimated revenue requirement of more than 0.5% of the 9+3 operating revenues. Items that do not meet these criteria are small in relation to the Company's scope of operations and in my opinion do not rise to the level of significance defined in *In re Elizabethtown Water Company Rate Case*.

Q. WHAT IS THE COST OF THE INDIVIDUAL INVESTMENT PROJECTS IDENTIFIED ON SGC-1S THAT ARE SCHEDULED TO BE COMPLETED IN THE POST TEST YEAR PERIOD?

A. The total estimated amount for investment projects shown on SGC-1S is $195,096,373. However, of these projects, the amount to be transferred to plant in service in the Post Test Year period is $177,535,073.

Q. WHAT PROJECTS HAVE YOU IDENTIFIED AS "MAJOR IN NATURE AND CONSEQUENCE"?

[28] Exhibit P-2, Schedule 1, page 1 of 2, line 4, Dated 11/11/2011.

[29] Exhibit P-2, Schedule 3, Page 3 of 3, Dated 11/11/2011.

A. It is my opinion that the Canoe Brook Treatment Plant Project (IP-1815-20) and the Business Transformation Project (CS-1801-3) satisfy the criteria defined in *In re Elizabethtown Water Company Rate Case.*

Q. WHAT IS THE TOTAL ESTIMATED COST OF THESE PROJECTS AS SHOWN ON SGC-1S AND HJW-11?

A. The Canoe Brook Treatment Plant project represents an estimated $78,250,500 in UPIS that will be transferred to plant in service by July 31, 2012 and the Business Transformation project represents an additional estimated plant in service amount of $27,822,300, which is also scheduled for a July 31, 2012 completion. Together, these two projects represent $106,072,800 in qualified plant additions that should be afforded post Test Year treatment. This is 60% of the total investment project estimate falling within the Post Test Year period.

Q. SHOULD THE TOTAL OF $106,072,800 BE ADDED TO THE UPIS BALANCE AT THE END OF THE TEST YEAR?

A. As this matter proceeds, the adjustment to the actual Test Year UPIS balance should be updated to reflect the most reliable estimates of the final completion cost for the Canoe Brook Water Treatment Plant project and the Business Transformation project. Construction project estimates typically bear contingency amounts that may not actually be spent and these amounts should not be reflected

in rate base. Conversely, costs not anticipated in the construction estimate may be identified only as the work proceeds and as long as these unanticipated costs are prudently incurred, the final estimates should be updated to reflect these amounts. With regard to the Canoe Brook Water Treatment Plant Project, the Company advised the parties in this proceeding of an adjustment to the magnitude of the projected Post Test Year addition that lowered the estimate to $73,228,696 (a reduction of $5,021,804 from the amount shown on Schedule SGC-1S). The Company also adjusted the estimate for the Business Transformation project to $26,320,173 as shown in the response to RCR-A-282. In addition, Rate Counsel Witness Robert J. Henkes has recommended several adjustments to the cost of this project, which I support, in his Schedules RJH-4 and RJH-4A.

7. SERVICE MARK-OUT EXPENSES

Q. HAS THE COMPANY PROVIDED TESTIMONY DESCRIBING THE IMPACT OF THE CURRENT BOARD RULES REQUIRING SERVICE LINE MARK-OUTS?

A. Yes. Mr. Kevin Kirwan has offered testimony on this issue. Mr. Kirwan describes the impact of changes made to the utility mark-out rules late in 2007 and noted that these rules will require water utilities to mark-out privately owned service lines located on private property. He has also provided an update concerning the status of a petition filed by the Company seeking a waiver from these requirements.

Q. PLEASE DESCRIBE THIS ISSUE IN GREATER DETAIL.

A. Traditionally, the water service lines located on private property are owned by and maintained by the property owner, not the utility company.[30] The utility company's obligation to perform maintenance or repairs normally stops at the property line. As a result, utility companies normally do not gather and maintain information regarding the privately owned service lines. Such information would include the type of material used for the service line, its location or its history – including any information concerning replacements or relocations done by the customer. Notwithstanding the fact that water utilities generally have no information regarding the location of or materials used to install private service lines, the October 2007 change to N.J.A.C. 14:2-4.2 has burdened the utility with the responsibility of marking these facilities all the way to the meter location – which is most likely in the customer's basement. Mr. Kirwan has testified that 73% of the Company's meters are located inside dwellings or other buildings.[31] As a result, this rule applies to the overwhelming majority of the Company's service lines. The new rule states that the utility "shall be deemed to control all portions of an underground facility carrying metered service, which are not located on the customer's side of the meter,

[30] In municipally owned utilities, it is common practice for the customer to own the entire service line form the point at which the water main in the street is tapped all the way to and into the structure served. Investor-owned water utilities typically own the service line from the tap at the main to the property line at the limit of the public right-of-way. This point of service is normally delineated by the installation of a shut off valve referred to as a "curb stop." In this case, the water meter is normally installed within the customer's premises. Alternatively, the point of service is defined by a meter pit, which includes the meter, the meter setting and an integral shut off valve.

[31] Exhibit PT-5, Kirwan; p.7, line 12.

regardless of who owns the property."[32] Simply because a published rule "deems" something does not make it true. The rule essentially requires the utility to search for and mark out something that they know little about, they don't own, and is located on property they have no specific right to access.

Q. HOW WILL THIS IMPACT NEW JERSEY AMERICAN AND ITS CUSTOMERS?

A. First, it is important to realize that the impact will not be uniform throughout all of New Jersey American's service areas. The Company uses a combination of "inside settings" and "outside settings" for its meters. That is, some 73% of the Company's meters are installed inside the customer's home or commercial structure (i.e. the "inside setting") while others are installed at the property line in a meter pit or vault (i.e. the "outside setting"). As a result, the new rule will require the Company to hunt around looking for privately owned service pipes on private property where inside settings are used. In cases where outside settings are used, the rule will only require the Company to mark facilities within the public right-of-way consistent with prior industry practice.

Q. HAS THE COMPANY ESTIMATED THE IMPACT OF THIS RULE AND HAVE THEY DONE ANYTHING TO MITIGATE THE COST?

[32] N.J.A.C. 14:2-4.2(c).

A. Mr. Kirwan has testified that the Company intends to use a combination of mark-out contractors and Company labor rather than exclusively rely on Company labor to perform these mark-outs. The estimated cost of completing the mark-outs according to the rule is $1,473,257 per year.[33] This is an improvement over the $1,828,851 per year estimate made in the Company's last rate proceeding in which the Company requested rate recognition of this amount.[34] The Company also estimates that this cost could be reduced to $84,186 if the Board accepts a compromise position offered in the waiver petition proceedings and if the full waiver is granted as requested by the Company, there will be no additional cost.[35]

Q. IS THE BENEFIT OF THIS PROGRAM CONSISTENT WITH THE EXPECTED COST?

A. In my opinion, it is not. The rule would require the Company to mark out facilities it neither owns nor controls. Furthermore, the privately owned service lines may not be within the intended limits of excavation, so even though these lines will be marked at great cost to the ratepayers, these lines may never have been at risk in the first place. It is important to remember that the privately owned service lines are on private property. It is highly unlikely that excavation work would be done on private property without the property owner's knowledge and consent. This is in direct contrast with excavation work done in the public right-of-way, which could be

[33] Exhibit PT-5, Kirwan; Schedule KK-1.

[34] BPU Docket WR10040260; Exhibit PT-5, Kirwan; p. 9, lines 9 through 13.

[35] Exhibit PT-5, Kirwan; p. 11, line 17 through page 12, line 2.

done without any individual property owner being aware of the proposed work. To the extent that work is done on private property and this work damages a private building water service line, there is a potential for inconvenience but there is little risk of the sort of significant property damage or loss of life if a gas line or buried electrical service were to be damaged during an excavation.

Q. WITH RESPECT TO RATE SETTING REQUESTED IN THIS PROCEEDING, WHAT IS YOUR RECOMMENDATION REGARDING THIS ISSUE?

A. Based on the high cost of the proposed program and the small benefit that could be derived, it is my recommendation that this Board's Order should incorporate a permanent stay of enforcement of the rule that requires privately owned service lines on private property to be marked-out by the Company. In addition, rates set as a result of this proceeding should not reflect the anticipated cost of compliance with the rule. If the waiver petition is decided in favor of the Company's position, there will be no incremental costs, so it is not appropriate to set rates in this proceeding based on a worst-case estimate of a future impact. Rather, it would be more appropriate to renew the authorization granted the Company in its previous rate case (e.g. BPU Docket WR10040260) to defer accounting of the incremental additional expenses incurred after the Board renders a decision in the waiver petition (e.g. BPU Docket WO080907490) and before the Company's next rate petition is decided.

Q. DOES THIS COMPLETE YOUR TESTIMONY AT THIS TIME?

A. Yes it does.

APPENDIX A - Qualifications
Of

Howard J. Woods, Jr., P.E.

HOWARD J. WOODS, JR., P.E.

KEY EXPERIENCE

Mr. Woods has over 34 years experience in water and wastewater utility engineering and operations. In his career he has worked for US EPA, engineering consultants and in numerous senior engineering and operational roles at a large investor-owned utility. His experience is well rounded, covering all aspects of public water and wastewater operations and management including outsourcing, acquisitions, maintenance, water production, filtration, distribution, water quality, wastewater collection and treatment, regulatory compliance and safety.

Mr. Woods managed numerous water and wastewater management contracts. He has assisted clients in outsourcing management activities and transferring ownership of complete utility systems. He has advised clients on alternative contracting approaches and reduced operating costs by renegotiating plant operations contracts. He has helped clients reduce operating expenses and he has provided expert testimony in construction arbitrations, contamination incidents and utility rate and service proceedings.

EDUCATION

Masters of Civil Engineering, Water Resources – Villanova University
Bachelor of Civil Engineering (cum laude) – Villanova University

ACCOMPLISHMENTS

- Directed and managed the procurement process leading to the sale of a municipal wastewater system in Southeastern Pennsylvania. The sale of the Upper Dublin Township Sanitary Sewer System will yield $20,000,000 for a system serving approximately 8,000 connections and having annual revenues of $3,000,000. Advised the Township on alternative outsourcing and contracting approaches, reduced interim operating expenses by 30% prior to the sale by renegotiating the plant operations contract.
- Prepared an analysis of ownership alternatives for Lower Makefield Township's sanitary sewer collection system. Managed a procurement process that lead to the receipt of a $17 million bid for the potential sale of a system serving 10,700 residential and commercial customers.
- Assessed an existing public private partnership contract and future contracting alternatives for the Jersey City Municipal Utilities Authority (JCMUA). Recommended alternative contract terms and assisted JCMUA in negotiating a new ten-year operations agreement saving approximately $3,000,000 per year.
- Assisted Greater Ouachita Water Company, a non-profit Louisiana water and sewer utility, in evaluating operating contract alternatives. Provided assistance in identifying qualified operators to be invited to bid a multi-year full-service operating contract. Assisted in evaluating bids and in contract negotiations.

ACCOMPLISHMENTS (CONTINUED)

- Completed an independent assessment of ownership and operating alternatives for the Township of Sparta water utility. The study evaluated current operating and financial conditions of the utility and considered two alternative service delivery approaches: contract operation and a sale of the system to an investor-owned utility.
- Completed an assessment of the financial and operating impacts of a proposal by a Pennsylvania municipality to dissolve its municipal water and sewer authority. The authority served multiple political subdivisions and dissolution would have resulted in regulation by the Pennsylvania Public Utility Commission. The additional regulatory burdens identified and limitations on municipal financing capacity resulted in a recommendation to retain authority ownership and operations.
- Completed an analysis of ownership alternatives for the Bristol Township Sewer Department. Reviewed capital needs and financing arrangements, rate structure and system revenues, operational costs and regulatory compliance issues. Assessed potential interest in the acquisition of the system by other municipal and investor-owned entities and assessed the possible impact of a sale on rates and service quality. The study recommended retention of the system by the Township and offered recommendations to reduce costs and improve staffing levels.
- Completed the assessment of a potential water utility acquisition by a Pennsylvania Municipal Authority. Assisted the Authority in developing a bid proposal for the acquisition and assessing the impact on revenue requirement and consumer rates resulting from the acquisition.
- Completed an evaluation of the revenue requirement associated with the decommissioning of a wastewater treatment plant and the diversion of wastewater to a regional treatment works for the North Wales Water Authority. Assessed the rate impact to customers of potentially retaining and improving an existing wastewater treatment plant and the rate impact of joining a regional treatment system. The evaluation supported the decision to regionalize the sewage treatment function.
- Assisted the Banco Gubernamental de Fomento para Puerto Rico, Autoridad para el Financiamiento de la Infrastructura de Puerto Rico and PricewaterhouseCoopers in developing a new operating contract for the Puerto Rico Aqueduct and Sewer Authority (PRASA). The contract was developed, bid and awarded in less than six months, cutting the normal procurement time by nearly two-thirds. The value of the contract was $300 million per year.
- Completed an independent assessment of the planning and engineering decision making for a major water treatment plant renovation project undertaken by Aquarion Water Company of Connecticut in Stamford Connecticut. Evaluated process selection decisions, project sizing and regulatory compliance issues and testified before the Connecticut Department of Public Utility Control on the findings of the evaluation.
- Completed audits of water production operations and water quality management functions at Aquarion Water Company of Connecticut, Aquarion Water Company of Massachusetts and Aquarion Water Company of New Hampshire. Assessed operational procedures and staffing levels, reviewed risk management plans including emergency response plans and dam safety programs, evaluated programmed and preventative maintenance systems and developed recommendations

ACCOMPLISHMENTS (CONTINUED)

to assist the Company in lowering the cost of service while reducing risk and improving reliability.

- Completed an audit of the watershed and environmental management functions at Aquarion Water Company of Connecticut. Assessed watershed management, monitoring and operational procedures, reviewed compliance tracking systems, reviewed risk management strategies and developed recommendations to assist the Company in reducing risk and improving reliability and watershed protection efforts.
- Completed a management audit of the water distribution function at Aquarion Water Company of Connecticut. Evaluated system monitoring and maintenance practices, assessed the impact of the use of contract maintenance and construction services to reduce Company workforce levels. Developed recommendations to improve the Company's programmed and preventative maintenance systems, corrosion control procedures and non-revenue water control programs.
- Assisted Greater Ouachita Water Company, a Louisiana non-profit water and sewer utility, in identifying the cause of water quality complaints resulting from poor color removal filtration processes. Recommended improvements to minimize capital modifications of the chemical feed, filter backwash and spent wash water treatment systems.
- Completed a Vulnerability Assessment for a municipally-owned public water system in northern New Jersey. Organized, planned and conducted the assessment using the RAM-W^{SM} methodology. Evaluated existing physical protection systems at utility facilities, developed threat assessments and adversary sequence analyses, prepared recommendations to reduce risk.
- Completed an energy management evaluation for the Elmira (NY) Water Board and provided operator training on energy management strategies. Recommendations from the study allowed the client to reduce energy expenses by 30% through a series of operational modifications.
- Completed an energy management audit of the Pittsburgh Water and Sewer Authority and identified strategies for reducing power consumption. The results of this investigation provided the foundation for the Authority and its contract manager (U.S. Water L.L.C.) to develop and implement more effective maintenance and operations procedures to reduce energy costs.
- Served as an expert witness in a matter involving the diversion of service by a large commercial customer of Atlantic City Municipal Utilities Authority (ACMUA). Statistically analyzed customer water use and billing records by relating water use variables (e.g. weather, occupancy rates, and restaurant output) to recorded consumption. Identified periods of service diversion and assisted ACMUA in the collection of revenues and penalties due.
- Served as an expert witness in a matter involving excess billing of a large commercial customer of a New Jersey public utility. Statistically analyzed usage patterns over a ten-year period and identified periods of excess billing. Assisted the customer in negotiating a $50,000 settlement of the dispute.
- Developed a model of the major water resources facilities in the Passaic, Pompton, Ramapo and Hackensack River Basins that allows the calculation of the safe and

ACCOMPLISHMENTS (CONTINUED)

dependable yield of the Wanaque/Monksville, Point View and Oradell Reservoir systems under varying drought conditions. The model is being used by Passaic Valley Water Commission to evaluate long-term water supply management strategies and to plan for future water supply needs.

- Prepared a long-range water supply needs forecast for the Passaic Valley Water Commission. Analyzed water use patterns within the Commission's retail service area and for over two dozen large contract customers. Produced population forecasts for the service area and individual water demand forecasts for each contract sale-for-resale customer using statistical and numeric forecasting techniques. The forecast projects total annual demand, average day, maximum month and maximum day demands and forms the basis for other ongoing facility and operations planning efforts.

- Prepared a long-range water supply needs forecast for the North Wales Water Authority. Analyzed water use patterns within the Authority's retail service and identified the water supply requirement for the Authority's share in a regional water supply system. Produced customer forecasts for the service area and individual water demand forecasts for large industrial customers and existing and potential wholesale water customers. Applied statistical and numeric forecasting techniques to assess trends in unit water use for each customer class. The forecast projects total annual demand, average day, maximum month and maximum day demands and forms the basis for other ongoing facility and operations planning efforts.

- Developed a Water Allocation Permit renewal and extension application for the Passaic Valley Water Commission. Secured a new 25-year permit for the diversion of surface water from the Pompton and Passaic Rivers. The new water diversion permit for the Commission supports more flexible operations and more efficient source utilization. The Commission serves a retail service population of 325,000 and effectively serves an additional 260,000 people through sale-for-resale connections.

- Prepared a cost of service allocation study for Passaic Valley Water Commission, a regional water system that serves a large urban retail service population and a significant outlying area through direct retail and wholesale water sales. Allocated costs based on standard methodologies to Owner Cities, External Cities Retail and Wholesale classes of service. The Commission has annual revenues in excess of $71 million.

- Prepared a cost of service allocation study for three Pennsylvania Municipal Utilities Authorities considering a joint water supply expansion project. Evaluated and allocated anticipated construction and operating costs for the plant expansion and assigned costs of existing facilities using a commodity-demand allocation method. Developed a recommended tariff design to allow for the fair recovery of prospective costs associated with the expanded facilities.

- Developed a five-year comprehensive business plan for Passaic Valley Water Commission. This plan moved the Commission from an annual operating budget to a five-year budget that links operating costs, capital construction and debt service requirements to customer growth and revenue requirements and rates. The plan was instrumental in obtaining an improved bond rating and positioning the Commission to undertake a major capital improvement program.

ACCOMPLISHMENTS (CONTINUED)

- Served as an expert witness in an arbitration involving a dispute between a New Jersey municipal water department and A.C. Schultes, Inc., a well contractor. Assisted A.C. Schultes in supporting its claim for a contract modification and the recovery of unanticipated expenses. The arbitrator awarded the contractor 100% of its cost claim.
- Served as an expert witness in a matter involving the alleged contamination of a New Jersey municipal water system with heavy metals and organic chemicals. Reviewed over 38,000 discrete water quality sample results, analyzed the operational records of the system and developed a computer model (EPANET2) depicting water flow and water quality changes over a period spanning two decades. Assisted the client in successfully defeating a threatened class action lawsuit at the certification level.
- Served as a mediator involving a dispute between the Long Beach Township Water Department and Don Siegel Construction Co., Inc., a pipeline installation contractor. Assisted the parties in resolving various construction cost claims and in interpreting the contract construction documents. Litigation over the disputes was avoided.
- Reviewed engineering plans and operational practices in numerous water and wastewater rate adjustment proceedings and quality of service proceedings for the New Jersey Division of Rate Counsel. Assessed utility engineering design and construction plans, developed alternatives to utility proposed projects, and evaluated the utility companies' ability to render safe, adequate and proper water or wastewater service. Provides expert testimony in the following utility rate, franchise expansion and service quality proceedings:
    - Acacia Lumberton Manor Fire Service Complaint
      BPU Docket No. WC01080495
    - Applied Waste Water Management Rates
      BPU Docket No. WR03030222
    - Applied Waste Water Management Base Rates
      BPU Docket No. WR08080550
    - Applied Waste Water Management Franchise
      BPU Docket No. WE03070530
    - Applied Waste Water Management Andover Franchise
      BPU Docket No. WE04111466
    - Applied Waste Water Management Hillsborough Franchise
      BPU Docket No. WE04101349
    - Applied Waste Water Management Oakland Franchise
      BPU Docket No. WE04111467
    - Applied Waste Water Management Union Twp Franchise
      BPU Docket No. WE050414
    - Applied Waste Water Management Tewksbury Franchise
      BPU Docket No. WR08100908
    - Aqua NJ Freehold Franchise Extension Review
      BPU Docket WE09120965
    - Aqua NJ Pine Hill Franchise
      BPU Docket No. WE05070581
    - Aqua NJ Upper Freehold Franchise
      BPU Docket No. WE05100822

ACCOMPLISHMENTS (CONTINUED)

- Aqua NJ Readington Wastewater Franchise
  BPU Docket No. WE07030224
- Aqua New Jersey Base Rate Case
  BPU Docket No. WR07120955
- Aqua New Jersey Acquisition of Bloomsbury Water
  BPU Docket WE09050360
- Aqua New Jersey Acquisition of Harkers Hollow Water
  BPU Docket WM09020119
- Aqua New Jersey Base Rate Adjustment
  BPU Docket No. WR09121005
- Atlantic City Sewerage Company Base Rate Adjustment
  BPU Docket No. WR09110940
- Atlantic City Sewerage Company Base Rate Adjustment
  BPU Docket WR11040247
- Bayview Water Company Rates
  BPU Docket No. WR01120818
- Borough of Haledon Rates
  BPU Docket No. WR01080532
- City of Orange Privatization Review
  BPU Docket No. WO03080614
- Crestwood Village Loan Approval
  BPU Docket No. WF04091042
- Crestwood Village Water Co Base Rates
  BPU Docket No. WR07090706
- Elizabethtown Water Co. v. Clinton Board of Adjustment
  BPU Docket No. WE02050289
- Elizabethtown Water Company Rates
  BPU Docket No. WR03070510
- Elizabethtown Water Company Franklin Franchise
  BPU Docket No. WE05020125
- Elizabethtown Water Company Purchased Water Adjustment Clause
  BPU Docket No. WR04070683
- Environmental Disposal Corporation Main Extension Agreement
  BPU Docket No. WO04091030
- Environmental Disposal Corporation Rates
  BPU Docket No. WR04080760
- Environmental Disposal Corporation Rates
  BPU Docket No. WR07090715
- Fayson Lake Water Company Rates
  BPU Docket No. WR03040278
- Fayson Lake Water Company Base Rates
  BPU Docket No. WR07010027
- Gordon's Corner Water Company Rates
  BPU Docket No. WR03090714
- Gordons Corner Water Co Base Rate Adjustment
  BPU Docket No. WR10060430

ACCOMPLISHMENTS (CONTINUED)

- Jensens Deep Run Franchise Transfer
  BPU Docket No. WE10070453
- Lake Valley Water Company Rates
  BPU Docket No. WR04070722
- Middlesex Water Company Rates
  BPU Docket No. WR03110900
- Middlesex Water Company Rates
  BPU Docket No. WR05050451
- Middlesex Water Company Base Rates
  BPU Docket No. WR07040275
- Middlesex Water Co Transmission Main Prudency Review
  BPU Docket No. WO08020098
- Middlesex Water Company Base Rates
  BPU Docket No. WR09080666
- Montague Water Company Rates
  BPU Docket No. WR03121034
- Montague Sewer Company Rates
  BPU Docket No. WR03121035
- Montague Sewer Company Rates
  BPU Docket No WR05121056
- Montague Water Company Acquisition
  BPU Docket No. WM10060432
- Mount Holly Water Company Rates
  BPU Docket No. WR03070509
- Mount Olive Villages Water & Sewer Franchise
  BPU Docket No. WE03120970
- New Jersey American Water Company Rates
  BPU Docket No. WR03070511
- New Jersey American Water Company Rates
  BPU Docket No. WR06030257
- New Jersey American Water Acquisition of Mt. Ephraim and Approval of Municipal Consent
  BPU Docket No. WE06060431
- New Jersey American Water Purchased Water Adjustment Clause
  BPU Docket No. WR05110976
- New Jersey American Water Company – Mantua Franchise
  BPU Docket No. WE07060372
- New Jersey American Water Co – Rocky Hill Franchise
  BPU Docket No. WE07020103
- New Jersey American Water Company Rates
  BPU Docket No. WR08010020
- New Jersey American Hopewell Township Franchise
  BPU Docket No. WE07120981
- New Jersey American Water Co/City of Trenton
  Joint Petition for Approval of the Sale of Water System
  BPU Docket No. WE08010063

ACCOMPLISHMENTS (CONTINUED)

- New Jersey American Water Company Petition for Approval of a Distribution System Improvement Charge (DSIC)
  BPU Docket No. WO08050358
- New Jersey American Water Co Management Audit
  BPU Docket No. WA09070510
- New Jersey American Water Base Rate Adjustment
  BPU Docket No. WR10040260
- New Jersey American Water Company Franklin Franchise Review
  BPU Docket No. WE11070403
- New Jersey Natural Gas Rates
  BPU Docket No. GR07110889
- Oakwood Village Sewer Change in Control
  BPU Docket No. WM07070535
- Parkway Water Company Rates
  BPU Docket No. WR05070634
- Pinelands Water Company Rates
  BPU Docket No. WR03121016
- Pinelands Wastewater Company Rates
  BPU Docket No. WR03121017
- Pinelands Water Company Rates
  BPU Docket No. WR08040282
- Pinelands Wastewater Company Rates
  BPU Docket No. WR08040283
- Rock GW, LLC Determination of Applicability of Board Regulation
  BPU Docket No. WO08030188
- Rock GW, LLC Determination of Applicability of Board Regulation
  BPU Docket No. WO10100739
- Roxbury Water Company Rates
  BPU Docket No. WR09010090
- Seabrook Water Company Franchise
  BPU Docket No. WC02060340
- Shorelands Water Company Rates
  BPU Docket No. WR04040295
- Shorelands Water Company Base Rates
  BPU Docket No. WR10060394
- Shore Water Company Rates
  BPU Docket No. WR09070575
- South Jersey Water Supply Change in Control
  BPU Docket No. WM07020076
- United Water Acquisitions Evaluation
  BPU Docket No. WM02060354
- United Water Arlington Hills Franchise
  BPU Docket No. WE07020084
- United Water Arlington Hills Sewerage Base Rates
  BPU Docket No. WR08100929

ACCOMPLISHMENTS (CONTINUED)

- United Water New Jersey Base Rates
  BPU Docket No. WR07020135
- United Water New Jersey Base Rates
  BPU Docket No. WR08090710
- United Water New Jersey Base Rates
  BPU Docket No. WR11070428
- United Water New Jersey Management Audit
  BPU Docket: WA05060550
- United Water New Jersey Affiliate Transaction Review – JPI Painting
  BPU Docket No. WO10060410
- United Water New Jersey Affiliate Transaction Review – Utility Service Contract
  BPU Docket No. WO10060409
- United Water New Jersey Mt Arlington Franchise Extension Review
  BPU Docket No. WE09121006
- United Water New Jersey Vernon Township Franchise Extension Review
  BPU Docket WE10110870
- United Water New Jersey Vernon Township Franchise Extension Review
  BPU Docket WE11030155
- United Water Great Gorge/Vernon Sewer Base Rates
  BPU Docket No. WR10100785
- United Water Toms River Base Rates
  BPU Docket No. WR080830139
- United Water West Milford Sewerage Base Rates
  BPU Docket No. WR08100928

- Assisted the New Jersey Division of Rate Counsel in assessing drought conditions effecting water utilities in New Jersey during the 2002 drought. Analyzed proposals for water supply interconnections to mitigate drought impacts, developed position statements regarding pricing alternatives, and provided a critique of State water supply management initiatives prior to and during drought conditions.

- Assisted the New Jersey Division of Rate Counsel in assessing the need for a Distribution System Improvement Charge (DSIC) to allow regulated water utilities to accelerate the recovery of capital investments in water distribution assets (BPU Docket WO10090655). Provided financial analyses of current and prospective distribution renovation programs. Reviewed and commented on draft language for a generic rule making.

- Assisted the Delaware Public Advocate in assessing drought conditions effecting water utilities in northern New Castle County during the 2002 drought (PSC Docket No. 323-02). Reviewed water utility operations prior to and during the drought emergency, assessed the effectiveness of use curtailments, developed recommendations to assure proper, cost-effective resources management for future drought conditions.

ACCOMPLISHMENTS (CONTINUED)

- Assisted New York City Department of Environmental Protection in compiling a report on the estimated safe yield of the City water supply reservoir system. A current assessment of safe yield was required by agreement of the Parties to the 1954 US Supreme Court Decree governing the use and export of water from the Delaware River Basin. Provided additional consulting assistance on plans to assure system reliability during planned repairs to the Roundout-West Branch Tunnel, an aqueduct that transports up to 800 million gallons of water per day to the City from the Delaware Basin reservoir system.
- Assisted the Delaware Public Service Commission in a determination of rate base for Artesian Water Company in PUC Docket 08-96. Evaluated selected plant facilities and proposed projects to determine the need to impute revenues for under-utilized facilities in establishing new base rates.
- Prepared an assessment of the water supply capacity certification and water conservation plan submitted by United Water Delaware in PUC Docket 09-282 on behalf of the Delaware Public Service Commission. Evaluated the capacity of the sources of supply available to the Company with respect to projected demands and the requirements of the Delaware Water Supply Self-Sufficiency Act of 2003. Assessed the effectiveness of water conservation activities and developed recommendations to improve the efficiency and effectiveness of Company conservation programs.
- Provided expert testimony on behalf of the Delaware Public Advocate in the matter of Inland Bays Preservation Company's request for an increase in wastewater rates before the Delaware Public Service Commission (PUC Docket No. 09-327-WW). Evaluated plant facilities, proposed projects and the allocation of developer contributions in aid of construction to determine rate base. Assessed the level of operating expenses claimed in the filing and recommended adjustments to substantially lower the requested rate increase.
- Managed 175 municipal and commercial water and wastewater contracts located in seven states for American Water Services/AmericanAnglian Environmental Technologies. Through these contracts, cost effective water and wastewater service was provided to over one million people. Contracts included the 160 MGD City of Buffalo, NY water system and the 30 MGD Scranton Sewer Authority wastewater operations. Directed an operations staff of 700 employees. Eliminated financial losses while improving safety and quality.
- Directed a marketing and business development staff for AmericanAnglian Environmental Technologies that secured the largest operations and maintenance contract awarded in the US in 1999 and the second best overall performance in the US market. Increased revenues by 28%. Evaluated potential contract operations and design/build projects to identify operating and capital savings on hundreds of potential contracts throughout the United States. Evaluations included Atlanta, Georgia, Scranton, Pennsylvania and Springfield, Massachusetts.

ACCOMPLISHMENTS (CONTINUED)

- Managed the operations of 16 water systems for New Jersey-American Water Company, a regulated investor-owned utility serving one million people throughout NJ. Coordinated the activities of a decentralized operations staff of 440 to provide reliable water service, ensure environmental compliance, control costs, manage and maintain system assets, reduce liability, provide site security and maintain a safe work place, and meet financial objectives. Responsible for the maintenance and operation of all source of supply, treatment, filtration and storage facilities, producing and distributing between 100 MGD and 220 MGD, as well as over 4,000 miles of water transmission and distribution facilities.
- Directed a team of engineering, legal, public relations and financial professionals that planned, designed, permitted and constructed a $192,000,000 water treatment plant and pipeline system for New Jersey-American Water Company. The intake, constructed in environmentally sensitive areas and the state of the art water filtration plant can be expanded to produce 100 MGD. The project is the principal source of surface water for nearly one million people in southern New Jersey and it was built to allow new regulatory controls on ground water use to go into effect. The project was completed within budget and on schedule.
- Developed the financial model and contract language that allowed water lines to be extended to over 3,000 homes with contaminated private wells in Atlantic County, New Jersey. This program provided the financial assurances needed to construct several miles of water mains, eliminate federal tax liability and reduce costs by 34%.
- Initiated and directed the first study of desalination for public water supply purposes in NJ for the City of Cape May. This project evaluated two desalination technologies and demonstrated that reverse osmosis could be used effectively to treat brackish water at a competitive cost. A full-scale plant has since been placed in service.
- Developed long-range regional water supply plan for Monmouth County, New Jersey, a county that was adding as many as 1,000 water utility customers per year and seriously stressing the water supply. The plan evaluated alternative sources of water, conservation and regional reservoir development. The recommendations avoided $30,000,000 in capital construction while ensuring a safe supply of water for a 15-year planning period. Negotiated supply sharing operating agreements with the New Jersey Water Supply Authority to implement the plan.
- Directed a staff of engineers and consultants in preparing comprehensive plans for 60 water systems located throughout the United States. Communities served by these systems include: Pittsburgh, Pennsylvania and its surrounding suburbs; Charleston, West Virginia; Richmond, Indiana; E. Saint Louis, Illinois and Monterey, California. Evaluated alternatives and identified the least costly means of providing safe water service for each system. Assessed operations strategies to identify external threats to the reliability and efficiency of these systems. Identified specific capital facility needs and operations strategies for five, ten and fifteen year planning horizons, defined the long term role of each system in prompting regional water supply development, and assessed the impact of future State and Federal water quality regulations on system operations and needs.

ACCOMPLISHMENTS (CONTINUED)

- Developed a formula for allocating ground water to 30 water suppliers in southern New Jersey for the New Jersey Department of Environmental Protection and negotiated an implementation agreement with effected suppliers. The New Jersey Legislature adopted the formula in the Water Supply Management Act Amendments of 1992. The allocation formula protects a regional aquifer from over-pumping.
- Developed a plan to convey storm water through a sixty-foot high railroad embankment in Prince Georges County, Maryland. Evaluated alternative methods and selected one that allowed an existing culvert to be modified to carry higher flow rates. Saved over $500,000 in construction costs. The Washington Suburban Sanitary Commission and Prince Georges County adopted the design as a standard in their storm water design manual.
- Negotiated Lakewood, New Jersey's first three-year water and wastewater labor agreement in the face of an impending strike, departing from prior history of year-to-year contract agreements.
- Provided expert testimony in judicial proceedings involving utility rate adjustments before the New Jersey Board of Public Utilities, the Connecticut Department of Public Utility Control and the New York Public Service Commission. Testified on environmental and operations topics including: rate setting strategies, source of supply improvements, water resources management, treatment to mitigate contamination, staffing levels and operating practices. Evaluated alternative operating practices and testified as to the least costly means of operating and maintaining water and wastewater facilities in these jurisdictions.
- Served as a gubernatorial appointee to the New Jersey Water Supply Advisory Council under Governors Florio and Whitman. Advised the NJ Department of Environmental Protection on a variety of water resources management issues.
- Coordinated the response to an outbreak of giardiasis for the US Environmental Protection Agency. The outbreak affected 20% of the people served by a municipal water system in north-central Pennsylvania. Specified immediate control measures, short-term treatment techniques and long-term treatment improvements to resolve the immediate problem and prevent a recurrence.

REPRESENTATIVE CLIENTS

- A.C. Schultes, Inc.
- Aquarion Water Company of Connecticut
- Aquarion Water Company of Massachusetts
- Atlantic City Municipal Utilities Authority
- Bethlehem Water Authority
- BOC Gases
- Bucks County Water & Sewer Authority
- Camco Management
- Cedar Grove Township
- Consumers New Jersey Water Company
- Delaware Public Advocate
- Delaware Public Service Commission
- D. R. Horton – New Jersey
- Elmira Water Board
- Greater Ouachita Water Company
- Harris Defense Group
- Jersey City Municipal Utilities Authority
- Lower Makefield Township
- New Jersey-American Water Company
- New Jersey Division of Rate Counsel
- New Jersey Water Supply Authority
- New York City Department of Environmental Protection
- North Penn Water Authority
- North Wales Water Authority
- Passaic Valley Water Commission
- Perkasie Borough
- Perkasie Regional Authority
- Pricewaterhouse Coopers, LLP
- Sussex Shores Water Company
- Township of Sparta (NJ)
- U.S. Water, LLC
- Upper Dublin Township

PROFESSIONAL QUALIFICATIONS

Registered Professional Engineer in Delaware (2004), Maryland (1982), New Jersey (1984), New Mexico (1987), New York (1984) and Pennsylvania (1983).

Licensed to complete RAM-W vulnerability assessments (2002).

PROFESSIONAL ASSOCIATIONS

American Society of Civil Engineers, American Water Works Association, International Water Association, National Ground Water Association, National Fire Protection Association, Water Environment Federation, Tau Beta Pi.

PROFESSIONAL HISTORY

HOWARD J. WOODS, JR. & ASSOCIATES, LLC **2000 - Present**
General Manager

AMERICAN WATER WORKS COMPANY **1983 - 2000**

American Water Services, Inc.	
Senior Vice President - Operations	1999 - 2000
American Anglian Environmental Tech., L.P.	
Senior Vice President - Business Development	1998 - 1999
American Water Works Service Co.	
Vice President - Special Projects	1997 - 1998
New Jersey-American Water Co., Inc.	
Vice President - Operations	1989 - 1997
American Water Works Service Co.	
Engineering Manager	1988 - 1989
System Director of Planning	1986 - 1988
Division Manager of Operations	1984 - 1986
Division Director of Engineering	1983 - 1984

JOHNSON, MIRMIRAN & THOMPSON **1981 - 1983**
Project Engineer

U.S. ENVIRONMENTAL PROTECTION AGENCY **1977 - 1981**
Environmental Engineer

APPENDIX B - Schedules

HJW-1: Comparison of SA-1 Residential Base and Total Use

HJW-2: SA-1 Residential Trend Analysis

HJW-3: SA-1 Commercial Trend Analysis

HJW-4: SA-2 Residential Trend Analysis

HJW-5: SA-2 Commercial Trend Analysis

HJW-6: Summary of Normalization Adjustments

HJW-7: Comparison of Base Use and Normalized Sales

HJW-8: Calculation of SA-2 Residential Savings Per Constant Customer

HJW-9: Calculation of SA-2 Residential Savings Per Customer, Increasing Customers

HJW-10: Analysis of WaterSense Home Refunds

HJW-11: Post Test Year Additions

Schedule HJW-1: Comparison of SA-1 Residential Base and Total Use				
	Base Use	Non-Base	Total	Ratio
Year	Dec-Apr	May-Nov	Dec-Nov	Total/Base
2001	8,769,126	18,414,249	27,183,375	3.0999
2002	8,865,970	17,270,466	26,136,436	2.9479
2003	8,453,998	16,284,892	24,738,890	2.9263
2004	9,078,026	17,207,555	26,285,581	2.8955
2005	8,983,494	19,299,169	28,282,663	3.1483
2006	8,947,650	18,675,247	27,622,897	3.0872
2007	8,942,003	19,658,347	28,600,350	3.1984
2008	8,865,745	18,942,666	27,808,411	3.1366
2009	8,824,091	16,234,179	25,058,270	2.8398
2010	8,696,848	19,029,095	27,725,943	3.1880
2011	8,464,058			
			Slope	0.01172842
			Intercept	-20.47455056

Schedule HJW-2: SA-1 Residential Trend Analysis

Year Ended	Average Customers	Annual Use (ThGal)	Average Use ThGal/Cust
x_1	x_2	y	
Dec-01	303,145	27,221,631	89.80
Dec-02	314,067	26,114,879	83.15
Dec-03	318,767	24,845,791	77.94
Dec-04	323,630	26,196,650	80.95
Dec-05	327,878	28,368,122	86.52
Dec-06	332,939	27,570,241	82.81
Dec-07	337,085	28,587,414	84.81
Dec-08	340,394	27,856,918	81.84
Dec-09	341,116	25,035,152	73.39
Dec-10	341,951	27,674,905	80.93
Regression Statistics			
43.23898086	-198.7148938	20484528.13	
151.4442991	1793.346254	24692082.41	
0.072385822	1449630.41	#N/A	
0.273120425	7	#N/A	
1.14789E+12	1.471E+13	#N/A	
m_2	m_1	b	
se_2	se_1	se_b	
r_2	se_y		
F	d_f		
ss_{reg}	ss_{resid}		
Normalized Use			
Jan-12	**342,300**	**27,150,042**	**79.32**
SIR-14; 5B Date	7/31/13		
Annual Use SIR-14; 5B		25,577,935	74.72
RC Adjustment		1,572,107	
Rate ($/ThGal)		$5.7025	
RC Adjustment ($)		$8,964,942	
Five Year Ave	2010-2006	27,344,926	
Projection		27,150,042	
Reduction from 5-Yr Ave		-0.7%	
Reduction from Base Use		-1.9%	

Schedule HJW-3: SA-1 Commercial Trend Analysis

Year Ended x_1	Average Customers x_2	Annual Use (ThGal) y	Average Use ThGal/Cust
Dec-01	31,411	13,591,671	432.71
Dec-02	31,535	13,070,001	414.46
Dec-03	30,780	12,363,199	401.66
Dec-04	30,147	12,878,438	427.19
Dec-05	29,651	13,141,883	443.23
Dec-06	29,554	12,994,687	439.69
Dec-07	29,534	12,680,474	429.36
Dec-08	29,574	12,220,625	413.22
Dec-09	29,539	11,398,083	385.86
Dec-10	29,534	11,981,243	405.68
Regression Statistics			
-512.0321493	-788.7297747	58714961.9	
330.8056896	243.5990529	18818157.09	
0.714671196	391223.6621	#N/A	
8.766549871	7	#N/A	
2.68355E+12	1.07139E+12	#N/A	
m_2	m_1	b	
se_2	se_1	se_b	
r_2	se_y		
F	d_f		
ss_{reg}	ss_{resid}		
Projection			
Jan-12	**29,558**	**11,290,507**	**381.98**
SIR-14: 5B Date	7/31/13		
Annual Use SIR-14; 5B		10,667,681	360.91
RC Adjustment		622,826	
Rate ($/ThGal)		$5.7025	
RC Adjustment ($)		$3,551,667	
Five Year Ave	2010-2006	12,255,022	
Projection		11,290,507	
Reduction from 5-Yr Ave		-7.9%	
Reduction from Base Use		-5.8%	

Schedule HJW-4: SA-2 Residential Trend Analysis

Year Ended	Average Customers	Annual Use (ThGal)	Average Use ThGal/Cust
x_1	x_2	y	
Dec-01	180,607	18,203,277	100.79
Dec-02	183,796	18,363,080	99.91
Dec-03	186,061	17,070,886	91.75
Dec-04	186,044	17,221,129	92.57
Dec-05	187,049	18,548,263	99.16
Dec-06	187,965	18,490,524	98.37
Dec-07	188,045	17,577,851	93.48
Dec-08	188,413	17,166,584	91.11
Dec-09	189,050	15,375,229	81.33
Dec-10	189,375	17,331,846	91.52
Regression Statistics			
46.28551152	-555.6591106	30494309.23	
280.7142339	684.8255038	30074561.42	
0.276614245	922189.456	#N/A	
1.338359028	7	#N/A	
2.27637E+12	5.95303E+12	#N/A	
m_2	m_1	b	
se_2	se_1	se_b	
r_2	se_y		
F	d_f		
ss_{reg}	ss_{resid}		
Projection			
Jan-12	**189,661**	**16,524,737**	**87.13**
SIR-14; 5B Date	7/31/13		
Annual Use SIR-14; 5B		15,490,876	81.68
RC Adjustment		1,033,861	
Rate ($/ThGal)		$5.0936	
RC Adjustment ($)		$5,266,076	
Five Year Ave	2010-2006	17,188,407	
Projection		16,524,737	
Reduction from 5-Yr Ave		-3.9%	
Reduction from Base Use		-4.7%	

Schedule HJW-5: SA-2 Commercial Trend Analysis

Year Ended x_1	Average Customers x_2	Annual Use (ThGal) y	Average Use ThGal/Cust
Dec-01	9,544	4,224,132	442.58
Dec-02	9,773	4,597,937	470.48
Dec-03	10,071	4,066,929	403.81
Dec-04	10,314	4,122,801	399.72
Dec-05	10,453	4,314,789	412.78
Dec-06	10,578	4,291,123	405.67
Dec-07	10,338	4,974,715	481.21
Dec-08	10,242	4,675,459	456.49
Dec-09	10,283	4,278,785	416.11
Dec-10	10,239	4,877,252	476.33
Regression Statistics			
-421.8563661	229.0510689	-164710.3683	
392.8100439	110.759251	3536436.89	
0.384984351	282394.917	#N/A	
2.1909121	7	#N/A	
3.49437E+11	5.58228E+11	#N/A	
m_2	m_1	b	
se_2	se_1	se_b	
r_2	se_y		
F	d_f		
SS_{reg}	SS_{resid}		
Projection			
Jan-12	**10,224**	**4,899,352**	**479.20**
SIR-14; 5B Date	7/31/13		
Annual Use SIR-14; 5B		4,428,368	
RC Adjustment		470,984	
Rate ($/ThGal)		$5.0936	
RC Adjustment ($)		$2,399,003	
Five Year Ave	2010-2006	4,619,467	
Projection		4,899,352	
Increase from 5-Yr Ave		6.1%	
Increase from Base Use		0.5%	

Schedule HJW-6: Summary of Normalization Adjustments

Area	Volume Adjustment (ThGal/Yr)	Revenue Adjustment
SA-1 Residential	1,572,107	$8,964,942
SA-1 Commercial	622,826	$3,551,667
SA-2 Residential	1,033,861	$5,266,076
SA-2 Commercial	470,984	$2,399,003
Total Adjustments	**3,699,779**	**$20,181,688**

Schedule HJW-7: Comparison of Base Use and Normalized Sales

Area	Base Year	5-Yr Average	Co Normalized	RC Normalized
SA-1 Residential	27,674,905	27,344,926	25,577,935	27,150,042
SA-1 Commercial	11,981,243	12,255,022	10,667,681	11,290,507
SA-2 Residential	17,331,846	17,188,407	15,490,876	16,524,737
SA-2 Commercial	4,877,252	4,619,467	4,428,368	4,899,352

Schedule HJW-8: Calculation of SA-2 Residential Savings Per Constant Customer

Date	Customers	Sales (ThGal)	Change	Use/Customer (ThGal/Yr)	Savings (ThGal/ Customer/ Year)
Jan-12	189,661	16,524,737		87.13	
Jan-13	189,661	16,321,366	-1.23%	86.06	(1.07)
Jan-14	189,661	16,118,550	-1.24%	84.99	(1.07)
Jan-15	189,661	15,915,735	-1.26%	83.92	(1.07)
Jan-16	189,661	15,712,919	-1.27%	82.85	(1.07)

Schedule HJW-9: Calculation of SA-2 Residential Savings Per Customer, Increasing Customers

Date	Customers Increasing at 500 per Year	Sales (ThGal)	Change	Use/Customer (ThGal/Yr)	Savings (ThGal/ Customer/ Year)
Jan-12	189,661	16,524,737		87.13	
Jan-13	190,161	16,344,509	-1.09%	85.95	(1.18)
Jan-14	190,661	16,164,836	-1.10%	84.78	(1.17)
Jan-15	191,161	15,985,163	-1.11%	83.62	(1.16)
Jan-16	191,661	15,805,490	-1.12%	82.47	(1.16)
				Average	(1.17)

Schedule HJW-10: Analysis of WaterSense Home Refunds

	WaterSense Home	Notes
Average Use Per Customer (thGal/Yr)	64.92	(1), (2)
Fixed Service Charge ($/Mo)	$12.00	(3)
Volumetric Rate ($/ThGal)	$6.5749	(4)
Annual Revenues per Customer	$570.82	
Revenue Refund Multiplier	10.00	(5)
Developer Refund	$5,708.20	
Authorized ROR	8.7417%	(6)
Average Operating Cost		
Total O&M	$231,226,422	(7)
Depreciation & Amortization	$67,257,649	(8)
Taxes Other Than Income	$80,573,152	(9)
TOTAL OPERATING COST	$379,057,223	
GMS Percent of Cost of Service	82.86%	(10)
Allocated Operating Cost	$314,086,815	
GMS Meter Equivalents	803,858	(11)
Average Ops Cost Per Customer	$390.72	
Operating Income Before Taxes	$180.10	
Income Taxes		
Revenues	$570.82	
Expenses & Taxes	$390.72	
Rate Base	$5,708.20	
Weighted Cost Interest Rate	2.7602%	(6)
Interest	$157.56	
Total Deductions	$548.28	
Taxable Income	$22.54	
Income Tax at 35%	$7.89	
Operating Income (Loss)	$172.21	
Rate Base	$5,708.20	
ROR	3.0168%	

Notes:
(1) Normalized SA-1 Residential use from Schedule HJW-2 of 79.32 thousand gallons per customer per year.
(2) Reduction in use of 14.4 thousand gallons per year from RCR-E-58.
(3) SIR-14, Exhibit P-2, Schedule 5, Page 1 of 15, Proposed rate.
(4) SIR-14, Exhibit P-2, Schedule 5, Page 1 of 15, Proposed base rate only.
(5) Refund multiplier for a WaterSense home from PT-3, Chiavari, p. 28, line 16.
(6) PT-6, Simpson, p. 10. Proposed ROR as filed.
(7) Exhibit P-2, Schedule 9, p. 2 of 3, Total Actual Water O&M less purchased water cost.
(8) Exhibit P-2, Schedule 47, Page 1 of 1
(9) Exhibit P-2, Schedule 50, Page 1 of 1
(10) Exhibit PT-16; Herbert, Schedule PRH-2.
(11) PT-16 , Herbert, Schedule PRH-4, p. 14 of 23.

Schedule HJW-11: Post Test Year Additions

Project Identifier	Project Description	UPIS Addition	In Service Date	Post Test Year Addition	% of UPIS Balance	Approximate Revenue Requirement	% of Operating Revenues	Greater than 0.5% of UPIS	Greater than 0.5% of Revenues
IP-1815-71	Canoe Brook WTP Solar PV Phase 1	$1,350,000	10/31/11	NO	NA	NA	NA	NA	NA
IP-5225-73	RMWTP- Roof Replacement at Low Lift	$256,400	11/30/11	NO	NA	NA	NA	NA	NA
IP-1813-77	Ancora Interconnection	$2,442,000	10/31/11	NO	NA	NA	NA	NA	NA
IP-5226-35	2011 Cleaning & Lining - Raritan	$1,623,000	11/30/11	NO	NA	NA	NA	NA	NA
IP-1815-35	2011 Cleaning & Lining - Passaic	$1,824,700	12/1/11	NO	NA	NA	NA	NA	NA
IP-1818-38	Jumping Brook WTP-Roof Replacement	$1,191,900	10/31/11	NO	NA	NA	NA	NA	NA
IP-1819-19	Oak Street Englishtown Well	$1,368,000	5/30/12	YES	0.043%	$271,586	0.048%	NO	NO
IP-1801-3	AMI Program - 2012	$-		NO	NA	NA	NA	NA	NA
IP-1812-50	Absecon Well Replacement Project	$1,517,100	4/1/12	YES	0.048%	$301,186	0.053%	NO	NO
IP-1801-41	NJAW Enterprise Telephony Project	$1,010,200	6/30/12	YES	0.032%	$200,553	0.035%	NO	NO
IP-5226-37	2011 Lg Valve Replacement	$2,773,600	12/31/11	NO	NA	NA	NA	NA	NA
IP-1815-85	Canoe Brook Bridge Replacement	$819,800	12/31/11	NO	NA	NA	NA	NA	NA
IP-1813-66	Logan Birch Creek WQ Improvements	$1,606,600	6/30/12	YES	0.050%	$318,955	0.056%	NO	NO
IP-1818-17	Coastal North Chloramine Conversion	$5,817,000	6/30/12	YES	0.183%	$1,154,835	0.204%	NO	NO
IP-1817-16	Belvidere PRV	$548,400	6/30/12	YES	0.017%	$108,873	0.019%	NO	NO
IP-1817-17	Changewater Treatment Improvements	$1,325,000	6/30/12	YES	0.042%	$263,049	0.046%	NO	NO
IP-1813-86	Moorestown IC - Borton Landing	$512,800	6/30/12	YES	0.016%	$101,805	0.018%	NO	NO
IP-1813-16	Logan - Raccoon Creek Crossing	$2,015,500	6/30/12	YES	0.063%	$400,133	0.071%	NO	NO
IP-1813-78	Solar Installation at DRRWTP	$7,843,400	6/30/12	YES	0.246%	$1,557,132	0.275%	NO	NO
IP-1813-79	Solar Installation - Mansfield Comp	$7,074,000	6/30/12	YES	0.222%	$1,404,385	0.248%	NO	NO
IP-1815-20	**Canoe Brook Treatment Plant**	**$78,250,500**	**6/30/12**	**YES**	**2.458%**	**$15,534,889**	**2.745%**	**YES**	**YES**
IP-1818-22	Middletown Transmission Phase 3	$5,279,900	12/31/11	NO	NA	NA	NA	NA	NA
IP-1818-34	Middletown Transmission - Phase 4	$2,861,200	6/30/12	YES	0.090%	$568,027	0.100%	NO	NO
IP-1818-35	Middletown Transmission - Phase 4A	$2,008,200	6/30/12	YES	0.063%	$398,683	0.070%	NO	NO
IP-1832-4	Layton Station Water Main	$2,143,200	6/30/12	YES	0.067%	$425,484	0.075%	NO	NO
IP-1818-16	Newman Springs Station Improvements	$1,105,700	6/30/12	YES	0.035%	$219,512	0.039%	NO	NO
IP-1819-24	Yellowbrook Plant Expansion	$6,668,300	6/30/12	YES	0.209%	$1,323,842	0.234%	NO	NO
IP-1818-27	JB Clarification Improvements	$1,077,600	6/30/12	YES	0.034%	$213,933	0.038%	NO	NO
IP-1801-40	Voorhees Roof Replacement	$860,000	6/30/12	YES	0.027%	$170,734	0.030%	NO	NO
IP-5225-76	Cranbury System Improvements	$1,000,200	6/30/12	YES	0.031%	$198,567	0.035%	NO	NO

IP-5225-63	National Starch 36" Rehabilitation	$2,339,300	6/30/12	YES	0.073%	$464,416	0.082%	NO	NO
IP-5226-27	Roselle Booster Station Upgrade	$10,230,217	6/30/12	YES	0.321%	$2,030,981	0.359%	NO	NO
IP-5225-77	SCADA Upgrades at RM 273 & 639 Gradients	$1,604,400	6/1/12	YES	0.050%	$318,518	0.056%	NO	NO
IP-5225-80	Raritan SCADA Improvements	$1,000,000	6/1/12	YES	0.031%	$198,528	0.035%	NO	NO
IP-5225-74	RM Filter House Roof Replacement	$1,450,000	6/30/12	YES	0.046%	$287,865	0.051%	NO	NO
IP-5226-38	2012 Lg Valve Replacement	$1,581,000	6/30/12	YES	0.050%	$313,872	0.055%	NO	NO
IP-5330-18	Woodlane Oxidation Improvements	$1,138,400	6/30/12	YES	0.036%	$226,004	0.040%	NO	NO
IP-1823-9	Vine Avenue Sewer Upgrade - Ph 1	$3,756,556	6/30/12	YES	0.118%	$745,780	0.132%	NO	NO
CS-1801-3	**Business Transformation - 3**	**$27,822,300**	**7/31/12**	**YES**	**0.874%**	**$5,523,496**	**0.976%**	**YES**	**YES**

Total Investment Project Additions	$195,096,373
Total Post Test Year Additions	$177,535,073
Qualified Post Test Year Additions	$78,250,500
Percent of Post Test Year Qualified	44%

Notes:

(1) Test Year and Post Test Year Period End Dates from PT-6 Simpson, page 4, lines 10, 11 and 20.

(2) UPIS balance at December 31, 2010 from Exhibit P-2 Schedule 1, page 1 of 2, line 4, Dated 11/11/2011.

(3) Requested ROR from PT-6 Simpson, page 10, line 17.

(4) 9+3 Operating Revenues from Exhibit P-2, Schedule 3, Page 3 of 3, Dated 11/11/2011.

(5) Statewide Tariff District UPIS and Depreciation from Exhibit P-2, Schedule 48, Page 2 of 12.

Test Year End	31-Jan-12
Post Test Year Period End	31-Jul-12
UPIS Balance 12/31/2010	$3,183,634,648
As-Filed ROR Request	8.7417%
9+3 Operating Revenues	$566,023,866
Statewide Tariff Dist UPIS	$1,753,378,224
Statewide Tariff Depreciation	$40,110,539
Composite Depreciation Rate	2.29%
Revenue Gross-up Factor	1.80

APPENDIX C – Exhibits

Exhibit HJW-1: Annual Residential Use SA-1 Service Area

Exhibit HJW-2: Annual Commercial Use SA-1 Service Area

Exhibit HJW-3: Annual Residential Use SA-2 Service Area

Exhibit HJW-4: Annual Commercial Use SA-2 Service Area

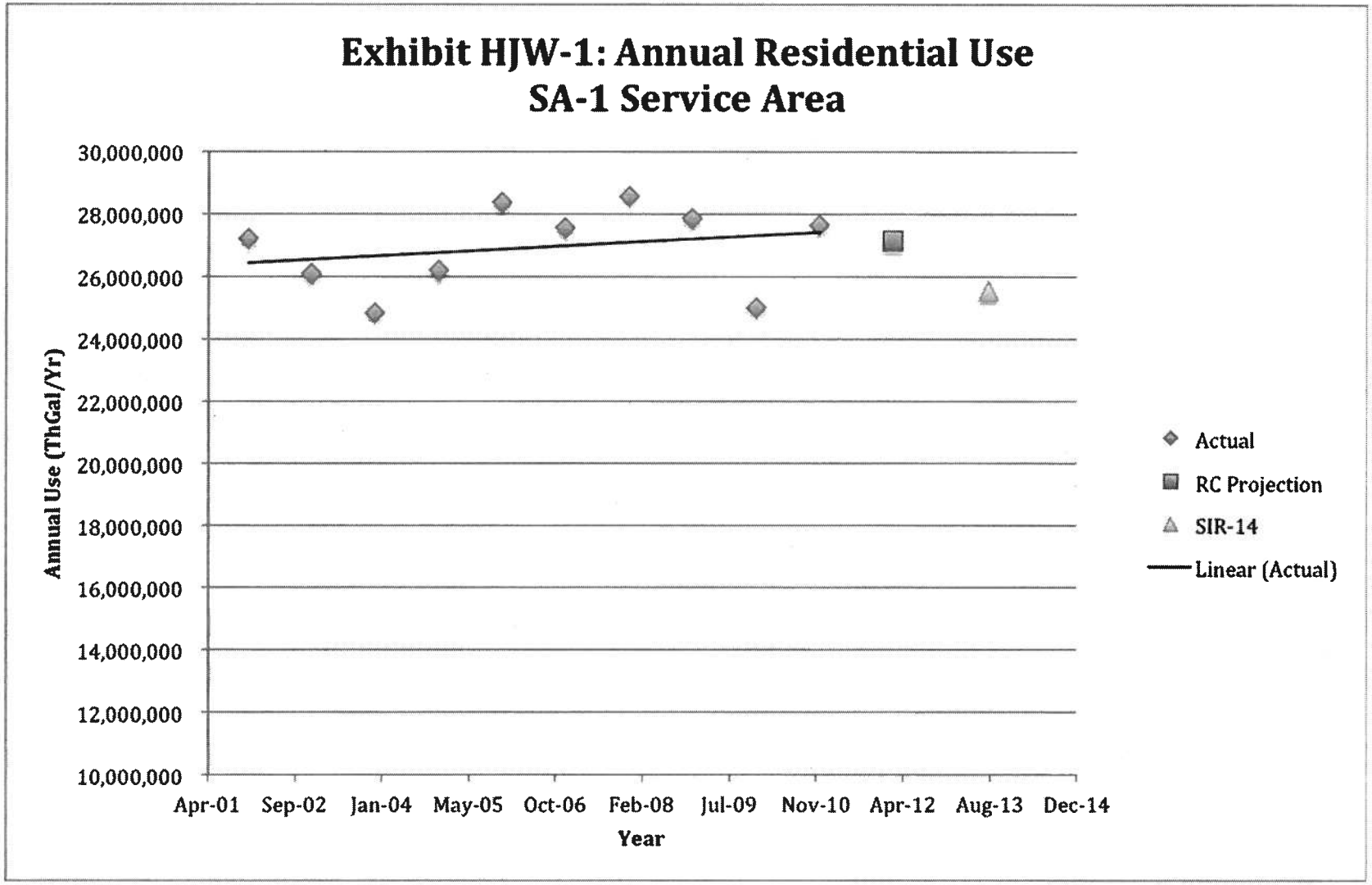
Exhibit HJW-1: Annual Residential Use
SA-1 Service Area
Annual Use (ThGal/Yr)
30,000,000
28,000,000
26,000,000
24,000,000
22,000,000
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
Apr-01
Sep-02
Jan-04
May-05
Oct-06
Feb-08
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
Year
Actual
RC Projection
SIR-14
Linear (Actual)

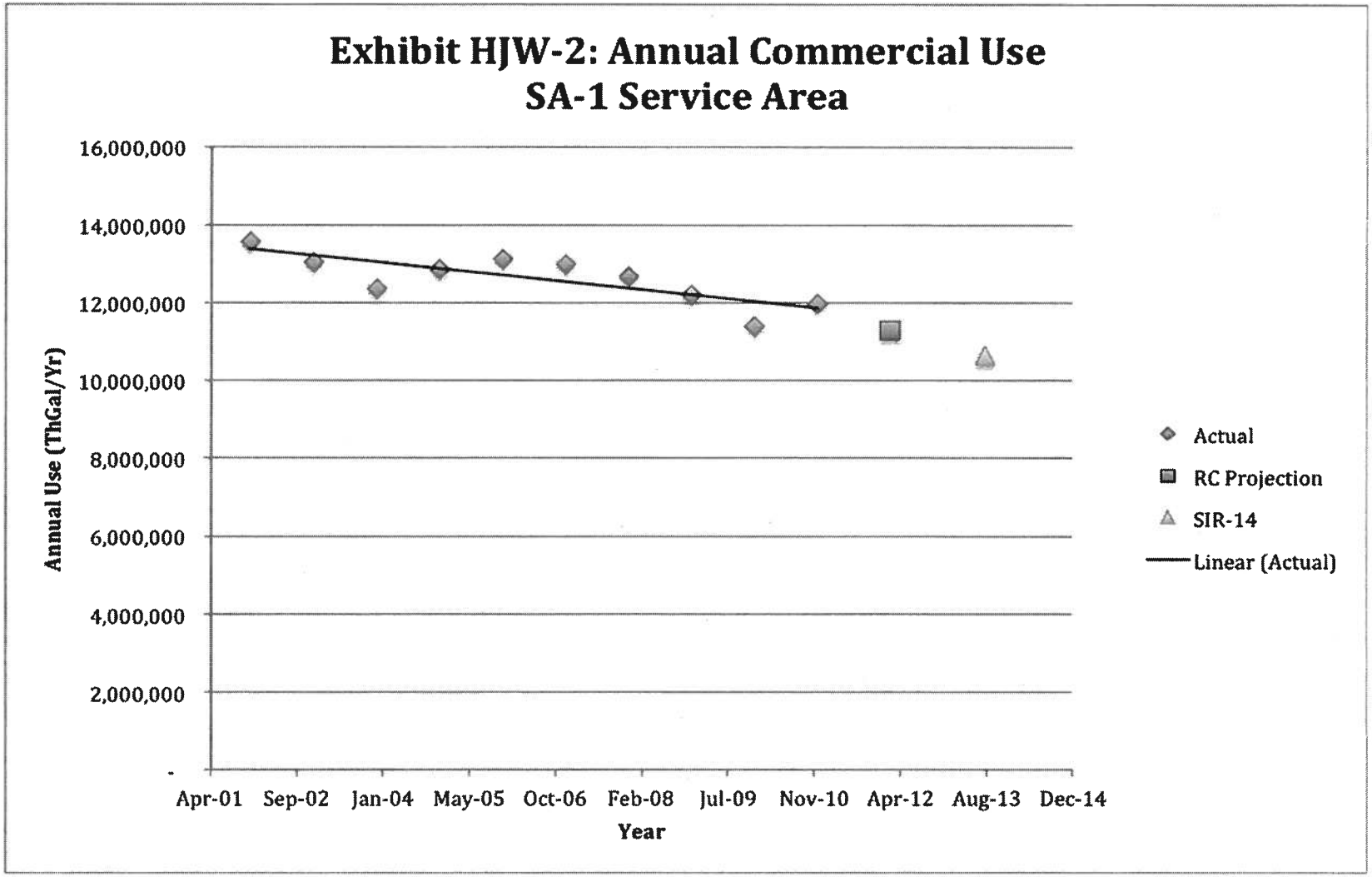
Exhibit HJW-2: Annual Commercial Use
SA-1 Service Area
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-
Annual Use (ThGal/Yr)
Apr-01
Sep-02
Jan-04
May-05
Oct-06
Feb-08
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
Year
Actual
RC Projection
SIR-14
Linear (Actual)

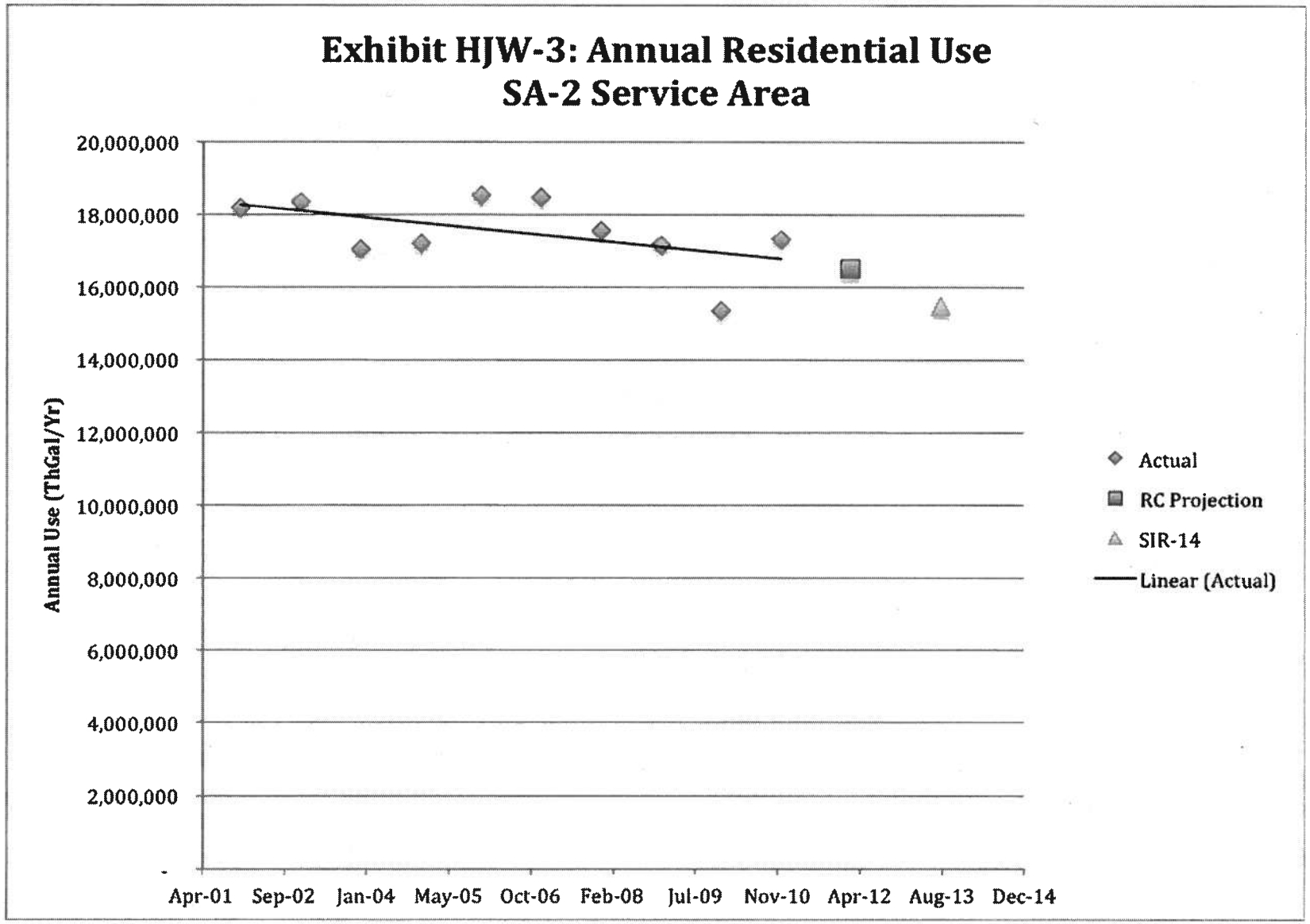
Exhibit HJW-3: Annual Residential Use
SA-2 Service Area
Annual Use (ThGal/Yr)
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-
Apr-01
Sep-02
Jan-04
May-05
Oct-06
Feb-08
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
Actual
RC Projection
SIR-14
Linear (Actual)

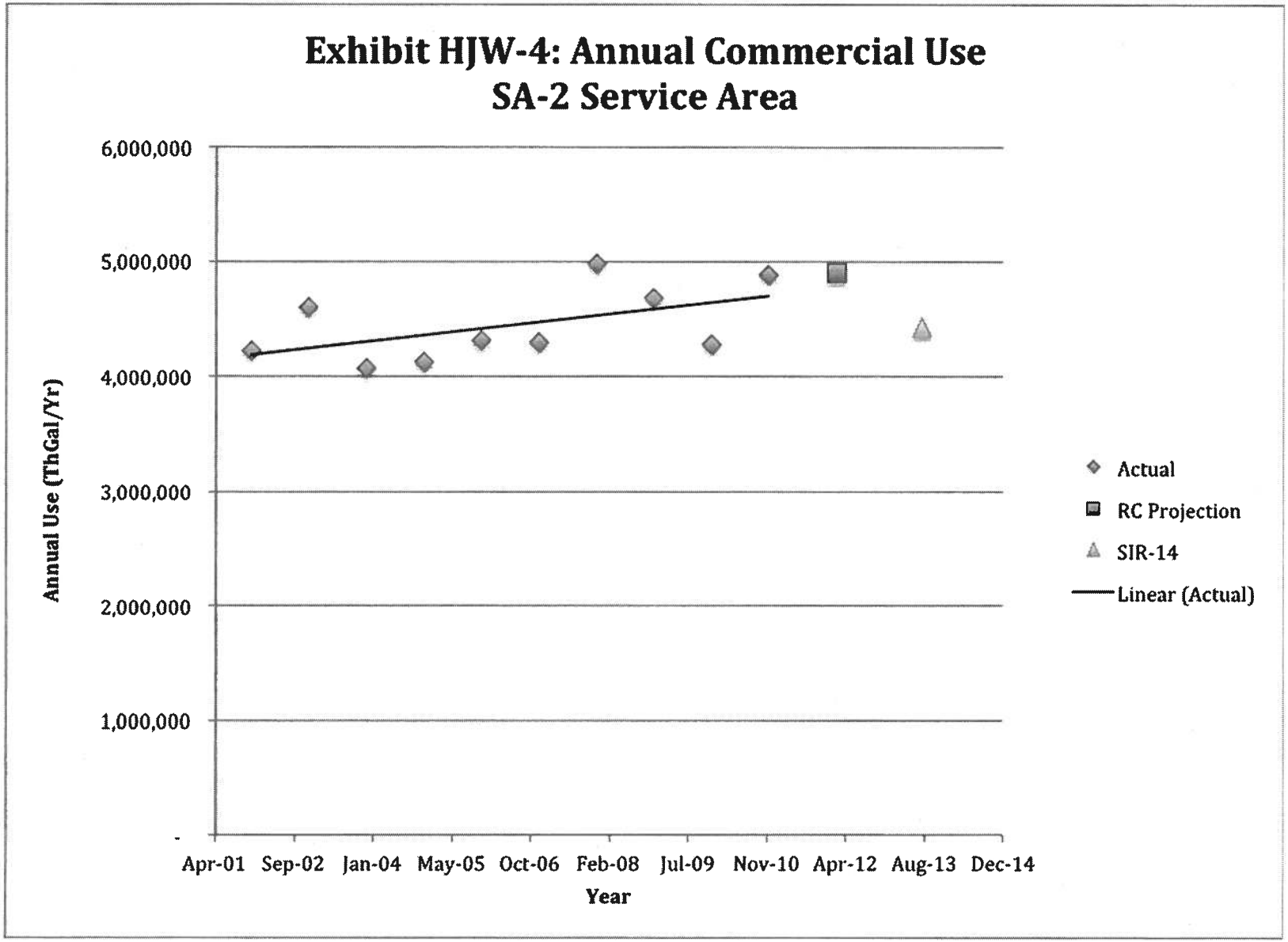
Exhibit HJW-4: Annual Commercial Use
SA-2 Service Area
Annual Use (ThGal/Yr)
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
Apr-01
Sep-02
Jan-04
May-05
Oct-06
Feb-08
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
Year
Actual
RC Projection
SIR-14
Linear (Actual)