14. Provide direct testimony for the application.

RESPONSE: See enclosed direct testimony of the following:

Direct Testimony of Scott D. Fogelsanger, Senior, Manager, Business Development, on behalf of Pennsylvania-American Water Company, PAWC Statement No. 1.

Direct Testimony of David R. Kaufman, Vice President - Engineering, on behalf of Pennsylvania-American Water Company, PAWC Statement No. 2.

Direct Testimony of John R. Cox, Director of Rates and Regulations, Rates and Regulations for the Mid Atlantic Division of the American Water Works Company, on behalf of Pennsylvania-American Water Company, PAWC Statement No. 3.

Direct Testimony of Joseph F. Woodward, Jr., Senior Manager, Central PA Operations, on behalf of Pennsylvania-American Water Company, PAWC Statement No. 4.

Direct Testimony of Jerome C. Weinert, P.E., Principal and Director for AUS Consultants, Inc. on behalf of Pennsylvania-American Water Company, PAWC Statement No. 5.

Steelton's Testimony:
Direct Testimony of Douglas Brown, Borough Manager on behalf of Steelton Borough Authority, Steelton Statement No. 1.

Direct Testimony of Dylan W. D'Ascendis, Director for ScottMadden, Inc. on behalf of Steelton Borough Authority, Steelton Statement No. 2.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	: : : : :	Docket No. U-2019-_____

DIRECT TESTIMONY OF
SCOTT D. FOGELSANGER
ON BEHALF OF
PENNSYLVANIA-AMERICAN WATER COMPANY

Dated: January 2, 2019

PAWC Statement No. 1

DIRECT TESTIMONY OF
SCOTT D. FOGELSANGER

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. My name is Scott D. Fogelsanger and my business address is 852 Wesley Drive, Mechanicsburg, Pennsylvania 17011.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Pennsylvania-American Water Company ("PAWC") as a Senior Manager of Business Development.

Q. WHAT ARE YOUR RESPONSIBILITIES AS PAWC'S SENIOR MANAGER OF BUSINESS DEVELOPMENT?

A. I develop and maintain necessary contacts to stay abreast of new business opportunities. I manage the acquisition from initial contact, responding to Requests for Qualifications, Requests for Proposals, Requests for Bids, preparation of the Application for submission to the Pennsylvania Public Utility Commission and manage the workflows required to close the acquisition. These responsibilities necessitate that I maintain a working knowledge of regulatory and technical developments, new technologies and current trends as they affect the water and wastewater utility industries, and that I be familiar with legislation, regulation and public policy affecting business opportunities.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EDUCATION AND EXPERIENCE.

A. I received a Bachelor of Science in Business Administration (B.S.B.A.) degree in Accounting from Shippensburg University in May of 1987. My experience in the waterworks industry began in September 1987 when I started as a Financial Analyst at AUS Consultants, Inc. During my 25 years at AUS Consultants, I received various promotions to Senior Analyst, Vice President and Principal. I was responsible for preparing various studies and testifying in the disciplines of cost of service, tariff design, bill frequency analysis, rate case preparation, original cost, and depreciation. My clients were investor-owned and municipal utilities in chilled water, electric, gas, steam, telephone, water and wastewater industries. In May 2013, I started employment at PAWC as Senior Manager of Business Development.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION")?

A. Yes, I have. A listing of testimony rendered is included as **PAWC Exhibit SDF-1**.

Q. HAS PAWC FILED AN APPLICATION WITH THE COMMISSION FOR REGULATORY APPROVAL TO ACQUIRE THE WATER SYSTEM OF THE STEELTON BOROUGH AUTHORITY ("STEELTON") AND RELATED APPROVALS?

A. Yes. PAWC filed its Application on January 2, 2019 for approval of PAWC's acquisition of Steelton's water treatment, transportation, and distribution facilities (the "Steelton System"). I will refer to the acquisition in my testimony as the "Transaction."

We used PAWC records, as well as Steelton records made available by Steelton, to prepare the Application. For purposes of having a complete evidentiary record in this proceeding upon which the Commission can base its decision, I submit the Application and all of its appendices (Appendices A through K) as **PAWC Exhibit SDF-2**.

Q. WHAT IS PAWC SEEKING IN ITS APPLICATION?

A. There are four basic requests. First, PAWC is requesting approval of the acquisition under Section 1102(a), 66 Pa. C.S. § 1102(a), similar to many requests that come before the Commission. Specifically, PAWC seeks approval to acquire the Steelton System and to obtain the right to begin service in the areas currently served by Steelton ("Service Area"). The Application contains a *pro forma* tariff supplement under which Steelton's rates would be initially adopted.

Second, pursuant to Act 12 of 2016, 66 Pa. C.S. § 1329 ("Section 1329"), PAWC is seeking to utilize fair market value for the ratemaking rate base of Steelton. As explained more-fully below, fair market value under Section 1329 is the lesser of the stated purchase price in the Asset Purchase Agreement ("APA"), dated November 14, 2018 or the average of the appraisal of Steelton's Utility Valuation Expert ("UVE") and the appraisal of PAWC's UVE.

Third, PAWC is also seeking confirmation under Section 1329 to collect a distribution system improvement charge ("DISC") for the new service area and seeking the accrual and deferral of certain post-acquisition improvement costs. Specifically, PAWC is seeking the accrual of Allowance for Funds Used During Construction ("AFUDC") for post-acquisition improvements not recovered through its DSIC for book and ratemaking

purposes and the deferral of depreciation related to post-acquisition improvements not recovered through the DSIC for book and ratemaking purposes.

Fourth, PAWC is seeking a Certificate of Filing for approval under Section 507, 66 Pa. C.S. § 507, for the APA.

Q. WHAT DOES SECTION 1329 REQUIRE TO BE INCLUDED IN THE APPLICATION?

A. Section 1329 requires that the Application include: (1) copies of the two UVE appraisals, (2) the purchase price, (3) the ratemaking rate base, (4) the transaction and closing costs, and (5) the proposed tariff. However, as will be explained later in my testimony, the Commission has expanded the filing requirements beyond those specifically required by the statute.

Q. WHAT DOES THE COMMISSION REQUIRE FOR THE APPROVAL OF THE FAIR MARKET VALUE RATEMAKING TREATMENT PERMITTED UNDER SECTION 1329?

A. In its Final Implementation Order entered October 27, 2016, at Docket No. M-2016-2543193 ("*Final Implementation Order*"), the Commission referenced the checklist in the Tentative Implementation Order entered July 21, 2016, at the same docket for items to include with an Application for it to be processed in a six-month time frame. The Commission's Bureau of Technical Utility Services prepared an extensive list of specific Section 1329 "Filing Requirements." The most-recent version of the Filing Requirements, as of the date of Application filing, is dated March 17, 2017. PAWC's Application is

structured around those Filing Requirements. Appendix A to the Application and its sub-appendices directly address each of the Filing Requirements.

Q. IS PAWC FILING SUPPLEMENTAL INFORMATION IN ADDITION TO WHAT IS REQUIRED FOR THE APPROVAL OF THE FAIR MARKET VALUE RATEMAKING TREATMENT PERMITTED UNDER SECTION 1329?

A. Yes. As a courtesy, PAWC's Application includes the written direct testimony of Steelton's selected UVE, Mr. Dylan W. D'Ascendis, Director for ScottMadden, Inc. and the written direct testimony of the Borough of Steelton's Manager, Douglas Brown. PAWC is not sponsoring the testimony of Mr. D'Ascendis or Mr. Brown, but has included it in the Application as a courtesy in anticipation of Steelton's potential participation in the proceeding. PAWC reserves its right to submit rebuttal testimony regarding Steelton's testimony, as appropriate.

Q. IS PAWC PROPOSING THAT ITS APPLICATION BE EVALUATED USING THE FAIR MARKET VALUE PROVISION OF SECTION 1329?

A. Yes. PAWC's Application has been prepared in accordance with the fair market value provision of Section 1329. Specifically, PAWC is requesting that the ratemaking rate base related to the Steelton System be based on the lesser of the average of the UVE fair market value appraisals included in the Application or the APA purchase price. I note however that PAWC reserves its right to make alternative ratemaking proposals in future proceedings as may be permitted under the Public Utility Code and regulations.

Q. ASIDE FROM AUTHENTICATING THE APPLICATION FOR ITS ADMISSION INTO THE EVIDENTIARY RECORD AND IDENTIFYING ITS REQUESTS FOR RELIEF, WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. My direct testimony describes the Transaction. I will explain why the Transaction is in the public interest and provides affirmative public benefits of a substantial nature, and should be promptly approved by the Commission. I will also discuss why PAWC is legally, financially, and technically fit to acquire and operate the Steelton System.

Q. PLEASE IDENTIFY THE OTHER PAWC WITNESSES WHO WILL BE PROVIDING WRITTEN DIRECT TESTIMONY AND THEIR SUBJECT MATTER AREAS.

A. In addition to my direct testimony, PAWC will submit the written direct testimony of Mr. David R. Kaufman, PAWC Vice President - Engineering; Mr. John R. Cox, American Water Works Service Company Director of Rates and Regulations, for Mid-Atlantic Division; and Joseph F. Woodward, Jr., Senior Manager, Central Pennsylvania Operations. PAWC is also sponsoring direct testimony by its selected UVE, Mr. Jerome C. Weinert, Principal and Director of AUS Consultants. As discussed above, as a courtesy, PAWC is also including in its Application the direct written testimony of Steelton's UVE and Borough Manager in anticipation of Steelton's potential participation in the proceeding. PAWC reserves its right to submit rebuttal testimony regarding Steelton's testimony, as appropriate.

Mr. Kaufman will describe engineering and environmental issues associated with the Steelton System, support PAWC's technical fitness to operate the Steelton System, explain certain commitments and improvements to be made by PAWC and other matters. Mr. Cox will address the initial rates, rules, and regulations for the Steelton customers as well as the impact of the Transaction on PAWC's existing customers. Mr. Cox will also discuss the financing of the Transaction and the overall financial fitness of PAWC. Mr. Woodward will address the anticipated day-to-day operation of the Steelton System once it is acquired by PAWC, including staffing and the customer service enhancements that PAWC intends to implement for the benefit of Steelton's customers. Mr. Weinert will provide supporting testimony for his fair market valuation report.

DESCRIPTION OF THE TRANSACTION

Q. PLEASE PROVIDE A DESCRIPTION OF THE TRANSACTION NEGOTIATION PROCESS.

A. On March 28, 2018, Steelton issued a Request for Proposals for the Purchase of Water System Assets of the Steelton Borough Authority, Steelton, Pennsylvania with proposals initially due April 26, 2018, but later extended to June 4, 2018. On June 4, 2018, PAWC submitted a proposal to acquire the Steelton System's assets. After subsequent arms-length negotiations, on November 14, 2018, Steelton's Board approved the Sale of the Steelton Water Facilities to PAWC. On November 14, 2018, Steelton and PAWC entered into the APA for the sale of substantially all of the assets, properties, and rights of the Steelton System at an agreed-upon price.

Q. CAN YOU PLEASE PROVIDE AN OVERVIEW OF THE APA?

A. Yes. The APA is attached as **Appendix A-24-a (CONFIDENTIAL)** to the Application **(PAWC Exhibit SDF-2)**. The APA sets forth the terms and conditions pursuant to which Steelton will sell, and PAWC will purchase, the Steelton System, as well as substantially all assets, properties and rights that Steelton owns and uses in connection with the Steelton System. The APA sets forth the entire understanding of the parties with respect to the Transaction. Under the APA, the closing of the Transaction will occur after the receipt of all applicable governmental approvals, including approvals from this Commission, and after all applicable conditions have been met (or waived) by the parties.

Upon closing of the Transaction, PAWC will take ownership of the Steelton System and begin rendering water service to Steelton's current customers and Steelton will permanently discontinue providing or furnishing water service to the public within the Borough of Steelton and a portion of Swatara Township, Dauphin County, Pennsylvania.

Q. CAN YOU PLEASE PROVIDE A SUMMARY OF THE APA'S PROVISIONS GOVERNING THE TRANSFER OF ASSETS?

A. The specific properties, assets and rights to be transferred to PAWC are defined and described in the APA's Section 2.01, while the excluded assets are defined in Section 2.02 of the APA. Generally, the APA states that every asset, property, business, goodwill and rights owned by Steelton and used in the provision of water service, whether real, personal, mixed, tangible or intangible, and including all the physical plant, property, equipment and facilities comprising the Steelton System owned by Steelton shall be conveyed to PAWC. The Engineering Assessment (Appendix A-15-a) contains a list of the water system

inventory used in connection with the Steelton System to be conveyed to PAWC. All interests in real estate, including leases, easements and access to public rights-of-way, owned by Steelton and relating to the Steelton System are defined and described in Schedule 4.09, as well as all assigned contracts to be conveyed to PAWC in Schedule 4.15.

Items that will not be transferred include: Steelton's cash and cash equivalents, including accounts receivable; water pipe from transmission main to and throughout each customer's property; Steelton's insurance policies; all rights to any action, suit or claims being pursued by Steelton; all assets, properties and rights used by Steelton other than those which primarily relate to the operations of the Steelton System; and, certain Agreements.

Q. HAS PAWC AGREED TO ASSUME ANY LIABILITIES OF STEELTON AS PART OF THE TRANSACTION?

A. Yes. PAWC is accepting certain "Assumed Liabilities" as part of this Transaction on the day of and after closing on the Transaction. Per Section 2.01 of the APA, PAWC will assume: (i) all obligations, conditions, and requirements associated with the Licenses and Permits following their transfers on the day of and after Closing; (ii) all liabilities and obligations related to the Steelton System or the Assets occurring after Closing; (iii) and, all liabilities and obligations of Steelton arising under or to be performed under the Assigned Contacts after Closing. PAWC will not assume or be liable for any liabilities or obligations relating to "Excluded Liabilities" or other liabilities or obligations, including liabilities and obligations that arise from any Assigned Contracts prior to Closing, including, but not limited to, all accounts payable, all of which liabilities and obligations constitute Excluded Liabilities, that are not "Assumed Liabilities."

Q. CAN YOU PLEASE SUMMARIZE THE APA'S PROVISIONS GOVERNING THE NEGOTIATED PURCHASE PRICE OF THE TRANSACTION?

A. The consideration for the purchase of the Steelton System as set forth in Section 3.01 of the APA is the negotiated purchase price of $22,500,000.

Q. PLEASE EXPLAIN THE RATES THAT WILL APPLY TO STEELTON'S CUSTOMERS FOLLOWING THE CLOSING OF THE TRANSACTION.

A. As set forth in Section 6.04 of the APA and as will be explained more-fully in the direct testimony of Mr. Cox, PAWC Statement No. 3, PAWC has committed to adopt Steelton's current service charges and consumption charges set forth in Schedule 6.04 upon closing of the Transaction as PAWC's base rates in the Service Area. Moreover, the parties recognize that ratemaking authority is vested with the Commission. Immediately upon Closing, Steelton customers will be subject to PAWC's approved water tariff on file with the Commission with respect to all rates other than the customer charge and consumption charge, including turn on fees and the like, as well as non-rate related terms and conditions of service. Steelton's customers are currently billed quarterly. As PAWC customers, all Steelton customers will be billed monthly. The monthly rates are shown in **Appendix A-13** to the Application (**PAWC Exhibit SDF-2**).

Q. HAS PAWC MADE ANY COMMITMENTS IN THE APA THAT WILL BE IMPLEMENTED AFTER THE CLOSING OF THE TRANSACTION?

A. Yes, PAWC has made certain commitments to improve the Steelton System (see Section 6.09 of the APA). My colleague, David R. Kaufman, will discuss these commitments in greater detail in his written direct testimony, PAWC Statement No. 2. In addition, PAWC has committed to offer employment to eligible Steelton employees following the closing of the Transaction (*see* Section 6.03 of the APA). My colleague, Joseph Woodward, will discuss anticipated day-to-day operation of the Steelton System once it is acquired by PAWC, including staffing, in his written direct testimony, PAWC Statement No. 4.

TRANSACTION IS IN THE PUBLIC INTEREST

Q. PLEASE PROVIDE AN OVERVIEW OF PAWC.

A. PAWC, a subsidiary of American Water Works Company Inc., ("American Water"), is the largest regulated public utility corporation duly organized and existing under the laws of the Commonwealth of Pennsylvania, engaged in the business of collecting, treating, storing, supplying, distributing, and selling water to the public, and collecting, treating, transporting and disposing of wastewater for the public. Water and wastewater services are furnished by PAWC to the public in a service territory encompassing more than 400 communities in 36 counties, including Dauphin County and neighboring counties of Lebanon, Cumberland and York. Overall, PAWC serves a combined population of over 2,400,000 across the Commonwealth and is American Water's largest subsidiary with nearly 21 percent of American Water's regulated customer base.

PAWC currently employs approximately 1,100 professionals with expertise in all areas of water and wastewater utility operations, including engineering, regulatory compliance, water and wastewater treatment plant operation and maintenance, distribution and collection system operation and maintenance, materials management, risk management, human resources, legal, accounting, and customer service. PAWC has the expertise, the record of environmental compliance, the commitment to invest in necessary capital improvements and resources, and the experienced managerial and operating personnel necessary to provide safe and reliable water services to the residents of Steelton and surrounding areas.

Q. HOW MANY CUSTOMERS DOES THE STEELTON SYSTEM CURRENTLY SERVE AND HOW MANY CUSTOMERS DOES PAWC CURRENTLY SERVE?

A. As of November 30, 2018, Steelton furnished water services to 2,472 customers. As of November 30, 2018, PAWC served approximately 659,930 water customers across Pennsylvania, inclusive of 607,787 residential, 45,064 commercial, 521 industrial, 2,244 municipal, 22 sales for resale, 4,290 fire protection and 2 other customers in 36 Pennsylvania Counties. As of November 30, 2018, PAWC furnished wastewater services to 65,076 customers, inclusive of 59,955 residential, 4,890 commercial, 33 industrial customers, 187 municipal, 11 other customers.

Q. CAN YOU PLEASE EXPLAIN WHY THE PROPOSED TRANSACTION IS IN THE PUBLIC INTEREST?

A. Yes. The Transaction will result in affirmative public benefits of a substantial nature. First, PAWC, as a large and long-established public utility, has the managerial, technical, and financial fitness to operate the Steelton System in a safe and efficient manner in compliance with the Pennsylvania Public Utility Code, the Pennsylvania Clean Streams Law, and all other applicable statutory and regulatory requirements. PAWC has extensive experience in the operation of water treatment and distribution systems including specific experience with the types of treatment technologies employed in the Steelton System. PAWC continues to develop expertise for the benefit of the Commonwealth through its current operation of 36 water treatment plants providing service to 659,930 customers in 36 Pennsylvania counties The Transaction fosters the Commission's stated goal of regionalizing water systems to provide greater environmental and economic benefits to customers. Current PAWC Central Area operation employees and Steelton employees will be under the same management and support teams, and employees of both departments will support each other when appropriate and necessary, particularly in emergency situations. The Steelton water treatment plant is located within 4 miles from PAWC Hershey water system. PAWC can draw upon a much broader range of engineering and operational experience, as well as deeper financial resources, to address operational challenges and support growth and development. Additionally, given PAWC's existing regional area operations, PAWC is better positioned to provide utility services on a long-term, cost-effective basis.

Second, Steelton's current customers will benefit in several ways from becoming PAWC customers. PAWC is a large, financially-sound company that has the capacity to finance necessary capital additions and improvements that will benefit its customers. In addition, given its size, its access to capital, and its recognized strengths in system planning, capital budgeting, and construction management, PAWC is well-positioned to ensure that high quality water service meeting all applicable state and federal regulatory requirements is provided to Steelton's customers.

Third, Steelton's current customers will benefit from enhanced and proven customer service that PAWC provides. My colleague, Joseph Woodward, discusses these customer service enhancements in more detail in PAWC Statement No. 4; however, I would like to note that they include -- but are not limited to -- additional bill payment options, extended customer service and call center hours, enhanced customer information and educational programs, and access to PAWC's customer assistance program.

Finally, the Transaction will benefit PAWC's existing customers and Steelton's current customers in the long-term by expanding PAWC's customer base. There will be no immediate rate impact on PAWC's existing customers, and we expect that the Transaction will help PAWC maintain reasonable rates for all its customers going forward. In the long-term, the Transaction will help PAWC keep rates reasonable for all of its customers. Through its expertise in water operations and management and the leveraging of economies of scale (purchasing power, labor efficiency, system integration and efficiency improvement), PAWC will, over time, be able to lower or slow the increase in the cost of operating the Steelton System. Moreover, by adding additional connections to the entire PAWC system, there are more customers to share future infrastructure

investment costs which promotes stable rates across the entire PAWC system. Customers who benefit from near-term improvements will one day help pay for improvements on behalf of other customers on other parts of the PAWC system. Being able to spread the costs of investing in and maintaining public water systems over a growing customer base, particularly in a time of increased environmental requirements, is essential to the continued success of water systems and maintaining reasonable rates for customers. Indeed, the Pennsylvania Legislature recognized, as a matter of public policy, the importance of consolidation and cost sharing in the passage of Act 11 of 2012. There is also a clear legislative intent associated with Section 1329 and its allowance of fair market valuation for ratemaking purposes. The General Assembly intended to facilitate the acquisition of municipal water and wastewater systems by investor-owned utilities for the benefit of municipal corporations and their customers.

PAWC'S LEGAL, FINANCIAL AND TECHNICAL FITNESS

Q. CAN YOU PLEASE TELL US WHY PAWC IS LEGALLY FIT TO ACQUIRE AND OPERATE THE SYSTEM?

A. Yes. PAWC is a Commission-regulated public utility with a good compliance history. There are no pending legal proceedings that would suggest that PAWC is not legally fit to provide service to customers on the Steelton System.

Q. CAN YOU EXPLAIN WHY PAWC IS FINANCIALLY FIT TO ACQUIRE AND OPERATE THE SYSTEM?

A. Yes. PAWC is the largest water and wastewater provider in Pennsylvania. It has a long-demonstrated history with the Commission of financial stability.

As part of the Application, PAWC provided the audited internal balance sheet, as of December 31, 2017, for PAWC (**Appendix D to PAWC Exhibit SDF-2**), as well as the audited income statement, as of December 31, 2017, for PAWC (**Appendix F to PAWC Exhibit SDF-2**). Those documents show that PAWC had total assets of approximately $4.6 billion as of December 31, 2017. Further, they show that PAWC had net income of approximately $161 million for the 12 months ending December 31, 2017. These figures are further demonstration that PAWC has the financial stability and wherewithal to acquire the Steelton System and operate it in the public interest. My colleague, John Cox, will provide additional details in PAWC Statement No. 3 on the financial health of PAWC and its ability to access capital.

Q. PLEASE EXPLAIN WHY PAWC IS TECHNICALLY FIT TO OPERATE THE SYSTEM?

A. As I discussed earlier, PAWC is engaged in the business of treating and distributing water for the public. We are the largest investor-owned water and wastewater utility in the Commonwealth of Pennsylvania and we already have significant water operations throughout Pennsylvania. PAWC is experienced in undertaking and completing water and wastewater system acquisitions with public and private sector owners and successfully integrating those assets into our business operations. My colleagues, David Kaufman and

Joe Woodward, will explain in greater detail in PAWC Statement Nos. 2 and 4, respectively, specifically how PAWC intends to operate the Steelton System once acquired.

SERVICE TERRITORY

Q. PLEASE EXPLAIN THE SERVICE TERRITORY SOUGHT BY PAWC IN THE APPLICATION.

A. As part of its Application, PAWC is seeking the right to provide service to the customers currently served by Steelton as shown in the maps and descriptions attached as **Appendix A-16-a through h to PAWC Exhibit SDF-2**. No municipal authority, corporation, partnership or individual other than Steelton is now furnishing or has corporate or franchise rights to furnish service similar to that to be rendered by PAWC in the Service Area covered by the Application, and no competitive condition will be created. As discussed above, upon closing of the Transaction, Steelton will permanently discontinue all water service to the public.

APPROVAL OF CONTRACTS WITH MUNICIPAL CORPORATIONS

Q. HAS PAWC REQUESTED CODE SECTION 507 CERTIFICATES OF FILING OR APPROVALS AS PART OF ITS APPLICATION?

A. Yes. In addition to the approvals sought under Code Sections 1102(a) and 1329, 66 Pa. C.S. §§ 1102(a), 1329, the APA must, according to PAWC's counsel, be filed with the Commission pursuant to Code Section 507, 66 Pa. C.S. § 507.

CUSTOMER NOTICE

Q. WHAT ARE THE PLANS FOR COMMUNICATING WITH STEELTON'S CUSTOMERS REGARDING THE ACQUISITION?

A. As part of the 1329 Application notice process, Steelton will provide individual customer notice through direct mail to all of its customers, attached as **Appendix A-18-d** to **PAWC Exhibit SDF-2**.

Approximately 4 – 5 weeks prior to closing of the Acquisition, PAWC will send a direct mailer to Steelton's customers with information regarding the transition to PAWC ownership, customer service and billing information, as well as phone numbers and a link for our web and media access. At closing, PAWC will mail each customer a "Welcome Letter" from PAWC President Jeff McIntyre along with a new customer brochure as attached as **Appendix A-18-d** to **PAWC Exhibit SDF-2.**

Q. WHAT ARE YOUR PLANS FOR COMMUNICATING WITH PAWC'S CUSTOMERS REGARDING THE ACQUISITOIN?

A. As part of the 1329 Application notice process, PAWC will provide individual customer notice through a bill insert attached as **Appendix A-18-d** to **PAWC Exhibit SDF-2**.

CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony as additional issues or facts arise during the course of this proceeding.

SCOTT D. FOGELSANGER
SUMMARY OF TESTIMONY

Pennsylvania Public Utility Commission:	
Appalachian Utilities, Inc.	R-00963557
Borough of Media – Water Works	R-912150
Borough of Hanover	R-00027522
Borough of Quakertown	R-2011-2251181
Citizens Water Company of Confluence	R-00932746
City of DuBois – Bureau of Water	R-00050671
Columbia Water Company	R-00061496
" " "	R-2008-0245157
Country Place Waste Treatment Co., Inc.	R-00932568
Emporium Water Company	R-00932567
" " "	R-00005050
" " "	R-00061297
Mercer Water Company	R-901689
National Utilities, Inc.	R-00932828
" " "	R-00953416
Newtown Artesian Water Company, The	R-2008-2042293
NRG Energy Center Harrisburg LLC	R-2008-2028395
NRG Energy Center Pittsburgh LLC	R-00061435
Pittsburgh Thermal, L.P.	R-00994641
Redstone Water Company, Inc.	R-00974227
Rockwood Water Company	R-00932771
Total Environmental Solutions, Inc. – Treasure Lake W	R-00072493
Total Environmental Solutions, Inc. – Treasure Lake S	R-00072495
Trigen – Philadelphia Energy Corporation	R-2009-2111011
Tri-Valley Water Supply, Inc.	R-00963806
Valley Energy, Inc.	R-00049345
Delaware Public Service Commission:	
Tidewater Utilities, Inc.	11-397
United Water Delaware	04-121
New Jersey Board of Public Utilities:	
Middlesex Water Company	WR12010027

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	: : : : : :	Docket No. U-2019-_____

DIRECT TESTIMONY OF
DAVID R. KAUFMAN ON BEHALF OF
PENNSYLVANIA-AMERICAN WATER COMPANY

Dated: January 2, 2019

PAWC Statement No. 2

DIRECT TESTIMONY OF
DAVID R. KAUFMAN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. David R. Kaufman, 800 West Hersheypark Drive, Hershey, PA 17033.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

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

Q. WHAT ARE YOUR RESPONSIBILITIES AS PAWC'S VICE PRESIDENT - ENGINEERING?

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

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EDUCATION AND EXPERIENCE.

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

with the Company in its Northeast Region and had responsibilities for both water and wastewater operations in the Scranton /Wilkes Barre and the Pocono/Lehman Pike regions. I remained in that position until February 2001, when I was promoted to Manager of Northeast Operations. In 2004, I accepted the position of Director of Engineering - Southeast Region with American Water Works Service Company and remained in that position until I accepted the position of Vice President - Engineering for PAWC. I am a registered Professional Engineer in Pennsylvania and a hold a Class A1 water treatment plant operator's license.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION?

A. Yes. I have testified before the Pennsylvania Public Utility Commission ("Commission") on several occasions, including both water and wastewater proceedings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony will describe the water system currently owned and operated by the Steelton Borough Authority (the "Steelton System") that PAWC has agreed to acquire. I will also testify about several other topics that relate to the Steelton System, including: plant performance, environmental compliance issues and PAWC's overall technical fitness to acquire and operate the Steelton System.

Q. PLEASE DESCRIBE THE STEELTON SYSTEM.

A. The Steelton System provides water service to approximately 2,472 customers in the Borough of Steelton and a portion of Swatara Township. The Steelton System is approximately 4 miles west of PAWC's existing Hershey water system. Based on a 10 year period from 2004 through 2015, the average and maximum daily water demand of the Steelton System was 1.53 million gallons per day (mgd) and 2.43 mgd, respectively. The Steelton System has a significant industrial baseload use which averages approximately 0.70 mgd (which is the equivalent of approximately 5,833 equivalent dwellings units).

The primary water supply of the Steelton System is the Susquehanna River. A Pennsylvania Department of Environmental Protection (PaDEP) Water Allocation permit WA 22-549B grants a maximum withdrawal of 3.0 mgd from the Susquehanna River at an existing intake located in the Borough of Steelton. PaDEP has also issued Water Allocation Permit No. WA 22-1037 for a supplemental/emergency interconnection with Suez Water Pennsylvania, in Swatara Township to purchase up to 0.648 mgd based on a 30-day average. The maximum combined daily withdrawal from both supplies is 3.0 mgd, which is adequate to meet present and anticipated future customer demands of the Steelton System.

The Steelton System has one conventional 3.0 mgd water treatment plant located on Christian Street in the Borough of Steelton which operates pursuant to PaDEP public water supply permit no. 7220036. The existing treatment process consists of rapid mix, coagulation with aluminum sulfate, sludge blanket clarification for flocculation and sedimentation, dual media filtration, and disinfection with chlorine. The original plant design is based on a 1970's Infilco Degremont process configuration. The most recent

plant modification is the addition of a baffled 0.26 million gallons (MG) clearwell. Chemical additions also include the addition of potassium permanganate near the raw water pump intake for iron and manganese oxidation/taste and odor control, lime for pH adjustment and alkalinity addition, polymer addition to aid in clarifier sludge blanket formation, and soda ash for pH control.

All wastewater generated through the plant is discharged into the sewer system for transmittal to the Harrisburg sewer treatment plant via the Trewick pump station. Emergency generators are located at the water treatment plant site, sized adequately to maintain reliable plant operation.

Two centrifugal finished water pumps with variable frequency drive control convey finished water from the plant's clearwell to the distribution system. The distribution system consists of approximately 28 miles of pipe ranging in size from 4 inch diameter to 20 inch diameter, one water booster station, and two – 2 million gallon (MG) finished water storage tanks. It is highly probable that the distribution system contains lead services. The bulk of the residential service lines in Steelton were installed during the timeframe when lead service lines were used.

Q. PLEASE DESCRIBE ANY PLANT PERFORMANCE AND ENVIRONMENTAL COMPLIANCE ISSUES THAT YOU ARE AWARE OF RELATING TO THE STEELTON SYSTEM?

A. A PaDEP filter plant performance evaluation (FPPE) conducted on February 21-22, 2017 at the Steelton water treatment plant identified numerous performance related issues. Based on PAWC's due diligence, the following performance and/or compliance issues,

many of which were identified in PaDEP's FPPE, will need to be addressed with capital improvement projects in the near future.

1) The existing sludge blanket clarification units should be meeting a clarified water turbidity goal of 2.0 NTU in 95% of the highest daily settled water turbidity samples. This goal has been met anywhere from 28% to 90% of the time with the existing plant units.

2) The sludge blanket clarification process can generate high levels of disinfection by-products (DBP) when pre-oxidants such as chlorine comes in contact with the organic material in the suspended sludge blanket. High DBP levels generated at the water treatment plant can lead to compliance issues in the distribution system. Over the past five years, Steelton has had DBP levels (TTHM and HAA5) results above the Maximum Contaminant Level (MCL) at multiple locations in the distribution system. In response to this, Steelton recently constructed a new baffled 260,000 gallon plant clearwell to limit the formation of DBPs. DBP levels in the distribution system will need to be closely monitored to determine whether further capital improvements will be needed.

3) Recirculating a portion of the sludge blowdown from these clarification units back into the flash mixer can adversely impact plant performance. In addition, during cold weather conditions, the sludge blanket can settle overnight which causes disruptions (higher settled water turbidity) for several hours after startup in the morning.

4) The Infilco Degremont-based filtration units have design limitations which make them ineffective in achieving required bed expansion during backwash, achieve and sustain needed backwash flow rates, and do not have filter-to-waste capabilities currently

required by PaDEP design standards. The current backwash rate is 12.1 gpm per square foot which is below the recommended backwash rate of 15 to 20 gpm per square foot and the filter expansion was measured at 10 to 12.5% which is below the recommended expansion rate of 20 – 30%. The ability to filter to waste prior to startup and after a backwash are important to reducing the chance that particles and pathogenic organisms are passed to customers. This feature is unable to be incorporated into the existing filter cell configuration.

5) Microscopic Particulate Analysis (MPA) conducted by PaDEP in a recent filter plant performance evaluation found several areas of potential concern. The filtered water had both diatoms and floc in the sample at very low levels. Organic particles of this type and size are not normally found in the filtered water. These particles were in the 30-85 micron size range; in comparison, Giardia and Cryptosporidium, which are pathogenic organisms that can cause serious illness, are in the 3-7 micron and 8-9 micron size range.

6) Chlorine gas, which is currently used in the treatment process, should be replaced with liquid sodium hypochlorite, which is a safer alternative disinfectant. Subject to further evaluation of water quality test data, the Steelton System may need to chloraminate.

7) The plant process should incorporate a sequestering agent post-filtration in order to inhibit corrosion effects in the distribution system.

8) The plant lacks process control (chased feed rates, monitoring) and redundant facilities in the treatment process (sludge blanket clarifiers). The plant also has limited laboratory facilities to aid in process monitoring and control.

Herbert, Rowland, and Grubic, Inc. (HRG) prepared a 10 year capital plan dated March 2018 for the Steelton Borough Authority ("Steelton") which identified necessary improvements including a water treatment plant upgrade. This HRG plan incorporated anticipated upgrades to the existing water treatment plant that will be needed due to design limiting factors, age of the facility, existing plant technology, and pending regulations that may require more stringent regulatory requirements. The limitations which were identified in PaDEP's FPPE will be addressed with the proposed water treatment plant replacement project which was incorporated in HRG's 10 year capital plan.

In summary, the existing water treatment plant process has design limitations and performance issues which have the potential to compromise finished water quality. The Steelton System has the potential to produce higher levels of disinfection by-products and could benefit from additional process improvements to reduce the lead leaching potential into the finished water from customer services and internal household piping. It is highly probable that lead service lines exist in the distribution system. I am also not aware of any on-going water distribution main or scheduled meter replacement programs.

Q. IS PAWC'S APPLICATION CONSISTENT WITH THE COMPREHENSIVE PLANS OF DAUPHIN COUNTY AND THE BOROUGH OF STEELTON?

A. Yes. We received letters from Dauphin County Planning Commission, the Borough of Steelton and Swatara Township indicating PAWC's application is consistent with their applicable comprehensive planning studies. These letters and links to their websites are located in Appendix A-22-e.

Q. WHAT ARE THE ANTICIPATED IMPROVEMENTS NEEDED TO THE STEELTON SYSTEM?

A. The anticipated improvements will primarily consist of the replacement of the existing water treatment plant and the development and implementation of a distribution system improvement plan consisting of main and service replacements and customer metering change-out/upgrades.

Various investigations/studies may need to be conducted to validate some of our assumptions. Water quality data will be evaluated to substantiate the appropriate Bin classification for source water treatment under the Long Term 2 (LT2) Enhanced Surface Water Treatment Rule and to evaluate the effectiveness of corrosion control measures to reduce the lead leaching potential into the finished water from customer services and internal household piping.

Other improvements will need to be made to existing facilities regarding plant process and distribution system monitoring, security, and safety features until the longer-term improvements are completed.

Q. WHAT ARE THE ESTIMATED CAPITAL COSTS FOR THE STEELTON SYSTEM?

A. The 10 year capital plan for the Steelton System, currently estimated at $35.735 Million, attached to my testimony as **PAWC Exhibit DRK-1**, includes projects for on-going capital needs for the Steelton System based on PAWC's evaluation.

Q. IS THERE ANYTHING RELATING TO THE ASSET PURCHASE AGREEMENT (APA) THAT YOU WISH TO DISCUSS?

A. Yes, per the Asset Purchase Agreement (APA), Section 6.09, PAWC has committed to invest $35.7 Million in capital improvement in water infrastructure in the Steelton System during the ten year period following Closing. As part of this capital improvement plan PAWC agreed to spend an average of $400,000 per year in pipeline replacements during the ten year period following closing.

Q. ARE THE CAPITAL IMPROVEMENTS TO WHICH PAWC HAS COMMITTED IN THE APA BEING PRIORITZIED OVER CAPITAL PROJECTS IN OTHER AREAS OF PAWC'S WATER AND WASTEWATER SYSTEMS THAT WERE PREVIOUSLY PLANNED FOR THE SAME PERIOD?

A. No. The capital projects identified are not being prioritized over capital projects in other areas of PAWC's water and wastewater systems that were previously planned for this time period. As explained above, PAWC was able to commit to spending $35.7 million on water infrastructure within the Borough of Steelton within the first ten years of PAWC's ownership of the Steelton System based on projects that PAWC identified for completion during its review and evaluation of the Steelton System.

Q. PLEASE DESCRIBE PAWC'S TECHNICAL FITNESS TO PROVIDE WATER SERVICE TO THE STEELTON SYSTEM CUSTOMERS.

A. As of November 30, 2018, PAWC served approximately 659,930 active water customers across 36 counties in the Commonwealth. A map of PAWC's current service territories is

attached to my testimony as **PAWC Exhibit DRK-2**. To provide water service to those customers, PAWC currently operates 36 water plants. PAWC has the skill and expertise to respond to ever-increasing environmental standards for the treatment of water and to manage the long-term infrastructure issues inherent in water systems.

Q. IN YOUR OPINION, IS PAWC BETTER EQUIPPED THAN STEELTON TO OWN, OPERATE, AND MAINTAIN THE STEELTON SYSTEM? IF YES, WHY?

A. Yes. PAWC can draw upon a much broader range of engineering and operational experience, as well as deeper financial resources, to address the environmental compliance challenges of the Steelton System, and given PAWC's existing platform in relation to operation of water and wastewater systems in neighboring communities, we believe that PAWC is best positioned to provide those services on a cost-effective basis.

PAWC is the Commonwealth's largest investor-owned provider of water and wastewater services. As a leading water provider in Pennsylvania, PAWC brings industry leading expertise and has extensive technical experience in upgrading, operating and maintaining water facilities. PAWC is a recognized leader in providing communities in the Commonwealth with well-maintained and reliable water and wastewater service and has extensive local knowledge due to our decades of experience providing water service to neighboring communities. For water systems alone, PAWC currently operates 36 water treatment plants that serve approximately 607,787 residential, 45,064 commercial, 521 industrial, 2,244 municipal, 22 sales for resale, 4,290 fire protection and 2 other customers in 36 Pennsylvania counties.

PAWC currently employs approximately 1,100 professionals with expertise in all areas of water and wastewater utility operations including engineering, regulatory compliance, water and wastewater treatment plant operation and maintenance, distribution and collection system operation and maintenance, materials management, risk management, human resources, legal, accounting, and customer service. As a subsidiary of American Water, PAWC has available to it additional resources of highly trained professionals who have expertise in various specialized areas. American Water's experience includes the full breadth of water treatment processes which provide American Water operators and process experts with deep experience in the operation and maintenance of every possible type of water treatment technology, as well as the experience available to support PAWC's operation's staff and facilities. A 50-person team of American Water corporate engineers has handled a wide variety of system evaluations, selecting treatment processes and establishing critical design criteria for water and wastewater treatment systems in order to improve operations and prioritize capital improvements.

Moreover, PAWC has committed as part of the APA to make offers of employment to Steelton's existing professionals who are familiar with the Steelton System.

PAWC has an established track record of successfully managing large capital investment projects in order to provide reliable service to the communities it serves. PAWC has an ongoing program of capital investment focused on systematically replacing and adding new pipes, treatment and pumping facilities, and other water and wastewater infrastructure; thereby minimizing customer disruption caused by infrastructure failure. PAWC has funded in excess of $1 billion in capital construction over the past five years

with expenditures expected to total $275 million to $300 million per year for the next five years. Capital planning is performed by in-house engineering staff and operations to establish capacity needs, regulatory impacts, service adequacy and reliability for PAWC's water and wastewater systems. Project costs, alternatives and risks are also determined. Comprehensive oversight of water and wastewater assets gives PAWC a clear and objective view of needs and potential capital project solutions.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

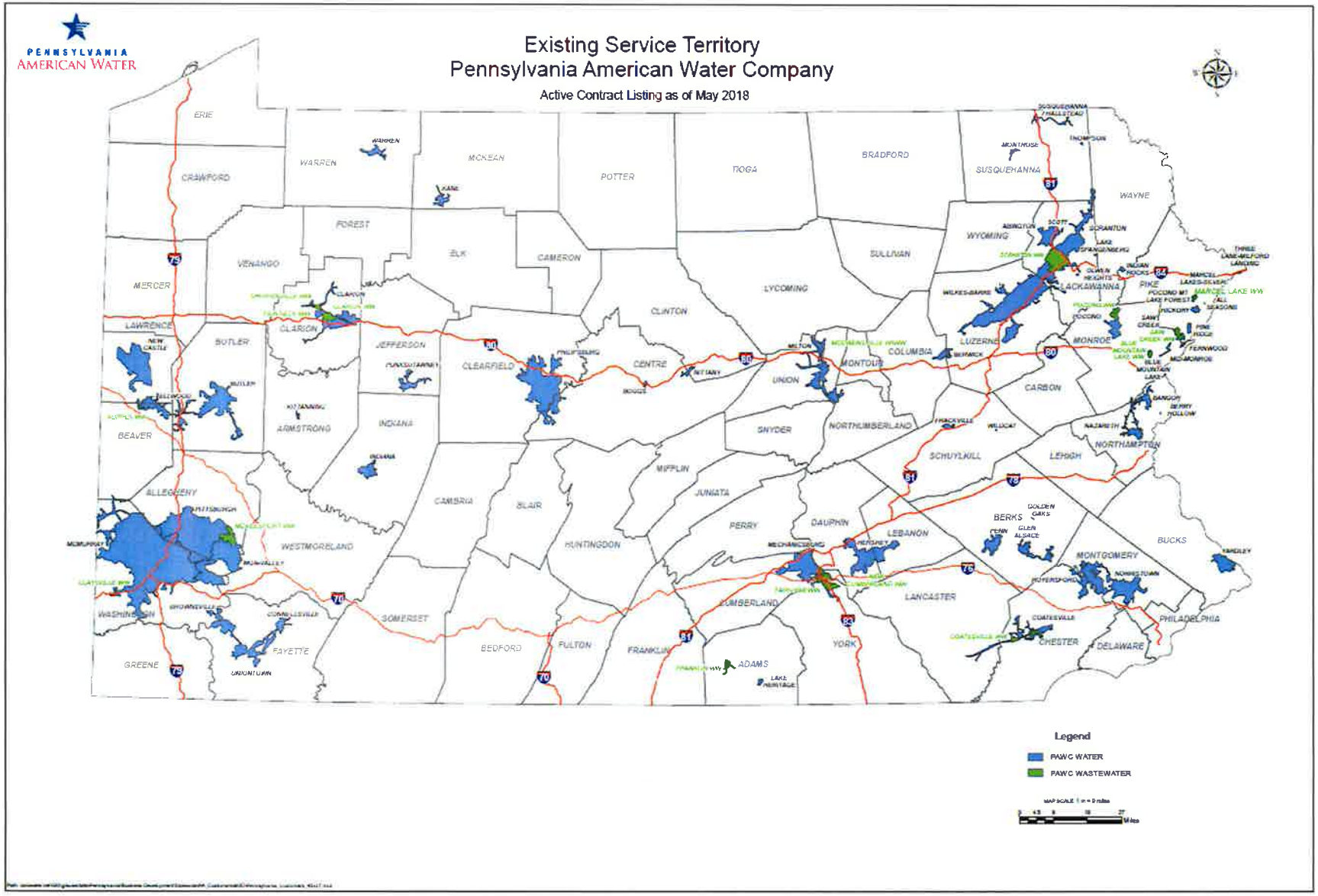
A. Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding. Thank you.

Capital Plan **PAWC Exhibit DRK-1**

Water Treatment	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Source Water Monitoring	$ 40,000										
TOC Monitoring	$ 20,000										
SCADA	$ 100,000										
Security	$ 100,000										
Safety	$ 200,000										
Miscellaneous plant improvements	$ 200,000										
Water Treatment Plant Replacement	$ 300,000	$2,000,000	$4,000,000	$8,000,000	$8,700,000	$1,000,000					
Distribution System											
Automatic Flushers		$ 25,000									
GIS Survey	$ 150,000										
Distribution Disinfection Study	$ 100,000										
Distribution System Improvements	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$ 400,000	$400,000	$400,000	$400,000	$400,000	$400,000
SCADA/Process Control	$ 200,000										
Lead service replacement	$ 500,000	$1,500,000	$1,500,000	$1,500,000							
Water Meter Installation	$ 400,000	$ 400,000	$ 400,000								
Total	$2,710,000	$4,325,000	$6,300,000	$9,900,000	$9,100,000	$1,400,000	$400,000	$400,000	$400,000	$400,000	$400,000

Grand Total $35,735,000

PAWC Exhibit DRK-2



BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	:	Docket No. U-2019-_____ *et al.*

DIRECT TESTIMONY OF
JOHN R. COX ON BEHALF OF
PENNSYLVANIA-AMERICAN WATER COMPANY

Dated: January 2, 2019

PAWC Statement No. 3

DIRECT TESTIMONY OF
JOHN R. COX

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. John R. Cox, 800 West Hersheypark Drive, Hershey, PA 17033.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by American Water Works Service Company, Inc. ("Service Company") as Director of Rates and Regulations – Pennsylvania.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I am a 1985 graduate of Shippensburg University of Pennsylvania with a Bachelor of Science degree in Business Administration, with a major in accounting. In 1999, I received my Master's Degree in Business Management from Lebanon Valley College. I have also completed the continuing education program sponsored by the National Association of Regulatory Utility Commissioners ("NARUC") and the University of Utah.

I have been employed by Pennsylvania-American Water Company ("PAWC" or the "Company") or the Service Company since June 1986. From 1986 through June 1988, I served as a staff accountant in the Accounting Department. In July 1988, I was transferred to the Rate Department, and, in July 1989, I was promoted to Senior Rate Analyst. In 1991, I was promoted to accounting supervisor and held that position until December 2000 when I was promoted to Fleet and Materials Management Superintendent. In July 2004, I was promoted to the position of Senior Financial Analyst assigned to the Finance Department.

In 2007, I was promoted to the position of Manager of Rates and Regulations, and in 2016, I was promoted to my current position of Director of Rates and Regulations.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION (THE "COMMISSION" OR "PUC")?

A. Yes. I have presented testimony on accounting and rate matters before this Commission on numerous occasions. I have also prepared water rate applications that were presented to the Maryland Public Service Commission, Virginia State Corporation Commission and the Public Service Commission of West Virginia by subsidiaries of the American Water Works Company that operate in those states.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony first addresses the financial fitness of PAWC to acquire and operate the water system currently owned and operated by Steelton Borough Authority ("Steelton Steelton"), which PAWC has agreed to purchase ("Transaction"). Second, my testimony addresses: (a) the identification of ratemaking rate base as required in 66 Pa. C.S § 1329 for PAWC's acquisition of the Steelton System; (b) an estimate of the range of transaction and closing costs incurred by PAWC; (c) an overview of the rate provisions contained in the Asset Purchase Agreement ("APA") for PAWC's acquisition of the Steelton System; (d) the benefits of the Transaction; and, (e) a statement regarding PAWC's intentions with respect to accrual of certain post-acquisition improvement costs and deferral of related depreciation.

TRANSACTION IS IN THE PUBLIC INTEREST

Q. WHAT, IF ANY, BENEFIT DO YOU SEE TO STEELTON'S CUSTOMERS AS A RESULT OF THE TRANSACTION?

A. The Steelton System's customers will be served by a large, financially sound company that has the capability to finance necessary capital additions. Given its size, access to capital and its recognized strengths in system planning, capital budgeting and construction management, PAWC is well-positioned from a financial perspective to ensure that high quality water service meeting all federal and state requirements is provided to Steelton's customers and maintained for PAWC's existing customers.

Q. DO YOU ANTICIPATE THE TRANSACTION HARMING PAWC'S FINANCIAL STATUS IN ANY MANNER?

A. No, not at all. PAWC does not anticipate that the acquisition of the Steelton System will have a negative impact on PAWC's cash flows, credit ratings or access to capital and, therefore, will not deteriorate in any manner PAWC's ability to continue to provide safe, adequate, and reasonable service to its existing customers at just and reasonable rates.

PAWC'S FINANCIAL FITNESS

Q. PLEASE DISCUSS PAWC'S FINANCIAL FITNESS.

A. PAWC is the Commonwealth's largest water and wastewater provider, with total assets of $4.6 billion and annual revenues of $661 million for 2017. For 2017, PAWC had operating income of approximately $346 million and net income of approximately $161 million.

These operating results produced cash flows from operations of approximately $337 million.

In addition to generating positive operating cash flows, PAWC may also obtain financing as follows:

Line of Credit

PAWC presently has liquidity through a $400 million line of credit through American Water Capital Corp. ("AWCC"), a wholly owned subsidiary of American Water Works Company, Inc. ("American Water"). PAWC's strong credit ratings allow PAWC to obtain additional capacity on this line of credit.

Long-Term Debt Financing

PAWC carries a corporate credit rating of "A3" from Moody's Investors Services and an "A" rating from Standard and Poor's Rating Services. PAWC obtains long-term debt financing through AWCC at favorable interest rates and payment terms. When applicable, PAWC also uses low-cost financing through the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the Pennsylvania Economic Development Financing Authority ("PEDFA").

Equity Investments

PAWC may obtain additional equity investments through American Water based on its strong operating performance.

Q. DOES PAWC HAVE THE OVERALL FINANCIAL FITNESS AND ACCESS TO CAPITAL TO ACQUIRE STEELTON'S ASSETS?

A. Yes. PAWC has strong operating cash flows and net income and, therefore, a strong balance sheet. PAWC's strong operating and financial performance allows it to obtain competitive interest rates for long-term debt financing and access to equity investments from its parent company. In my opinion, PAWC is a financially-sound business that can financially support the acquisition of the Steelton System as well as the ongoing operating and investment commitments that will be required to operate, maintain and improve those assets in serving the public.

Q. PLEASE EXPLAIN HOW PAWC INTENDS TO FUND THE ACQUISITION.

A. PAWC will initially fund the Transaction with short-term debt and will later replace it with a combination of long-term debt and equity capital.

Q. WHAT IMPACT, IF ANY, DO YOU ANTICIPATE THAT THE ACQUISITION OF THE ASSETS WILL HAVE ON PAWC'S CORPORATE CREDIT RATINGS?

A. As stated above, PAWC does not anticipate that the acquisition of the Steelton System will have a significant impact on its credit ratings.

FAIR MARKET VALUE RATE BASE

Q. PLEASE STATE THE RATE BASE REQUESTED IN THE APPLICATION PURSUANT TO 66 Pa. C.S § 1329.

A. The negotiated purchase price for the acquired assets is $22,500,000 and the average of the appraisals of the buyer's Utility Valuation Expert ("UVE") and the seller's UVE is $22,340,695. Accordingly, the average of the appraisals of the buyer's UVE and the seller's UVE of $22,340,695 is the fair market value for ratemaking purposes under Section 1329 (*i.e.* the lower of the negotiated purchase price and the average of the UVEs' appraisals). The fair market value as determined by the Section 1329 process, which, in addition to the transaction and closing costs described below, becomes part of PAWC's rate base for ratemaking purposes. Note, however, that PAWC reserves its right in future proceedings to make rate base claims related to the acquisition as may otherwise be permitted under the Pennsylvania Public Utility Code.

TRANSACTION AND CLOSING COSTS

Q. PLEASE DESCRIBE THE ESTIMATED TRANSACTION AND CLOSING COSTS FOR THE TRANSACTION.

A. As set forth in the Commission's *Final Implementation Order* at Docket No. M-2016-2543193, transaction and closing costs include the UVE's appraisal fee and the buyer's closing costs, including reasonable attorney fees. In accordance with the *Final Implementation Order* and traditional ratemaking principles, reasonable transaction and closing costs are not to be decided in this Application proceeding; instead, PAWC must justify the costs by a "preponderance of the evidence" in a future base rate proceeding.

As a practical manner, the exact extent of such costs cannot be known at the time of filing the Application and will not be finally known until after closing of the Transaction. The costs depend on a number of variables, including whether this Application is settled or fully-litigated. PAWC will track such costs and incorporate them into rate base in a future base rate proceeding as appropriate. Nevertheless, attached to the Application, as **Appendix A-12,** is PAWC's estimate of the anticipated range of transaction and closing costs approximately $137,500 to $225,000.

APA RATE PROVISIONS

Q. PLEASE PROVIDE AN OVERVIEW OF THE RATE PROVISIONS OF THE APA.

A. Section 6.04 of the APA, dated as of November 14, 2018, contains provisions related to rates. PAWC has committed to adopt, upon closing of the Transaction, Steelton's current customer (service) charge and consumption charge including special private fire service metered rates for UGI Energy Services LLC – Liquefied Natural Gas Facility then in effect at the time of closing. The current usage rate (consumption charge) utilized by Steelton is a rate per thousand gallons. Under PAWC ownership, and set forth in the *pro forma* tariff supplement, attached as **Appendix A-13,** the usage rate per thousand gallons is converted to a usage rate per hundred gallons, thereby corresponding to how all other PAWC customers are billed. In addition, as shown in Section 6.04(c) of the APA PAWC, upon approval by the PaPUC, will have the right to adopt public fire hydrant rates, unmetered private fire service rates and metered private fire service rates, which annual rates shall be consistent with PAWC statewide Commission approved tariff rates.

The initial rates to be applicable to the former Steelton water customers are set forth in the *pro forma* tariff supplement attached as **Appendix A-13** to the Application. Steelton System customers will be governed by rates for the new Steelton Rate Zone 5 and PAWC's currently approved statewide public fire hydrant rates, unmetered private fire service rates and metered private fire service rates. After PAWC closes the Transaction, Steelton System customers will be subject to PAWC's prevailing water tariff on file with the Commission with respect to all fees, including reconnection fees, late payment (penalty) and the like, as well as non-rate related terms and conditions of service.

Steelton's customers are currently billed quarterly. As PAWC customers, all Steelton customers will be billed monthly.

Q. DO THE RATE PROVISIONS OF THE APA INCLUDE A RATE STABILIZATION PLAN AS DEFINED BY SECTION 1329?

A. The APA does not set forth or require a "rate stabilization plan" as defined by Section 1329(g). Therefore, PAWC is not required under the *Final Implementation Order* at Docket No. M-2016-2543193 to provide testimony, schedules, and work papers in support of a plan.

Section 1329(g) defines a "rate stabilization plan" as "[a] plan that will hold rates constant or phase rates in over a period of time after the next base rate case." As detailed in Section 6.04 of the APA, PAWC will be charging Steelton's current rates (but not other charges) as the Company's base rates within the service territory.

Base rates for Steelton area customers will be addressed and adjusted, as appropriate and without any form of contractual restriction, in PAWC's first base rate case

in which the Steelton System is included. Interested parties will have an opportunity to participate in that rate case and address issues, including cost allocation, as appropriate.

PAWC was careful in negotiating the APA to respect the statutory authority of the Commission to set just and reasonable rates.

Q. DOES PAWC SEEK THE AUTHORITY TO CHARGE NON-BASE RATES PRIOR TO PAWC'S FIRST BASE RATE CASE IN WHICH THE STEELTON SYSTEM IS INCLUDED?

A. Yes. PAWC is requesting authority from the Commission to approve collection of a distribution system improvement charge ("DSIC") related to the Steelton System in the future, prior to the first base rate case in which the Steelton System plant-in-service is incorporated into rate base. PAWC would not begin charging a DSIC charge until the eligible Steelton System plant is approved by the Commission in PAWC's Long_Term Infrastructure Improvement Plan for water.

BENEFITS OF TRANSACTION

Q. WHAT, IF ANY, RATE BENEFITS ARE ANTICIPATED TO BE REALIZED BY STEELTON CUSTOMERS FROM THE TRANSACTION?

A. In the long-term, the Transaction will help PAWC keep rates reasonable for all of its customers -- including Steelton customers. Through its expertise in water management and the leveraging of economies of scale, PAWC will -- over time -- be able to improve efficiencies and lower or slow the increase in the cost of operating the Steelton System.

These operational efficiencies -- while they cannot be precisely quantified at this time -- will inevitably be realized because of the size of PAWC's water and wastewater operations.

Q. WHAT IMPACT, IF ANY, WILL THERE BE ON THE RATES OF PAWC'S CURRENT CUSTOMERS AS A RESULT OF THE ACQUISITION OF THE STEELTON SYSTEM?

A. There will be no short-term impact on PAWC's current customers. As explained above, PAWC has committed to adopt Steelton's current rates as its base rates. In the future, Steelton's water operations would be included in future base rate filings similar to the other operations of PAWC.

In the long-term, the acquisition of the Steelton System will help PAWC keep rates reasonable for all of its customers by sharing costs across a much larger customer base. I would like to reiterate that nothing contained in the APA, if approved by the Commission, would bind the Commission or other interested parties in future ratemaking proceedings.

POST-ACQUISITION IMPROVEMENTS

Q. PLEASE STATE YOUR UNDERSTANDING OF SECTION 1329 WITH RESPECT TO POST-ACQUISITION IMPROVEMENTS.

A. I am advised by counsel that Section 1329(f) allows "an acquiring public utility's post acquisition improvements that are not included in a distribution system improvement charge [to] accrue allowance for funds used during construction ["AFUDC"] after the date the cost was incurred until the asset has been in service for a period of four years or until the asset is included in the acquiring public utility's next base rate case, whichever is

earlier." Section 1329(f) also provides that "[d]epreciation on an acquiring public utility's post acquisition improvements that have not been included in the calculation of a distribution system improvement charge shall be deferred for book and ratemaking purposes."

Q. DOES PAWC INTEND TO ACCRUE AFUDC FOR POST-ACQUISITION IMPROVEMENTS?

A. Yes. As summarized in the Direct Testimony of PAWC Witness David R. Kaufman, PAWC's Vice-President Engineering, PAWC Statement No. 2, PAWC will be making post-acquisition improvements to the Steelton System. As such, PAWC will likely accrue AFUDC consistent with what is permitted under Section 1329. Rate claims related to AFUDC can then be adjudicated in the context of a future PAWC base rate proceeding.

Q. DOES PAWC INTEND TO DEFER DEPRECIATION ON NON-DSIC-ELIGIBLE POST-ACQUISITION IMPROVEMENTS FOR BOOK AND RATEMAKING PURPOSES?

A. Yes. Section 1329(f) permits such deferral of depreciation. The statute appears to allow deferral without specific Commission approval; however, out of an abundance of caution, PAWC is specifically petitioning the Commission, as part of this Application proceeding, for permission to defer the depreciation for book and ratemaking purposes.

AUTHENTICATION OF APPLICATION APPENDICES

Q. ARE YOU FAMILIAR WITH THE APPLICATION FILED BY PAWC IN THIS PROCEEDING?

A. Yes, I helped to prepare several of the appendices in support of the Application and I have reviewed the final version of the Application and the appendices.

Q. PLEASE IDENTIFY WHICH APPLICATION APPENDICES WERE PREPARED BY YOU OR UNDER YOUR SUPERVISION AND CONTROL?

A. PAWC's finance team prepared the response in **Appendix A-12** which is the Company's estimate of the anticipated range of transaction and closing costs and the *pro forma* tariff supplement attached as **Appendix A-13** to the Application. In addition, they prepared **Appendix C** (audited balance sheet of Steelton Borough Authority as of December 31, 2017), **Appendix D** (audited balance sheet of PAWC as of December 31, 2017), **Appendix E** (audited income statement of Steelton Borough Authority for the 12 months ended December 31, 2017), **Appendix F** (audited income statement of PAWC for the 12 months ended December 31, 2017), **Appendix G** (*pro forma* balance sheet of PAWC, giving effect to the transfer), **Appendix H** (*pro forma* consolidated income statement of PAWC and Steelton Borough Authority for 12 months) and **Appendix K** (estimated annual revenues and Expenses).

Q. HOW DID YOU PREPARE APPENDICES A-12, A-13, APPENDICES C THROUGH H, AND APPENDIX K?

A. I reviewed the financial information of PAWC, to which I have direct access, and I reviewed the financial and rate information of the Steelton Borough Authority, to which I received access through the Transaction due diligence process.

Q. ARE APPENDICES A-12, A-13, APPENDICES C THROUGH H, AND APPENDIX K TRUE AND CORRECT TO THE BEST OF YOUR KNOWLEDGE, INFORMATION, AND BELIEF?

A. Yes.

CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding. Thank you.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	:	Docket No. U-2019-_____ *et al.*

DIRECT TESTIMONY OF
JOSEPH F. WOODWARD JR. ON BEHALF OF
PENNSYLVANIA-AMERICAN WATER COMPANY

Dated: January 2, 2019

PAWC Statement No. 4

DIRECT TESTIMONY OF
JOSEPH F. WOODWARD JR.

INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. Joseph F. Woodward Jr., 852 Wesley Drive, Mechanicsburg, PA 17055

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Pennsylvania-American Water Company ("PAWC" or the "Company") as the Senior Manager of Operations, Central Pennsylvania.

Q. WHAT ARE YOUR RESPONSIBILITIES AS PAWC'S SENIOR MANAGER OF OPERATIONS, CENTRAL PENNSYLVANIA?

A. I am responsible for all water and wastewater operations across the Central Region of the Commonwealth, managing a team of approximately 110 professionals in 13 individual districts, serving 108,421 customer connections.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EDUCATION AND EXPERIENCE.

A. I received a Bachelor of Science Degree in Environmental Engineering from Wilkes University. I am also a professional member of the American Water Works Association and the Water Environment Federation. I have more than 23 years of operational, management and business experience in the water and wastewater industries. I am a certified water and wastewater operator in Pennsylvania and hold the licenses of Water Class A, Water Class E, Wastewater Class B, and Wastewater Class E. I joined American

Water in November of 1997. Before that, I was an Operator for the Borough of Ashland in Schuylkill County. In that role, I was responsible for the operation of a 1 MGD surface water treatment plant and for meter reading for billing purposes. During my career with American Water, I have held various positions of increasing responsibility including Operations Supervisor, Project Manager, Central Region Contract Operations Manager, Southern Indiana Field Operations Manager, Central Pa Field Operations Manager, and Central PA Senior Manager of Operations. In the past, I have also been a trainer for the PA Department of Environmental Protection. Throughout my career, I have worked in the water and wastewater industries in the states of Pennsylvania, Indiana, Iowa, Ohio, and Louisiana.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My direct testimony describes the anticipated day-to-day operations of the water treatment, transportation, and distribution facilities currently owned and operated by the Steelton Borough Authority ("Steelton"), Dauphin County, Pennsylvania ("Steelton System") that PAWC has agreed to acquire ("Acquisition"). I will describe several customer service enhancements PAWC intends to implement for the benefit of Steelton's customers and I will also describe how PAWC intends to operate the Steelton System once acquired.

SCOPE OF OPERATIONS

Q. PLEASE PROVIDE AN OVERVIEW OF PAWC'S SCOPE OF OPERATIONS.

A. PAWC is a subsidiary of American Water Works Company, Inc. ("American Water"), the largest publicly traded water and wastewater utility company in the United States with a history extending 130 years. Through its various subsidiaries, American Water provides approximately 14 million people with regulated and market-based drinking water, wastewater, and other water-related services in 45 states and parts of Canada. PAWC is the largest regulated water and wastewater provider in the Commonwealth providing service to approximately 2.4 million people in 36 counties in over 400 communities. As a public utility operating in Pennsylvania, PAWC operates under the rules and regulations of the Pennsylvania Public Utility Commission ("Commission") which, in addition to regulating specific aspects of service, approves the rates charged for water and wastewater services. PAWC must also meet standards established by the Pennsylvania Department of Environmental Protection ("DEP") and the Federal Environmental Protection Agency ("EPA").

PAWC employs approximately 1,100 highly trained, dedicated professionals who have expertise in all areas of water and wastewater utility operations including engineering, water quality, operations, maintenance, materials management, risk management, human resources, legal, regulatory compliance, finance and accounting.

OPERATIONS IN STEELTON AREA

Q. PLEASE PROVIDE AN OVERVIEW OF PAWC'S EXISTING WATER OPERATIONS FACILITIES NEAR THE STEELTON AREA.

A. PAWC regional Hershey water system serves 19,742 customer connections in parts of Dauphin and Lebanon Counties. The estimated population served is 50,000. The PAWC Hershey water system is located within 4 miles from the Steelton water treatment plant ("Treatment Plant") and houses both the local operations team and operations support staff. The Hershey plant is a 11 mgd plant.

The primary sources of supply for the Hershey water system are the Swatara and Manada Creeks. Additionally, there is one interconnection with the Lebanon Water Authority. PAWC regional Hershey water system is monitored on our SCADA system.

The Hershey distribution system has over 323 miles of main and consists of five finished water storage tanks with approximately 6.4 million gallons of storage and five booster stations located throughout the system.

PAWC regional Mechanicsburg water system serves 40,271 customer connections in parts of Cumberland and York Counties. The estimated population served is 100,000. The PAWC Mechanicsburg operations office is located less than 9 miles from the Steelton Treatment Plant and houses both the local operations team and operations support staff. The combined plants' capacity for the Mechanicsburg water system is 20 mgd. The primary sources of supply are the Conodoguinet and Yellow Breeches Creeks. PAWC regional Mechanicsburg water system is monitored on our SCADA system.

The Mechanicsburg distribution system has over 530 miles of main and consists of five (5) finished water storage tanks with approximately 7.75 million gallons of storage and four (4) booster stations located throughout the system.

Q. PLEASE DESCRIBE STEELTON'S CURRENT WATER OPERATIONS AND FACILITIES.

A. The Steelton System under permit PWSID 7220036 provides water to approximately 2,472 customers in the Borough of Steelton and a portion of Swatara Township. The Steelton System consists of one surface water source and a supplemental/emergency interconnection with Suez Water Pennsylvania, Inc. (SUEZ). The Steelton System has one Treatment Plant constructed in 1973 and two 2.0 million gallon finished water storage tanks. While the Treatment Plant's permitted capacity is 3.0 MGD (2,083 gpm), the Treatment Plant maintains a typical daily production rate of 1.6 to 2.4 MGD (1,111 to 1,670 gpm). The existing treatment process at the Treatment Plant currently consists of potassium permanganate for DBP control, alum for coagulation, flash mixing, two up flow sludge blanket clarifiers for flocculation and sedimentation, four multimedia filters and chlorine disinfection. A polymer is also added to the flash mixer to aid in clarifier blanket formation. The existing filtration system is manufactured by INFILCO and was originally installed in 1973. Various upgrades to the filtration system have been performed over the years with the most recent addition of a new clearwell being completed in 2017. The existing distribution system generally consists of a network of water distribution piping including approximately 28 miles of pipe ranging from 4 inch diameter to 20-inch diameter, one water booster station,

two – 2 million gallon (MG) finished water storage tanks that provide water service to various residential, commercial, institutional, and industrial properties throughout the Borough including the Arcelor Mittal Steel Plant.

Q. WILL THERE BE ANY UNNECESSARY DUPLICATION OF OPERATIONS FACILITIES FOLLOWING THE ACQUISITION?

A. No. As discussed in detail below, the Steelton System will be operated as a stand-alone system. It will, however, have the support of PAWC's surrounding operations including the Hershey and Mechanicsburg operations as well as PAWC's operations throughout the Commonwealth and American Water's nationwide resources.

Q. PLEASE DESCRIBE HOW PAWC WILL MANAGE THE DAY-TO-DAY OPERATIONS OF THE STEELTON SYSTEM ONCE IT IS ACQUIRED.

A. The Steelton System will be managed as a separate water department within PAWC's Central Area operations. A senior manager currently manages the Central Area with overall responsibility for the water department and a range of shared support services -- including purchasing, environmental compliance, health, and safety. When the Acquisition is complete, the senior manager's role will expand to include responsibility for the new water department. The Steelton System will have a full time Supervisor and will be supported by our Hershey and Mechanicsburg operations.

Q. ARE OTHER PAWC EMPLOYEES AVAILABLE TO ASSIST WITH WATER OPERATIONS, AS NEEDED?

A. Yes. PAWC operations are divided into seven geographical areas. Steelton is located within PAWC's Central Area operations. Current PAWC employees in this area and Steelton employees will be under the same area management and supported by a shared support team supporting common functions such as payroll, purchasing, environmental compliance, health, and safety. Employees from both the water and wastewater operations within PAWC's Central Area operations will support each other when appropriate and necessary, particularly in emergencies. As mentioned above, all operations and employees within PAWC and within the broader American Water footprint have access to each other when circumstances require and/or when a very specialized skill or experience is required to support all local issues.

Q. PLEASE DESCRIBE PAWC'S PLAN FOR THE INTEGRATION OF STEELTON's OPERATIONS.

A. PAWC has assembled a transition team to manage the transition of existing staff and operations from Steelton. The transition team has two tiers; a senior management group and the functional team. The senior tier is comprised of leaders from each of the support functions, including Operations, Engineering, Customer Experience, Information Technology Services, External Affairs, Legal, Human Resources, Health & Safety, Maintenance Services, Water Quality, and Environmental Compliance. Each support function has its own bi-weekly team meeting. Meetings may occur more frequently

depending on group activities. The transition team will ensure that all environmental, employee, operational, and business requirements are addressed.

EMPLOYEE HIRING

Q. HOW MANY EMPLOYEES DOES PAWC CURRENTLY HAVE IN THE STEELTON AREA?

A. PAWC currently has 110 employees in the Central Area.

Q. HOW MANY EMPLOYEES DOES STEELTON CURRENTLY HAVE?

A. Steelton currently has eight (8) active employees.

Q. WILL ALL OF THE CURRENT STEELTON EMPLOYEES BE RETAINED BY PAWC?

A. PAWC will offer employment effective on the closing date of the Acquisition to all active union personnel employed by Steelton in the Steelton System as of the closing date, subject to PAWC's background checks and drug screening.

Q. WILL THERE BE ANY UNNECESSARY DUPLICATION OF SERVICES AS A RESULT OF RETAINING ALL PAWC AND STEELTON EMPLOYEES?

A. No. PAWC's commitment to employ Steelton's active employees will assure continued quality service to customers and effective operations of the Steelton System post-closing.

Q. PLEASE DESCRIBE THE LABOR AGREEMENTS CURRENTLY IN PLACE FOR STEELTON EMPLOYEES.

A. Steelton employees are currently covered by one collective bargaining agreement with the AFSCME Union Council 90.

Q. DO YOU ANTICIPATE ANY ISSUES IN LABOR NEGOTIATIONS AFTER PAWC ACQUIRES THE STEELTON SYSTEM?

A. No. PAWC has a good track record in working with its employees and their unions to achieve mutually acceptable collective bargaining agreements.

SECURITY, SAFETY AND EMERGENCY PREPAREDNESS

Q. DOES PAWC MAINTAIN CYBER SECURITY, PHYSICAL SECURITY, BUSINESS CONTINUITY, AND EMERGENCY PLANS?

A. Yes. Cyber and physical security plans are maintained and monitored by American Water for each of its subsidiaries. PAWC maintains emergency response plans and Operations and Maintenance ("O&M") Manuals, both of which have operational business continuity included within the plans, and are updated each year. These plans are tested each year through emergency response tabletop exercises. Each of the plans are overseen and managed by various groups and individuals to provide overarching support to PAWC. These groups are responsible for testing, reviewing, and updating their respective plan(s). The departments assigned to Physical Security, Emergency Response, Business Continuity, and Cyber Security plans are as follows:

- Physical Security Plan – Operational Risk Management Security (American Water Works Service Company, Inc. ("AWWSC")
- Cyber Security Plan – Operational Risk Management Security (AWWSC)
- Emergency Response Plan – Operations (PAWC)
- Business Continuity Plan – Operational Risk Management (PAWC) and Operations (PAWC)

To constantly protect physical and cyber resources, the designated groups have developed procedures to ensure that PAWC operates in a safe, secure, and reliable environment. A major commitment in assuring plans are kept current is performing various testing on an annual basis. Types of testing performed by AWWSC and PAWC include vulnerability assessments, system operational testing, full-scale exercises, media backups, and real-life events.

Q. PLEASE DESCRIBE PAWC'S RELATIONSHIPS WITH COMMISSION EMERGENCY RESPONSE STAFF, PENNSYLVANIA EMERGENCY MANAGEMENT AGENCY STAFF, AND LOCAL FIRST RESPONDERS.

A. PAWC has a strong working relationship with the Commission's Emergency Response Staff. PAWC provides the Commission with emergency response numbers for all PAWC operating areas each year. The Commission provides emergency numbers for its staff, which PAWC distributes to all of PAWC's operating areas for inclusion in the PAWC Emergency Response Plan. For those emergencies that warrant communication to the Commission's Emergency Preparedness Liaison Officer ("EPLO"), PAWC contacts Commission staff to advise of situations and actions taken by PAWC. Each year PAWC

conducts emergency response tabletop exercises to test response to emergency situations, including weather emergencies, contamination of supply, damage to facilities, cyber-attack, and other perils. Since 2006, the Commission's emergency response staff has participated in those exercises each year. PAWC also invites local first responders; such as, fire departments, police departments, hazmat responders, local prison personnel, as well as DEP, and Pennsylvania Department of Homeland Security ("DHS") personnel to participate in emergency response tabletop exercises. PAWC has participated through Pennsylvania Water/Wastewater Agency Response Network ("PaWARN") and Pennsylvania Emergency Management Agency ("PEMA") sponsored exercises over the years. Our current relationship with PEMA is through the Commission EPLO and PaWARN.

Q. PLEASE DESCRIBE PAWC'S PARTICIPATION IN PENNSYLVANIA'S "ONE CALL" SYSTEM AND THE RESOURCES THAT PAWC DEDICATES TO THE PROGRAM.

A. PAWC's 36 districts are members of Pennsylvania One Call System Inc. and complete excavator requested mark outs on a daily basis. Each district has a minimum of one person dedicated to completing dig notifications utilizing a third party internet-based One Call ticket management system known as Korweb that is accessible via vehicle mounted computers for real time response to any One Call dig notification.

Q. DOES PAWC HAVE AN EMPLOYEE SAFETY PROGRAM?

A. Yes. American Water and PAWC have made safety a value and not just a goal. It is very important to the Company that every employee and contractor return home safely every day. We make safety a value instead of a goal because goals change, but values do not change. Safety performance is fundamental to our Company's culture and key to its success. Employees are expected to conduct themselves in a safe manner, in accordance with our Health and Safety policy and with the Health and Safety Procedures and Practices Manual. PAWC establishes, implements, promotes and manages safety programs, activities and training that enable continued safety improvement, injury reduction and compliance with applicable Federal, State and local requirements. Safety programs are developed and implemented in accordance with Company policy and applicable practices and include:

- Supporting practices that are developed, reviewed and updated to provide guidance on safe performance of activities in the workplace and are reflective of changes in organizational, operational and regulatory needs;
- Strategic and priority development and implementation of safety improvements based on risk analysis of work places, work tasks and related potential injuries and incidents;
- Development of, and measurement against, specific Company and external safety performance targets and safety accountabilities for all employees;
- Ongoing assessment and review of safety processes, activities and supporting programs (including those related to other Company policies, such as the

Workplace Conduct and Behavior Policy) to gauge effectiveness, identify program gaps and pinpoint opportunities for continued improvement;

- Consistency of implementation and compliance with Company and regulatory requirements across the enterprise; and,
- Defined and monitored contractor qualifications and requirements for safety performance in accordance with approved contract documents, applicable laws and regulations.

CUSTOMER EDUCATION AND CUSTOMER SERVICE

Q. WHAT EFFORTS, IF ANY, WILL PAWC UNDERTAKE TO EDUCATE CUSTOMERS REGARDING PAWC OWNERSHIP OF THE STEELTON SYSTEM?

A. As the Acquisition is nearing closing, PAWC plans to produce bill inserts and/or letters to customers to explain the transition, billing, payment options and other items associated with the change in ownership. PAWC's website will also add content to help educate customers and to address frequently asked questions.

Q. WHAT, IF ANY, CUSTOMER ENHANCEMENTS CAN THE STEELTON CUSTOMERS EXPECT AS A RESULT OF THE ACQUISITION?

A. PAWC prides itself on providing superior customer service. As part of its commitment to customer service, PAWC offers its customers a number of enhanced services, including

extended call center hours, additional bill payment options, enhanced customer information and education programs, and access to PAWC's customer assistance program.

Q. CAN YOU PLEASE PROVIDE ADDITIONAL DETAIL ON EACH OF THESE CUSTOMER SERVICE ENHANCEMENTS?

A. Yes. ***Customer Service.*** Our call center is available from 7:00 a.m. to 7:00 p.m., Monday through Friday. Customers can also reach a customer service representative via email at infopa@amwater.com. In addition, our customers have the ability to manage their account via PAWC's "My H20" online portal. Finally, PAWC offers emergency support 24 hours a day, seven days a week. All of this means that we are very responsive to our customers and any issues they may have, and will provide the same responsive approach to Steelton's customers once PAWC acquires the Steelton System.

Bill Payment Options. PAWC offers a number of bill payment options. Customers have the option to receive paper bills through the mail or go paperless and receive their bills electronically via the "My H20" on-line portal. Either way, a customer can pay their bill by mail, online, or over the phone with a debit or credit card. They can also pay by e-check or an electronic funds transfer (which can be set up at the "My H20" online portal) or pay in person at multiple authorized payment locations across the state. Additionally, customers will transition from a water quarterly billing to a monthly billing cycle.

Customer Information and Education Programs. PAWC provides extensive customer information and education programs that will be available to Steelton's customers through brochures, bill inserts, and educational videos posted on PAWC's website. PAWC customers always have full access to a wide range of topics, including information on

preventing frozen pipes, beneficially re-using residuals from water treatment plants for community gardens, detecting and fixing silent toilet leaks, properly disposing of unused pharmaceuticals, conserving water, installing expansion tanks, obtaining fire department grants, and protecting customers from utility imposters.

Customer Assistance Programs. Finally, as new PAWC customers, Steelton's customers will have access to PAWC's customer assistance program called the "H2O Help to Others Program." Additionally, customers who qualify for the program may also qualify to receive a water saving kit, which includes, among other things, a low-flow showerhead and low-flow faucet aerators.

Q. DOES PAWC HAVE A PROGRAM TO PROTECT ITS CUSTOMERS AGAINST UTILITY EMPLOYEE IMPOSTERS?

A. Yes, PAWC has developed communications tools and programs to regularly educate customers about the tactics used by utility employee imposters and what homeowners need to know to protect themselves. The communications vehicles include bill inserts, news releases, social media posts and website information about imposter-related crimes and precautions that customers can take. In addition, PAWC helped form the Keystone Alliance to Stop Utility Imposters, a coalition of water, gas and electric utilities, along with the Commission, Pennsylvania District Attorneys Association and Pennsylvania Chiefs of Police Association, to launch a public awareness campaign using public service announcements, print materials, posters and community presentations.

Q. PLEASE DESCRIBE PAWC'S CUSTOMER DISPUTE RESOLUTION PROCEDURE.

A. PAWC is governed by Chapter 14 of the Pennsylvania Public Utility Code, Responsible Utility Customer Protection Act, 66 Pa. C.S. § 1401 *et seq.*, and the Commission's regulations commonly known as Chapter 56, 52 Pa. Code § 56.1 *et seq.* This law and Commission regulations provide the process and procedures for customer billing, collections, payment arrangements, medical certifications, Protection from Abuse Orders, termination of service, reconnection of service, and customer dispute resolution procedures. PAWC has a customer compliance team responsible for ensuring that customer disputes and complaints are resolved in compliance with the Commission's regulations. Additionally, the Company has a customer advocacy team responsible for addressing customer disputes and escalated concerns.

Q. TO THE BEST OF YOUR KNOWLEDGE, DO STEELTON'S CUSTOMERS CURRENTLY HAVE A PUBLIC OMBUDSMAN TO REPRESENT THEIR INTERESTS?

A. No.

Q. DO PAWC'S CUSTOMERS HAVE A PUBLIC OMBUDSMAN TO REPRESENT THEIR INTERESTS?

A. Yes. The Office of Consumer Advocate ("OCA") represents residential customers of public utilities; the Office of Small Business Advocate ("OSBA") represents small commercial customers of public utilities; and, the Commission's Bureau of Investigation

& Enforcement ("I&E") represents the general public interest. Moreover, the Commission, an independent regulatory agency, has regulatory oversight of matters involving public utilities. The Commission and all of the public advocates are funded by regulatory assessments against the public utilities.

CONCLUSION

Q. DO YOU BELIEVE PAWC HAS THE ABILITY TO PROVIDE SAFE, ADEQUATE, AND RELIABLE WATER SERVICE TO STEELTON'S CUSTOMERS?

A. Yes.

Q. DO YOU BELIEVE THAT THE PROPOSED TRANSACTION WOULD RESULT IN AN AFFIRMATIVE PUBLIC BENEFIT OF A SUBSTANTIAL NATURE?

A. Yes. PAWC, as the largest investor-owned water and wastewater company in the Commonwealth, will be able to provide an enhanced level of operational expertise and customer service.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding. Thank you.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	: : : : : : :	Docket No. U-2019-_____

DIRECT TESTIMONY OF JEROME C. WEINERT, ASA, PE, CDP
UTILITY VALUATION EXPERT SELECTED BY
PENNSYLVANIA-AMERICAN WATER COMPANY

Dated: January 2, 2019

PAWC Statement No. 5

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. Jerome C. Weinert, ASA, PE, CDP, with business addresses at 3601 North Progress Avenue Suite 202, Harrisburg, PA 17110 and 8555 West Forest Home Avenue Suite 201, Greenfield, Wisconsin 53228.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Associated Utility Services, Inc. ("AUS") as a Principal and Director in AUS's consulting operation ("AUS Consultants"), a position I have held since 1987. AUS was founded in 1967 as a financial consulting firm specializing in utility rate-making and regulatory matters. AUS Consultants is based in Mount Laurel, New Jersey, with various subsidiary offices located in Harrisburg, Pennsylvania; Greenfield (Milwaukee), Wisconsin; and Albuquerque, New Mexico. AUS Consultants comprises several subsidiary groups, including Utility Services Group, C.A. Turner Utility Reports, Valuation and Depreciation Services Group.

Q. WHAT ARE YOUR RESPONSIBILITIES AS PRINCIPAL AND DIRECTOR OF AUS CONSULTANTS?

A. As a Principal of AUS Consultants, I am responsible for appraisals and depreciation studies which AUS Consultants performs for its clients. As Director of AUS Consultants, I am responsible for the daily administration and operations of AUS Consultants' staff and offices in Harrisburg, PA; Greenfield, WI; and Albuquerque, NM.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I received a Bachelor of Science Degree in Mechanical Engineering from the Milwaukee School of Engineering in Milwaukee, WI, in 1972 and a Master of Business Administration Degree from Marquette University in 1988.

I am registered as a Professional Engineer (E-15552) in the State of Wisconsin. I have held a Professional Engineer's License continuously since 1976, when I completed the State of Wisconsin's engineering certification requirements. Those requirements include successfully completing two 8-hour written examinations along with four years of qualifying engineering experience. Wisconsin also requires that licensed engineers complete continuing education requirements of 15 professional development hours on a bi-annual basis for renewal of a Professional Engineers license. I most recently renewed my Wisconsin Professional Engineers' license on July 31, 2016.

Since 1982, I also have been an Accredited Senior Appraiser ("ASA") in the American Society of Appraisers, which is a technical society whose charter is to ensure the integrity and continuation of the appraisal profession. My accreditation is in the specialty of Technical Specialties, which includes public utility valuation. I recertify in this specialty every five years, I am currently in the process of recertifying. I also hold Senior Membership in Public Utility Valuation. To become a senior member, a candidate must have five years of qualifying experience in the designated field and pass a written examination that covers general appraisal principles and issues specific to the candidate's field. Finally, the candidate's work is reviewed for a selected number of valuation problems, which, for Public Utility Valuation, requires the applicant to demonstrate

understanding of values, both tangible and intangible, for utility property. These valuations may be in connection with rate case studies, sale or acquisition, eminent domain (condemnation), ad valorem property tax appraisals, and insurance risk management appraisals. These valuations require special knowledge in order to take into account the unique economic and value characteristics of public utility properties and properly recognize regulatory factors which influence value conclusions. Senior membership in Public Utility Valuation also requires an understanding of the principles and practices necessary in developing appropriate capital recovery (depreciation) accrual rates for public utilities.

I am also a founding member of the Society of Depreciation Professionals (the "Society"). Formed in 1987, the Society is an international society whose purpose is to recognize the professional field of depreciation engineering and those individuals contributing to that field; to promote the development and professional ethics of the profession; and collect and exchange information concerning depreciation engineering and analysis. Its membership, of which there are approximately 200 individual and corporate members, is comprised of professionals from regulated industries (telephone, electric, gas, and water), regulatory agencies, consulting firms, and educational institutions. I have held various offices with the Society including serving as treasurer in 1993, vice president in 1994, and president in 1995.

I gained the status of a Certified Depreciation Professional from the Society in 1997. To obtain this status, a candidate must have five years of qualifying experience in the field of depreciation, pass a written examination that covers depreciation engineering principles and practices, and provide references to his or her work and qualifications as a

depreciation professional. I have re-certified every five years since 1997 with the most recent re-certification effective January 1, 2013.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION")?

A. Yes. In valuation matters related to utility rate base, I most recently testified before the Commission in the matter of the applications of Pennsylvania-American Water Company ("PAWC") and Aqua Pennsylvania Wastewater, Inc. ("Aqua"), pursuant to Sections 1102 and 1329 of the Pennsylvania Public Utility Code ("Code"), 66 Pa. C.S. §§ 1102 and 1329, for approval of Aqua's acquisitions of the wastewater systems assets of New Garden Township, Docket No. A-2016-2580061 and East Bradford Wastewater, Docket No. A-2018-3001582 and PAWC's acquisition of The McKeesport Municipal Wastewater System at Docket No. A-2017-2606103 and Sadsbury Wastewater Collection System at Docket No. A-2018-3002437. I have also presented testimony on the subject of depreciation to the public service commissions in the states of Alaska, Arkansas, Illinois, Indiana, Iowa, Nebraska, Nevada, North Carolina, Ohio, and Oregon. I have testified on depreciation matters before the Federal Energy Regulatory Commission ("FERC") and the Canadian Radio, Television and Telephone Commission ("CRTTC"). In addition, I have testified on valuation matters before the Massachusetts Superior Court; the Court of Common Pleas, Fayette County, Ohio; the Twentieth Judicial Circuit Court in Charlotte County, Florida; the Nineteenth Judicial Circuit Court in St. Lucie County, Florida; the New Hampshire Public Service Commission; the California Board of Equalization and Assessment; and the Valuation Adjustment Boards in the Florida counties of Duval,

Hillsborough, Okeechobee, and Palm Beach. Attached to this direct testimony as **Appendix A** is a copy of my current curriculum vitae which includes a listing of clients which I have provided consulting services.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe the fair market value appraisal of the water system and related plant, property, equipment and assets of the Steelton Borough Authority ("Steelton") in Dauphin Township, Pennsylvania (the "Steelton System") that I and my staff performed on behalf of PAWC, the buyer of the Steelton System. Our report dated December 7, 2018, is entitled "Pennsylvania Water Company Fair Market Value Appraisal Report of Steelton Borough Authority (Water Utility) Dauphin County, Pennsylvania as of July 1, 2018." The appraisal and its report was developed to meet the criteria established in paragraph Section 1329 of the Pennsylvania Public Utility Code ("Code"), 66 Pa. C.S. § 1329 ("Determination of the fair market value of water and wastewater assets").

In its 2015-2016 legislative session, the Pennsylvania Legislature passed Act 12 of 2016 and Governor Wolf signed into law Section 1329 of the Code establishing the legislative guidelines facilitating the acquisition of municipal and regional water and wastewater systems by private investor-owned utilities and other entities which are rate-regulated by the Commission. This legislation was intended to facilitate the acquisition of water and wastewater systems in order to facilitate capital improvements to the water and or wastewater properties.

QUALIFICATION AS UTILITY VALUATION EXPERT

Q. IS AUS CONSULTANTS ON THE COMMISSION'S REGISTRY OF UTILITY VALUATION EXPERTS?

A. Yes. AUS Consultants is a Utility Valuation Expert ("UVE") in the Commonwealth of Pennsylvania approved by the Commission (Utility Code 9919181).

Q. PLEASE DESCRIBE THE PROCESS BY WHICH AUS CONSULTANTS WAS PLACED ON THE COMMISSION'S REGISTRY OF UTILITY VALUATION EXPERTS.

A. After passage of Section 1329 of the Code, the Commission established an application process by which the Commission would approve and designate firms to be placed on the Commission's "Registry of Utility Valuation Experts." AUS Consultants submitted its application and the required proof of experience in July of 2016 and received confirmation and approval from the Commission of AUS Consultants' placement on the Commission's UVE Registry in August 2016. AUS Consultants applied with the Commission to renew its registrations as a UVE with the Commission for 2018 and received notification on February 12, 2018 as a qualified UVE by the Commission.

Q. PLEASE EXPLAIN YOUR QUALIFICATIONS TO ACT AS A UVE IN THIS PROCEEDING.

A. I have been involved in utility consulting in the valuation and depreciation area for my entire 46-year career. I have been a Registered Professional Engineer since 1978, an Accredited Senior Appraiser ("ASA") since 1982 in the American Society of Appraiser in

their Technical Valuation specialty which includes utilities such as water and wastewater utilities, and I am a Certified Depreciation Professional ("CDP") since 2000 in the Society.

I have prepared fair market value appraisals for numerous clients during my career as well as numerous depreciations studies in support of utilities depreciation rates for rate making. In my capacity as Principal and Director for AUS, I have performed numerous appraisals of water, wastewater, gas, electric and telecommunication companies and their property. Similarly, in the area of depreciation studies, I have performed depreciations studies for water, gas, electric and telecommunications companies. Prior to my employment with AUS, I worked for 14 years in the Regulated Industries Group at American Appraisal Associates, a national appraisal firm, with emphasis on performing public utility appraisals and depreciation studies.

Q. HAVE YOU EVER HAD YOUR PROFESSIONAL CREDENTIALS REVOKED OR SUSPENDED?

A. I am currently in the process of recertifying my ASA status in the American Society of Appraisers and my status as a Wisconsin PE. My status as a CDP in the Society is current.

Q. DO YOU HAVE SPECIFIC EXPERIENCE WITH THE VALUATION AND APPRAISAL OF UTILITY ASSETS?

A. Yes. I annually prepare several fair market valuation appraisals for clients for various purposes. In recent years, AUS Consultants has been quite active in consulting in the water and wastewater industries, particularly in Pennsylvania. This consulting included original cost studies, depreciated original cost studies, and fair market value appraisals for

municipalities and investor-owned utilities. During my career, I have participated in or have been responsible for more than 208 valuation studies and 128 depreciation studies. These appraisals and depreciation studies are identified in my curriculum vitae attached hereto as Appendix A. Over the course of my career, I have submitted depreciation study results to the public service commission's in the states of Alabama, Alaska, Arkansas, Colorado, Florida, Georgia, Illinois, Indiana, Idaho, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Carolina, Ohio, Oregon, Pennsylvania, Washington, and Wisconsin. I also have submitted depreciation study results to the Federal Communications Commission; the Canadian Radio, Television, and Telephone Commission ("CRTTC"); and the State of New York's Office of Real Property Tax Services (NY ORPTS) formerly the New York state Board of Equalization and Assessment.

Q. HAVE YOU OR AUS CONSULTANTS OR ANY OF ITS STAFF DERIVED ANY MATERIAL FINANCIAL BENEFIT FROM THE SALE OF STEELTON'S ASSETS OTHER THAN FEES FOR YOUR SERVICES RENDERED?

A. No.

Q. ARE YOU OR AUS CONSULTANTS OR ANY OF ITS STAFF AN IMMEDIATE FAMILY MEMBER OF A DIRECTOR, OFFICER, OR EMPLOYEE OF EITHER PAWC OR STEELTON?

A. No.

Q. IS AUS CONSULTANTS IN COMPLIANCE WITH APPLICABLE PENNSYLVANIA LAWS?

A. Yes.

Q. DOES AUS CONSULTANTS HAVE THE FINANCIAL AND TECHNICAL FITNESS, INCLUDING PROFESSIONAL LICENSES AND TECHNICAL CERTIFICATIONS, TO PERFORM A FAIR MARKET VALUATION OF THE ASSETS OF STEELTON?

A. Yes. As described earlier I am an accredited Senior Appraiser (ASA designation) in the American Society of Appraisers, a registered Professional Engineer in the State of Wisconsin (WI license E-15552) and a Certified Depreciation Professional (CDP designation) in the Society all societies and state licensing agencies involved in various aspects of the valuation and depreciation profession. These designations coupled with my 46 years of appraisal and depreciation experience demonstrate my and AUS Consultants' financial and technical capabilities to perform utility appraisals.

Q. ARE YOU AWARE OF ANY FACT, INCLUDING BUT NOT LIMITED TO ANY POTENTIAL CONFLICT OF INTEREST, THAT WOULD CAST DOUBT UPON YOUR ABILITY TO PROVIDE A THOROUGH, OBJECTIVE, UNBIASED, AND FAIR VALUATION IN THIS PROCEEDING?

A. No.

FEES PAID FOR UTILITY VALUATION EXPERT SERVICES

Q. HOW IS AUS CONSULTANTS BEING COMPENSATED FOR ITS SERVICES IN THIS MATTER?

A. AUS Consultants is being compensated on a fee-and-expenses basis for the initial appraisal and a per-diem rate plus fee-and-expenses basis for activities beyond the issuance of a final appraisal report. True, correct, and complete copies of AUS Consultants' invoices to PAWC for this matter, as of the date of Application filing, are attached to PAWC's Application as Appendix A-4 and I incorporate those invoices in my direct testimony as if set forth in their entirety.

Q. WHAT IS THE ESTIMATED TOTAL COMPENSATION THAT AUS CONSULTANTS WILL RECEIVE FOR ITS SERVICES IN THIS MATTER?

A. The fee for our initial appraisal is $36,500 plus expenses and our per-diem rate for activities subsequent to the initial appraisal range from $50 to $250 per hour depending on the consultant involved. My per-diem rate is $250 per hour. Expenses include travel, lodging, and report production and shipping expenses, all of which are billed at cost.

Q. PLEASE DESCRIBE THE PROCESS BY WHICH THIS COMPENSATION WAS NEGOTIATED?

A. AUS Consultants met with PAWC personnel to describe the corporate appraisal and depreciation capabilities of AUS Consultants and for AUS Consultants to understand PAWC's requested scope of work. After that meeting, AUS Consultants provided a fee estimate for the appraisal of the Steelton System including a schedule of per-diem rates for

activities subsequent to the appraisal report. Next, the parties drafted a contract, including a non-disclosure agreement, which were both signed. The contract and non-disclosure agreement form the basis of the relationship between AUS Consultants and PAWC. True, correct, and complete copies of the contract and non-disclosure agreement are attached as Appendix A-8 of PAWC's Application and I incorporate them in my direct testimony as if set forth in their entirety.

Q. ARE THESE FEES CONSISTENT WITH COMPENSATION RECEIVED FOR SIMILAR SERVICES PROVIDED TO OTHER CLIENTS?

A. Yes.

FAIR MARKET VALUATION OF STEELTON'S ASSETS

Q. PLEASE IDENTIFY APPENDIX A-5 TO THE APPLICATION IN THIS PROCEEDING?

A. Appendix A-5 of PAWC's Application contains my appraisal report dated December 7, 2018 which I prepared for PAWC to be filed with its Application.

Q. HOW DO YOU RECOGNIZE IT?

A. I personally prepared and supervised AUS Consultants personnel in preparing the report, and recognize it as AUS Consultants' work product.

Q. IS THE AUS REPORT CONTAINED IN APPENDIX A-5 A TRUE, COMPLETE, AND ACCURATE COPY OF YOUR VALUATION REPORT?

A. Yes, and I incorporate it into my direct testimony as if set forth in its entirety.

Q. PLEASE DESCRIBE THE PROCESS BY WHICH YOU PREPARED THE VALUATION REPORT.

A. In accordance with Section 1329 of the Code, PAWC and Steelton engaged Herbert, Rowland & Grubic, Inc. Engineering & Related Services (HRG) as the licensed engineer to conduct an assessment of the tangible assets of the Steelton System. PAWC engaged AUS to prepare the fair market valuation report for the Steelton System. PAWC provided financial statements from Steelton regarding the Steelton System and a copy of the Engineering Assessment development by HRG as required by Section 1329(a)(4). AUS Consultants received financial and system data information relative to the Steelton System. After reviewing that information, AUS Consultants inspected the Steelton System on November 30, 2018, with Steelton personnel conducting the on-site tour. After those activities and data gathering, we finalized the appraisal.

The appraisal contains a letter of transmittal; a table of contents detailing all the sections of the report and work papers; certification describing that the appraisal was prepared in conjunction with the Uniform Standards of Professional Appraisal Practices ("USPAP"); a narrative report containing an Executive Summary; a Purpose and Scope of the Work; a description of the water and wastewater industries – nationally and in the state of Pennsylvania; a description of the Steelton System including the assets, property, plant, and equipment; the appraisal procedures and supporting data and analysis; HRG Engineer's

Engineer Assessment; and miscellaneous public documents describing Section 1329 of the Code.

The intent of the valuation report is to provide the appraisal results, as well as the entire appraisal work file, in sufficient detail to satisfy the parties' and Commission's review requirements of Section 1329 and the Commission's Final Implementation Order, *In re: Implementation of Section 1329 of the Public Utility Code*, Docket No. M-2016-2543193 (Order Entered October 27, 2016). In addition to a copy of my appraisal report, I have provided supporting work papers for the appraisal report in Appendix A-4 to PAWC's Application. The relevant work papers have also been submitted to the Commission and provided to the public advocates in live electronic format.

Q. IS THERE ANYTHING THAT YOU WOULD CHANGE IN THE VALUATION REPORT SINCE ITS PREPARATION?

A. No.

Q. WAS THE FAIR MARKET VALUATION OF THE STEELTON ASSETS DETERMINED IN COMPLIANCE WITH THE UNIFORM STANDARDS OF PROFESSIONAL APPRAISAL PRACTICE ("USPAP")?

A. Yes. Included in my appraisal report is a document entitled "Compliance with Uniform Standard of Professional Appraisal Practice (USPAP) 2018-2019" which described our reports compliance with USPAP.

Q. DID YOU EMPLOY THE COST, MARKET AND INCOME APPROACHES IN PREPARING YOUR VALUATION?

A. Yes. We developed our appraisal utilizing the cost, income, and market approaches as required by USPAP and Section 1329 of the Code. These approaches are summarized below.

Cost Approach. The cost approach has as its basis the principle of substitution in that the maximum value of the property is the cost to construct a replacement property of similar capacity, quality, and condition. In this appraisal, we utilized the trend cost method to determine the cost new, evaluated the condition of the property using age-life depreciation, and evaluated external obsolescence based on the income and market approaches.

Income Approach. Under the income approach, the valuation basis is the value of an income producing property as defined by its economic returns. There are several income approach valuation methods, primarily the direct capitalization (of income from operation) and the discounted cash flow methods. In the direct capitalization method, the economic returns of the property, as defined by its operating income, are directly capitalized into value by dividing a single estimate of the near-term income with a capitalization rate. In the discounted cash flow, the result of future periods' operations are determined with each periods' cash flow being forecast and then discounted to appraisal date values using a discount rate. The two procedures are similar in nature in that they both estimate the value of the property based on capitalizing or discounting future economic returns of the property's operation. The capitalization of income approach attempts to incorporate all future periods' changes in revenues, operating expenses, and working capital into a single

operating income estimate while the discounted cash flow method allows the appraiser to forecast each future periods' operating results considering changes to customer growth, changing revenues and operating expenses in the analysis. Considering that Steelton's operations will be undergoing a change from municipal operation to an investor-owned, rate-regulated operation, the flexibility of the discounted cash flow to adjust the operating inputs and criteria make it superior to the capitalized income approach.

Market Approach. The market or comparable sales approach to value looks to market sales of comparable properties in order to arrive at value. In this appraisal, the market approach was addressed from a comparable sales approach (Pennsylvania wastewater systems) and market value to book value ratios based on investor-owned water utilities reported in Value Line Investment Survey.

Q. DID YOU RELY UPON A LICENSED ENGINEER'S ASSESSMENT OF THE TANGIBLE ASSETS OF STEELTON IN PERFORMING YOUR VALUATION?

A. Yes. PAWC and Steelton engaged HRG engineers as the licensed engineer to conduct an assessment of the tangible water system assets of Steelton. PAWC provided a copy of the Engineering Assessment development by HRG Engineers as required by Section 1329(a)(4). A copy of the Engineering Assessment is attached to the appraisal.

Q. DID THE LICENSED ENGINEER'S ASSESSMENT INCLUDE AN INVENTORY OF THE USED AND USEFUL UTILITY PLANT ASSETS TO BE TRANSFERRED COMPILED BY YEAR AND ACCOUNT?

A. Yes.

Q. DID THE LICENSED ENGINEER'S ASSESSMENT IDENTIFY SEPARATELY ANY UTILITY PLANT THAT IS BEING HELD FOR FUTURE USE?

A. Yes.

Q. DID THE LICENSED ENGINEER'S ASSESSMENT LIST ALL NON-DEPRECIABLE PROPERTY SUCH AS LAND AND RIGHTS-OF-WAY?

A. Yes.

Q. TO THE BEST OF YOUR KNOWLEDGE, WAS THE LICENSED ENGINEER'S INVENTORY DEVELOPED FROM AVAILABLE RECORDS, MAPS, WORK ORDERS, DEBT ISSUE CLOSING DOCUMENTS FUNDING CONSTRUCTION PROJECTS, AND OTHER SOURCES TO ENSURE AN ACCURATE LISTING OF UTILITY PLANT INVENTORY BY UTILITY ACCOUNT?

A. Yes.

Q. DO YOU HAVE ANY REASON TO DOUBT THE ACCURACY OF THE LICENSED ENGINEER'S INVENTORY OF THE ASSETS?

A. No.

Q. DID YOU INCORPORATE THE LICENSED ENGINEER'S ASSESSMENT INTO YOUR COST APPROACH IN DEVELOPING YOUR VALUATION?

A. Yes.

Q. DID YOU HAVE TO EXERCISE PROFESSIONAL DISCRETION IN DEVELOPING ANY ASPECT OF YOUR VALUATION?

A. Yes. In the Cost Approach the selection of costing factors such as the cost trends to be utilized in developing the cost new and the depreciation factors such as service lives and survival and retirement patterns were inputs to the depreciation portion of the cost approach; all of these inputs were based on my expertise in appraising similar utility property and an understanding of the significance of these inputs. In the Income Approach the analysis of historical financial information and how that analysis is used in forecasting future expectation of the property's return(s), along with the selection of cost of capital inputs in developing the present value of future returns which quantifies the income approach conclusion are significant inputs which this appraiser exercises appraisal discretion. In the Market Approach the selection of comparable sales required appraisal discretion. Finally, the consideration of each of the individual value indicators, cost, income, and market, in developing the final appraisal conclusion required appraisal discretion.

Q. WHAT, IF ANY, FACTORS DID YOU TAKE INTO CONSIDERATION WHEN HAVING TO MAKE DISCRETIONARY DECISIONS?

A. I considered the interrelation of the inputs and how those inputs relate to the value of water property plant and equipment, its operations and resultant value.

CONCLUSION

Q. WHAT IS YOUR CONCLUSION REGARDING THE FAIR MARKET VALUE OF STEELTON'S WATER SYSTEM ASSETS AND ITS OPERATION TO BE PURCHASED BY PAWC?

A. The fair market value of the Steelton System to be purchased by PAWC is $23,221,800, as of July 1, 2018. As described above, we utilized the cost, income, and market approaches to utility valuation for purposes of appraising the Steelton System. The results of those appraisal analyses and our conclusions as of July 1, 2018 are summarized in the following table:

Pennsylvania-American Water Company
Steelton Borough (Water) Authority
Water System
Investor-Owned Utility
As of July 1, 2018

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Depreciated Replacement Cost New	$	23,921,473		
Cost Approach Conclusion		23,921,473	50%	11,960,736
Income Approach		22,424,662		
Income Approach Conclusion		22,424,662	40%	8,969,865
Market Approach				
Market Approach Conclusion		22,911,987	10%	2,291,199
Appraisal Conclusion	$	23,221,800	100%	23,221,800
Conclusion (cost approach)	$	23,921,473		

The fair market value determination of the tangible assets was based primarily on the cost approach with the income and market approaches being supportive of the cost approach conclusion. The Steelton System's original cost was determined to be $19,739,906 and its reproduction cost new as of July 1, 2018 is $23,921,473. Because the Steelton System has aged and experienced depreciation, physical depreciation, and possibly function and external obsolescence, the condition of the property was determined using age life depreciation. The cost new less depreciation under this methodology resulted in our preliminary cost approach conclusion of $23,921,473. AUS Consultants utilized the income and market approaches to evaluate for external obsolescence. Under that analysis, the income approach of $22,424,662 and the market approach of $22,911,987 indicate that no external obsolescence exists in the Steelton System at the preliminary cost approach conclusion of $23,921,473. The cost approach therefore yields a fair market value of the Steelton System tangible assets as $23,921,473. Based on all the factors that AUS Consultants evaluated in accordance with valuation standards and statutory requirements, the cost approach is the most reliable and useful indicator of the value of Steelton's assets, property, plant, and equipment water system to be acquired by PAWC.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding.

APPENDIX A

Curriculum Vitae of
Jerome C. Weinert, P.E., CDP, ASA

Curriculum Vitae (CV) of Jerome C. Weinert, P.E., CDP, ASA

Mr. Weinert is currently Principal and Director of AUS Consultants, Depreciation and Valuation. He has forty-six (2018-1972) years experience in valuation and depreciation consulting and management. AUS, with offices across the country, has provided consulting services to the regulated utility industry nationally for over thirty nine years. A partial list of services provided includes: valuations depreciation studies, rate of return studies, cost of service studies, and rate design.

Prior to joining AUS in 1987, Mr. Weinert was employed by American Appraisal Associates, Inc. (American) for sixteen years in their Regulated Industries Group. He held various positions at American, the last being supervising appraiser. Among his other valuation responsibilities, he directed the firm's utility industry capital recovery studies and AUS Consultant's valuation of communication company assets and businesses.

Mr. Weinert graduated from the Milwaukee School of Engineering with a Bachelor of Science degree in Mechanical Engineering and received a Masters in Business Administration (MBA) from Marquette University. He is a registered professional engineer (1976) (by examination) in the state of Wisconsin as well as a senior member (1982) of the American Society of Appraisers in the public utility valuation field. This latter designation is obtained by written examination primarily in the areas of utility valuation, depreciation, and the economics of regulated firms. He is also a Certified Depreciation Professional (1997) (CDP) and founding member of the Society of Depreciation Professionals and the Society's 1995 President and sponsor of the Society's Certification and re-certification program; as such Mr. Weinert developed these programs and oversaw their initial introduction into the Society. He also worked in conjunction with Society members in the development of the Society's training programs which as of 2003 has become the only such formalized depreciation training program in the North America and is an instructor in several of its courses.

During his professional career related to valuations and depreciation matters Mr. Weinert has testified before various courts and public service commissions on these subjects. He has also assisted numerous utilities in preparing capital recovery plans which specifically address the issues of plant replacement. Mr. Weinert has also presented expert testimony on valuation matters. On matters related to eminent domain issues, Mr. Weinert has presented expert testimony in the Massachusetts Superior Court, the Court of Common Pleas, Fayette County, Ohio, the New Hampshire Public Utilities Commission, the Twentieth Judicial Court (deposition only) in Charlotte County, Florida, the Nineteenth Judicial Circuit Court in St. Lucie County, Florida (deposition only). In regards to ad valorem taxation, Mr. Weinert has presented study results to the New York State Board of Equalization and Assessment (now the New York Office of Real Property Services (NY ORPS)), pertaining to useful life and net salvage values for all types of utility property subject to the Board's mass appraisal model. Mr. Weinert has appeared before the Valuation Adjustment Board in Florida for Duval, Hillsborough, Okeechobee, and Palm Beach counties, the Twelfth Judicial Circuit Sarasota County, Florida, the California Board of Equalization and Assessment, the Arizona Board of Assessment, the Missouri Board of Taxation, the Colorado and Texas Departments of Review, the Massachusetts Tax Appeal Court, the Superior Court of the State of Arizona in the County of Maricopa, the State Tax Appeal Board of the State of Montana and the New York City Tax Commission.

Mr. Weinert has appeared before regulatory bodies in Alaska, Arkansas, Illinois, Indiana, Iowa, Missouri, Nevada, Nebraska, North Carolina, Ohio, Oregon, Pennsylvania, and South Carolina in support of rate-base valuation determination and capital recovery. He has presented testimony on depreciation matters before the Canadian Radio-Television and Telecommunications Commission (CRTC) and the United States Federal Energy Regulatory Commission (FERC). In terms of water and wastewater acquisitions and applications for regulatory approval of rate base Mr. Weinert has testified for two investor-owned

acquisitions of municipal wastewater authorities one representing the municipality and secondly for the acquiring investor-owned utility. He has submitted study results to the State Commissions of Alabama, Alaska, Arkansas, Idaho, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Carolina, Oregon, Pennsylvania, South Carolina, Washington, and Wisconsin, and the Federal Communications Commission.

Mr. Weinert has presented papers on valuation and depreciation topics to professional and utility industry trade organizations. He also directed AUS Consultants' semi-annual week-long depreciation training programs (1988-1997). These specialized training courses, offered at basic and advanced levels, teach depreciation study techniques to public utility and public service commission staff specialists. The training includes depreciation theory and concepts and hands-on experience with personal computer-based analytical depreciation programs.

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
2018				
AT&T Communications	North America	2017	2018	Ad Valorem Tax Appraisal
AT&T Communications	California	2017	2018	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2017	2018	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2017	2018	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2017	2018	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2017	2018	Ad Valorem Tax Appraisal
Level 3 Communications, LLC	North America	2017	2018	Ad Valorem Tax Appraisal
Level 3 Communications, LLC	California	2017	2018	Ad Valorem Tax Appraisal
CenturyLink Communications, LLC	North America	2017	2018	Ad Valorem Tax Appraisal
CenturyLink Communications, LLC	California	2017	2018	Ad Valorem Tax Appraisal
East Bradford Township, PA	East Bradford Wastewater	2018	2018	Fair Market Value 1329
Pennsylvania American Water Company	Sadsbury Wastewater	2017	2018	Fair Market Value Appraisal
Pennsylvania American Water Company	Kane Wastewater	2017	2018	Fair Market Value Appraisal
2017				
AT&T Communications	North America	2016	2017	Ad Valorem Tax Appraisal
AT&T Communications	California	2016	2017	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2016	2017	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2016	2017	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2016	2017	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2016	2017	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2016	2017	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2016	2017	Ad Valorem Tax Appraisal
Level 3 Communications	California	2016	2017	Ad Valorem Tax Appraisal
Whitpain Township, PA	Whitpain Wastewater	2016	2017	Appraisal for Planning
Plymouth Township, PA	Plymouth Wastewater	2016	2017	Appraisal for Planning
East NorittonTownship, PA	East Norittlan Wastewater	2016	2017	Appraisal for Planning
Pennsylvania American Water Company	Sadsbury Wastewater	2016	2017	Fair Market Value Appraisal
Pennsylvania American Water Company	McKeesport Wastewater	2016	2017	Fair Market Value Appraisal
2016				
AT&T Communications	North America	2015	2016	Ad Valorem Tax Appraisal
AT&T Communications	California	2015	2016	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2015	2016	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2015	2016	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2015	2016	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2015	2016	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2015	2016	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2015	2016	Ad Valorem Tax Appraisal
Level 3 Communications	California	2015	2016	Ad Valorem Tax Appraisal
New Garden Township, PA	New Garden Wastewater	2016	2016	Fair Market Value Appraisal
2015				
AT&T Communications	North America	2014	2015	Ad Valorem Tax Appraisal
AT&T Communications	California	2014	2015	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2014	2015	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2014	2015	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2014	2015	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Verizon Communications	Florida	2014	2015	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2014	2015	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2014	2015	Ad Valorem Tax Appraisal
Level 3 Communications	California	2014	2015	Ad Valorem Tax Appraisal
Verizon Wireless	Nationwide	2014	2015	Ad Valorem Tax Appraisal
2014				
AT&T Communications	North America	2013	2014	Ad Valorem Tax Appraisal
AT&T Communications	California	2013	2014	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2013	2014	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2013	2014	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2013	2014	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2013	2014	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2013	2014	Ad Valorem Tax Appraisal
Level 3 Communications	North America,	2013	2014	Ad Valorem Tax Appraisal
Level 3 Communications	California	2013	2014	Ad Valorem Tax Appraisal
Cascade Natural Gas Corporation	Oregon & Washington	2013	2014	Depreciation Study
Intermountain Gas Company	Idaho	2013	2014	Depreciation Study
Virgin Islands Telephone Corporation	US Virgin Islands	2013	2014	Depreciation Study
Verizon Wireless	Nationwide	2013	2014	Ad Valorem Tax Appraisal
2013				
AT&T Communications	North America	2012	2013	Ad Valorem Tax Appraisal
AT&T Communications	California	2012	2013	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2012	2013	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2012	2013	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2012	2013	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2012	2013	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2012	2013	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2012	2013	Ad Valorem Tax Appraisal
Sprint Nextel Corporation	North America	2012	2013	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2012	2013	Ad Valorem Tax Appraisal
Verizon Communications	New England Mass	2002-2007	2013	Ad Valorem Tax Appraisal
2012				
AT&T Communications	North America	2011	2012	Ad Valorem Tax Appraisal
AT&T Communications	California	2011	2012	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2011	2012	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2011	2012	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2011	2012	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2011	2012	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2011	2012	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2011	2012	Ad Valorem Tax Appraisal
Sprint Nextel Corporation	North America	2011	2012	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Verizon Wireless	Palm Beach, Florida	2011	2012	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2011	2012	Ad Valorem Tax Appraisal
Verizon Communications	Florida - revised	2008	2012	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2012	2012	Ad Valorem Tax Appraisal
2011				
AT&T Communications	North America	2010	2011	Ad Valorem Tax Appraisal
AT&T Communications	California	2010	2011	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2010	2011	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2010	2011	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2010	2011	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2010	2011	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2010	2011	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2010	2011	Ad Valorem Tax Appraisal
Global Crossing	North America	2010	2011	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2010	2011	Depreciation Study
Sprint Nextel Corporation	North America	2010	2011	Ad Valorem Tax Appraisal
Verizon Wireless	Palm Beach, Florida	2010	2011	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2010	2011	Ad Valorem Tax Appraisal
Verizon Communications	Florida - revised	2008	2011	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2010	2011	Depreciation Study
Virgin Islands Telephone Corporation	US Virgin Islands	2010	2011	Technical Update of Depreciation Study
2010				
AT&T Communications	North America	2009	2010	Ad Valorem Tax Appraisal
AT&T Communications	California	2009	2010	Ad Valorem Tax Appraisal
AT&T Communications	Florida	2009	2010	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2009	2010	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2009	2010	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2009	2010	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2009	2010	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2009	2010	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2009	2010	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2009	2010	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California	2009	2010	Ad Valorem Tax Appraisal
Global Crossing	North America	2009	2010	Ad Valorem Tax Appraisal
MetroPCS	Palm Beach, Florida	2009	2010	Ad Valorem Tax Appraisal
2009				
AT&T Communications	North America	2008	2009	Ad Valorem Tax Appraisal
AT&T Communications	California	2008	2009	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
AT&T Communications	Florida	2008	2009	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2008	2009	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2008	2009	Ad Valorem Tax Appraisal
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2008	2009	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2008	2009	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2008	2009	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas	2008	2009	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2008	2009	Ad Valorem Tax Appraisal
Embarq Northwest	Washington	2008	2009	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2008	2009	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2008	2009	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2008	2009	Ad Valorem Tax Appraisal
Verizon Communications	New England - Mass	2008	2009	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2008	2009	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California, Michigan & Arizona	2008	2009	Ad Valorem Tax Appraisal
Global Crossing	North America	2008	2009	Ad Valorem Tax Appraisal
AboveNet, Inc	North America/California	2003	2009	Ad Valorem Tax Appraisal
Verizon Wireless	Ohio Properties	2004-2005	2009	Ad Valorem Tax Appraisal
Virgin Islands Telephone Corporation	US Virgin Islands	2008	2009	Depreciation Study
Sprint Nextel Corporation	North America	2008	2009	Ad Valorem Tax Appraisal
2008				
AT&T Communications	North America	2007	2008	Ad Valorem Tax Appraisal
AT&T Communications	California	2007	2008	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2007	2008	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2007	2008	Ad Valorem Tax Appraisal
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2007	2008	Ad Valorem Tax Appraisal
AT&T - Southwestern Bell Telephone Company	Arkansas, Kansas, Missouri, Oklahoma, Texas	2007	2008	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2007	2008	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas	2007	2008	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2007	2008	Ad Valorem Tax Appraisal
Embarq Northwest	Washington	2007	2008	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	California	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2007	2008	Ad Valorem Tax Appraisal
Verizon Communications	New England Mass	2002-2007	2008	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2007	2008	Ad Valorem Tax Appraisal
Level 3 Communications	North America, California, Michigan & Arizona	2007	2008	Ad Valorem Tax Appraisal
Global Crossing	North America	2007	2007	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2007	2008	Depreciation Study
2007				
AT&T Communications	North America	2006	2007	Ad Valorem Tax Appraisal
AT&T Communications	California	2006	2007	Ad Valorem Tax Appraisal
AT&T - Indiana Bell Telephone Company	Indiana	2006	2007	Ad Valorem Tax Appraisal
AT&T - Michigan Bell Telephone Company	Michigan	2006	2007	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
AT&T - Wisconsin Bell Telephone Company	Wisconsin	2006	2007	Ad Valorem Tax Appraisal
Embarq Florida, Inc.	Florida	2006	2007	Ad Valorem Tax Appraisal
Embarq Texas, Inc.	Texas,	2006	2007	Ad Valorem Tax Appraisal
Embarq Missouri, Inc.	Missouri	2006	2007	Ad Valorem Tax Appraisal
Embarq North Carolina	North Carolina	2006	2007	Ad Valorem Tax Appraisal
Embarq Virginia	Virginia	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	California	2006	2007	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2006	2007	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	North America	2006	2007	Ad Valorem Tax Appraisal
Qwest Communications Corporation	North America	2006	2007	Ad Valorem Tax Appraisal
	California			
Level 3 Communications	North America,	2006	2007	Ad Valorem Tax Appraisal
	California, Michigan, & Arizona			
Level 3 Communications	Arizona	2002 - 2006	2007	Ad Valorem Tax Appraisal
Global Crossing	North America	2006	2007	Ad Valorem Tax Appraisal
Alaska Communications System, Inc.	ACS of Alaska	2006	2007	Depreciation Studies
(ACS)	ACS of Anchorage			
	ACS of Fairbanks			
	ACS of the Northland			
	ACS Holdings			
Intermountain Gas Company	Idaho	2006	2007	Depreciation Study
2006				
AT&T Communications	Palm Beach Florida	2000 - 2003	2006	Ad Valorem Tax Appraisal
AT&T Communications	North America	2005	2006	Ad Valorem Tax Appraisal
AT&T Communications	California	2005	2006	Ad Valorem Tax Appraisal
Sprint Florida, Inc.	Florida	2005	2006	Ad Valorem Tax Appraisal
Sprint Texas, Inc.	Texas,	2005	2006	Ad Valorem Tax Appraisal
Sprint Missouri, Inc.	Missouri	2005	2006	Ad Valorem Tax Appraisal
Sprint North Carolina	North Carolina	2005	2006	Ad Valorem Tax Appraisal
Sprint Virginia	Virginia	2005	2006	Ad Valorem Tax Appraisal
Embarq Nevada	Nevada	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	California	2005	2006	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2005	2006	Ad Valorem Tax Appraisal
Verizon Business (formerly MCI)	Massachusetts	2002-2--5	2006	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2005	2006	Ad Valorem Tax Appraisal
Level 3 Communications	Arizona	2002-2006	2006	Ad Valorem Tax Appraisal
Global Crossing	North America	2005	2006	Ad Valorem Tax Appraisal
Indianapolis Power & Light	IPL	2005	2006	Depreciation Study
2005				
AT&T Communications	North America	2004	2005	Ad Valorem Tax Appraisal
AT&T Communications	California	2004	2005	Ad Valorem Tax Appraisal
Sprint Florida, Inc.	Florida, .	2004	2005	Ad Valorem Tax Appraisal
Sprint PCS	North America	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	Florida	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	California	2004	2005	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2004	2005	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2004	2005	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Level 3 Communications	North America	2004	2005	Ad Valorem Tax Appraisal
Global Crossing	North America	2004	2005	Ad Valorem Tax Appraisal
Global Crossing	New York Special Franchise Property	2003 & 2004	2005	Ad Valorem Tax Appraisal
Indianapolis Power & Light	IPL	2004	2005	Depreciation Study
2004				
Sprint Florida, Inc.	Florida	2003	2004	Ad Valorem Tax Appraisal
Verizon Communications	California	2003	2004	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2003	2004	Ad Valorem Tax Appraisal
Verizon Communications	New England	2003	2004	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2003	2004	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2003	2004	Ad Valorem Tax Appraisal
Global Crossing	North America	2003	2004	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2003	2004	Ad Valorem Tax Appraisal
AT&T Communications	North America	2003	2004	Ad Valorem Tax Appraisal
AT&T Communications	California	2003	2004	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2003	2004	Depreciation Study
2003				
Sprint Florida, Inc.	Florida	2002	2003	Ad Valorem Tax Appraisal
Verizon Communications	California	2002	2003	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2002	2003	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2002	2003	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2002	2003	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2002	2003	Ad Valorem Tax Appraisal
AT&T Communications	North America	2002	2003	Ad Valorem Tax Appraisal
AT&T Communications	California	2002	2003	Ad Valorem Tax Appraisal
Global Crossing	North America	2002	2003	Ad Valorem Tax Appraisal
Verizon Wireless	Broward County, FL	1998 through 2002	2003	Ad Valorem Tax Appraisal
2002				
Sprint Florida, Inc.	Florida	2001	2002	Ad Valorem Tax Appraisal
Verizon Communications	California	2001	2002	Ad Valorem Tax Appraisal
Verizon Communications	Northwest	2001	2002	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2001	2002	Ad Valorem Tax Appraisal
Level 3 Communications	North America	2001	2002	Ad Valorem Tax Appraisal
Global Crossing	North America	2001	2002	Ad Valorem Tax Appraisal
AT&T Wireless	Plymouth, MI	2001	2002	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2001	2002	Ad Valorem Tax Appraisal
AT&T Communications	North America	2001	2002	Ad Valorem Tax Appraisal
Intermountain Gas Company	Idaho	2001	2002	Depreciation Study
AT&T Communications	California	2001	2002	Ad Valorem Tax Appraisal
2001				
Verizon	Verizon - New York	2001	2001-2	Functional Obsolescence & Useful Life studies for valuation
Sprint Florida, Inc.	Sprint Florida, Inc.	2000	2001	Ad Valorem Tax Appraisal
Verizon Communications	California	2000	2001	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	2000	2001	Ad Valorem Tax Appraisal

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Global Crossing	North America	2000	2001	Ad Valorem Tax Appraisal
Sprint PCS	Cost Indexes	2000	2001	Ad Valorem Tax Appraisal
Sprint Corporation	Centel - Nevada	2000	2001-2	Depreciation Study
Alaska Communications System, Inc. (ACS)	ACS of Alaska ACS of Anchorage ACS of Fairbanks ACS of the Northland ACS Holdings	2000	2001	Depreciation Study
2000				
Sprint PCS	BTS Equipment	2000	2000	Economic Life Study
Telus Communications	Telus - Alberta & British Columbia	2000	2000	Depreciation study Phase III Price Caps
Sprint Florida, Inc.	Florida	1999	2000	Ad Valorem Tax Appraisal
Verizon Communications	California	1999	2000	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1999	2000	Ad Valorem Tax Appraisal
1999				
Sprint Corporation	Centel - Nevada	1998	1999	Depreciation Study
Intermountain Gas Company	Intermountain Gas Company	1998	1999	Depreciation Study
Sprint Florida, Inc.	Florida	1998	1999	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1998	1999	Ad Valorem Tax Appraisal
1998				
Frontier Corporation	Frontier Telephone of Rochester	1998	1997	Valuation depreciation Lives and Net Salvage Parameters
Pacific Telecom, Inc.	Telephone Utilities of Washington	1997	1998	Depreciation Study
Sprint Florida, Inc.	Florida	1997	1998	Ad Valorem Tax Appraisal
Verizon Communications	Florida	1997	1998	Ad Valorem Tax Appraisal
Sprint Communications, LP	North America	1997	1998	Ad Valorem Tax Appraisal
Sprint Corporation	United Telephone Company of South Carolina	1998	1998	Depreciation Expense Universal Service Fund
Sprint Corporation	Carolina Telephone and Telegraph and Central Telephone of North Carolina	1998	1998	Depreciation Expense Universal Service Fund
Telus Communications	Telus - Edmonton (TCE)	1997	1998	Depreciation Study Phase II Price Caps
1997				
Sprint Corporation	Centel - Nevada	1997	1997	Unbundling/ Inter-connection Depreciation Study
Pacific Telecom, Inc.	Telephone Utilities of Oregon	1996	1997	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Pacific Telecom, Inc.	Telephone Utilities of Alaska And the Northland	1996	1997	Depreciation Study
Telus Communications	Telus - TCI formerly AGT	1996	1997	Depreciation Study Phase II Price Caps
Indianapolis Power & Light	IPL	1996	1997	Depreciation Study
Sprint Florida, Inc.	Florida	1996	1997	Ad Valorem Tax Appraisal
Verizon Communications	Florida	1996	1997	Ad Valorem Tax Appraisal
Pacific Telecom, Inc.	Eagle Telephone (Colorado)	1996	1997	Depreciation Study
1996				
Intermountain Gas Company	Intermountain Gas Company	1995	1996	Depreciation Study
Sprint Florida, Inc.	Florida	1995	1996	Ad Valorem Tax Appraisal
Century Telephone	Century Telephone of Ohio, Inc.	1995	1996	Depreciation Study
Telus Communications	AGT Limited (Alberta Government Telephones)	1995	1996	Depreciation Study
Johnson County Kansas Office of the Assessor	Useful Life of Computer Equipment	1995	1995	Useful/Market Life Analysis
Milwaukee Metropolitan Sewerage District	Milwaukee Metropolitan Sewerage District	1995	1996	Depreciation Study
Sprint Corporation	Long Distance Division	1995	1995	Depreciation/Recovery Status Study
Sprint Corporation	Cellular Division	1995	1995	Depreciation/Recovery Status Study
Pacific Telecom, Inc.	Alascom, Inc.	1994	1995	Depreciation Study
Pacific Telecom, Inc.	Telephone Utilities of the Northland	1993	1994	Depreciation Study
	Telephone Utilities of Alaska	1993	1994	Depreciation Study
Indiana Energy	Indiana Gas Company	1993	1994	Depreciation Study
Columbia Gas Transmission	Gas Pipeline Property in Sullivan County, NY	1993	1993	Useful Life Study
United Telephone - Midwest Group	United Telephone Company of Missouri	1993	1993	Modernization/ Depreciation Study
Intermountain Gas Co.	Intermountain Gas Co.	1992	1993	Depreciation Study
Pacific Telecom, Inc.	Alascom, Inc.	1992	1993	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
	Telephone Utilities of Oregon, Inc.	1991	1992	Depreciation Study
	Telephone Utilities of Washington, Inc.	1991	1992	Depreciation Study
Small Telephone Company Coalition	Oregon Small Telephone Companies	1991	1992	Depreciation Support
United Telephone Systems	United Telephone Co. of Pennsylvania	1991	1992	Instructional Depreciation Study
New York State Division of Equalization and Assessment	Electric, Gas, Water, Telephone, Pipeline, Steam, CATV	1991	1992	Useful Lives and Net Salvage Values
Rochester Telephone Company	Enterprise Telephone	1991	1992	Study Review
Indiana Energy	Indiana Gas/Richmond Gas/ Terre Haute Gas	1990	1991	Depreciation Study
American Electric Power	Indiana/Michigan Power Co.	1990	1991	Depreciation Study
Rochester Telephone Company	Rochester Telephone Co.	1990	1991	Study Review
United Telephone Systems	United Telephone Co. of Florida	1990	1991	Instructional Depreciation Study
United Telephone Systems	United Telephone Co. of Oregon	1989	1990	Study Review
Telephone and Data Systems, Inc.	Quincy Telephone Company	1990	1991	Depreciation Study
Telephone and Data Systems, Inc.	Wolverine Telephone Company	1989	1990	Depreciation Study
Indiana Energy	Indiana Gas Company, Inc.	1989	1990	Depreciation Study
Intermountain Gas Co.	Intermountain Gas Co.	1989	1990	Remaining Life/Net Salvage Support
North-West Telephone Company	North-West Telephone Company	1989	1990	Study Review
United Telephone System	United of Texas	1989	1990	Instructional Depreciation Study
	United of Missouri	1989	1990	Instructional Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
Milwaukee Water	Milwaukee Water	1989	1990	Depreciation Study
Indiana Natural Gas Corp.	Indiana Natural Gas Corp.	1989	1990	Depreciation Study
Pacific Telecom	Telephone Utilities of the Northland	1989	1990	Depreciation Study
	Telephone Utilities of Alaska	1989	1990	Depreciation Study
	Alascom	1989	1990	Depreciation Study
	Telephone Utilities of Washington, Inc.	1988	1989	Depreciation Study
WICOR	Wisconsin Gas Company	1988	1989	Depreciation Study
ALLTEL	ALLTEL - Kentucky, Inc.	1987	1989	Depreciation Study
	ALLTEL - Ohio, Inc.	1988	1989	Depreciation Study
	Western Reserve Telephone Company	1988	1989	Depreciation Study
Milwaukee Metropolitan Sewer District	Milwaukee Metropolitan Sewer District	1988	1989	Depreciation Study
United Telephone	United of Ohio	1988	1989	ELG Support
Telephone Company	Telephone Company	1988	1989	ELG Support
United Telecom	U.S. Sprint	1988	1988	Useful Life Study
Pacific Telecom	Telephone Utilities of Oregon	1987	1988	Depreciation Study
	Telephone Utilities of Eastern Oregon	1987	1988	Depreciation Study
	Rose Valley Telephone Company	1987	1988	Depreciation Study
United Telephone	United of Minnesota	1987	1988	Capital Planning Support
Wisconsin Southern Gas	Wisconsin Southern Gas	1987	1988	Depreciation Study
Pacific Telecom	Glacier State Telephone Company	1986	1987	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
	Sitka Telephone Co.	1986	1987	Depreciation Study
	Juneau-Douglas Tel Company	1986	1987	Depreciation Study
Pacific Telecom	Telephone Utilities of Alaska	1986	1987	Depreciation Study
	Alascom	1986	1987	Depreciation Study
Lincoln Telecommunications	Lincoln Telephone and Telegraph Company	1986	1987	Digital Switching Service Life
Northwest Natural Gas Corporation	Northwest Natural Gas Corporation	1985	1986	Depreciation Study
ALLTEL	Western Reserve Telephone Company	1984	1985	Depreciation Study
	ALLTEL - Ohio	1984	1985	Depreciation Study
	ALLTEL - Alabama	1984	1985	Depreciation Study
Gulf Telephone Co.	Gulf Telephone Company	1984	1985	Depreciation Study
United Telephone Systems, Inc.	United of Iowa	1984	1985	Depreciation Study
	United of Arkansas	1984	1985	Depreciation Study
Pacific Telecom	Telephone Utilities of Washington	1983	1984	Depreciation Study
	Telephone Utilties of Eastern Oregon	1983	1984	Depreciation Study
Pacific Telecom	Telephone Utilities of Oregon	1983	1984	Depreciation Study
	Northwestern Telephone Systems, Inc., Oregon	1983	1984	Depreciation Study
	Rose Valley Telephone Company	1983	1984	Depreciation Study
United Telecommunications	All United Telephone Companies	1983	1984	Capital Recovery Strategy
Lincoln Telecommunications	Lincoln Telephone & Telegraph Company	1983	1984	Depreciation Study
ALLTEL	ALLTEL - Mississippi	1982	1983	Depreciation Study
	ALLTEL - Michigan	1982	1983	Depreciation Study

Appraisal & Capital Recovery Activities Client List

Company	Property	Study Year	Year Performed	Activity
North Carolina Natural Gas Corp.	North Carolina Natural Gas Corporation	1982	1983	Depreciation Study
Mid Continent Telephone (Currently ALLTEL)	Western Reserve Telephone	1982	1983	Depreciation Study
	Mid Ohio Telephone	1982	1982	Depreciation Study
	Florence Telephone Company	1980	1981	Depreciation Study
	Leeds Telephone Co.	1980	1981	Depreciation Study
	Elmore Coosa Tel Company	1980	1981	Depreciation Study
	Brookville Telephone Company	1980	1981	Depreciation Study
	Mid Pennsylvania Telegraph	1980	1981	Depreciation Study
Telephone Utilities (Currently Pacific Telecom)	Telephone Utilities of Oregon	1979	1980	Depreciation Study
	Telephone Utilities of Eastern Oregon	1979	1980	Depreciation Study
	Northwestern Telephone Systems, Inc.-Oregon	1979	1980	Depreciation Study
	Rose Valley Telephone Company	1979	1980	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1979	1980	Depreciation Study
Telephone Utilities	Telephone Utilities of Washington	1978	1979	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1978	1979	Depreciation Study
Rochester Telephone	Rochester Telephone (Indiana)	1977	1978	Depreciation Study
United Telephone Systems, Inc.	United of Ohio	1977	1978	Depreciation Study
Princeton Telephone	Princeton Telephone (Indiana)	1976	1977	Depreciation Study
Northwestern Telephone	Northwestern Telephone (Illinois)	1975	1976	Depreciation Study

Papers and Seminars

2011 Training Instructor Depreciation Basics Sessions A & B and Life and Salvage Analysis
Society of Depreciation Professionals 25th Annual Meeting
Atlanta, GA September, 20-22, 2011

2010 Will the Real Cost Approach Please Stand Up?
National Association of Property Tax Representatives Transportation, Energy, & Communications (NAPTR-TEC)
Scottsdale, Arizona October 25-27, 2010

Issues Affecting Assessment of Regulated Industries
Institute for Professionals in Taxation (IPT) Property Tax Symposium
Austin, Texas October 31 – November 3, 2010

2009 (Valuing) Intangibles
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 28, 2009

Fair Value Accounting (Appraisal Panelist)
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 29, 2009

2008 Valuation Issues Valuation of Assets and the Impact of Depreciation
Society of Depreciation Professionals Annual Meeting
Greenville, SC September 21-26, 2008

Obsolescence in the Long-Distance and Local Transport Networks
Technology Futures Inc. Asset Valuation Conference
Austin Texas February 8, 2008

2007 Communications Industry Issues
National Association of Property Tax Representative – Transportation, Energy, & Communications
New Orleans, LA October 30, 2007

2006 Appraisal Procedures & Issues in a Changing communications Industry
Florida Chapter International Association of Assessing Officers' Tangible Personal Property Conference
Ocala, Florida January 12, 2006

Valuation of Intangibles
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas July 25, 2006

SDP 20 years of History and Beyond
Society of Depreciation Professionals 20th Annual Meeting
Long Beach, CA September, 18, 2006

2005 Valuation in a World with Asset Impairments
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas August 1, 2005

Papers and Seminars

2004 Depreciation in the Valuation of Assets
Society of Depreciation Professionals' Eighteenth Annual Meeting
Washington, D.C., September 13, 2004

2003 Cost Approach and the Use of Appraisal Guidelines
Institute for Professionals in Taxation – Property Tax Symposium
Fort Lauderdale, FL, September 17, 2003

Cost Approach – Obsolescence and Depreciation
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, July 28, 2003

2000 Appraisal Issues Associated with Technological Change in the Wireline Telecommunications Industry
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, July 31, 2000

The Impact of Advancing Technology and the Changing Regulatory Environment on Obsolescence Calculations for Ad Valorem Valuation Purposes
Journal of Property Tax Management, Spring 2000

1996 How to Develop a Reproduction/Replacement Cost New Less Depreciation Approach to Value
Appraisal for Ad Valorem Taxation, Wichita State University
Wichita, Kansas, August 4, 1996

1995 Valuation Method, Techniques and Strategies (How to Quantify Stranded Investment) (Market, Income, & Cost Approach
AGA Depreciation Committee Meeting
Denver, Colorado, August 6-9, 1995, jointly presented with Earl Robinson of AUS Consultants

1994 Integrating Future Expectations for the Telephone Industry into Historical Depreciation Analysis
United States Telephone Association (USTA's 1994 Capital Recovery Seminar)
Scottsdale, Arizona, September 12-13, 1994

1994 Capital Recovery: United States versus Canada
Canadian Telephone Industry's Annual Capital Recovery Seminar
Edmonton, Alberta, Canada June 14-15, 1994

1990 Capital Recovery: Methods, Terminology, Procedures, and Record Keeping
United States Telephone Association (USTA)'s
1990 Non-FCC Subject and Small Company Capital Recovery Seminar
Minneapolis, Minnesota April 10_11, 1990

Integration of Technology Forecasting Into Historical Life Studies
29th Iowa State Regulatory Conference
Ames, Iowa May 15_17, 1990

The 1990's and the Second Wave of Major Plant Retirements in the Communications Industry
NARUC's Seventh Biennial Information Conference
Columbus, Ohio September 12_14, 1990

Papers and Seminars

How Do We Incorporate Change Into the Study Filing Procedures?
USTA's 1990 Capital Recovery Seminar
Chicago, Illinois October 16_17, 1990

1989 Plant Modernization: Capital Planning and Capital Recovery
Midwest Utilities Conference
Chicago, Illinois September 11_14, 1989

Price Indexes Today: Procedures, Uses, and Misuses
Society of Depreciation Professionals' Third Annual Meeting
New Orleans, Louisiana December 6_7, 1989

1988 Plant Modernization: Capital Planning and Capital Recovery
National Association of Regulatory Utility Commissioners (NARUC)'s
Sixth Biennial Regulatory Information Conference
Columbus, Ohio September 14_16, 1988

Papers and Seminars

1997	Sprint Corporation - West Finance Center Overland Park, Kansas, August 1997
1997	Rochester Telephone Corporation Rochester, New York, April 1997
1996	Sprint-Florida-Vista United Telecommunications Altamonte Springs, Florida August 27-29, 1996
1994	Saskatchewan Telecommunications Regina, Saskatchewan, Canada, June 1994
1994	AUS Consultants/Leroy J. Murphy and Associates 1994 Capital Recovery Seminar May 1994
1993	Manitoba Telephone System, Winnipeg, Manitoba, December 1993
1993	Society of Depreciation Professionals Annual Meeting Charleston, South Carolina September 30, 1993
1993	SPRINT - Local Telephone Division Atlanta, Georgia August 11-12, 1993
1993	AUS Consultants/Leroy J. Murphy and Associates 1993 Capital Recovery Seminar Chicago, Illinois May 11 - 13, 1993
1993	Canadian Telephone Capital Recovery Seminar Halifax, Nova Scotia April 20 - 22, 1993
1993	United Telephone, Midwest Group Overland Park, Kansas January 20, 1993
1992	BellSouth Corporation Birmingham, Alabama November 23, 1992
1992	Sprint - Local Telephone Division Kansas City, Kansas November 18 - 20, 1992
1992	Society of Depreciation Professionals Annual Meeting San Antonio, Texas September 9 - 10, 1992
1992	AUS Consultants/Leroy J. Murphy and Associates 1992 Capital Recovery Seminar Chicago, Illinois October 6 - 8, 1992
1991	Society of Depreciation Professionals Annual Meeting Nashville, Tennessee November 20-22, 1991
1991	ALLTEL Corporation Microcomputer Depreciation Studies System Training Hudson, Ohio October 14-16, 1991

Capital Recovery Training

2016	Society of Depreciation Professionals Annual Training Charleston, South Carolina, September 2016
2015	Society of Depreciation Professionals Annual Training Austin, Texas September 2015
2014	Society of Depreciation Professionals Annual Training New Orleans, LA September 2014
2013	Society of Depreciation Professionals Annual Training Salt Lake City, UT September 2013
2012	Society of Depreciation Professionals Annual Training Minneapolis, Minnesota, September 2012
1991	United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training Kansas City, Kansas September 23-25, 1991
1991	AUS Consultants/Leroy J. Murphy and Associates 1991 Capital Recovery Seminar Lake Geneva, Wisconsin September 17_19, 1991
1991	Rochester Telephone Corporation, Capital Recovery/Microcomputer Depreciation Studies System Training, Rochester, New York September 3-7, 1991
1991	Ameritech Services, Microcomputer Depreciation Studies System Training Chicago, Illinois May 16-17, 1991
1991	AUS Consultants/Leroy J. Murphy and Associates 1991 Capital Recovery Seminar Washington, D.C. April 9_11, 1991
1990	United Telecommunications, Inc., Capital Recovery Seminar Overland Park, Kansas December 1990
1990	AUS Consultants/Leroy J. Murphy and Associates 1990 Capital Recovery Seminar Chicago, Illinois September 24_27, 1990
1990	AUS Consultants/Leroy J. Murphy and Associates 1990 Capital Recovery Seminar Chicago, Illinois January 29-February 1, 1990
1990	United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training, Chicago, Illinois July 1990
1989	United Telecommunications, Inc., Capital Recovery/Microcomputer Depreciation Studies System Training, Chicago, Illinois July 1989

Capital Recovery Training

1989	AUS Consultants/Leroy J. Murphy and Associates 1989 Capital Recovery Seminar Chicago, Illinois March 6_9, 1989
1988	AUS Consultants/Leroy J. Murphy and Associates 1988 Capital Recovery Seminar Chicago, Illinois July 25_28, 1988
1988	United Telecommunications, Inc., Microcomputer Depreciation Studies System Training Kansas City, Kansas January 1988

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	:	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	:	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	:	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	:	Docket No. U-2019-_____

DIRECT TESTIMONY
AND EXHIBITS

OF

DOUGLAS E. BROWN

ON BEHALF OF THE STEELTON BOROUGH AUTHORITY

Dated: January 2, 2019

Steelton Statement No. 1

DIRECT TESTIMONY OF DOUGLAS E. BROWN
ON BEHALF OF THE STEELTON BOROUGH AUTHORITY

Q. PLEASE STATE YOUR FULL NAME AND BUSINESS ADDRESS.

A. My name is Douglas E. Brown and my business address is 123 North Front St., Steelton, Pennsylvania, 17113.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by the Borough of Steelton, Pennsylvania ("Borough") as the Borough Manager. I initially served as Borough Manager from 2010-2012 and later returned to the position in 2015, where I have remained through the present. Additionally, I am the Secretary for the Steelton Borough Authority ("Authority"), having been appointed to that position in 2010-2012 and again in 2015. In my capacity as Borough Manager, I serve as the chief operating officer of the Borough, responsible for preparing and managing the budget, hiring and supervising Borough employees, maintenance of records, preparation of financial and administrative reports, and various additional duties required for management of the Borough's business. Notably, my duties in managing Borough employees include supervising the Borough employees that are assigned to work on the water system owned by the Authority". In my capacity as Secretary for the Authority, I am responsible for taking the minutes for the Authority's public meetings, certifying ordinances and Authority Resolutions, attending Authority Board meetings, and serving as the custodian of the Authority's records.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EMPLOYMENT EXPERIENCE.

A. I obtained a Bachelor of Arts in Government and Political Affairs from Millersville University in 2005. Prior to accepting my current positions as Borough Manager and Authority Secretary, I worked for the Pennsylvania State House of Representatives as a Legislative Director to Tom Houghton, State Representative for the 13th District. Additionally, I worked for the Association of Pennsylvania State College and University Faculties ("APSCUF"), initially as a Public Policy Specialist and subsequently as the Associate Director of Governmental Affairs.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION?

A. No.

Q. IN SUPPORT OF WHOM ARE YOU TESTIFYING IN THIS PROCEEDING?

A. My testimony is in support of the Authority in this proceeding. As more-fully explained below, Commission approval of the Application will provide numerous benefits for the Authority, the Borough and customers and residents, respectively.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY AND SUMMARIZE THE MAIN POINTS.

A. The purpose of my testimony is to explain why the Authority supports Commission approval of the sale of the Authority water system to PAWC (the "Transaction"). Specifically, I will discuss the key benefits of the Transaction, including the following:

- Increased long term investment in necessary capital improvements to the water system;
- Long-term ability to meet current and future DEP water quality standards;

- Increased water pressures in some parts of the system;
- Mitigation of serious rate impact to water system customers should the water system's largest customer representing 60% of total system revenues reduce or eliminate its demand;
- Decreased expenses resulting from procurement power of large water systems;
- Ensuring job protection for the existing Borough employees assigned to the water system;
- Availability of sale proceeds to reduce Authority debt and subsequently Borough debt resulting in lower sewer rates and property taxes;
- Availability of a customer assistance program; and
- Implementation of monthly billing

Q. PLEASE DESCRIBE THE AUTHORITY, INCLUDING ITS RELATIONSHIP WITH THE BOROUGH.

A. The Authority was organized by the Borough in accordance with the Pennsylvania Municipality Authorities Act ("Act"). Consistent with the powers vested by the Act, the Authority currently owns the water system assets serving customers in the Borough and in part of Swatara Township. The Authority is governed by a Board of 5 members, each of whom are appointed by the Steelton Borough Council to serve staggered terms of 1-5 years. The Board establishes rates and charges for all customers served by the water system, but contracts with the Borough for day-to-day management and maintenance of the water system. Currently, the Borough employs eight employees that are directly assigned to the Authority's water system and one employee that splits time between the Authority's water system and the Borough's sewer system.

Q. PLEASE SUMMARIZE THE TRANSACTION.

A. After extensive discussion and deliberation among the Board and stakeholders, including the customers and the Borough, the Authority reached a decision to sell the water system to PAWC on August 24, 2018. The Authority authorized execution of an Asset Purchase Agreement on November 14, 2018, for the sale of its water system assets to PAWC for $22.5 million.

Q. HAS THE AUTHORITY BOARD APPROVED THE TRANSACTION?

A. Yes. The Authority Board granted several approvals related to the Transaction. On March 27, 2018, the Authority Board authorized the issuance of a Request for Proposals ("RFP") for purchase of the water system, which the Authority subsequently issued on March 28, 2018. On August 24, 2018, the Authority Board adopted Resolution 2018-AR-01 (attached hereto as Exhibit 1 DEB-1) selecting PAWC's proposal and authorizing the Authority's professionals to take all steps necessary to negotiate and enter into an asset purchase agreement for approval by the Authority. On November 14, 2018, the Authority Board adopted Resolution 2018-AR-02 (attached hereto as Exhibit 2 DEB-2) authorizing the Authority Board Chairman to execute the Asset Purchase Agreement negotiated between the Authority and PAWC and authorizing the Authority's professionals to take all actions necessary to carry out the rights and obligations stated in the agreement.

Q. WHAT WERE SOME OF THE PRIMARY DRIVERS UNDERLYING THE AUTHORITY'S DECISION TO SELL THE WATER SYSTEM TO PAWC?

A. The decision to sell the water system to PAWC was made after thoughtful and transparent deliberation of a variety of the challenges facing the Authority's ongoing operation of the water system and the short-term and long-term solutions to those challenges.

One of the principal considerations influencing the Authority's decision to sell the system was the significant capital expenditures needed to address the systems' long-term water quality issues and the impact of those capital expenditures on customer rates. Conservative estimates prepared by the Authority's engineer estimated that the water system would require at least $17 million of capital investment over the next 10 years, including $14 million for upgrades to the Authority's aging water treatment plant. These projections were considered in the context of a system that is already $11.5 million in debt, running annual deficits, and cutting capital projects to balance its budget.

Additionally, the Authority had become increasingly concerned about the system's financial risk related to dependence on one large industrial customer. By "financial risk," I refer primarily to the fact that approximately 60% of the revenues collected by the Authority comes from a single large industrial customer on the system. For example, a decrease in industrial revenues in 2017 forced the Authority to transfer $228,540 from reserve funds and cancel approximately $500,000 of planned investments. Combined, these adjustments make up approximately 24% of the Authority's $3,000,000 operating revenues. In addition to year-to-year usage fluctuations, the Authority also considered the possibility of a plant shut down. If this customer were to shut down, the Authority would have to reallocate the significant shortfall in revenue among the remaining customers. The Authority determined this to be an untenable situation that would dramatically increase rates for customers.

Further, while the Authority is currently operating the water system in compliance with environmental laws and regulations, it is concerned with the rising costs and ability to meet the ever more stringent and changing environmental compliance, particularly with regards

to the water treatment system. With today's ever-evolving regulatory landscape and technological advancements, the costs of environmental compliance are becoming increasingly uncertain and challenging from a managerial standpoint. For example, the treatment costs upgrades are primarily driven by a variety of design limitations identified by the Pennsylvania Department of Environmental Protections ("DEP") in its Filter Plant Performance Evaluations ("FPPE") as well as updates to DEP's Total Chlorination Regulations. The Authority appreciates the importance of environmental compliance, but the cost and administrative complexity strains the Authority's limited financial and personnel resources. The last DEP FPPE is attached as Exhibit 3 DEB-3. The Authority is also concerned about its mounting debt obligations. As of December 21, 2018, the Authority has approximately $11,545,985 of outstanding debt. The debt burden would significantly increase if the Authority kept the system, particularly because of the near-term necessity to address the water treatment plant issues.

Q. HOW DOES THE SALE ADDRESS THESE ISSUES?

A. PAWC is the largest water system operator in Pennsylvania and it is my understanding that PAWC has access to the capital needed to fund significant capital improvements. It also has the staff and technology to not only comply with ever-increasing environmental regulations but to anticipate and plan for those regulatory changes. Similarly, with a customer base of 659,930 customers across the Commonwealth, PAWC is better positioned to absorb the financial and operational risks of a small system with more than half of its annual water sales coming from a single industrial customer.

Q ARE THERE ANY ADDITIONAL BENEFITS TO BE REALIZED BY THE AUTHORITY'S CURRENT CUSTOMERS?

A. Absolutely. It is important to consider that approximately 26% of the Borough's residents, which constitute most of the Authority's customer base, live at or below the poverty line. PAWC, offers a customer assistance program offering grants and discounted water service charges to assist low income customers with service payments. PAWC also has the administrative capacity to offer monthly billing—something that customers regularly request for budgeting purposes.

Q. HOW DOES THE TRANSACTION IMPACT THE AUTHORITY'S CURRENT EMPLOYEES?

A. In assessing the potential sale of the water system, the Authority remained firmly committed to protecting the interests of the employees assigned to the water system. Consistent with the Authority's request, PAWC has agreed to offer employment to each of these employees, thus ensuring job protection for the existing water system employees.

Q. ARE THERE ADDITIONAL BENEFITS TO BE REALIZED BY THE AUTHORITY'S STAKEHOLDERS?

A. Yes. Several additional benefits associated with the Transaction warrant Commission consideration. From my perspective, these additional benefits include, but are not limited to:

- Sale proceeds realized by the Authority, which would be transferred to the Borough following a closing of the Transaction and dissolution of the Authority. It is my understanding that after repayment or defeasance of Authority debt any remaining sale proceeds would be transferred to the Borough. At that point, the proceeds would be available to support a variety of critical Borough objectives, including debt reduction, infrastructure improvements, or other beneficial public purposes;

- Access to sophisticated customer service resources offered by PAWC, including online bill pay and a fully-staffed customer call center;

- Regulatory oversight over the water system operations by the Commission and other statutory parties that I understand are tasked with monitoring utility-related proceedings and protecting customer interests;

- Operational expertise from the largest water system operator in Pennsylvania; and

- Implementation of monthly billing, which I mentioned as a benefit for budgeting and which additionally helps customer detect leaks quickly and conserve usage.

Q. OVERALL, DO YOU BELIEVE THIS TRANSACTION IS IN THE PUBLIC INTEREST?

A. Yes. For the reasons stated throughout my testimony, the Authority believes the Transaction is in the public interest and will provide significant short and long-term benefits for the Authority customers and Borough residents and the general public. I respectfully request that the Commission promptly approve the Transaction.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, although I reserve the right to submit rebuttal or surrebuttal testimony as may be necessary.

Exhibit 1 DEB-1

STEELTON BOROUGH AUTHORITY

2018-AR-01

A RESOLUTION APPROVING THE SALE OF WATER SYSTEM ASSETS BY THE STEELTON BOROUGH AUTHORITY TO PENNSYLVANIA-AMERICAN WATER COMPANY.

ON MOTION OF Mr. Segina, SECONDED BY Mr. Proctor:

WHEREAS, the Steelton Borough Authority ("Authority"), located in Dauphin County, Pennsylvania, is a municipal authority organized by the Borough of Steelton ("Borough") in accordance with the Municipality Authorities Act, 53 Pa. C.S. § 5601, *et seq.*, and governed by a board of five members (the "Authority Board"), each of whom are appointed by the Steelton Borough Council; and

WHEREAS, the Authority has heretofore issued a Request for Proposals, dated March 28, 2018, as amended, for the Purchase of its Water System Assets (the "RFP"); and

WHEREAS, the Authority, after due consideration of all proposals received in response to the RFP, has determined that the proposal submitted by Pennsylvania-American Water Company for the Purchase of the Water System Assets as defined in the RFP (the "PAWC Proposal") offers the greatest value to the Authority of all the proposals submitted pursuant to the RFP; and

NOW THEREFORE, BE IT RESOLVED, that the Authority selects Pennsylvania-American Water Company to enter into negotiations of an Asset Purchase Agreement and directs that the Authority's professionals, including legal counsel, take all necessary steps to proceed to negotiate and present an Asset Purchase Agreement for approval by the Authority.

RESOLUTION APPROVED this 27th day of August, 2018.

ATTEST:

Secretary

Allan Ausman, Chairman
Steelton Borough Authority

Exhibit 2 DEB-2

STEELTON BOROUGH AUTHORITY

2018-AR-02

A RESOLUTION APPROVING THE EXECUTION OF AN ASSET PURCHASE AGREEMENT FOR SALE OF WATER SYSTEM ASSETS BY THE STEELTON BOROUGH AUTHORITY TO PENNSYLVANIA-AMERICAN WATER COMPANY.

ON MOTION OF Brian Preston SECONDED BY Ryan Maxwell :

WHEREAS, the Steelton Borough Authority ("Authority"), located in Dauphin County, Pennsylvania, is a municipal authority organized by the Borough of Steelton ("Borough") in accordance with the Municipality Authorities Act, 53 Pa. C.S. § 5601, *et seq.*, and governed by a board of five members (the "Authority Board"), each of whom are appointed by the Steelton Borough Council; and

WHEREAS, the Authority on August 27, 2018 approved a Resolution to enter into negotiations with Pennsylvania-American Water Company for the Purchase of Water System Assets as defined in the Request for Proposals, dated March 28, 2018, as amended, for the Purchase of its Water System Assets (the "RFP"); and

WHEREAS, the Authority has reviewed the Asset Purchase Agreement negotiated between the Authority and Pennsylvania-American Water Company; and

NOW THEREFORE, BE IT RESOLVED, that the Authority authorizes its Chairman to execute the Asset Purchase Agreement on behalf of the Authority; and that the members of the Authority Board, its financial advisors, attorneys and consulting engineers are authorized to take all actions necessary to carry out the rights and obligations delineated in the Asset Purchase Agreement.

RESOLUTION APPROVED this 14th day of December, 2018.

ATTEST:

Secretary

Allan Ausman, Chairman
Steelton Borough Authority

Exhibit 3 DEB-3

Filter Plant Performance Evaluation

February 21-22, 2017

Steelton Water Treatment Plant

Public Water Supply #7220036

Bureau of Safe Drinking Water

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Introduction

The Steelton Water Treatment Plant obtains raw water from the Susquehanna River in Dauphin County. Constructed in 1973/74, the filter plant serves the community of Steelton and some homes in Swatara Township. The Steelton Borough Water Authority provides water to about 6,300 consumers through 2,410 metered service connections. Treatment currently consists of alum coagulation, clarification, filtration, and disinfection (Figure 1, next page).

On February 21-22, 2017, staff from the Department of Environmental Protection (Department) evaluated the optimization level of the Steelton filter plant. Optimization is the process of continuously striving to improve the effectiveness of each treatment process in order to provide the highest level of consumer protection from waterborne pathogens and ensure long-term reliability. During the evaluation, each unit process was assessed for its capability to consistently meet the turbidity (< 0.3 NTU) and disinfection (> 1 log inactivation) requirements of the Pennsylvania Filtration Rule. In addition, each individual treatment process was evaluated on its ability to continuously provide the optimized or most-effective barrier to the passage of microorganisms.

In this Filter Plant Performance Evaluation (FPPE), specific performance goals are used for the clarification, filtration and disinfection unit processes. These included settled water turbidity levels of 2 NTU or less from the sedimentation basin when the raw water is greater than 10 NTU or less than 1 NTU when the raw water is less than 10 NTU. Also, the filters should have the capability to consistently produce a stable filtered water turbidity of less than 0.10 NTU. These levels of performance are goal oriented, but are considered necessary to consistently protect consumers against waterborne pathogens.

The evaluation team collected a raw water sample for Method 1623 analysis (*Giardia*/*Cryptosporidium*) and a microscopic particulate analysis (MPA) of the filtered water. Afterwards, laboratory staff checked for the presence of *Giardia* and *Cryptosporidium* and determined semi-quantitative particle removal by the plant. In-line turbidimeters and particle counters were installed on the effluent of filter #1 and filter #2. As yet, no national standard has been established on allowable particle concentration thresholds for filtered water at filter plants, but an optimization goal of 25 particles/ml or less has been established. The disinfection process was evaluated using "CT" values (disinfection concentration X contact time) as outlined in the U.S. Environmental Protection Agency guidance manual for meeting filtration and disinfection requirements. Other tests were performed and samples collected as appeared necessary during the evaluation.

During the February 21-22, 2017 Filter Plant Performance Evaluation, no major problems concerning water quality were noted at the Steelton filter plant but the long-standing operational issues related to design limitations (clarifier operation, backwash limitations, lack of filter to waste) and several minor issues were discussed. Limitations are apparent that may hinder improvement of overall filter plant performance. Plant personnel appear willing and capable of improving overall operation of the filter plant, but are faced with many design limitations. Settled water turbidities met the optimization goal of 2 NTU or less 71% of the time and filtered water turbidities remained below the optimization goal of 0.10 NTU or less 97% of the previous year. During the evaluation, turbidity was always below the optimization goal; and while particle counts on both filters were below the optimization goal (25 particles or less) some of the time, there was a notable amount of time when the particle counts were higher. In addition, laboratory staff found a nematode in the filtered water MPA sample. After careful consideration of all findings summarized in this report, the Steelton filter plant received an overall "**satisfactory**" performance rating for its ability to remove waterborne pathogens and similar size particles through optimized filter plant performance. Because of the number of design-related limiting factors, Steelton Authority management should thoroughly evaluate long-term plans for this facility.

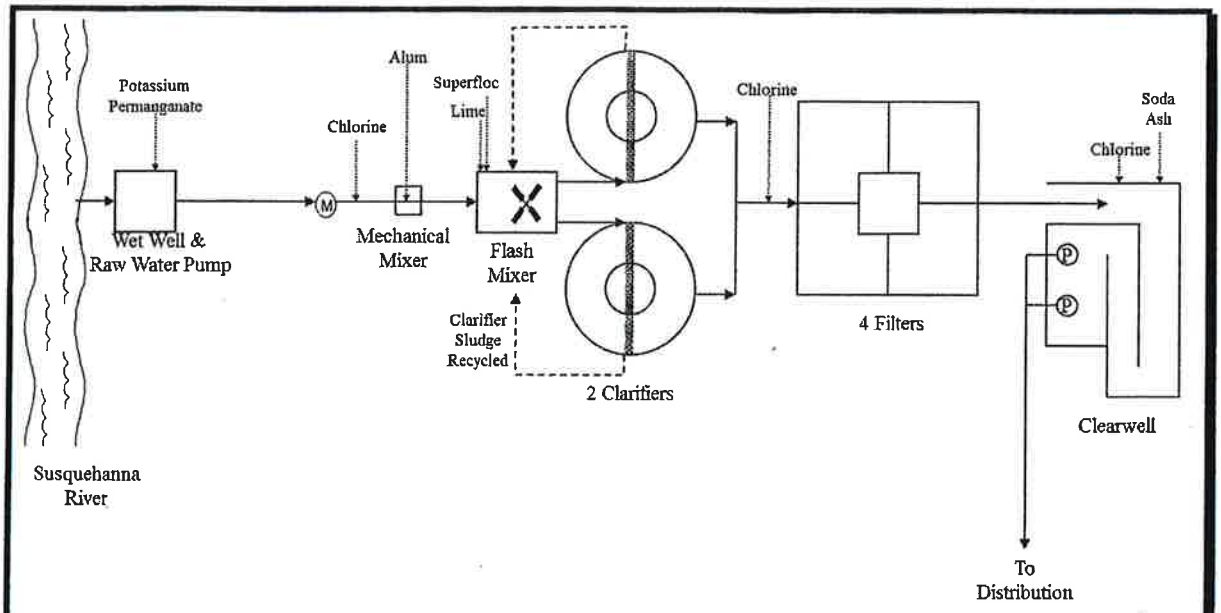


Figure 1. Steelton Water Treatment Plant schematic.

Facility Information

Plant Production

- Current Flow: 1,400 gpm
- Typical Production: 1.1-1.7 MGD demand/produced
  Typically operate around 1,400 gpm and vary hours of operation to meet demand
  Summer flow = 1,250 gpm (1.8 MGD)
  Winter flow = 1,400 gpm (2.0 MGD) (higher in winter because of Steel Mill leaks & open faucets
- Time of operation: 15-16 hours/day, 7 days/week
  Startup is usually around 6 am and shutdown is usually around 9-10:30pm
  Operators onsite: 24 hrs/day
- Permitted/Design capacity: 3 MGD (2,083 gpm)
  Filtration rate: 4 gpm/sq.ft
- Allocations Permit: 3 MGD
- LT2 Source Water Classification: Bin 1
- Pumps: 2 vertical turbine raw water pumps (3 MGD each) VFDs
  2 centrifugal finished water pumps (3 MGD each) VFDs
  2 new sludge recirculation pumps.
  No backwash pumps. Flow from 3 online filters used to backwash 4th.
- Recycle: None

Chemical Treatment

- Coagulation: alum (liquid) (today dose 360 ml/min)
  Superfloc (nonionic polymer)

- pH adjustment-pre: Lime
  Post: Soda Ash Lite
- Disinfection: Gas chlorine (pre, prefilter and post)
- Other: Potassium permanganate

Application points (in order): Potassium permanganate is added in the raw water wet well. Gas chlorine for prechlorination is injected in the raw water line, followed by alum at a newly reinstalled mechanical mixer. Both are prior to the flash mixer. Lime is added to the flash mixer for pH control and alkalinity adjustment. A nonionic polymer, Superfloc N300, is also added in the flash mixer to aid in clarifier blanket formation. Starting in late 2015, prefilter chlorine addition was activated. After filtration, gas chlorine is added in the clearwell for post disinfection and then soda ash is added at the head of the clearwell for pH control.

Rapid Mix

- 1 mechanical mixer reinstalled at the alum addition location
  1/2 horsepower
- 1 vertical mixer (operated at a constant rate) in the flash mix basin
  7 ft. x 7.5 ft. x 9.2 ft. total
  3,613 gallons
- Sludge from the clarifiers is recycled back to the head of the flash mixers before the mixer paddles. The rate of recirculation is mostly constant.
- Using reflective square and tape measure to measure blanket depth. Operators note that this works better than a sludge judge, less disruptive.

Clarification

- 2 circular clarifiers operated in parallel.
  35 ft. radius x 15 ft. deep (average)
  137,455 gallons each; 274,909 gallons total
  3,850 sq. ft. each; 7700 sq. ft. total
- Design detention time: 131 min. (2,083 gpm)
- Actual detention time: 196 min. (1,400 gpm)
- Surface overflow rate: 0.18 gpm/ft^2 (1,400 gpm)
- Sludge is continually being recirculated to the flash mixer from the bottom of the clarifiers. Around 500 gallons of sludge from each clarifier is wasted daily (5 mins) to the sewer line.

Filtration

- 4 dual media filters
  11.1 ft. x 9.75 ft. plus corner area of 5.25 ft. x 5.67 ft.
  138 sq. ft. each
- Media:
  24 inches of anthracite
  6 inches of sand
  Last media replacement in 2012.
  Anthracite media topped off as needed
- Permitted filtration rate: 4 gpm/ft^2.
- Actual filtration rate: 2.54 gpm/ft^2. (1,400 gpm)
  3.38 gpm/ft^2 with 1 filter out of service during backwash.

- Backwash criteria: Backwash is normally initiated on time. All filters are washed every morning after startup and operations has stabilized. The plant is typically started up around 6 am and the backwashes start around 1-5 hours after startup. The order of filters backwashed is alternated daily (1234, 4321). Headloss is now monitored 3 times each day (after filter wash/starting bed, after all filter washes, half an hour prior to filter wash/end bed headloss). Normal headloss is 5-6 inches; highest headloss observed is 8-9 inches. A rise in turbidity is rarely noted because the filters are being backwashed daily.
- Filter run duration: 13-20 hours.
  Operators have tried lengthening filter run times and under good conditions can extend the filter runs to 24 hours without rises in turbidity or problems with cleaning up during backwash. Monitoring headloss also provides additional data for determining particle loading on filters.
  Operators will repeat backwash if filter did not clean up by end of backwash cycle.
- Backwash: We observed backwash on filters 1 & 2
  Filter drain – 4.5 min. (270 sec).
  Surface wash only – 6.0 min. (360 sec.)
  Surface wash and backwash – 1.5 min. (90 sec.)
  Backwash only – 12 min. (720 sec.)
  Backwash water is supplied by the other 3 filters. Therefore, backwash rate is based on the flow rate through the filter plant. Typically, the filter plant operates at 1,400 gpm, so the backwash rate would be around 1,400 gpm or 10.1 gpm/ft^2.
- Filter-to-waste: not available/possible.
  Filters are allowed to settle offline for 25 min. (1,500 secs) before returning to service.
- Media Expansion: 10-15% in Winter
  6-8% in Summer
  Measured during FPPE: 3 inches (10%)
- Filter Inspections: Annually for routine maintenance (2014, 2015)
  Delayed in 2016 because of staffing issues; plan to do soon.
  Inspection includes: Freeboard (media surface to top), general condition, media depth (rod), dig down to sand layer, scrape off top/fines, top off if needed, surface wash arms & nozzles. Keep record on Computer.

Storage (plant)

- Clearwell:
  Volume based on drawing of filter plant (1972) that notes "6,143.02 gal per foot of height".
  High (12 ft.)= 73,617 gallons
  Normal Level (9.3 ft.) = 57,129 gallons
  Normal Low (8.1 ft.) = 49,758 gallons (after backwashes)
  Low Alarm/Hi Service pump shutoff (4 ft.) = 24,527 gallons

Turbidimeters and Inline Monitors

- Hach Surface Scatter 6 inline turbidimeter on the raw water.
- Hach 1720E inline turbidimeter on clarified water/filter influent.
- Hach 1720E inline turbidimeter on each filter effluent (4).
  Calibration: Quarterly by Hach
  Most recent: 4/15/16 (IFE 1 & 3, CFE)
  7/18/16
  10/11/16

1/5/17

- Hach 2100N benchtop turbidimeter in the lab area.
- Hach Cl-17 inline chlorine analyzer on the finished water (recorded using SD card & chief operator's computer).

  Method 334: were doing until May 2015, restarted January 2017.
- Rosemount Analytical inline pH meter (& temperature) on the raw water
- Rosemount Analytical inline pH meter (& temperature) on the clarified water.

Alarms

- Raw turbidity above 100 NTU triggers an alarm.
- Settled water turbidity above 2.2 NTU triggers an alarm.
- Individual filter effluent turbidity above 0.103 NTU triggers an alarm.
- Chlorine residual after the clarifier below 0.45 mg/L or above 1.05 mg/L triggers an alarm.
- Chlorine residual leaving the clearwell below 1.15 mg/L or above 1.95 mg/L triggers an alarm. (Change seasonally to meet CTs+buffer)
- Facility is manned 24 hrs/day. Triggered alarms sound an audible alarm and flash on the main control panel. Staff estimate that the operator passes by the control panel at least once every 15 min.

Operational Goals/Triggers

- Clarified water pH goal of 6.8-6.95
- Finished pH goal of 7.5-8.0

Wastewater Disposal

-All waste water goes to the Harrisburg sewer treatment plant via the Trewick Pump Station

Certified Operators

- Needed: B, E – 1, 8, 10, 11
- Superintendent of Water – Mark Handley: A, E 1–14
- Operators: Barry Hockenberry – A,E 1, 7-14
  Stephen Wilbert: A 1
  Gregory Shea: A 1
  Charles Berry : A 1, 8, 10, 11 (retire in 2018)

Emergency Power/Generation

-Generator onsite to run entire plant – diesel
  Tested/run every other Monday
  Would run for at least 2 days before needing to refuel
-Finished Water Storage: 3 MG
  Supply entire system for 2-2.5 days
  At 14 ft., some parts of the distribution system might lose pressure

Process Observations

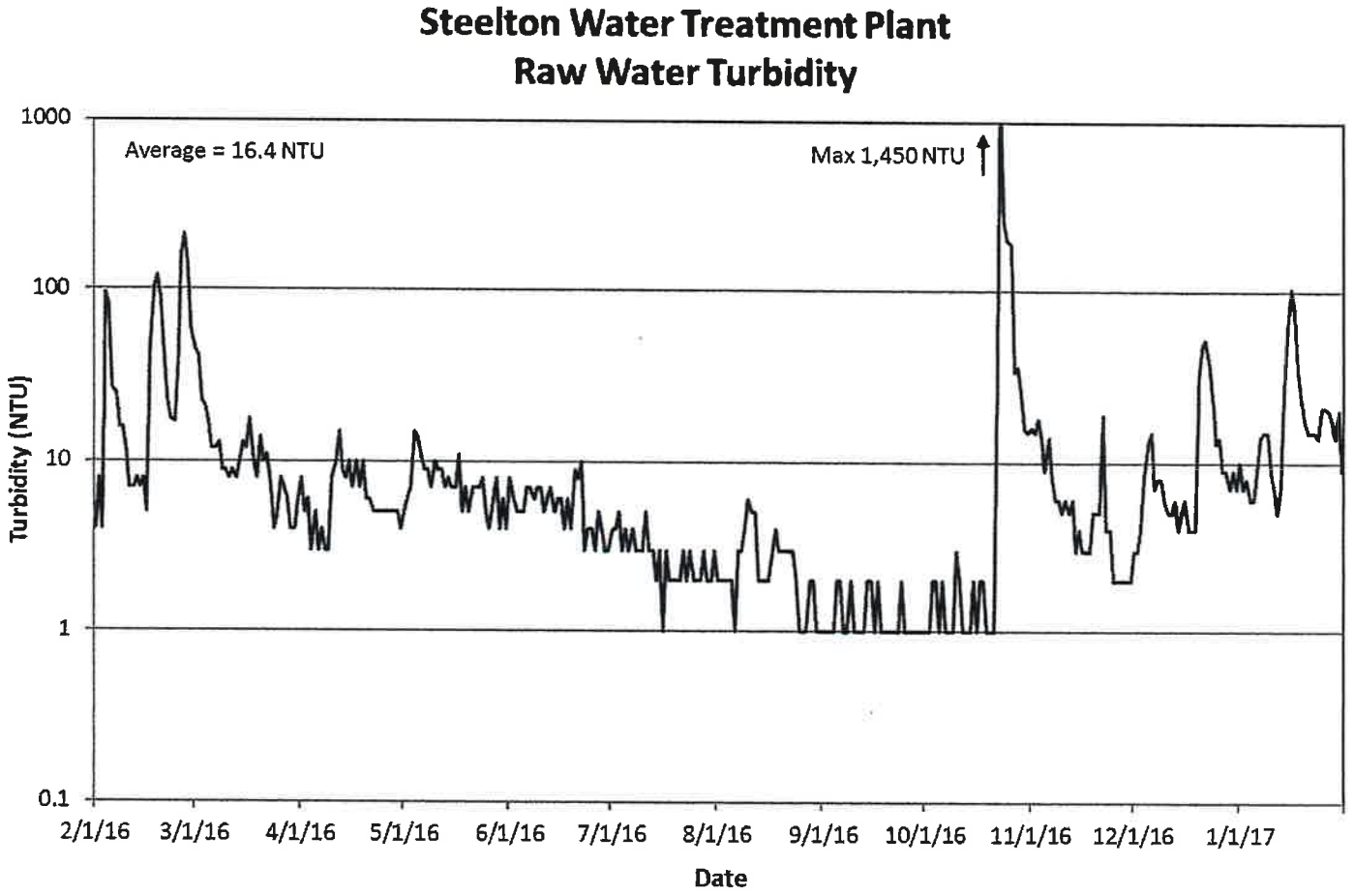


Figure 2. Daily raw water turbidities at the Steelton plant from February 2016 through January 2017. The turbidity data was obtained from WebOAS.

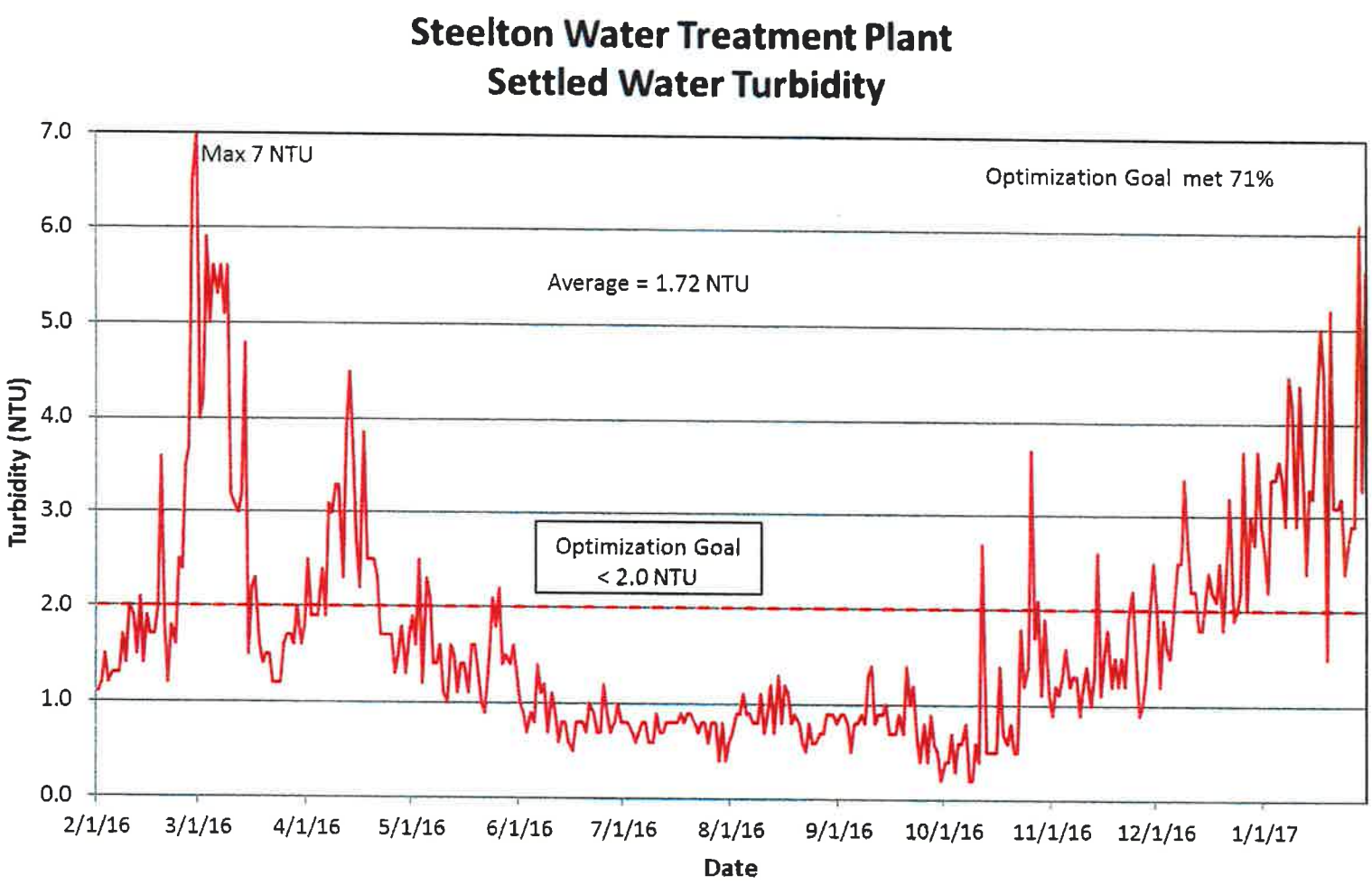


Figure 3. Daily settled water turbidities at Steelton Water Treatment Plant from February 2016 through January 2017. The turbidity data was obtained from WebOAS.

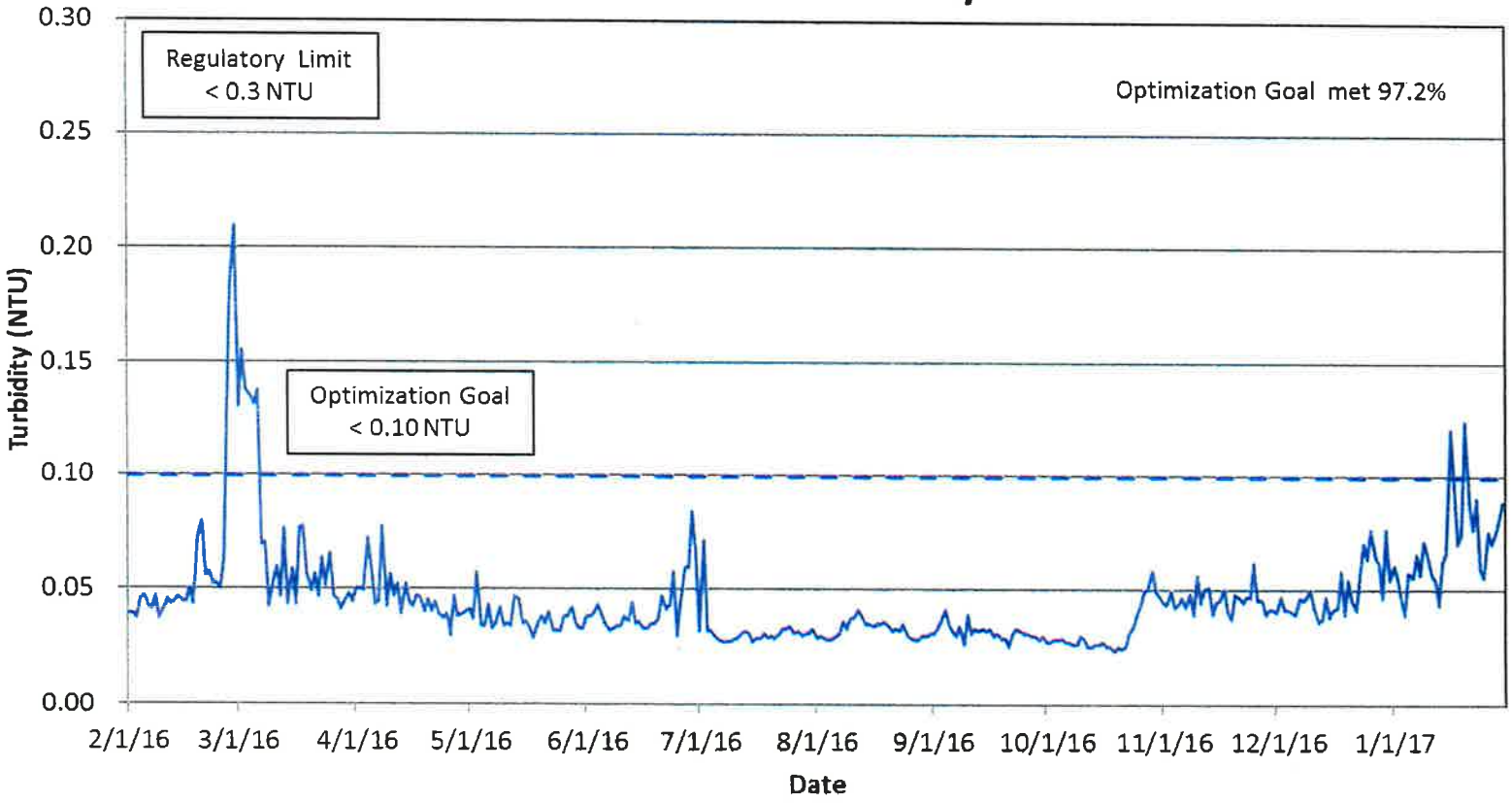


Figure 4. Daily filtered (CFE) water turbidities at the Steelton Water Treatment Plant from February 2016 through January 2017. The turbidity data was obtained from WebOAS.

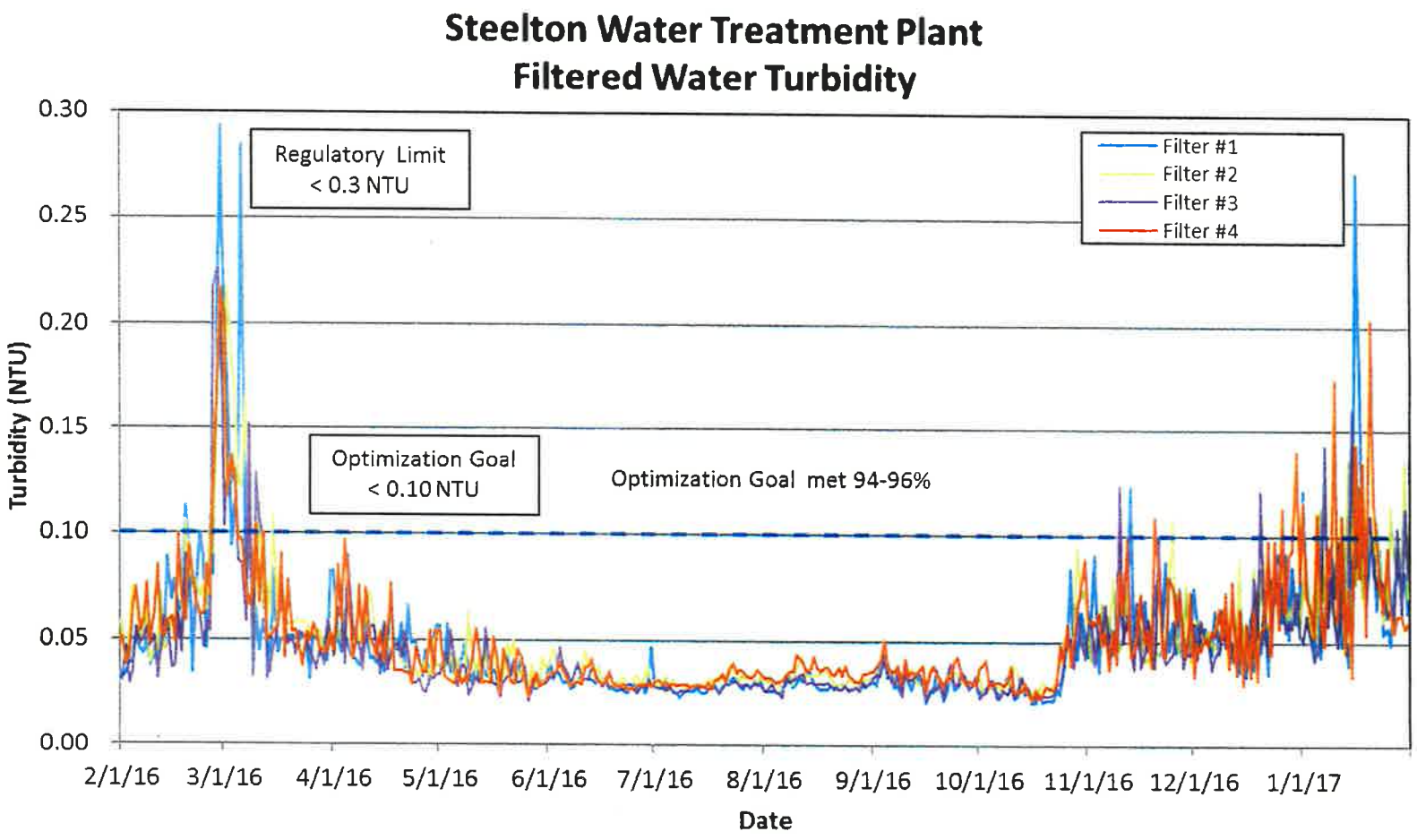


Figure 5. Daily IFE water turbidities at the Steelton Water Treatment Plant from February 2016 through January 2017. The turbidity data was obtained from WebOAS.

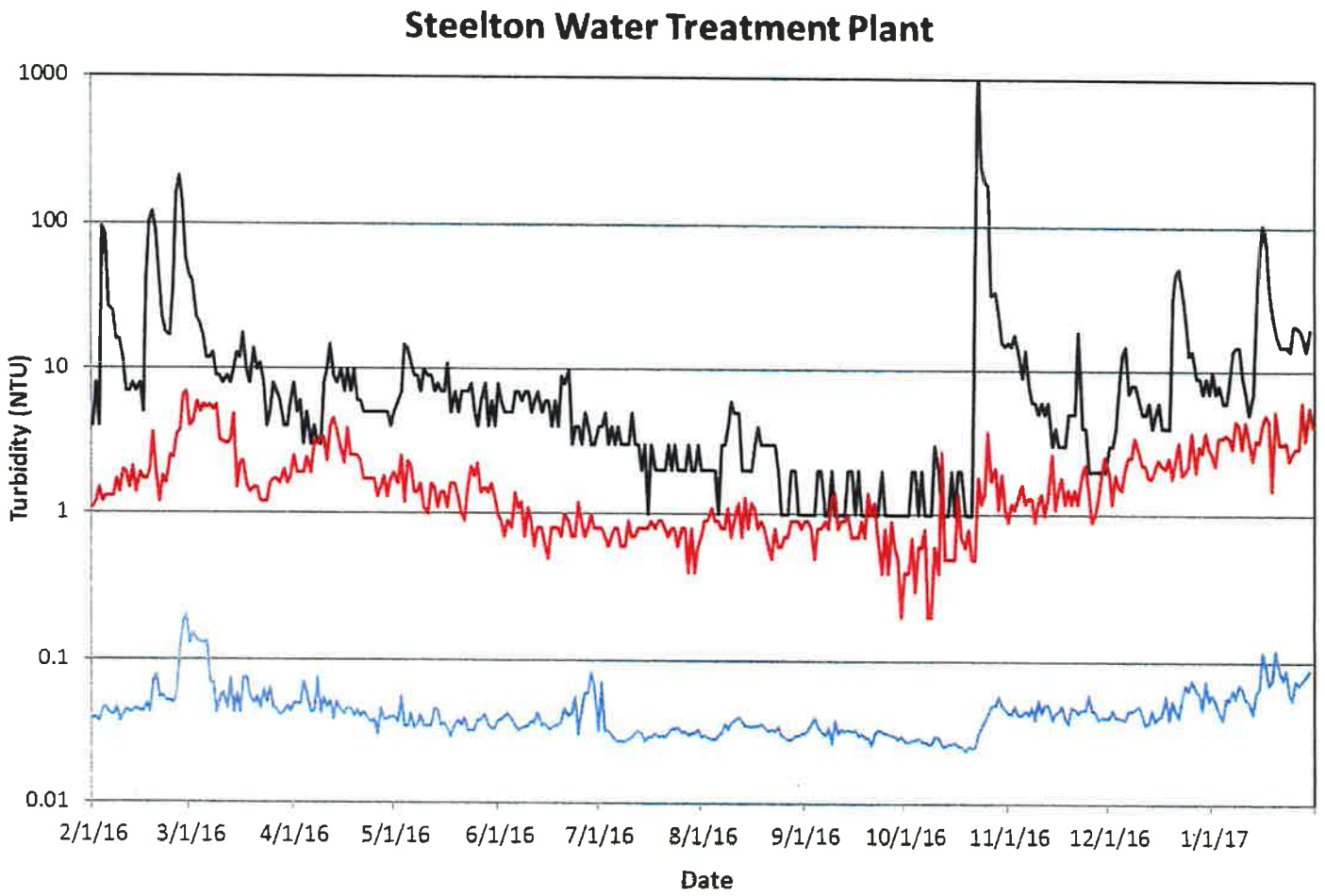


Figure 6. Daily filtered water turbidities at the Steelton Water Treatment Plant from February 2016 through January 2017. The turbidity data was obtained from WebOAS.

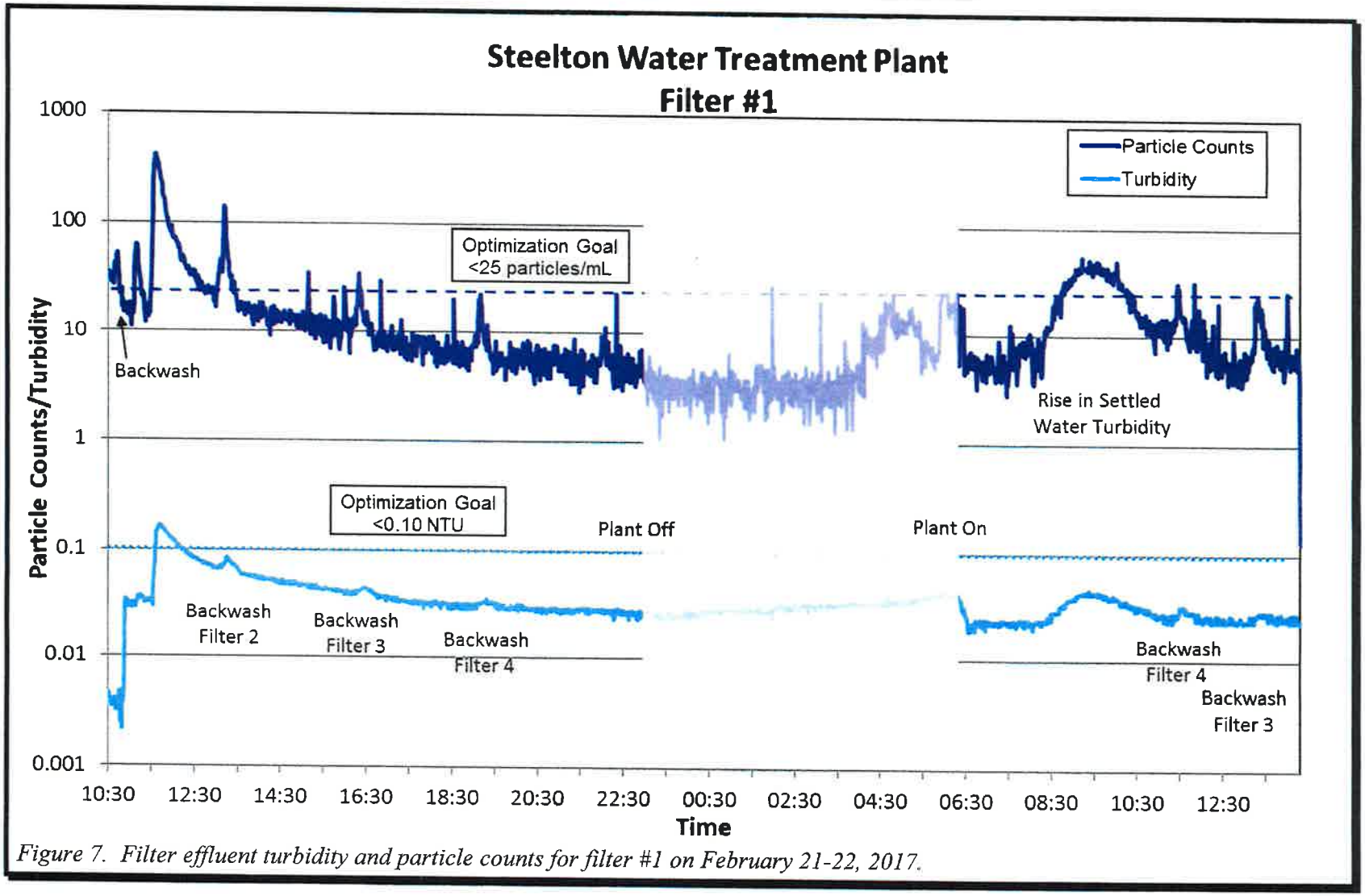


Figure 7. Filter effluent turbidity and particle counts for filter #1 on February 21-22, 2017.

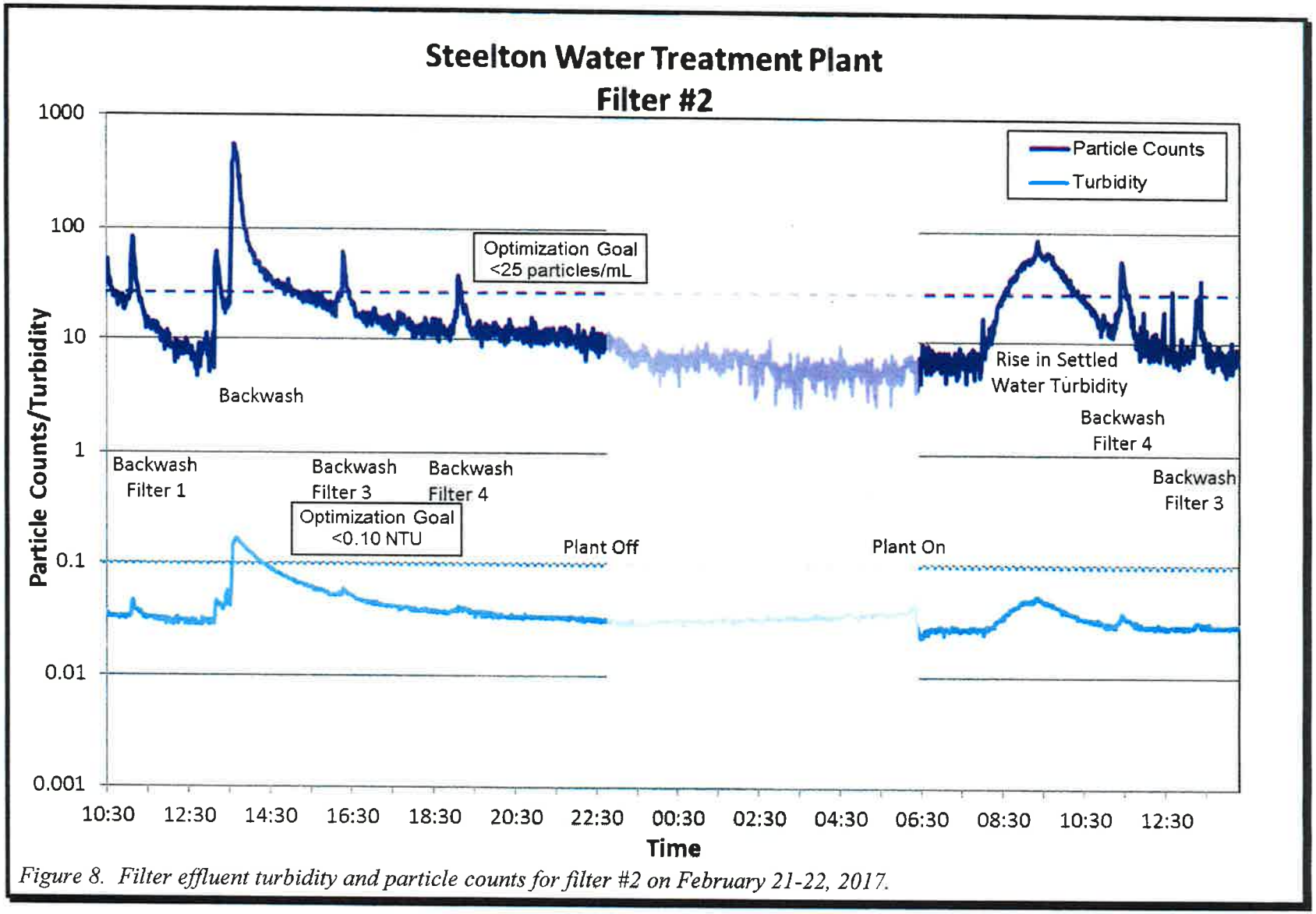


Figure 8. Filter effluent turbidity and particle counts for filter #2 on February 21-22, 2017.

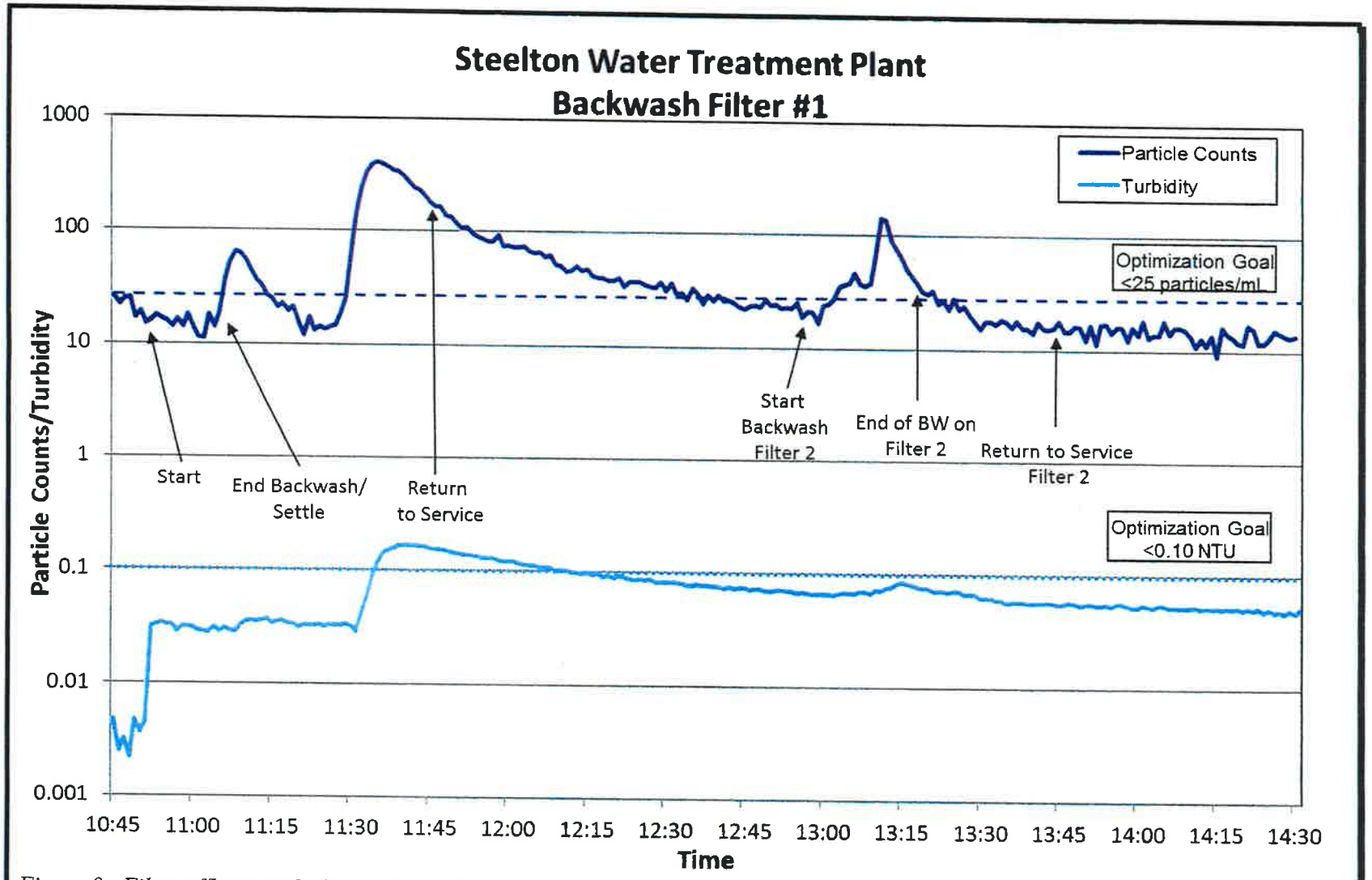


Figure 9. Filter effluent turbidity and particle counts during Backwash for filter 1 on February 21, 2017.

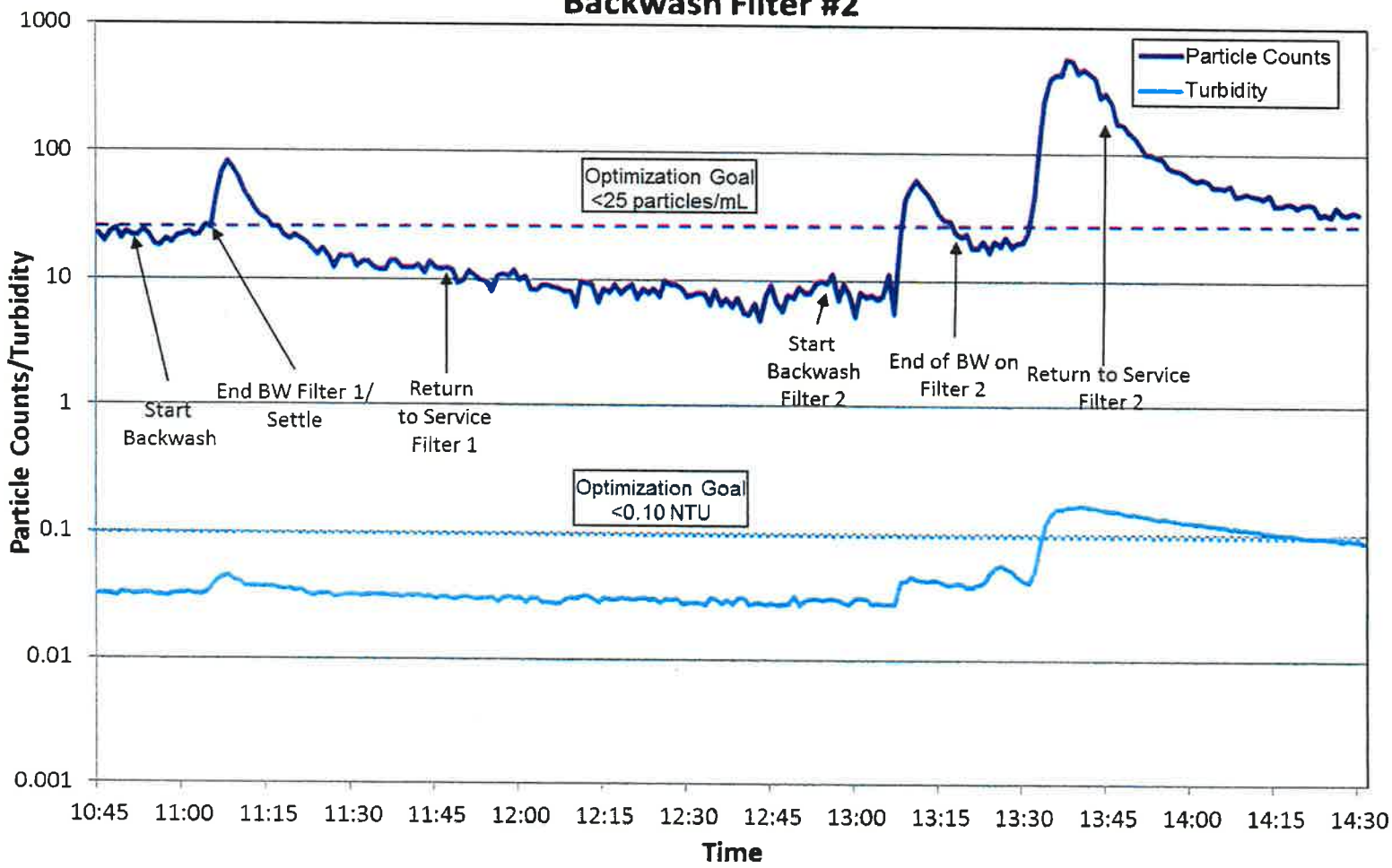


Figure 10. Filter effluent turbidity and particle counts during Backwash for filter 2 on February 21, 2017.

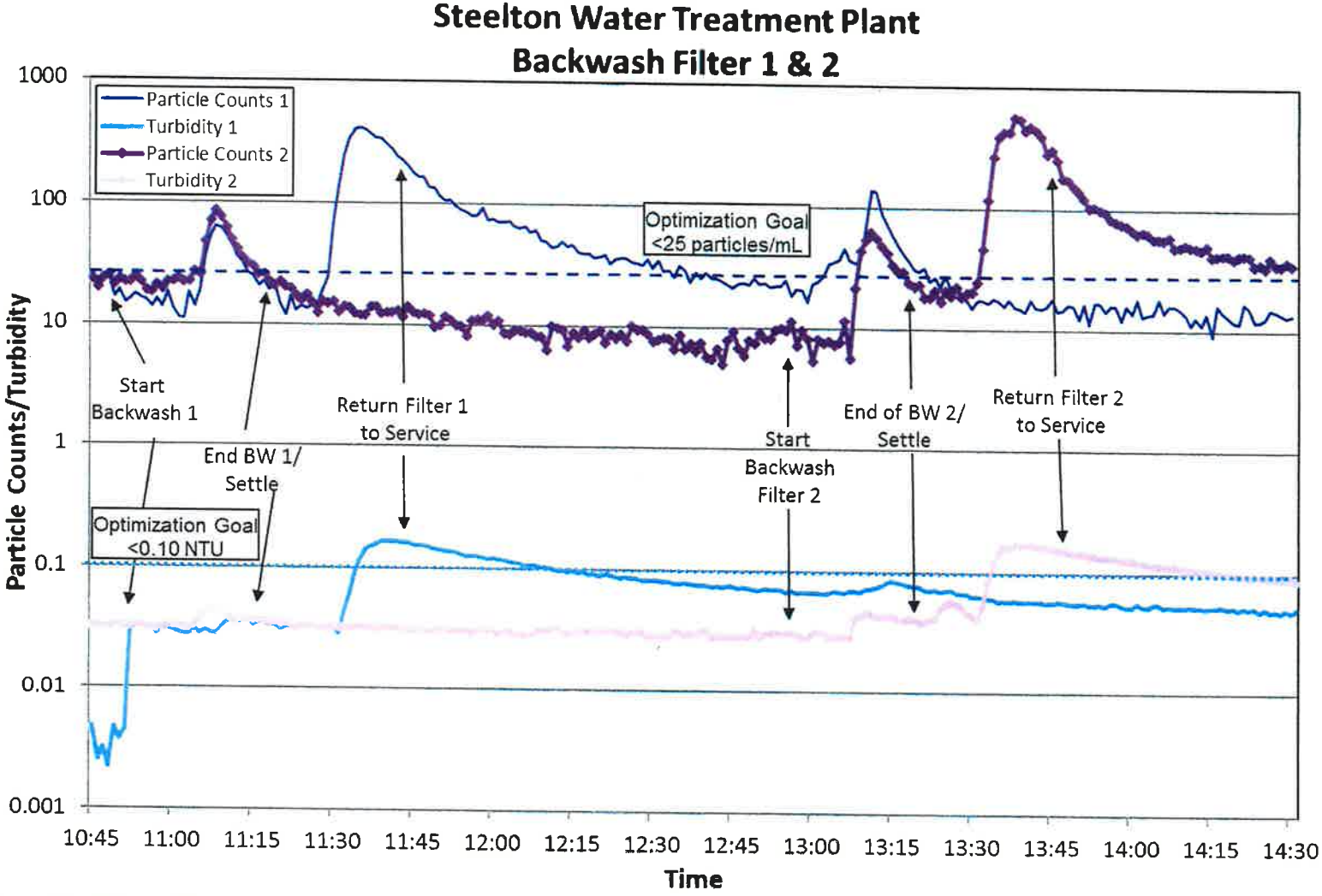


Figure 11. Filter effluent turbidity and particle counts during Backwash for both filter 1 & 2 on February 21, 2017.

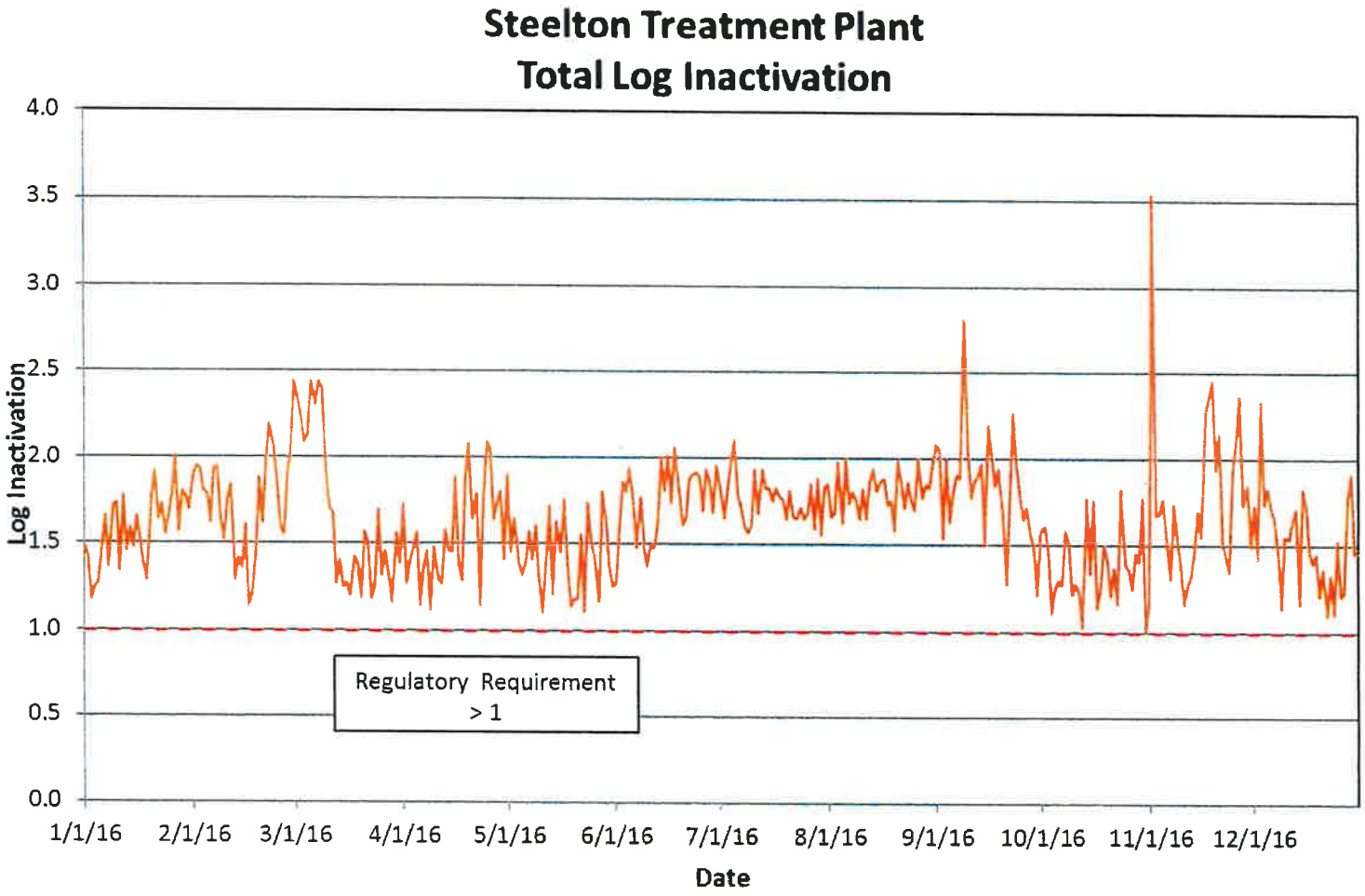


Figure 12. Total Giardia Log Inactivation graph with Lowest daily CT calculations from 2-hour calculations.

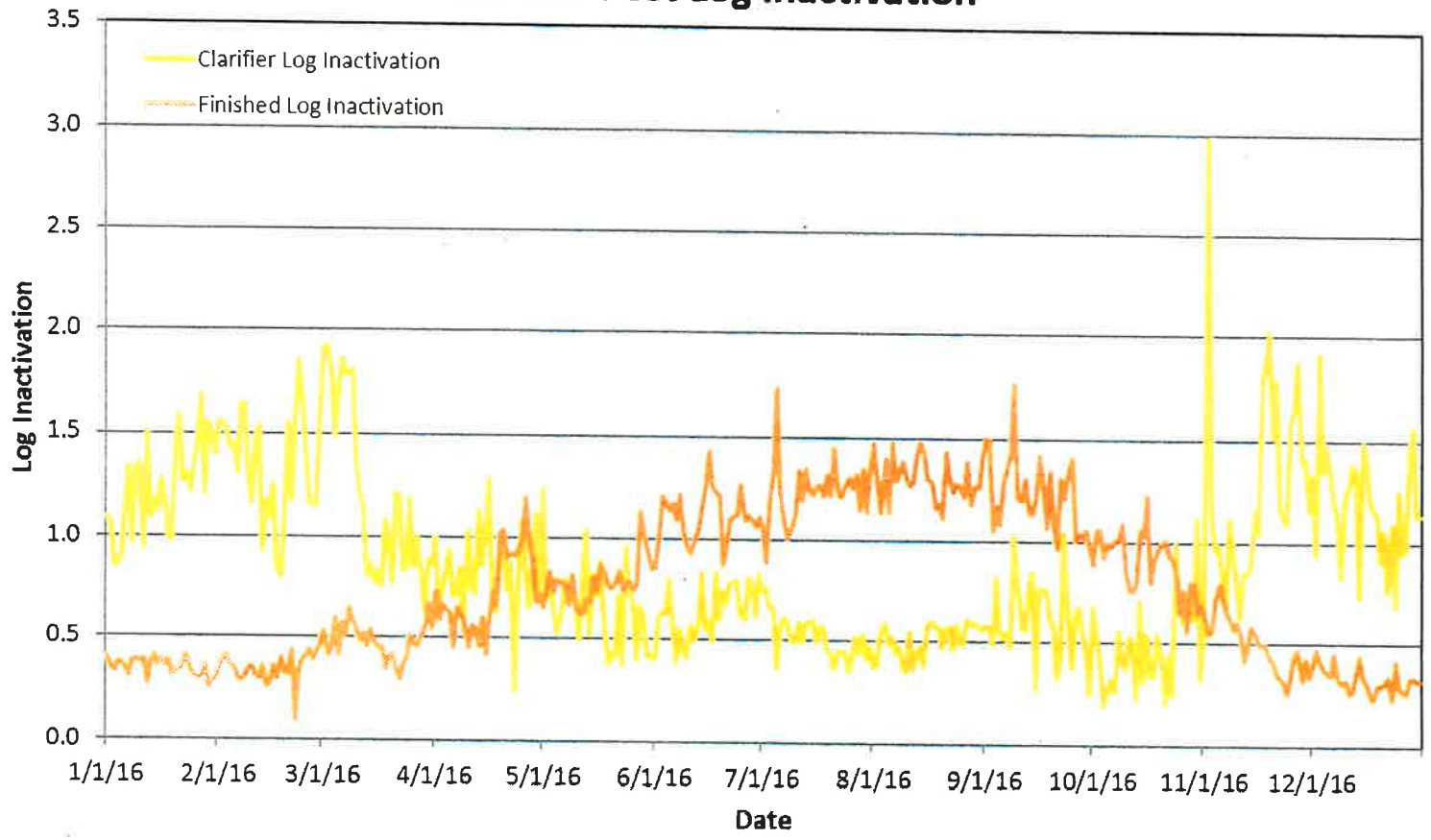


Figure 13. Pre and Post Giardia Log Inactivation graph at time of lowest daily log inactivation.

Disinfection

Using data collected at the filter plant on February 22nd the CT (chlorine concentration x time) values were calculated. For the pretreatment disinfection, the flow rate was around 1,400 gpm, the pH was 7.0, the temperature was 8.5 °C and the free chlorine as measured as 0.55 mg/L after the clarifiers. For the post disinfection segment, a flow rate of 1,400 gpm was used and sampling showed the pH was 7.5, the temperature was 7.2 °C and the free chlorine residual was 1.37 mg/L. A low clearwell level of 9.3 ft. was used, which is 57,130 gallons. A tracer study performed by Aquaterrra in 2004 found the pretreatment baffling factor to be 0.54 and the baffling factor on the clearwell to be 0.41. (See paragraph following charts for important baffling factor/tracer study information.) We calculated the log inactivation to be 1.91 during the evaluation.

1-log inactivation
2/22/2017

Enter Baffling Factor for Stage 1: 0.54
Enter Baffling Factor for Stage 2: 0.41

Treatment Stage	Disinfectant	Residual Conc. (C) (mg/L)	pH	Temp. (Celsius)	Peak Flow (GPM)	Volume (gal)	TDT (min)	Contact Time (T) (min)	CT_{calc}	3-log CT_{req}	Log Inactivation (*Giardia*)
Clarifier	Free Chlorine	0.55	7.00	8.5	1,400	274,909	196.4	106.0	58.3	117.27	1.49
Clearwell	Free Chlorine	1.37	7.50	7.5	1,400	57,130	40.8	16.7	22.9	163.62	0.42
System TOTAL											1.91

Tracer studies, performed by Aquaterra in 2003 & 2004, indicated a pre-treatment baffling factor of 0.22 when wasting was occurring (2003) and a baffling factor of 0.54 when wasting was not occurring (2004). The post-treatment baffling factor was determined to be 0.41. There is some concern that clarifier wasting and the density of the clarifier sludge blanket could affect the pretreatment baffling factor. Currently wasting only occurs for 5 minutes/day. If wasting occurs more frequently or for longer durations, the pretreatment baffling factor should be re-evaluated.

Steelton calculates log inactivation at least every 2 hours and records the lowest log inactivation for the day, along with the data used to determine the log inactivation. The graphs on page 16 & 17 shows the lowest daily log inactivation as calculated every 2 hours by the operators. Steelton is working to balance the requirement to always maintain at least 1 log inactivation and reduce disinfection byproducts, which have been an ongoing issue for several years. They use CT calculations to effectively balance pre and post disinfection to minimize the formation of DBP by reducing predisinfection when they are able to throughout the year (graph 13). On February 22nd, the lowest log inactivation of the day was 1.82 according to Steelton's records (below).

Steelton's Lowest Log Inactivation

Sample Date	Time	1 LOG TOTAL CT	Treatment Stage	Disinfectant	Residual Conc. (C) (mg/L)	pH	Temp. (Celsius)	Peak Flow (GPM)	Clearwell Depth (feet)	Volume (gal)	TDT (min)	Contact Time (T) (min)	CT_{calc}	3-log CT_{req}	1 Log Inactivation (*Giardia*)
February 22, 2017	10:00	1.82	Clarifer	Free Chlorine	0.45	6.96	8.4	1,319		274,909	208.4	112.5	50.6	115.04	1.32
			Finish	Free Chlorine	1.58	7.49	7.2	1,319	9.3	57,130	43.3	17.8	28.1	169.63	0.50
														System TOTAL	1.82

To calculate the worst-case scenario, the lowest clearwell level (8.1 ft.; 49,748 gallons), maximum flow rate from one high service pump/permitted capacity (2,083gpm), highest pHs (clarifier 7.5; clearwell 8.5), lowest temperature (clarifier 3.5 °C; clearwell 1.5°C) and 3 mg/L of chlorine were used. As has been noted in the past, it appears that Steelton may not be able to achieve 3-log inactivation

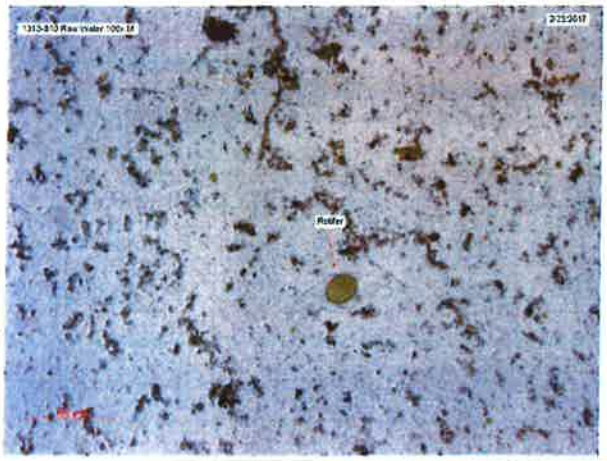
in an emergency situation, under worst case conditions. Steelton operators are aware of this and do regularly calculated log inactivation. Additionally, they have developed a detailed SOP in the Emergency Response plan for achieving 3-log inactivation. It includes cutting back flow (if >1,335 gpm) and raising free chlorine residuals, and using the CT calculator to determine log inactivation.

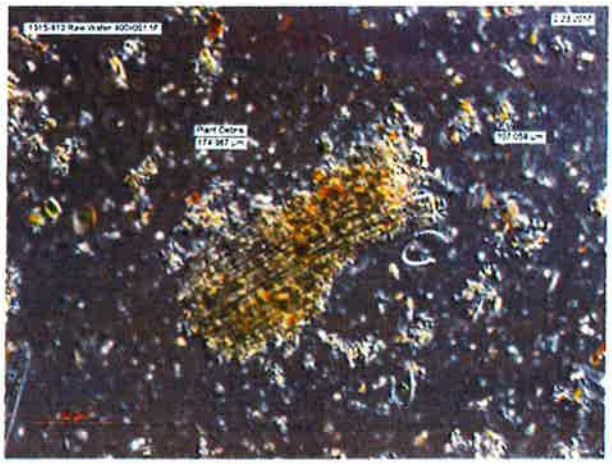
3-log inactivation/worst-case

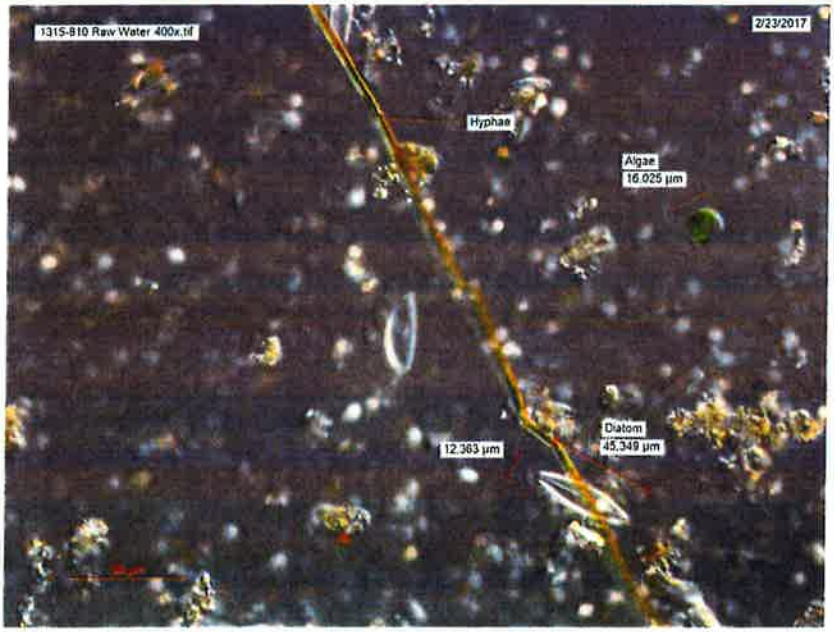
Enter Baffling Factor for Stage 1: 0.54
Enter Baffling Factor for Stage 2: 0.41

Treatment Stage	Disinfectant	Residual Conc. (C) (mg/L)	pH	Temp. (Celsius)	Peak Flow (GPM)	Volume (gal)	TDT (min)	Contact Time (T) (min)	CT_{calc}	3-log CT_{req}	Log Inactivation (*Giardia*)
Clarifier	Free Chlorine	3.00	7.50	3.5	2,083	274,909	132.0	71.3	213.8	241.70	2.65
Clearwell	Free Chlorine	3.00	8.50	1.5	2,083	49,748	23.9	9.8	29.4	414.23	0.21
System TOTAL											2.87

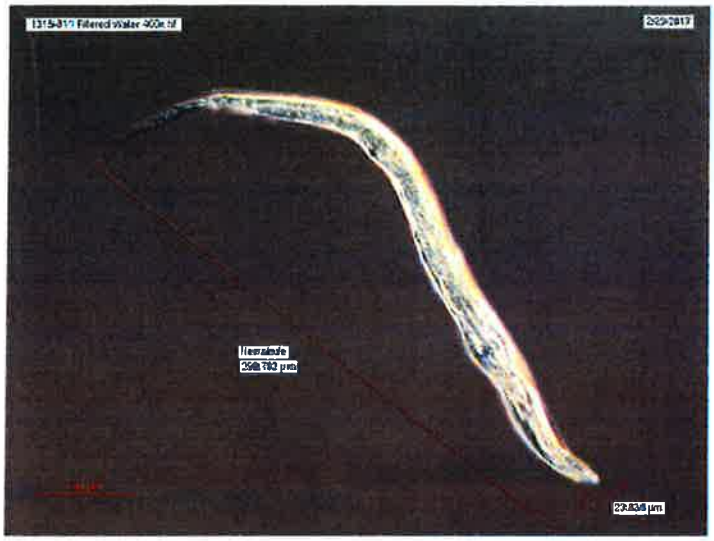
Raw Sample-Method 1623



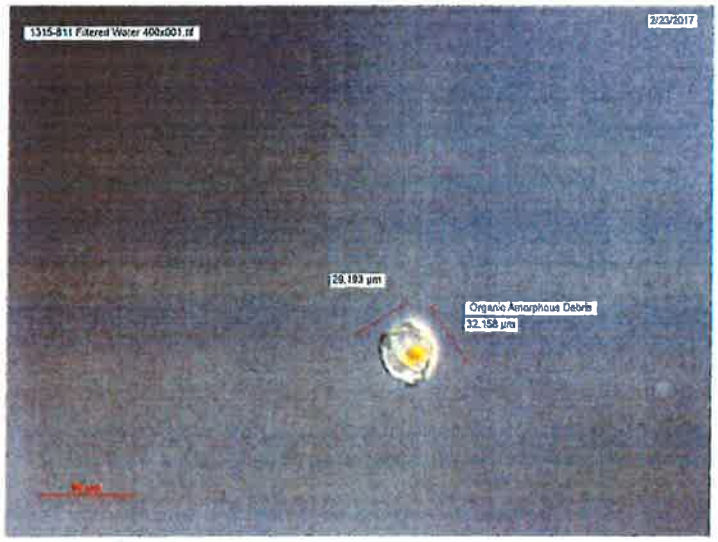




Filter Sample- MPA (microscopic particulate analysis)



Note: *Giardia* is around 8-19 microns in size; *Crypto* is around 3-7 microns in size



Comments

On February 21-22, 2017, the Department of Environmental Protection evaluated the Steelton Water Treatment Plant for its ability to produce the highest quality water through optimized operation. Historical data for the past year indicates that the settled water turbidity was below the optimization goal of 2 NTU or less 71% of the time. The filtered water turbidity remained below the optimization goal of 0.10 NTU or less for 97% of the year. During the on-site evaluation, the filtered water turbidity was usually below 0.10 NTU, except after backwashes when the filter was returned to service. The particle counts were below the optimization goal during most of the filter run, except after a backwash, when

other filters were backwashed and when there was a rise in settled water turbidity several hours after startup. As has been previously mentioned, there is concern with the backwash effectiveness, lack of filter to waste and challenging operations of the clarifiers and filters.

Laboratory staff found acceptable reduction of *Giardia*-sized and *Cryptosporidium*-sized particles in a microscopic particulate sample (MPA); however, an unusual organism was noted. Based on careful consideration of all findings summarized in this report, (historical data, operations, proceedures) and Steelton's staff, operators and consultant's progressive attitude towards continually improving the operation of the plant the Department provided the Steelton Water Treatment Plant with an overall "**satisfactory**" performance rating for its ability to remove *Giardia* cysts and *Cryptosporidium* oocysts. (Please see attachment A for an explanation of ratings.) There are several issues and concerns that are listed in the comments sections that should be investigated and may be improved by operational adjustments; however, many of Steelton's limitations are linked to the design of the clarifiers and filters. Management at Steelton should make a realistic review of the long-term future of this facility.

Department Staff identified several "operational areas of strength". This determination was made primarily on what was observed and discussed during the February 21-22, 2017 Filter Plant Performance Evaluation (FPPE). For example, the operator's process control skills have led to filtered water turbidity levels of <0.10 NTU almost all of the time, despite rapid changes in raw water quality. The process monitoring program is thorough and includes many water quality parameters in all major unit processes at frequent intervals. The operators have established water quality goals for each of these parameters. Staff at Steelton have worked hard since the previous FPPE to meet regulations, restore confidence, strive for optimization and continue to try to find ways to improve ongoing issues. The Department would like to commend the operators and management of the Steelton filter plant for this extra effort and foresight and emphasizes the importance of continually striving to maintain these areas at or above the level observed during the FPPE.

Previous FPPE

The Department of Environmental Protection previously conducted several FPPEs at the Steelton Water Treatment Plant. Comments were provided in the FPPE reports as an effort to assist in achieving the highest level of filter plant performance. During the 2013 FPPE several critical violations were noted and Steelton and the Department entered into a Consent Order and Agreement (COA). Some FPPE comments were addressed as a part of the COA.

A summary of the number of unaddressed comments from all previous FPPEs, the number of comments that were addressed since the previous FPPE and the previous FPPE rating are shown in the table below. Following that is a brief summary of the addressed comments; as well as the unaddressed previous comments and new comments. Each section is listed in priority order.

# Comments Not Adequately Addressed from Previous FPPE	# Comments Addressed Since Previous FPPE	Previous Rating
8	22	Needs Improvement

ADDRESSED: It should be noted that some of these comments had been long-standing unaddressed issues and regulatory violations that were reducing public health protections. Since the previous FPPE, there were changes made to staff and consulting engineers. Staff at Steelton have dedicated a lot of resources to addressing these comments and have made significant improvements that are not fully captured by this brief summary. Actions taken to address previous comments include:

- ☑ **Disinfection – 1-log Inactivation Requirement (2004):** Steelton's consultants, HRG, developed a CT calculator for this facility and operators collect water quality and operational data and calculate CTs every 2 hours during operation. All staff are well aware of the requirement for 1-log inactivation and related requirements. Steelton has been submitting weekly reports since February 2013 and have at all times been maintaining greater than 1-log inactivation as required.
- ☑ **IFE Turbidity Monitoring (2013):** Individual filter effluent (IFE) turbidity has been monitored and recorded as required (at least every 15 minutes) since the 2013 FPPE. It is now reviewed every day and stored in an organized manner.
- ☑ **Routine Review of Regulatory Data-IFE, CFE and Entry Point Free Chlorine (2013):** Staff at Steelton and the Chief Operator in particular reviews all regulatory data on a frequent enough basis to discover irregularities in a timely manner (IFE and post chlorine=every day). Steelton is aware of all requirements to review data and situations that require them to contact the Department within 1 hour.
- ☑ **Steelton's 1-log Inactivation Spreadsheet and Related Data Entry (2013):** The old spreadsheet was replaced by one that the Department reviewed and approved. During this evaluation we reviewed the data being used in the spreadsheet calculator and verified that all data was being collected from the correct locations.
- ☑ **Clarified Free Chlorine Residual Monitor (2013):** An online free chlorine residual monitor has been installed on the clarified water. A low chlorine alarm based on needed CTs has been established (0.45 mg/L).
- ☑ **Settled Water Turbidity and Chlorine Residual Monitoring (2010):** Online settled water turbidity and free chlorine monitoring is being performed. Turbidity is recorded on an SD card and routinely transferred to the computer. Free chlorine in manually recorded every 2 hours on the operator sheet.
- ☑ **Alarms (2010):** The IFE turbidity alarm has been lowered to 0.103 NTU and the low chlorine alarm on the finished water has been established based on maintaining CTs. The low chlorine alarm is adjusted seasonally. In addition, a low chlorine alarm for the clarifier effluent has also been established based on meeting CTs.
- ☑ **Low Entry Point Free Chlorine Alarm (2013):** The entry point free chlorine alarm is established seasonally based on what chlorine residual would be needed to maintain 1-log inactivation. Currently the low chlorine setpoint is 1.15 mg/L, but it is adjusted seasonally.
- ☑ **Coagulation Dosage (2010):** Operators at Steelton primarily use a coagulant dosage chart based on raw water turbidity, in conjunction with detailed water quality and historical records and occasional jar testing to determine/verify coagulant dosage.
- ☑ **Headloss Monitors (2013):** Operators now monitor headloss manually with a tape measure 3 times throughout the day to monitor loading on the filter throughout the filter run. This includes 1 hour after the filter wash and 30 minutes prior to the next filter wash. Normal headloss is 5-6 inches; maximum is 8-9 inches.
- ☑ **Update O&M Manual (2004):** The Operations and Maintenance (O&M) manual was reproduced by Steelton's consultants and the Chief Operator in 2014. Since then the Chief Operator has routinely added, refined and updated it. The most recent update was 12/20/2016.
- ☑ **Media Expansion (2013):** Operators developed a method for measuring media expansion and do so during every backwash. This has confirmed that there is minimal media expansion during the backwash. Media expansion is 12-15% in the winter and 3-6% in summer.

- ☑ **Filter inspection/Media Evaluation (2013):** Filter inspections have been performed annually in the fall except in 2016 when staffing limitations caused them to delay. Plans are to perform filter inspections soon. Records of the filter inspection and results are kept on the computer.
- ☑ **IFE Sample Lines (2013):** IFE sample lines have been replaced with clear hosing so operators can monitor sample lines for debris build up. The lines become stained within about 2 months and are changes at least 2 times annually. The lines are flushed more often. During this FPPE, there was minimal flushing needed and not debris noted.
- ☑ **Data Accuracy - Raw & Settled Water Sample Lines (2013):** Operators are now confident in the online raw and settled monitoring units. Differences between online units and grab samples are minor.
- ☑ **3-log Inactivation (2013):** A detailed SOP has been developed in the Emergency Response plan for achieving 3-log inactivation. It includes cutting back flow (if >1,335 gpm) and raising free chlorine residuals, and using the CT calculator to determine log inactivation.
- ☑ **Operator Certification (2013):** Additional operators have become fully certified, for a total of 3 fully certified operators. Furthermore, detailed SOPs have been developed for those operators who are not fully certified and to ensure consistency among all operators.
- ☑ **Nonionic Polymer--Type and Permitting (2010):** As required in the COA, Steelton submitted specifications for the polymer and related equipment as part of a request to amend the operations permit. The Department's Technical Services (permitting) staff recently issued the permit that included the nonionic polymer (5/5/2017).
- ☑ **Operations Permit (2013):** Similar to the previous comments, staff and consultants for Steelton have submitted all necessary components to the Department's Technical Services staff. DEP staff recently issued the operations permit for work done in relation to construction permit 2209510.
- ☑ **Resolution and Trending Capability - Individual Filter Effluent (IFE) NTU (2010):** While the current IFE turbidity strip charts are not the easiest to review for trending and regulatory compliance, they are able to be used by Steelton operators. The Chief Operator demonstrated/explained the resolution, times, backwashes, turbidity spikes and how the charts are used for regulatory compliance.
- ☑ **Storage/Retention of Records (2013):** We reviewed the methods that Steelton is using to store and retain regulatory records. All records we reviewed have been properly retained since the previous FPPE.
- ☑ **Turbidimeter Dates/Calibration (2013):** We reviewed the turbidimeter calibration history on filters 1 & 3 and the CFE. Calibrations were performed every 3 months by Hach.

UNADDRESSED: The following comments, provided in previous FPPE reports, have not been adequately addressed. Note, that in some cases, operators and consultants at Steelton have made changes that may have improved the situation, but the basic comment remains a concern. The unaddressed comments are listed in priority order along with the date of the FPPE report in which they were originally noted.

I. **Lack of Filter to Waste (2013):** *Start up and backwash are times of increased likelihood of particle breakthrough. The ability to filter to waste prior to startup and after a backwash are important to reducing the chance that particles and pathogenic organisms are passed to customers. Additionally, current design standards require filter to waste capabilities. Steelton's facility does not have the ability to filter to waste. This issue was considered during the recent filter plant renovation. Steelton's consultant (former) reviewed the situation and determined that*

physical limitation prevented the installation of filter to waste. Therefore, this is a design related limiting factor. Operators perform backwashes more often and allow the filters to settle for 25 minutes after the backwash to offset this design limitation. Staff at Steelton should be vigilant during start up and after the backwash to verify there are not high turbidity spikes (indicating particle breakthrough), especially when raw water quality is challenging or there is a pretreatment upset. The lack of filter to waste should continue to be considered when making long-term improvement decisions for this facility. Moreover, a report outlining operational techniques used to offset the lack of filter to waste capability was included as a Special Condition of Construction permit number 2209510 and should be submitted to the Department (Tom Filip).
Update (2017): Steelton and their new consultants re-evaluated the possibility of installing filter to waste and again reached the conclusion that it was not possible. Operators continue to use operational adjustments (25 min. settling period after BW, short filter runs, close monitoring of IFE turbidity after BW) to attempt to offset the lack of filter to waste. As required in a permit Special Condition and the COA, a report outlining these operational techniques was submitted to the Department. Lack of filter to waste continues to be a limiting factor.

II. **Backwash Effectiveness (2010):** *Steelton's filter backwashes are design-limited by backwash rate (rate is limited by supply from the other three filters) and lack of filter-to-waste. To compensate, Steelton backwashes each filter daily after 14 to 20 hours of run time, and they let each filter rest for 25 minutes after a backwash before returning to service. The backwash rate is 12.1 gpm/ft^2 (2010) which is below the recommended backwash rate of 15 to 20 gpm/ft^2 and the filter expansion was measured at 10 to 12.5% which is below the recommended expansion rate of 20 – 30%. Steelton should consider this design limitation during future plant upgrades.*
Update (2017): The design of the filter plant does not allow for adjustments to the backwash rate without adjusting the entire plant flow. Operators at Steelton continue to limit filter run lengths, keep the filter offline for 25 mins after the backwash and remain alert to turbidity spikes when the unit returns to service. In addition, they have started to monitor media expansion, headloss and other important factors, which alert them to seasonal or water quality changes, but design limitation continue to prevent a thorough backwash and prevent adjustments to the backwash seasonally or when water quality warrants. There was minimal to no floc accumulation in the corners after backwashing and the water above the filter was clear at the end of the backwash, but the return to service turbidity spike was notable. These backwash limitations should be taken into account as part of the long-term planning for the Steelton Authority.

III. **Sludge Blanket Maintenance/Clarifier Operation (2010):** *The sludge blanket in the clarifier serves as a key treatment process by trapping particles; reducing loading on the filters and reducing the potential for pathogen breakthrough. Therefore, maintaining the level and consistency (density) of the sludge blanket is a very important pre-filtration process that allows for a stable and consistent (optimized) settled water turbidity. Steelton stops and starts the plant each day, which allows the sludge blanket to settle, and adds a challenge for operators to maintain this treatment barrier. Because the sludge blanket is a key treatment process, Steelton should consider conducting more frequent dip tests, recording and trending test results, and developing formalized written SOPs that outline a detailed strategy for overall sludge blanket management.*
Update (2017): The new Chief Operator is continuing to work on SOPs for Sludge Blanket operation and clarifier optimization. Various monitoring and operational practices have been tried, but they continue to have problems related to the start/stop operation, which allows the sludge blanket to settle overnight and causes disruptions (higher settled water turbidity) several hours after startup. They have tried several procedures of sludge blanket recirculation and wasting; in addition, they have attempted to connect various monitoring practices, such as dip

tests and V/V testing, with optimized operations, but have not found anything that results in effective sludge blanket operation with start/stop operation during cold water. They continue to look into improving this process with the most recent approach being consideration of different polymers.

IV. **Clarified Water Turbidity (2004):** *Operators should continue to strive to meet the clarified water turbidity optimization goal of 2.0 NTU in 95% of the highest daily settled water turbidity samples.*
Update (2017): Over the years, Steelton has investigated many aspects of water quality and operation of the clarifiers towards the goal of producing optimized settled water. Historically, the settled water turbidity optimization goal has been met anywhere from 28% to 90% of the time. In 2016, the settled water turbidity goal of 2 NTU or less was met 80% of the time. Operators have noted that combination of cold water and start/stop operation of this facility seems to be the greatest challenge to maintaining low settled water turbidity. According to operators and a review of settled water turbidity data, during cold water the settled water turbidity spikes several hours after startup with it remaining above 2 NTU only for several hours before it settles down to around 1 NTU or less. Operators have started to look into alternative polymers especially ones that work well in cold water without leading to excessive headloss in the filters. The operators are encouraged to continue to work on optimizing the pretreatment process towards the objective of meeting the settled water turbidity optimization goal 95% of the time.

V. **MPA (Microscopic Particulate Analysis) (2013):** *While the MPA (2013) was rated acceptable, there were several areas of potential concern. The filtered water had both diatoms and floc in the sample at very low levels. Organic particles of this type and size are not normally found in the filtered water. These particles were in the 30-85 micron size range; in comparison, Giardia and Cryptosporidium, which are pathogenic organisms that can cause serious illness, are in the 3-7 micron and 8-19 micron size range. Similarly, the large particle debris category had a "2+" rating. Most MPA results at other filter plants are in the "1+" (rare) level. The MPA results did not indicate an immediate concern, but could signal a reduction in effective filtration, which could be more significant during times of challenging raw water quality.*
Update (2017): The MPA sample collected from filter #2 was rated acceptable, but again had organic particles in it that are not normally found in other filtered water samples. This sample had less particles than the 2013 sample and no floc. The primary organism noted that is not typically found in filtered water was a nematode. While nematodes themselves are not considered a health risk, it is unusual to find them in the filtered water. Steelton was contacted immediately about this finding. Additional/immediate action was not needed, but this may be additional indication of the limitations of the filtration process and/or complications of the pretreatment process.

VI. **Short Filter Runs (2013):** *Steelton normally backwashes each filter every morning at startup, which appears to result in a 13-17 hour filter run. At times the superintendent (former) decides to backwash the filters a second time in the evening before the filter plant is shut down resulting in filter run times of only 2-6 hours. While it is important to keep filters clean, it is important to note that for optimized filter plants, filter runs are usually 24-72 hours and backwash processes result in visually clear water at the conclusion of the wash cycle. On day two (November 20th) of the FPPE, a backwash was observed on Filter #3 and the water atop the filter visually appeared turbid at the end of the wash; this filter reportedly had only 6-7 hours of runtime. These short filter runs combined with visually turbid water at the conclusion of the backwash seems to indicate a need to adjust the backwash process and/or pretreatment processes as noted in other comments.*

Update (2017): Filter runs continue to be around 13-20 hours with operators washing the filters every day usually in the morning reversing the order every other day (1-2-3-4; 4-3-2-1). A review of 2016 data shows some filter runs that were 24-30 hours. The operators state it is now rare (1/month) that filters do not clear up by the end of the backwash. At those times the operators would rewash the filters. It is understandable that operators do not want to extend filter runs because of there are limited adjustments that they are able to make to the backwash processes due to the design of these filters; however, it is unusual that filter runs are less than 24 hours. There was some discussion about trying to extend filter runs when raw water quality is good and stable in summer. With the accumulated headloss information and ongoing IFE turbidity information, operators have several ways to monitor if filter runs can be extended without overloading the filters.

VII. **DBP (Disinfection Byproduct) Issues (2013):** *A review of Steelton's historical DBP sampling suggests that there might be problems meeting Stage 2 Disinfection Byproduct Rule limits for TTHMs (Total Trihalomethanes) and HAA5s (Haloacetic Acids). The TTHM MCL (maximum contaminant limit) is 0.080 mg/L and the HAA5 MCL is 0.060 mg/L. Over the past 3 years, Steelton has had TTHM and HAA5 results above the MCL at multiple locations. It would be prudent to carefully review the new sampling requirements, review historical sampling data and determine how Steelton can meet these new requirements without compromising other regulatory requirements such as 1-log disinfection inactivation.*

Update (2017): Steelton staff and consultants have been giving this issue a lot of attention and have tried operational adjustments at the filter plant and in the distribution to reduce TTHMs and HAA5s, including pre and post disinfection strategy, sample site locations, flushing and water age analysis. The Department's distribution staff have assisted with some of these efforts. While this has reduced the TTHM and HAA5s levels, Steelton continues to occasionally exceed the MCLs. Data collected regarding this issue seemed to show that most of the TTHMs and HAA5s are being formed prior to leaving the filter plant. Steelton is optimistic that the new storage tank at the filter plant, which will allow prechlorination to be reduced, will reduce DBP also.

VIII. **Method 334/Online Chlorine Monitoring (2013):** *EPA Method 334 is a quality control program for online chlorine monitors, which defines minimum frequency of critical QC measures. It centers on weekly comparison of the online chlorine analyzer with a benchtop unit that uses an EPA approved chlorine analysis method and routine calibration and verification of the benchtop unit using secondary standards. If there is a significant difference between a verified benchtop unit and the online chlorine analyzer, the online chlorine analyzer must be corrected. Steelton's operators have been routinely performing a comparison of the online unit with the benchtop unit and verifying the benchtop unit with secondary standards. Staff at Steelton should review the Method 334 monitoring and recordkeeping requirements to verify that they are consistently meeting these requirements. A sample recordkeeping sheet is provided with this report.*

Update (2017): The operators at Steelton were performing Method 334 comparisons and verifications from early 2014 until May 2015 along with maintaining proper records for both the clarified and finished water chlorine analyzers. At all times, operators were doing comparisons between the online analyzers and the benchtop unit and separate records of those results were being maintained, but recorded comparisons and verifications were not maintained and could not be verified. They restarted Method 334 comparisons, verifications and associated recordkeeping in January 2017 and plan to continue.

New Comments

During the February 21-22, 2017 FPPE, Department staff identified several issues and areas of possible improvement. As with previous comments, correction of the following concerns, which are organized in priority order, may further improve filtered water quality and improve the long-term reliability of the filter plant.

1. **Start/Stop Operation:** While start/stop operation may currently be the preferred option for Steelton considering the existing design, this does seem to be the trigger of some of the pretreatment problems. However, if the filter plant was operated at a slower, continuous flow, problems might show up in the filtered water barrier because of the lower backwash flow rate. Consider/investigate the possibility of operating at a slower flow and keeping one filter offline, until it is time to backwash the next filter. At which point three filters would be online and one would be in backwash. If those 3 filters were near capacity the backwash flow rate should still be almost 12 gpm/sq. ft. While it may be primarily during cold water, start/stop operation does appear to be a performance limiting factor.

2. **Different Polymer:** Staff at Steelton in conjunction with their consulting engineers are considering trying a different pretreatment polymer, specifically one that works in cold water. With the cold weather wrapping up this year, they will not be able to pilot test anything now, but should be prepared to test any new polymers over the next cold weather season (17/18). Pilot testing new polymers will require pre-approval from the Department prior to any chemical changes to the filter plant and should be done well ahead of the next cold water season. Contact Tom Filip at (717) 705-4941 for additional details.

3. **Recording Clarified Chlorine Monitor.** Steelton is encouraged to install a recording device for the clarified chlorine analyzer. Staff at Steelton are considering using a SC200 or connecting the clarified chlorine monitor into the settled (clarified) water turbidity SC200. This would allow the chlorine results to be recorded on the SD card and transferred to the computer for recordkeeping and trending analysis like the settled water turbidity data.

4. **Minimal Media Expansion:** In order for a filter to be properly cleaned during the backwash cycle, the backwash flow rate should be high enough to cause 20-30% media expansion. Operators monitor the media expansion and have confirmed that the media expansion is 3-6% in summer and 12-15% in winter. Typically at other filter plants, this would be remedied by increasing the backwash flow rate; however, Steelton can not increase the backwash flow rate with the existing design. Operators offset this limitation by keeping filter runs short which reduces how far into the filter media particles are pushed. This is another design related backwash limitation.

5. **Trending for Optimization:** Steelton has found a method for recording key regulatory and operational water quality monitoring data, involving strip charts, SD cards and operator 2-hour records. While this is an improvement, it is still cumbersome and does not allow for quick or easy trending. For example, turbidity strip charts are maintenance intensive, hard to review and don't show minor changes; and the use of SD cards that have to be removed from the unit and transferred to a computer before producing a trend graph. Steelton is encouraged to continue to pursue their plans for electronic data recording and management that would allow for quick, trending of multiple parameters and easy to review graphs. Ongoing, automatic trending allow operators to catch changes in water quality that could lead to problems sooner and with more ease thus optimizing operations.

6. **Collect and Analyze Media Samples:** Operators now perform thorough filter inspections annually. During these filter inspection, consider collecting a media sample for analysis using AWWA B-100 media analysis method for effective size, uniformity coefficient and acid solubility (weight loss). A list of possible media analysis labs has been provided.

7. **High Aluminum, Iron and Manganese in Coagulated Water:** Samples collected from the middle of the clarifier had unusually high levels of aluminum, iron and manganese. Because this area contains recirculated sludge, it would not be unusual to see elevated levels of aluminum, iron and manganese; however, the results from the DEP sampling were extremely high (aluminum = 232 mg/L; iron = 50.6 mg/L; manganese = 19.5 mg/L). Samples collected from the clarifier effluent were significantly lower and filtered water and finished water samples were non-detect for iron and manganese and very low for aluminum. Investigate if any of these parameters are an issue for the pretreatment process or are a sign of sludge blanket problems. Consider collecting and analyzing similar samples to provide operators with additional information.

Filter plant staff should investigate and consider if the previously listed comments would result in improved water quality. In some cases, plant staff may determine that addressing certain comments would not result in improved water quality. Steelton staff will be asked to provide a written response explaining how each comment was considered or addressed. Please note that there will be a follow-up meeting approximately 1 year following receipt of this report to review progress on the FPPE comments. If you have any general questions or concerns, please contact Chris Sanderson at (717) 705-4745 or for specific FPPE or filter plant related questions, please contact Stephanie Stoner at (717) 705-4939.

Steelton Borough Authority

Water Quality Data and Evaluation Information

Filter Plant Performance Evaluation Team	Organization/Location	Title
Stephanie Stoner #*	DEP- Southcentral Region, Harrisburg	Water Treatment Plant Specialist
Chris Sanderson #	DEP- Harrisburg District Office	Sanitarian
Zac Duchow #*	DEP – York District Office	Environmental Trainee
Tom Filip #(2/21 only)	DEP-Southcentral Region, Harrisburg	Environmental Engineer
Joe Mattucci #(2/21 only)*	DEP- Southcentral Region, Harrisburg	Chief, Capability Enhance.

**Reviewed Report* *# = Attended on-site evaluation*

Water Treatment Plant Personnel	Organization	Title
Mark Handley	Steelton Borough Water Authority	Chief Operator
Chuck Berry	Steelton Borough Water Authority	Operator

1623 and MPA Sample Collection Site Information

Raw water 1623 sample collected on 2/22/17 from the raw water tap several hours after potassium permanganate turned off. Oxidant residual on was 0.02 mg/L (normal is 0.4-0.5 mg/L).

Filtered water sample collected from filter #2.

On-Site Water Quality Parameters

Location → / ↓ Parameter	*Raw*	*Clarified*	*Filters*	*CFE*	*Clearwell/ Finished*
Temp (°C)	**7.1-8.9**				
pH	**7.25**	**7.06-7.12**			
Turbidity (NTU)	**8.64** **7.4-8.2**	**1.13/0.98** **1.01-1.08**	**0.028-0.046#** **0.052**	**0.052**	
Alkalinity (mg/l)					
Free Cl_2 (mg/l)	**0.047/0.49**	**0.55/0.62** **0.65-0.69**			**1.37/1.41** **1.58-1.93**
Free Cl2 (mg/l)	**0.02**				

Comments: * Clarified water turbidity spiked to 6-7 NTU at start of day
IFE turbidity after backwash was 0.08-0.09 NTU
Black = Steelton online analyzers
Grey = Steelton operator comparative grab sample
Blue = DEP online analyzers
Green = DEP grab samples

Samples collected 2/22/17 by S. Stoner

Contaminant	Raw	Coagulated	Settled	Combined Filter	Clearwell	Comments
		Center Ring of Clarifier		**Effluent**		
Alkalinity	41.6 mg/L	135.2 mg/L	39.2 mg/L	37.4 mg/L	43.4 mg/L	
Aluminum	0.219 mg/L	**232.0 mg/L**	0.242 mg/L	0.027 mg/L	0.023 mg/L	
Color	10 pt/C	<5 pt/C	<5 pt/C	<5 pt/C	<5 pt/C	
TDS	122 mg/L	170 mg/L	156 mg/L	110 mg/L	142 mg/L	
Hardness	69 mg/L	135 mg/L	92 mg/L	92 mg/L	94 mg/L	
Calcium	20.6 mg/L	37.2 mg/L	29.5 mg/L	29.6 mg/L	30.1 mg/L	
Magnesium	4.22 mg/L	10.2 mg/L	4.36 mg/L	4.37 mg/L	4.43 mg/L	
Sodium	15.9 mg/L	16.1 mg/L	15.5 mg/L	15.4 mg/L	19.5 mg/L	
Sulfate	19.2 mg/L	43.1 mg/L	44.1 mg/L	40.3 mg/L	45.0 mg/L	
Fluoride	<0.2 mg/L	<0.2 mg/L	<0.2 mg/L	<0.2 mg/L	<0.2 mg/L	
Iron	0.480 mg/L	**50.65 mg/L**	0.042 mg/L	<0.020 mg/L	<0.020 mg/L	
Manganese	0.080 mg/L	**19.53 mg/L**	0.020 mg/L	<0.010 mg/L	<0.010 mg/L	
Bromide	<0.025 mg/L	<0.025 mg/L	<0.025 mg/L	<0.025 mg/L	<0.025 mg/L	

Microscopic Analysis

Rev. Sep 06

Public Water: STEELTON WATER AUTHORITY **ID:** 7220036
Filtration System: CONVENTIONAL
Collector: S.STONER **Received Date:** 2/23/2017

Raw Water Method 1623.1

Sample Number:	1315810
Sample Location:	SUSQ RIVER
Date Collected:	2/22/2017
Liters:	10.962
Total Sed. Volume:	0.15 ml.
Size Range:	0 - 257um

Particulate Debris Observed

AMORPHOUS DEBRIS, DIATOMS,
PLANT DEBRIS, ROTIFERS,
ALGAE, HYPHAE

Giardia **: NO GIARDIA CYSTS
cysts per liter: 0.000
Cryptosporidium*:** NO CRYPTO OOCYSTS
oocysts per liter: 0.000

Filtered Water MPA

Sample Number:	1315811
Sample Location:	FILTER #2
Date Collected:	2/22/2017
Gallons:	440
Total Sed. Volume:	0.010 ml.
Size Range:	0 - 32um

Quantification - Particulate Debris*

Crypto-sized. Debris:	1+		
Giardia-sized Debris:	1+		
Large Part. Debris:	1+		
Cellular Debris:	0		
Diatoms:	0	**Algae:**	0
Rotifers:	0	**Protozoa:**	0
Nematodes:	1+	**Crustacea:**	0
Insects:	0	**Other:**	0

Giardia **: NO GIARDIA CYSTS
cysts per 100 liters: 0
Cryptosporidium*:** NO CRYPTO OOCYSTS
oocysts per 100 liters: 0

Filtration Performance Rating: 1

1 = Acceptable
2 = Unacceptable

Comments:

Analyzed By: C.STERLING **Date of Analysis:** 2/24/2017

** Quantification figures are based on a 300 gallon sample. Particulate debris are scored in the following manner:*
0 = None 1+ = Rare 2+ = Few 3+ = Moderate 4+ = Many
Crypto-sized Debris = 3-7 um Giardia-sized Debris = 8-19 um Large Part. Debris = >20 um

*** Giardia cyst identification is based on size, shape, and at least two identifiable internal structures.*

**** Cryptosporidium oocysts are considered "presumptive" unless noted.*

*ATTACHMENT A

The following information is excerpted from "Guidance for Filter Plant Performance Evaluations", DEP Document Number 383-3120-106. This attachment is intended to provide further explanation of the rating your filter plant has received.

PERFORMANCE RATING SYSTEM

FPPE staff will use the following categories to rate each plant. The ratings are based on the plant's ability and operators' skill level to maintain optimal performance over the long-term. Please note that while FPPEs may discover major treatment problems or identify and record violations of regulations, the rating system is not based on regulatory compliance.

"Commendable"
Department staff have identified only minor operational, equipment, and/or performance problems that affect the plant's ability to maintain optimized performance. Plant personnel have already taken steps to improve overall filter plant performance and maintain the long-term reliability of the plant.

"Satisfactory"
Department staff have identified operational, equipment, and/or performance problems that may affect the plant's ability to maintain optimized performance. Plant personnel appear willing and capable of improving overall filter plant performance. However, one or more of the treatment processes showed areas of weakness in operational, equipment, and/or performance that, if corrected, will improve filter plant performance and maintain the long-term reliability of the plant.

"Needs Improvement"
Department staff have identified considerable operational, equipment, and/or performance problems that are affecting the plant's ability to maintain optimized performance. Limitations are apparent that hinder improvement of overall filter plant performance. Areas of weakness affect the capability and dependability of the plant in providing consumers with an adequate level of protection against waterborne pathogens.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

In re: Application of Pennsylvania-American Water Company under Section 1102(a) of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1102(a), for approval of (1) the transfer, by sale, of substantially all of the Steelton Borough Authority's assets, properties and rights related to its water treatment, transportation, and distribution facilities to Pennsylvania-American Water Company, and (2) the rights of Pennsylvania-American Water Company to begin to offer, render, furnish or supply water service to the public in the Borough of Steelton and a portion of the Township of Swatara, Dauphin County, Pennsylvania.	Docket No. A-2019-_____ *et al.*
In re: Application of Pennsylvania-American Water Company under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, for approval of the use for ratemaking purposes of the lesser of the fair market value or the negotiated purchase price of the Steelton Borough Authority's assets related to its water treatment and distribution system.	Docket No. A-2019-_____ *et al.*
Petition of Pennsylvania-American Water Company, related to its acquisition of the Steelton Borough Authority's water treatment, transportation and distribution facilities, for approval under Section 1329 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 1329, to (i) collect a distribution system improvement charge, (ii) for book and ratemaking purposes, accrue Allowance for Funds Used During Construction for post-acquisition improvements not recovered through the distribution system improvement charge, and (iii) for book and ratemaking purposes, defer depreciation related to post-acquisition improvements not recovered through the distribution system improvement charge.	Docket No. P-2019-_____ *et al.*

In re: Filing by Pennsylvania-American Water Company under Section 507 of the Pennsylvania Public Utility Code, 66 Pa. C.S. § 507, the Asset Purchase Agreement Between Pennsylvania-American Water Company and the Steelton Borough Authority.	:	Docket No. U-2019-_____

DIRECT TESTIMONY OF
DYLAN W. D'ASCENDIS, CVA, CRRA

Dated: January 2, 2019

Steelton Statement No. 2

DIRECT TESTIMONY OF
DYLAN D'ASCENDIS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by ScottMadden, Inc. ("ScottMadden") as Director.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EDUCATION AND EXPERIENCE.

A. I offer expert testimony on behalf of investor-owned utilities on rate of return issues and class cost of service issues. I am a Utility Valuation Expert ("UVE") in the Commonwealth of Pennsylvania approved by the PUC (Utility Code 9919278). I also assist in preparing rate filings, including, but not limited to, revenue requirements and original cost and lead/lag studies. I am a graduate of the University of Pennsylvania, where I received a Bachelor of Arts degree in Economic History. I also hold a Masters of Business Administration from Rutgers University with a concentration in Finance and International Business, which was conferred with high honors. I am a Certified Rate of Return Analyst ("CRRA") and a Certified Valuation Analyst ("CVA"). My full professional qualifications, including my expert witness appearances, are provided in Appendix A

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION?

A. Yes. I have testified before the Pennsylvania Public Utility Commission ("Commission" or "PUC") on several occasions.[1]

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe the fair market value appraisal of the water distribution system ("Water System" or the "System") of Steelton Borough Authority ("Steelton") that I and my staff performed on behalf of Steelton. Steelton is selling their System to Pennsylvania American Water Company, Inc. ("PAWC"). Our report is entitled "Valuation Report Steelton Borough Authority June 12, 2018." The appraisal and its report were developed to meet the criteria established in Section 1329 of the Pennsylvania Public Utility Code ("Code"), 66 Pa. C.S. § 1329 ("Determination of the fair market value of water and wastewater assets").

In its 2015-2016 legislative session, the Pennsylvania Legislature passed Act 12 of 2016 and Governor Wolf signed into law Section 1329 of the Code establishing the legislative guidelines facilitating the acquisition of municipal and regional water and wastewater systems by private investor-owned utilities and other entities which are rate-regulated by the Pennsylvania Public Utility Commission ("PUC"). This legislation was intended to facilitate the acquisition of water and wastewater systems in order to facilitate capital improvements to the water and or wastewater properties.

[1] Docket Nos. R-2011-2255159 (Penn Estates Utilities, Inc.), R-2013-2360798 (Columbia Water Company), R-2014-2402324 (Emporium Water Company), R-2017-2593142 (Veolia Energy Philadelphia, Inc.), R-2017-2598203 (Columbia Water Company), R-2018-3000834 (SUEZ Water Pennsylvania Inc.), and A-2018-3003519 (Mahoning Township/SUEZ Water Pennsylvania Inc.).

QUALIFICATION AS UTILITY VALUATION EXPERT

Q. IS SCOTTMADDEN, AND SPECIFICALLY YOURSELF, ON THE COMMISSION'S REGISTRY OF UTILITY VALUATION EXPERTS?

A. Yes. ScottMadden and I are considered UVEs in the Commonwealth of Pennsylvania approved by the PUC (Utility Code 9919278).

Q. PLEASE DESCRIBE THE PROCESS BY WHICH SCOTTMADDEN WAS PLACED ON THE COMMISSION'S REGISTRY OF UTILITY VALUATION EXPERTS.

A. After passage of Section 1329 of the Code, the Commission established an application process by which the Commission would approve and designate firms to be placed on the Commission's "Registry of Utility Valuation Experts." ScottMadden submitted its application and the required proof of experience on October 13, 2016 and received confirmation and approval from the Commission of ScottMadden's placement on the Commission's UVE Registry on December 7, 2016.

Q. HAVE YOU EVER HAD YOUR PROFESSIONAL CREDENTIALS REVOKED OR SUSPENDED?

A. No.

Q. DO YOU HAVE SPECIFIC EXPERIENCE WITH THE VALUATION AND APPRAISAL OF UTILITY ASSETS?

A. Yes. Please see Appendix A for the details of my valuation assignments.

Q. HAVE YOU, SCOTTMADDEN, OR ANY OF ITS STAFF DERIVED ANY MATERIAL FINANCIAL BENEFIT FROM THE SALE OF STEELTON'S ASSETS OTHER THAN FEES FOR YOUR SERVICES RENDERED?

A. No.

Q. ARE YOU, SCOTTMADDEN, OR ANY OF ITS STAFF AN IMMEDIATE FAMILY MEMBER OF A DIRECTOR, OFFICER, OR EMPLOYEE OF EITHER PAWCOR STEELTON?

A. No.

Q. IS SCOTTMADDEN IN COMPLIANCE WITH APPLICABLE PENNSYLVANIA LAWS?

A. Yes.

Q. DOES SCOTTMADDEN HAVE THE FINANCIAL AND TECHNICAL FITNESS, INCLUDING PROFESSIONAL LICENSES AND TECHNICAL CERTIFICATIONS, TO PERFORM A FAIR MARKET VALUATION OF THE ASSETS OF STEELTON?

A. Yes.

Q. ARE YOU AWARE OF ANY FACT, INCLUDING BUT NOT LIMITED TO ANY POTENTIAL CONFLICT OF INTEREST, THAT WOULD CAST DOUBT UPON YOUR ABILITY TO PROVIDE A THOROUGH, OBJECTIVE, UNBIASED, AND FAIR VALUATION IN THIS PROCEEDING?

A. No.

FEES PAID FOR UTILITY VALUATION EXPERT SERVICES

Q. HOW IS SCOTTMADDEN BEING COMPENSATED FOR ITS SERVICES IN THIS MATTER?

A. ScottMadden is being compensated on a fee basis, which includes a fixed fee upon delivery of the initial valuation report, and hourly rates for any services rendered thereafter. True, correct, and complete copies of ScottMadden's invoices to Steelton for this matter, as of the date of Application filing, are attached to PAWC's Application as **Appendix A-8** and I incorporate those invoices in my direct testimony as if set forth in their entirety.

Q. ARE THESE FEES CONSISTENT WITH COMPENSATION RECEIVED FOR SIMILAR SERVICES PROVIDED TO OTHER CLIENTS?

A. Yes.

FAIR MARKET VALUATION OF STEELTON'S ASSETS

Q. PLEASE IDENTIFY APPENDIX A-5.2 TO THE APPLICATION IN THIS PROCEEDING?

A. **Appendix A-5.2** of PAWC's Application includes my appraisal report dated June 12, 2018, which I prepared for Steelton to be filed in this proceeding. As noted in the cover letter accompanying the report, the appraisal was edited in October 2018 to remove the analysis of sewer assets and incorporate corrections to the asset inventory report prepared by Herbert, Rowland, and Grubic ("HRG").

Q. HOW DO YOU RECOGNIZE IT?

A. I personally prepared and supervised ScottMadden personnel in preparing the report, and recognize it as ScottMadden's work product.

Q. IS APPENDIX A-5.2 A TRUE, COMPLETE, AND ACCURATE COPY OF YOUR VALUATION REPORT?

A. Yes, and I incorporate it into my direct testimony as if set forth in its entirety.

Q. PLEASE DESCRIBE THE PROCESS BY WHICH YOU PREPARED THE VALUATION REPORT.

A. In accordance with Section 1329 of the Code, Steelton engaged Herbert, Rowland, and Grubic ("HRG") as the licensed engineer to conduct an assessment of the tangible assets of Steelton. Steelton engaged ScottMadden to prepare the fair market valuation report for their System. Steelton provided financial statements regarding the System and a copy of the Engineering Assessment development by HRG for use by PAWC and ScottMadden as required by Section 1329(a)(4). In addition, ScottMadden performed an on-site visit of the above ground facilities and conducted intensive interviews of Steelton staff on March 27, 2018. After those activities and data gathering, we developed the appraisal.

The appraisal contains a letter of transmittal; a narrative report explaining our methodology and conclusions; a statement of assumptions and limiting conditions; a statement of the Valuation Analyst's Representations; a statement of the professional qualifications of Dylan W. D'Ascendis, CVA, CRRA; and various schedules and appendices.

The intent of the valuation report is to provide the appraisal results, as well as the entire appraisal work file, in sufficient detail to satisfy the parties' and Commission's review requirements of Section 1329 and the Commission's Final Implementation Order, *In re: Implementation of Section 1329 of the Public Utility Code*, Docket No. M-2016-2543193 (Order entered October 27, 2016). In addition to a copy of my appraisal report, I

have provided supporting work papers for the appraisal report, which are included in **Appendix A-4** to PAWC's Application. The relevant work papers have also been submitted to the Commission and provided to the public advocates in live electronic format.

Q. IS THERE ANYTHING THAT YOU WOULD CHANGE IN THE VALUATION REPORT SINCE ITS PREPARATION?

A. No.

Q. WAS THE FAIR MARKET VALUATION OF THE STEELTON ASSETS DETERMINED IN COMPLIANCE WITH THE UNIFORM STANDARDS OF PROFESSIONAL APPRAISAL PRACTICE ("USPAP")?

A. Yes. Included in my cover letter is a statement of our report's compliance with USPAP.

Q. DID YOU EMPLOY THE COST, MARKET AND INCOME APPROACHES IN PREPARING YOUR VALUATION?

A. Yes. We developed our appraisal utilizing the cost, income, and market approaches as required by USPAP and Section 1329 of the Code. These approaches are summarized below.

Valuation Approach	Indicated Value
Cost Approach	$22,243,034
Income Approach	$12,507,119
Market Approach	$29,388,354

Q. DID YOU RELY UPON A LICENSED ENGINEER'S ASSESSMENT OF THE TANGIBLE ASSETS OF STEELTON IN PERFORMING YOUR VALUATION?

A. Yes. Steelton engaged HRG as the licensed engineer to conduct an assessment of the tangible assets of the System. Steelton provided a copy of the Engineering Assessment

developed by HRG for use by PAWC and ScottMadden as required by Section 1329(a)(4). A copy of the Engineering Assessment is attached to the Application as **Appendix A-5.1-3.**

Q. DID THE LICENSED ENGINEER'S ASSESSMENT INCLUDE AN INVENTORY OF THE USED AND USEFUL UTILITY PLANT ASSETS TO BE TRANSFERRED COMPILED BY YEAR AND ACCOUNT?

A. Yes.

Q. DID THE LICENSED ENGINEER'S ASSESSMENT IDENTIFY SEPARATELY ANY UTILITY PLANT THAT IS BEING HELD FOR FUTURE USE?

A. Yes.

Q. DID THE LICENSED ENGINEER'S ASSESSMENT LIST ALL NON-DEPRECIABLE PROPERTY SUCH AS LAND AND RIGHTS-OF-WAY?

A. Yes.

Q. TO THE BEST OF YOUR KNOWLEDGE, WAS THE LICENSED ENGINEER'S INVENTORY DEVELOPED FROM AVAILABLE RECORDS, MAPS, WORK ORDERS, DEBT ISSUE CLOSING DOCUMENTS FUNDING CONSTRUCTION PROJECTS, AND OTHER SOURCES TO ENSURE AN ACCURATE LISTING OF UTILITY PLANT INVENTORY BY UTILITY ACCOUNT?

A. Yes.

Q. DO YOU HAVE ANY REASON TO DOUBT THE ACCURACY OF THE LICENSED ENGINEER'S INVENTORY OF THE ASSETS?

A. No.

Q. DID YOU INCORPORATE THE LICENSED ENGINEER'S ASSESSMENT INTO YOUR COST APPROACH IN DEVELOPING YOUR VALUATION?

A. Yes.

Q. DID YOU HAVE TO EXERCISE PROFESSIONAL DISCRETION IN DEVELOPING ANY ASPECT OF YOUR VALUATION?

A. Yes. The use of professional discretion is detailed throughout my valuation report in **Appendix A-5.2**, where applicable.

CONCLUSION

Q. WHAT IS YOUR CONCLUSION REGARDING THE FAIR MARKET VALUE OF THE STEELTON SYSTEM'S ASSETS TO BE PURCHASED BY PAWC?

A. The fair market value of the Water System is $21,459,590 as of June 12, 2018. The results of our appraisals and our conclusions are summarized in the following table:

Valuation Approach	Indicated Value	Weight	Weighted Value
Cost Approach	$22,243,034	33%	$7,340,201
Income Approach	$12,507,119	33%	$4,127,349
Market Approach	$29,388,354	34%	$9,992,040
			$21,459,590

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony as additional issues and facts arise during the course of the proceeding.

scottmadden
MANAGEMENT CONSULTANTS

Appendix A
Professional Qualifications of
Dylan W. D'Ascendis, CRRA, CVA

Summary

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 9 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities. He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 13 regulatory commissions in the U.S. and an American Arbitration Association panel.

He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured. He serves on the Rates and Regulatory Committee of the National Association of Water Companies (NAWC).

Areas of Specialization

- Regulation and Rates
- Utilities
- Mutual Fund Benchmarking
- Capital Market Risk
- Capital Market Risk
- Financial Modeling
- Valuation
- Regulatory Strategy and Rate Case Support
- Rate of Return
- Cost of Service
- Rate Design

Recent Expert Testimony Submission/Appearances

Jurisdiction	*Topic*
Regulatory Commission of Alaska	Return on Common Equity & Capital Structure
New Jersey Board of Public Utilities	Cost of Service, Rate Design
Pennsylvania Public Utility Commission	Return on Common Equity
South Carolina Public Service Commission	Return on Common Equity
American Arbitration Association	Valuation

Recent Assignments

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the City
- Co-authored a valuation report on behalf of a large investor-owned utility company in response to a new state regulation which allowed the appraised value of acquired assets into rate base

Recent Publications and Speeches

- Co-Author of: "The Impact of Decoupling on the Cost of Capital of Public Utilities", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. (Forthcoming)
- "Past is Prologue: Future Test Year", Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit, May 2, 2017, Savannah, GA.
- Co-author of: "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley, The Electricity Journal, May, 2013.
- "Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

VALUATION ENGAGEMENTS	DATE	ASSETS VALUED	DESCRIPTION
Steelton Borough Authority	6/18	Water Operations	Authored Valuation Report, which is part of Act 12 Filing.
Block Island Power Company	4/18	Electric Operations	Authored Valuation Report for internal purposes.
Mahoning Township, PA	9/17	Water and Sewer Assets	Authored Valuation Report, which is part of Act 12 Filing.
Atmos Energy Corporation	9/16	Intrastate Natural Gas Pipeline	Authored Valuation for internal purposes.
Village of Glenview, IL (North Maine Utilities)	7/14	Water and Sewer Assets	Co-Authored Valuation Report, which was part of House Bill 1379 Filing (similar to PA Act 12).
Springfield Township, PA	8/14	Sewer Assets	Co-Authored Valuation report for internal purposes.
Erie City Water Authority, Erie, PA	12/13	Water Assets	Sponsored Valuation Testimony in Arbitration Hearing.
City of Allentown, PA	12/12	Water and Sewer Assets	Assisted in the generation of Valuation Report.

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Regulatory Commission of Alaska				
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
Colorado Public Utilities Commission				
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Return on Equity
Delaware Public Service Commission				
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
Hawaii Public Utilities Commission				
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. __	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
Illinois Commerce Commission				
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
Indiana Utility Regulatory Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
Louisiana Public Service Commission				
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc.	Docket No. U-32848	Rate of Return
Massachusetts Department of Public Utilities				
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	Docket No. 15-75	Rate of Return
Missouri Public Service Commission				
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Docket No. SR-2016-0202	Rate of Return
New Jersey Board of Public Utilities				
Middlesex Water Company	010/17	Middlesex Water Company	Docket No. WR1710xxxx	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
Public Utilities Commission of Ohio				
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Docket No. 16-0907-WW-AIR	Rate of Return
Pennsylvania Public Utility Commission				
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No. R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
South Carolina Public Service Commission				
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Utility Services of South Carolina, Inc.	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
Virginia State Corporation Commission				
Aqua Virginia, Inc.	7/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design