Jerome C. Weinert
Principal & Director

AUS Consultants
Depreciation and Valuation
8555 West Forest Home Avenue
Suite 201
Greenfield, WI 53228
Telephone 414-529-5755
Fax 414-529-5750
E-Mail weinertj@auswest.net

September 11, 2018

Mr. Andrew L. Swope
Vice President, General Counsel
Pennsylvania-American Water Company
800 West Hersheypark Drive
Hersey, PA 17033

RE: Exeter Township, PA Wastewater Utility Appraisal

Enclosed is the appraisal report for Exeter, PA's wastewater utility system as of January 1, 2018 prepared for Pennsylvania-American Water Company. The report was prepared based on the 2018-2019 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) Paragraph 1329 "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are Pennsylvania-American Water Company and the Pennsylvania Public Utility Commission.

Based on our appraisal the Fair Market Value of Exeter's wastewater system property, plant, and equipment operating as a Pennsylvania rate regulated wastewater utility is $101,817,000 determined based on the cost, income, and market approaches to value, as detailed in the following table:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

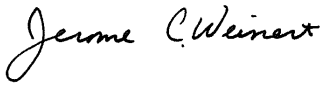
Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Depreciated Replacement Cost New	$	99,589,819		
Cost Approach Conclusion		99,589,819	50%	49,794,909
Income Approach				
		106,363,321		
Income Approach Conclusion				
		106,363,321	40%	42,545,328
Market Approach				
Market Approach Conclusion		94,769,671	10%	9,476,967
Appraisal Conclusion	$	101,817,204	100%	101,817,204
Conclusion (cost approach)	$	99,589,819		

As the purpose of this appraisal was to fulfill the requirements of Act 12 in the establishment of value for rate making of Exeter's wastewater utility's property, plant and equipment, the cost approach conclusion of $99,589,819 is consistent with the purpose of the appraisal. This cost approach conclusion is detailed in the Cost Approach of this report. As the cost approach work papers details our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry

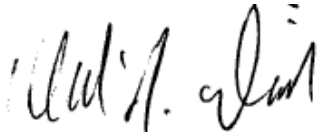
account classifications and the installation year of the property this detail can be used to establish the booked value for future accounting and rate making.

Respectfully Submitted,
AUS Consultants, Depreciation & Valuation
By:

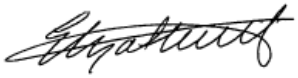


Jerome C. Weinert, ASA, P.E., CDP
Principal and Director

David A. Sheffer
Principal



Michael J. Diedrich, ASA, P.E., CDP
Certified General Appraiser
Principal



Elizabeth A. Weinert
Associate

September 1, 2018

ASA: Accredited Senior Appraiser in the Machinery and Equipment (Public Utilities) discipline of the American Society of Appraisers
P.E.: Registered Professional Engineer State of Wisconsin
CDP: Certified Depreciation Professions in the Society of Depreciation Professionals

Enclosures

AUS CONSULTANTS

Exeter, Pennsylvania's Wastewater Utility

Fair Market Value Appraisal Report
As of January 1, 2018
for
Pennsylvania-American Water Company

AUS Consultants
Depreciation and Valuation
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September 11, 2018

Pennsylvania-American Water Company
Hersey, Pennsylvania

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Depreciation and Valuation
8555 West Forest Home Avenue
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Greenfield, WI 53228
Telephone 414-529-5755
Fax 414-529-5750
E-Mail weinertj@auswest.net

RE: The Exeter, Pennsylvania Wastewater Utility Appraisal

Enclosed is the appraisal report for Exeter, PA's wastewater utility system as of January 1, 2018 prepared for our client Pennsylvania-American Water Company. The report was prepared based on the 2018-2019 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated (PA CS) Statues Section 1329 "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are Pennsylvania-American Water Company and the Pennsylvania Public Utility Commission.

Based on our appraisal, the Fair Market Value of the Exeter PA's wastewater utility's property, plant, and equipment operating as Pennsylvania rate regulated wastewater utility is $101,817,000 determined based on the cost, income, and market approaches to value, as detailed in the following table:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Depreciated Replacement Cost New	$	99,589,819		
Cost Approach Conclusion		99,589,819	50%	49,794,909
Income Approach		106,363,321		
Income Approach Conclusion		106,363,321	40%	42,545,328
Market Approach				
Market Approach Conclusion		94,769,671	10%	9,476,967
Appraisal Conclusion	$	101,817,204	100%	101,817,204
Conclusion (cost approach)	$	99,589,819		

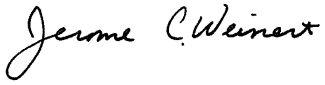
As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of Exeter's property, plant and equipment, the cost approach conclusion of $99,589,819 is consistent with the purpose of the appraisal. This cost approach conclusion is detailed in the Cost Approach of this report. As the cost approach work papers details our value conclusion by National Association of Regulatory Utility

Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of the property this detail can be used to establish the booked value for future accounting and rate making.

.

Respectfully Submitted,

AUS Consultants, Depreciation & Valuation
By:



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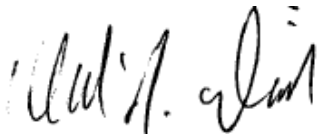
Principal and Director

David A. Sheffer
Principal



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September 11, 2018

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AUS CONSULTANTS

APPRAISAL CERTIFICATION
for the Fair Market Appraisal of
Exeter Township, Pennsylvania's Wastewater Utility
As of January 1, 2018
Prepared for
Pennsylvania-American Water Company

AUS Consultants, Depreciation & Valuation, certifies that, to the best of its knowledge and belief:

- The statements of fact contained in this report are true and correct.

- Over the last three years, AUS Consultants has not appraised these properties.

- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.

- AUS Consultants, Depreciation & Valuation, or its professional staff have no present or prospective interest in the property that is the subject of this report, and has no personal interest with respect to the parties involved.

- Neither AUS Consultants, Depreciation & Valuation, nor its professional staff has any bias with respect to the property that is the subject of this report or to the parties involved.

- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

- Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice 2018-2019 Edition.

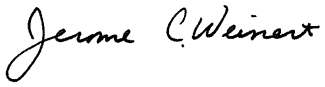
- The signer (David A. Sheffer) of this report has made personal inspections of the property that is the subject of this report.

- All individuals who participated in the preparation of this report and who are Senior Members of the American Society of Appraisers are re-certified as required by the mandatory re-certification as set out in the constitution by-laws and administrative rules of the American Society of Appraisers.

AUS CONSULTANTS

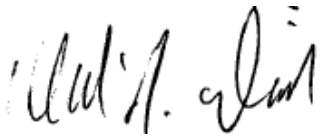
- No individuals provided significant professional assistance to the persons signing this report. However, the following Pennsylvania-American Water Company personnel provided information and assistance obtained from Exeter Township, Pennsylvania and Gannett Fleming Valuation and Rate Consultants, LC's Engineers Assessment report which was the inventory starting point of the Cost Approach.

AUS Consultants, Depreciation & Valuation
By:



Jerome C. Weinert, ASA, P.E., CDP
Principal and Director

David A. Sheffer
Principal



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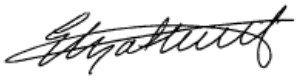

Elizabeth A. Weinert
Associate

September 11, 2018

AUS CONSULTANTS

NARRATIVE REPORT

AUS CONSULTANTS

EXECUTIVE SUMMARY

The purpose of this appraisal is the determination of the fair market value of the property plant and equipment of Exeter Township, Pennsylvania's wastewater utility for our client Pennsylvania-American Water Company. The report was prepared based on the 2018-2019 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues Paragraph 1329: "Valuation of acquired water and wastewater systems", collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12) and the Pennsylvania Public Utility Commission's Final Implementation Order M-2016-2543193 adopted October 27, 2016. The intended users of this appraisal are Pennsylvania-American Water Company and the Pennsylvania Public Utility Commission (PUC).

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress."* *The Appraisal of Real Estate, 14th Edition, page 58.*

In arriving at our opinion of value of Exeter wastewater utility's property, plant, and equipment as it is operated as an investor-owned Pennsylvania PUC rate regulated wastewater utility the cost, income, and market approaches to value were considered. Detailed explanations of each approach to value are included below in the section "Appraisal Procedures and Results". The following summarizes the data, analysis and conclusions of each of those valuation approaches.

Cost Approach - The philosophy in the cost approach to value is that the maximum value of a property is established by the cost to acquire or build a similar property. In this appraisal, the cost approach to value was analyzed using reproduction/replacement cost approach.

Reproduction cost and replacement cost are defined as:

> Reproduction cost – "Reproduction cost is the estimated cost to construct, as of the effective appraisal date, an exact duplicate or replica of the building [property] being appraised, insofar as possible, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, super-adequacies, and obsolescence of the subject improvements [property]."[1]
>
> Replacement cost – "Replacement cost is the estimated cost to construct, as of the effective appraisal date, a substitute for the building [property] being appraised using contemporary materials, standards, design and layout. When this cost basis is used, some existing obsolescence in the property may be cured. Replacement cost may be the only alternative if reproduction cost cannot be estimated"[2]
>
> In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new estimated by the trended original cost or the inventory-unit cost methods.

The trended original cost method was utilized in preparing the replacement cost new. "Trending is a method of estimating a property's replacement cost new in which an *index* or *trend factor* is applied to the property's *historical costs* to convert the known historical costs into an indication of current (appraisal date) costs. Simply put, trending reflects the movement of price over time."[3] In the trended original cost method, Exeter's investment in wastewater plant and equipment is restated to costs reflective of the appraisal date, by the application of cost trends to the property's original investment. AUS Consultants utilized the Engineer's Assessment performed by Gannett Fleming Valuation and Rate Consultants, LC (Engineer's Assessment tab) as the starting point of the Cost Approach. Utilizing the Engineer's Assessment AUS Consultant developed Exeter's original cost less depreciation in property, plant and equipment at January 1, 2018 (AUS Cost Approach tab).

The cost trends were applied to each of the Exeter's various investment categories (plant accounts) by original year of placement for that investment. The cost indexes

[1] The Appraisal of Real Estate, 14th Edition. pages 569-570
[2] Ibid, page 570
[3] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Third Edition. Page 50

used in these studies were the Handy-Whitman Index of Public Utility Construction Costs for the water industry in the northeastern region of the United States, AUS General Plant Indexes, and various United States Bureau of Labor Statistics (US BLS) indexes as detailed in the following table:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
January 1, 2018

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)	(4a)	(4b)	(5)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence
		Index Series	Table	Line Reference	Lookup	AUS Input		years	years
	Non-Depreciable								
	Land & Land Rights						Non-Depr		
	Depreciable								
353.00	**Land & Land Rights**								
353.10	Land & Land Rights	USBLS	PPI	3	USBLS3	1.000	**Non-Depr**	**0**	0%
353.20	Land & Land Rights - Collection	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.30	Land & Land Rights - Pumping	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.40	Land & Land Rights - Treatment	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
354.00	**Stuctures & Improvements**						**R4.0**	**45**	
354.30	Stuctures & Improvements - Pumping	HW	W-1	8	HWW-18	1.000	R4.0	45	0%
354.40	Stuctures & Improvements - Treatment	HW	W-1	15	HWW-115	1.000	R4.0	55	0%
355.00	**Generating Equipment**	USBLS	PPI	4	USBLS4	1.000	**R3.0**	**35**	0%
355.30	Generating Equipment - Pumping	USBLS	PPI	4	USBLS4	1.000	R3.0	35	0%
360.00	**Mains Force**						R3.0	60	
360.21	Collection Sewers - Force - Mains	HW	W-1	44	HWW-144	1.000	R3.0	60	0%
360.211	Collection Sewers - Force - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	60	0%
360.213	Collection Sewers - Force - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	60	0%
360.23	Collection Sewers - Force - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	65	0%
360.31	Air Release	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
360.41	Valves	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
361.00	**Mains Gravity**						**R3.0**	**80**	
361.12	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.211	Collection Sewers - Gravity - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	80	0%
361.212	Collection Sewers - Gravity - Mains - VCP	HW	W-1	36	HWW-136	1.000	R3.0	80	0%
361.213	Collection Sewers - Gravity - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	80	0%
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	44	HWW-144	0.100	R3.0	80	0%
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	80	0%
361.24	Collection Sewers - Gravity - Manholes Repairs	HW	W-1	45	HWW-145	0.100	R3.0	80	0%
361.71	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
363.00	**Service Laterals**	HW	W-1	39	HWW-139	1.000	**R3.0**	**55**	0%
363.20	Service Laterals	HW	W-1	39	HWW-139	1.000	R3.0	55	0%
364.00	**Flow Measuring Devices**	HW	W-1	40	HWW-140	1.000	**R3.0**	**35**	0%
364.20	Flow Measuring Devices	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
365.20	Flow Measuring Installations	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
371.00	**Pumping Equipment**	HW	W-1	9	HWW-19	1.000	**R3.0**	**35**	0%
371.30	Pumping Equipment	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
371.32	Pumping Equipment - Grinder	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
380.00	**Treatment and Disposal Equipment**						**R3.0**	**45**	
380.40	Treatment and Disposal Equipment	HW	W-1	17	HWW-117	1.000	R3.0	45	0%
390.00	**General Plant**						**R3.0**	**12**	
390.70	Office Furniture and Equipment	AUS	T-1	15	AUST-115	1.000	R3.0	12	0%
391.70	Transportation Equipment	AUS	T-1	4	AUST-14	1.000	R3.0	10	0%
392.70	Stores Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0
393.70	Tools, Shop, & Garage Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0%
394.70	Laboratory Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	20	0%
395.70	Power Operated Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	15	0%
396.70	Communications Equipment	USBLS	PPI	2	USBLS2	1.000	R3.0	12	0%
397.70	Miscellaneous Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
398.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
399.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%

Using the trended original cost method, Exeter's investment in plant, property and equipment of $68,404,345 was determined to have a reproduction cost new of $209,865,528.

Replacement Cost New - In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new." In this instance the reproduction costs and replacement costs are the same hence I used reproduction and replacement cost interchangeably. The exception to this was the investment associated with the mains relining (361.22) and the manhole repairs (361.24) wherein the replacement cost as estimated at 10% of their reproduction cost. The replacement cost new was determined to be $209,693,218.

Replacement Cost New Less Depreciation - The replacement cost described above reflects the cost of new property; however, Exeter's wastewater system property is not new and has experienced normal depreciation and potentially functional and/or economic obsolescence. These various forms of depreciation are defined as follows:

> Normal depreciation/deterioration, akin to physical deterioration, is "loss in value caused by wear, tear, age and use."[4]
>
> Functional obsolescence is "the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient of less costly replacement property that new technology has developed."[5]
>
> Economic, or external, obsolescence is defined as "a loss in value caused by factors outside a property"[6] and is most often indicated by insufficient earning.

[4] The Dictionary of Real Estate Appraisal, 4th Edition
[5] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 67.
[6] The Appraisal of Real Estate, 13th Edition, page 442.

Based on our experience in regard to: water and wastewater depreciation studies and our analysis of Exeter's wastewater system operating performance; we found that Exeter's wastewater utility's property experiences normal depreciation but not any significant functional or economic obsolescence (see Income Approach).

In order to ascertain the service lives of the various types of Exeter's property, plant and equipment, we considered AUS Consultants' past water and wastewater depreciation studies, documentation provided by Exeter Township, and the interviews with Pennsylvania-American's personnel and consultants. Through our experience and the above described information, the following normal depreciation parameters of survival/retirement characteristics and service lives were determined for Exeter's wastewater utility property:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
January 1, 2018

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)	(4a)	(4b)	(5)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence
		Index Series	Table	Line Reference	Lookup	AUS Input		years	years
	Non-Depreciable								
	Land & Land Rights						Non-Depr		
	Depreciable								
353.00	**Land & Land Rights**								
353.10	Land & Land Rights	USBLS	PPI	3	USBLS3	1.000	**Non-Depr**	**0**	0%
353.20	Land & Land Rights - Collection	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.30	Land & Land Rights - Pumping	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.40	Land & Land Rights - Treatment	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
354.00	**Stuctures & Improvements**						**R4.0**	**45**	
354.30	Stuctures & Improvements - Pumping	HW	W-1	8	HWW-18	1.000	R4.0	45	0%
354.40	Stuctures & Improvements - Treatment	HW	W-1	15	HWW-115	1.000	R4.0	55	0%
355.00	**Generating Equipment**	USBLS	PPI	4	USBLS4	1.000	**R3.0**	**35**	0%
355.30	Generating Equipment - Pumping	USBLS	PPI	4	USBLS4	1.000	R3.0	35	0%
360.00	**Mains Force**						R3.0	60	
360.21	Collection Sewers - Force - Mains	HW	W-1	44	HWW-144	1.000	R3.0	60	0%
360.211	Collection Sewers - Force - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	60	0%
360.213	Collection Sewers - Force - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	60	0%
360.23	Collection Sewers - Force - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	65	0%
360.31	Air Release	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
360.41	Valves	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
361.00	**Mains Gravity**						**R3.0**	**80**	
361.12	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.211	Collection Sewers - Gravity - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	80	0%
361.212	Collection Sewers - Gravity - Mains - VCP	HW	W-1	36	HWW-136	1.000	R3.0	80	0%
361.213	Collection Sewers - Gravity - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	80	0%
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	44	HWW-144	0.100	R3.0	80	0%
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	80	0%
361.24	Collection Sewers - Gravity - Manholes Repairs	HW	W-1	45	HWW-145	0.100	R3.0	80	0%
361.71	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
363.00	**Service Laterals**	HW	W-1	39	HWW-139	1.000	**R3.0**	**55**	0%
363.20	Service Laterals	HW	W-1	39	HWW-139	1.000	R3.0	55	0%
364.00	**Flow Measuring Devices**	HW	W-1	40	HWW-140	1.000	**R3.0**	**35**	0%
364.20	Flow Measuring Devices	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
365.20	Flow Measuring Installations	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
371.00	**Pumping Equipment**	HW	W-1	9	HWW-19	1.000	**R3.0**	**35**	0%
371.30	Pumping Equipment	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
371.32	Pumping Equipment - Grinder	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
380.00	**Treatment and Disposal Equipment**						**R3.0**	**45**	
380.40	Treatment and Disposal Equipment	HW	W-1	17	HWW-117	1.000	R3.0	45	0%
390.00	**General Plant**						**R3.0**	**12**	
390.70	Office Furniture and Equipment	AUS	T-1	15	AUST-115	1.000	R3.0	12	0%
391.70	Transportation Equipment	AUS	T-1	4	AUST-14	1.000	R3.0	10	0%
392.70	Stores Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0
393.70	Tools, Shop, & Garage Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0%
394.70	Laboratory Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	20	0%
395.70	Power Operated Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	15	0%
396.70	Communications Equipment	USBLS	PPI	2	USBLS2	1.000	R3.0	12	0%
397.70	Miscellaneous Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
398.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
399.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%

Normal Depreciation – The extent of the normal depreciation in the property was evaluated using age-life depreciation techniques. In age-life depreciation, the property's depreciation or condition is estimated using the following formula:

$$\text{Depreciation (\%)} = \frac{\text{Age (years) x100\%}}{\text{Service Life (years)}}$$

$$\text{Condition (\%)} = \frac{\text{Remaining Life (years) x (100\%)}}{\text{Service Life (years)}}$$

where: the property's Service Life = Age + Remaining Life

When the above depreciation lives are used to quantify the property's depreciation is applied to the replacement cost new (RCN) of $209,693,218 the resultant RCN less normal depreciation (RCNLD) was found to be $99,589,819 detailed as follows:

Pennsylvania-American Water Company
Exeter Wastewater System
Exeter Township, Berks County, Pennsylvania
Wastewater System
Investor-Owned Utility

Summary of Original Cost, Average Service Life/Curve, Replacement Cost and Depreciated Replacement Cost
As of January 1, 2018

Account No.	Description	Original Cost	Cost Index	Cost Translator	Reproduction Cost New	Reproduction to Replacement Cost Factor	Replacement Cost New	Average Age	Weighted RCN Age	Iowa Survivor Curve and Life	Average Normal Remaining Life	Weighted RCN Average Normal Remaining Life	Average Total Life Expectancy	Weighted RCN Average Total Life Expectancy	Condition	Depreciated Replacement Cost	Economic Obsolescence	Fair Market Value
353.20	Land & Land Rights - Collection	336,068.94	USBLS1	2.23	749,404.75	1.000	749,404.75	32.60	24,434,285.00	Non-Depr	-	-	-	-	100.00%	749,404.75	0.00%	749,404.75
353.30	Land & Land Rights - Pumping	63,244.16	USBLS1	1.58	99,930.18	1.000	99,930.18	22.17	2,215,422.00	Non-Depr	-	-	-	-	100.00%	99,930.18	0.00%	99,930.18
353.40	Land & Land Rights - Treatment	735,535.35	USBLS1	3.075	2,261,697.09	1.000	2,261,697.09	39.72	89,823,729.00	Non-Depr	-	-	-	-	100.00%	2,261,697.09	0.00%	2,261,697.09
354.30	Stuctures & Improvements - Pumping	1,000,471.00	HWW-18	2.18	2,181,008.75	1.000	2,181,008.75	23.09	50,359,151.00	R4.0 45 yrs	22.70	49,513,519.00	45.79	99,872,670.00	49.62%	1,082,243.87	0.00%	1,082,243.87
354.40	Stuctures & Improvements - Treatment	36,457,669.12	HWW-115	3.057	111,449,475.20	1.000	111,449,475.20	32.99	3,676,737,065.00	R4.0 55 yrs	24.21	2,698,338,995.00	57.20	6,375,076,059.00	42.99%	47,912,068.89	0.00%	47,912,068.89
355.30	Generating Equipment - Pumping	46,258.60	USBLS4	1.547	71,562.06	1.000	71,562.06	24.50	1,753,270.00	R3.0 35 yrs	13.39	958,216.00	37.89	2,711,487.00	35.34%	25,289.42	0.00%	25,289.42
360.21	Collection Sewers - Force - Mains	724,186.15	HWW-144	1.989	1,440,743.93	1.000	1,440,743.93	19.87	28,620,637.00	R3.0 60 yrs	40.92	58,962,345.00	60.79	87,582,982.00	67.36%	970,489.03	0.00%	970,489.03
360.23	Collection Sewers - Force - Manholes	165,868.09	HWW-145	1.642	272,340.40	1.000	272,340.40	19.48	5,304,528.00	R3.0 65 yrs	46.33	12,616,233.00	65.80	17,920,763.00	70.42%	191,793.42	0.00%	191,793.42
361.21	Collection Sewers - Gravity - Mains	15,360,150.52	HWW-144	3.266	50,172,506.70	1.000	50,172,506.70	38.45	1,928,923,877.00	R3.0 80 yrs	45.03	2,259,336,879.00	83.48	4,188,260,756.00	54.35%	27,267,923.87	0.00%	27,267,923.87
361.22	Collection Sewers - Gravity - Mains Relining	161,438.00	HWW-144	1.12	180,828.45	0.100	18,082.84	9.21	166,575.00	R3.0 80 yrs	70.90	1,282,079.00	80.11	1,448,653.00	8.85%	16,003.65	0.00%	16,003.65
361.23	Collection Sewers - Gravity - Manholes	4,110,550.96	HWW-145	2.907	11,949,309.18	1.000	11,949,309.18	36.87	440,541,620.00	R3.0 80 yrs	46.36	553,983,646.00	83.23	994,525,265.00	56.11%	6,704,939.15	0.00%	6,704,939.15
361.24	Collection Sewers - Gravity - Manholes Repairs	10,179.00	HWW-145	1.044	10,626.88	0.100	1,062.69	2.50	2,657.00	R3.0 80 yrs	77.64	82,507.00	80.14	85,164.00	9.69%	1,029.54	0.00%	1,029.54
363.20	Service Laterals	8,107,147.46	HWW-139	3.376	27,369,203.97	1.000	27,369,203.97	35.96	984,283,481.00	R3.0 55 yrs	23.93	654,884,859.00	59.89	1,639,168,341.00	41.12%	11,253,482.31	0.00%	11,253,482.31
364.20	Flow Measuring Devices	28,200.34	HWW-140	1.422	40,090.31	1.000	40,090.31	12.75	511,209.00	R3.0 35 yrs	23.30	934,195.00	36.05	1,445,404.00	65.35%	26,198.65	0.00%	26,198.65
365.20	Flow Measuring Installations	95,497.64	HWW-140	2.583	246,670.40	1.000	246,670.40	26.50	6,536,764.00	R3.0 35 yrs	11.92	2,940,312.00	38.42	9,477,076.00	31.03%	76,530.76	0.00%	76,530.76
371.30	Pumping Equipment	180,108.68	HWW-19	2.109	379,859.84	1.000	379,859.84	18.15	6,893,209.00	R3.0 35 yrs	18.78	7,134,775.00	36.93	14,027,979.00	51.62%	196,073.11	0.00%	196,073.11
371.32	Pumping Equipment - Grinder	61,593.68	HWW-19	2.326	143,245.00	1.000	143,245.00	20.20	2,894,167.00	R3.0 35 yrs	17.06	2,443,058.00	37.26	5,337,225.00	46.43%	66,506.40	0.00%	66,506.40
380.40	Treatment and Disposal Equipment	515,491.49	HWW-117	1.117	575,784.83	1.000	575,784.83	3.68	2,119,410.00	R3.0 45 yrs	41.35	23,809,188.00	45.03	25,928,600.00	91.83%	528,742.73	0.00%	528,742.73
390.70	Office Furniture and Equipment	89,011.30	AUST-115	1.026	91,282.84	1.000	91,282.84	3.68	335,833.00	R3.0 12 yrs	8.50	775,557.00	12.18	1,111,395.00	69.89%	63,799.45	0.00%	63,799.45
391.70	Transportation Equipment	24,623.01	AUST-14	1.121	27,609.14	1.000	27,609.14	14.93	412,158.00	R3.0 10 yrs	0.90	24,734.00	15.82	436,882.00	8.46%	2,336.52	0.00%	2,336.52
393.70	Tools, Shop, & Garage Equipment	42,074.30	AUST-17	1.134	47,694.46	1.000	47,694.46	7.98	380,601.00	R3.0 35 yrs	27.39	1,306,258.00	35.37	1,686,860.00	77.63%	37,023.29	0.00%	37,023.29
394.70	Laboratory Equipment	80,810.59	AUST-17	1.19	96,139.85	1.000	96,139.85	9.74	936,735.00	R3.0 20 yrs	11.05	1,062,375.00	20.79	1,999,109.00	53.59%	51,524.13	0.00%	51,524.13
395.70	Power Operated Equipment	-	AUST-18	0	-	-	-	-	-	R3.0 15 yrs	-	-	-	-	0.00%	-	0.00%	-
396.70	Communications Equipment	3,996.00	USBLS2	0.979	3,912.08	1.000	3,912.08	6.50	25,429.00	R3.0 12 yrs	6.06	23,707.00	12.56	49,136.00	48.25%	1,887.52	0.00%	1,887.52
397.70	Miscellaneous Equipment	4,170.76	AUST-18	1.103	4,601.61	1.000	4,601.61	7.80	35,887.00	R3.0 20 yrs	12.83	59,035.00	20.63	94,922.00	63.04%	2,900.82	0.00%	2,900.82
	TOTAL PLANT	$ 68,404,345		3.068	$ 209,865,528	0.999	$ 209,693,218	34.59	$ 7,254,247,699		30.16	$ 6,330,472,462	64.18	$ 13,468,246,728	47.45%	$ 99,589,819	0.00%	$ 99,589,819

The preliminary cost approach to value of Exeter's wastewater utility property was found to $99,589,819.

Income Approach

The income approach to value establishes the value of the property based on its economic returns. There are two generally accepted procedures in performing an income analysis: the direct capitalization of anticipated income, and the discounted cash flow procedures.

In the direct capitalization approach, anticipated earnings are capitalized directly into value using a market-required return. Exeter's wastewater operation will be moving from a municipal operation, wherein economic returns are not the primary objective of the operation to a private (investor owned) rate regulated wastewater utility operation in which economic returns are one of the objectives of the operation; therefore, the direct capitalization of earnings approach was not utilized in this appraisal.

In the discounted cash flow (DCF) approach, the property's economic returns are forecast for future periods. The cash flows (after-tax debt free cash flows) from operations are discounted to the appraisal date using a market derived discount resulting in the DCF approach's income indicator of value. Use of the DCF approach allows the appraiser to address the property's historical operating experience and its migration, in future periods, to an operation as a rate regulated operation; thus making the DCF approach preferable.

In preparing this appraisal's DCF analysis first, the results from Exeter's wastewater utility's operations were evaluated based on an analysis of historical operating performances over the period 2010 through 2017 resulting in operating statistics such as revenues and their growth, various operating expenses stated as function of their typical drivers (revenues, plant investment, income from operations, etc.). Next, the results of future periods operations were forecast based on the migration of Exeter's historical operations over time to operations of the Exeter's wastewater operation similar to a public investor-owned water/wastewater utility. Finally, the resultant cash flows from future period operations on the Exeter wastewater system were discounted to the appraisal date using a market derived discount rate for a public investor-owned water/wastewater utility. The following table presents the results of the discounted cash flow analysis:

Pennsylvania-American Water Company													
Exeter Wastewater System													
Wastewater System													
Potential Purchaser: Investor-Owned Utility													
As of January 1, 2018													
Discounted Cash Flow Analysis													
Discount Rate:			7.19%										
Capitalization Rate:			5.67%										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	9,664,515	2,566,310	3,912,895	7,098,205	3,185,310	920,236	1,411,155	(213,383)	4,980,197	0.966	4,810,870	4,810,870
2	1.5	9,761,160	2,647,124	3,961,115	7,114,036	3,152,921	910,879	1,429,959	(5,605)	4,778,803	0.901	4,305,702	9,116,572
3	2.5	9,858,772	2,730,555	4,010,755	7,128,217	3,117,462	900,635	1,449,037	(5,662)	4,784,207	0.841	4,023,518	13,140,090
4	3.5	9,957,360	2,816,691	4,061,846	7,140,669	3,078,823	889,472	1,468,397	(5,718)	4,788,518	0.784	3,754,198	16,894,288
5	4.5	11,052,670	2,905,623	4,114,421	8,147,047	4,032,626	1,165,026	1,488,038	(63,528)	5,557,511	0.732	4,068,098	20,962,386
6	5.5	11,273,723	2,997,447	4,168,513	8,276,276	4,107,763	1,186,733	1,507,965	(12,821)	5,594,399	0.683	3,820,975	24,783,361
7	6.5	11,499,197	3,092,260	4,283,302	8,406,937	4,123,635	1,191,318	1,750,771	(13,077)	5,477,925	0.637	3,489,438	28,272,799
8	7.5	11,729,181	3,190,168	4,353,324	8,539,013	4,185,689	1,209,246	1,781,820	(13,339)	5,561,286	0.594	3,303,404	31,576,203
9	8.5	12,667,515	3,291,272	4,425,889	9,376,243	4,950,354	1,430,157	1,813,467	(54,424)	6,187,043	0.554	3,427,622	35,003,825
10	9.5	13,427,566	3,395,679	4,501,072	10,031,887	5,530,815	1,597,853	1,845,726	(44,083)	6,632,391	0.517	3,428,946	38,432,771
11	10.5	13,696,117	3,503,505	4,578,949	10,192,612	5,613,663	1,621,787	1,878,610	(15,576)	6,707,791	0.482	3,233,155	41,665,926
12	11.5	13,970,039	3,614,865	4,659,597	10,355,174	5,695,577	1,645,452	1,912,130	(15,887)	6,813,479	0.450	3,066,066	44,731,992
13	12.5	15,087,642	3,729,879	4,730,149	11,357,763	6,627,614	1,914,718	1,946,302	(64,821)	7,561,564	0.420	3,175,857	47,907,849
14	13.5	15,389,395	3,848,672	4,816,514	11,540,723	6,724,209	1,942,624	1,981,137	(17,502)	7,634,464	0.392	2,992,710	50,900,559
15	14.5	16,312,759	3,971,376	4,905,898	12,341,383	7,435,485	2,148,112	2,016,650	(53,555)	8,230,176	0.365	3,004,014	53,904,573
16	15.5	16,312,759	4,098,124	4,764,210	12,214,635	7,450,425	2,152,428	1,686,951	-	8,375,256	0.341	2,855,962	56,760,535
17	16.5	17,291,525	4,229,050	4,836,367	13,062,475	8,226,108	2,376,523	1,710,730	(56,768)	9,031,990	0.318	2,872,173	59,632,708
18	17.5	17,291,525	4,364,305	4,841,729	12,927,220	8,085,491	2,335,898	1,734,870	-	8,856,452	0.297	2,630,366	62,263,074
19	18.5	17,291,525	4,504,038	4,847,193	12,787,487	7,940,294	2,293,951	1,759,376	-	8,734,160	0.277	2,419,362	64,682,436
20 and beyond	19.5	17,983,186	4,648,405	4,923,552	13,334,781	8,411,229	2,430,004	1,784,260	(40,117)	9,160,634	4.550	41,680,885	106,363,321
			70,145,348					34,357,351					
Age									19.5				
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$									0.258				
PW to Perpetuity = 1/Capitalization Rate									17.637				
$PW_{(20and Beyond)}$ = PW to Perpetuity * PW $Factor_{(19.5)}$									4.55				

Based on the above described discounted cash flow analysis, the Income Approach to value of the Exeter's wastewater property and its operations was determined to be $106,817,204.

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 of Pennsylvania wastewater systems and market value to book value ratios based on investor owned water utilities financial performance as reported in Value Line Investment Survey.

Market Sales – In the comparable sale market approach the sales of Pennsylvania municipal wastewater systems to investor owned water/wastewater utilities were used to insure comparability. As the purpose of this appraisal is to define the value of Exeter's

wastewater utility under Section 1329 of the PA CS the market comparable sales were limited to sales subsequent to the passage of Section 1329 in 2016. The sale of the City of McKeesport, Pennsylvania wastewater system to Pennsylvania-American Water (announced September 9, 2016) and the sales of New Garden Township's sewer, Limerick Wastewater and East Bradford Wastewater Collection systems to Aqua Pennsylvania, Inc. were analyzed in relationship to those properties' depreciated original cost and depreciated replacement cost (Market Approach tab).

Financial Market Ratios – In the market approach based on market financial ratios the market data of companies (nine) in the water/wastewater industry as reported in Value Line Investment Surveys (January 2018) were analyzed. In the analysis, the companies' stock (market) and debt (book value) per share are compared as a ratio to the book investment value per share.

The following table summarizes both the comparable sales and financial market ratio analysis and the Market Approach conclusion of this appraisal:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Market Approach Summary

Comparable Sales	Book Ratios	Purchase Price to Depreciated Original Cost (Book Value)	Indicated Market Value
Depreciated Original Cost (AUS Consultants) OCLD	40,057,633.92	1.5819	63,367,171
Replacement Cost New less Depreciation RCNLD	99,589,818.55	0.9516	94,769,671
Average			79,068,421
Use (RCNLD)			94,769,671

Financial Markets	Market Value per Share to Book Value per Share
Market to Book (equity)	2.61
Market to Book (equity and debt)	1.77
Use (equity and debt)	1.77

Market Conclusion	Investor Purchaser Owned Value to Depreciated Original Cost (Book Value)		
Exeter Wastewater System	Exeter Wastewater System		
AUS Depreciated Original Cost	40,057,634	1.77	70,902,012

Market Value	Indicated Valus $s
Minimum	63,367,171
Mean	76,346,285
Median	70,902,012
Maximum	94,769,671
Use (RCNLD)	**94,769,671**

The market approach conclusion of this appraisal was determined to be $94,769,671.

Cost Approach Revisited – Before concluding this appraisal's fair market value the preliminary cost approach conclusion of $99,589,819 needs to be reviewed in light of the above described income and market analyses in order to evaluate if external obsolescence exists in the preliminary replacement cost new less depreciation conclusion. The appraisal literature in regards to developing a cost approach states:

> "The last step in the implementation of the cost approach is to estimate *economic obsolescence*. Economic obsolescence (sometimes called "external obsolescence") has been previously defined as the loss in value or usefulness of a property caused by factors external to the asset. These factors include increased cost of raw materials, labor, utilities (without an offsetting increase in product price); reduced demand for the product; increased competition; environmental or other regulations; or similar factors.
>
> The difficulty in measuring the full effect of economic obsolescence is one of the weaknesses of the cost approach. Because economic obsolescence is usually a function of outside influences that affect an entire business (i.e., all tangible and intangible assets) rather than individual assets or isolated groups of assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic influences on value. However, the cost approach can be used to measure some forms of economic obsolescence."[7]

The above described income approach value conclusion of $106,363,321 and the market approach conclusion of $94,789,671 for the Exeter's future wastewater system compared to the preliminary cost approach conclusion of $99,589,819 indicates no significant external obsolescence exists in the cost approach conclusion of $99,589,819.

Value Conclusion

The Fair Market Value of Exeter's wastewater property, plant and equipment and its operation was determined to be $101,817,000 as follows:

[7] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition, pp. 96-97.

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Depreciated Replacement Cost New	$	99,589,819		
Cost Approach Conclusion		99,589,819	50%	49,794,909
Income Approach				
		106,363,321		
Income Approach Conclusion				
		106,363,321	40%	42,545,328
Market Approach				
Market Approach Conclusion		94,769,671	10%	9,476,967
Appraisal Conclusion	$	101,817,204	100%	101,817,204
Conclusion (cost approach)	$	99,589,819		

As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of Exeter's property, plant and equipment, the cost approach conclusion of $99,589,819 is consistent with the purpose of the appraisal. This cost approach conclusion is detailed (Cost Approach tab of this report). As the cost approach work papers details our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of

the property this detail can be used to establish the booked value for future accounting and rate making.

PURPOSE AND SCOPE OF WORK

The purpose of this appraisal of Exeter, Pennsylvania's wastewater utility is the determination of the fair market value of the property plant and equipment of Exeter wastewater utility. The report was prepared based on the 2018-2019 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) Paragraph 1329: Valuation of acquired water and wastewater systems, collectively referred to as Act 12 of the 2016 Pennsylvania legislative session (Act 12). The intended users of this appraisal are Pennsylvania-American Water Company and Pennsylvania Public Utility Commission.

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 14th Edition, page 58.*

In conducting this appraisal, we utilized several sources of data:

- Annual (year-end) Exeter, Pennsylvania wastewater operational financial statements cover the period 2010 through 2017 results.

- The Gannett Fleming Valuation and Rate Consultants Engineer's Assessment of Exeter, Pennsylvania wastewater facilities' inventory at August 2018.

- The Handy-Whitman (water industry) Index of Public Utilities Construction Costs for northeastern United States, AUS Consultant General Plant Cost Indexes for the period 1946 through January 1, 2018, and various cost indexes published by the United States Bureau of Labor Statistics (US BLS).

- We conducted interviews and discussions with Pennsylvania-American Water Company personnel.

In preparing this fair market value appraisal of the Exeter, Pennsylvania's wastewater system property, plant and equipment, and its operations, the cost, income, and market approaches to value were considered. Primary reliance was placed on the cost approach for the property, plant and equipment, with the income approach and market approaches being utilized to confirm the overall value of the wastewater system's operation. A detailed explanation of each approach to value is included below in the section "Appraisal Procedures and Results".

WATER/WASTEWATER INDUSTRY NATIONALLY AND IN PENNSYLVANIA
AND
EXETER PENNSYLVANIA WASTEWATER FACILITIES

Water/wastewater Industry

The water and wastewater industry in the United States consist of both municipal authorities (literally thousands) and private investor owned companies. Of the investor owned there are nine which are large enough to be tracked by Value Line Investment Surveys, of which, two are major players in the northeast portion of the United States, American Water Works Company, Inc. and Aqua America, Inc. American and Aqua have been particularly active in the acquisition of municipal water and wastewater authorities as such in this appraisal these two were reviewed as being indicative of the industry's financial and operating performance.

Pennsylvania Water / Wastewater Industry

The water and wastewater industry in Pennsylvania also consist of both municipal and investor owned systems. Over the last several years the need for infrastructure improvements has lead the Pennsylvania legislature to pass legislation facilitating the acquisition of municipal water and/or wastewater authorities' systems to private investor owned rate regulated companies such as American Water and Aqua America. This legislation, Act 12 of the Pennsylvania legislator's 2016 legislative session (Act 12). The Act 12 legislation added a section (1329) modifying Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PA CS) adding Section 1329: Valuation of acquired water and wastewater systems (see Act 12 tab), collectively referred to as Act 12. This appraisal was developed to meet the valuation criteria established by Section 1329 in the valuation of acquired water and wastewater systems.

Exeter Township, Pennsylvania's Wastewater Facilities, its Property and Operations[8]

The Exeter Township ("Township") is located within the Reading Metropolitan Area in the south central section of Berks County, Pennsylvania, about 1 $^{1}/_{2}$ miles east of the City of Reading. The Township consists of 24.1 square miles and is bounded by the Townships of Alsace, Amity, Cumru, Lower Alsace, Oley and Robeson; by the Boroughs of Birdsboro, Mount Penn and St. Lawrence; and by the Schuylkill River.

The Township owns and operates a wastewater system consisting of wastewater treatment facilities, gravity mains, force mains, pump houses, associated infrastructure and appurtenances, and related land and land rights ("Wastewater System"). The Wastewater System serves Township, St. Lawrence Borough, the Shady Lane Estates area of Alsace Township, and a small portion of Lower Alsace Township.

The Township Wastewater Treatment Plant ("WWTP") operates under National Pollutant Discharge Elimination System (NPDES) Permit No. PA0026972. The WWTP treats wastewater originating from Township, St. Lawrence Borough, and small portions of Alsace Township and Lower Alsace Township in Berks County and consists of two (2) separate treatment flow trains, the East WWTP and the West WWTP. The East WWTP is used exclusively for the equalization of high-strength residual waste, as needed. The West WWTP consists of the Main Pumping Station, Headworks Building, four (4) Primary Clarifiers, three (3) 1st Stage Aeration Tanks, two (2) 2nd Stage Aeration Tanks, four (4) Final Clarifiers, and two (2) Chlorine Contact Tanks.

The WWTP (combined East and West treatment trains) is currently permitted for an annual average daily flow capacity of 7.10 million gallons per day (mgd) and a maximum month average daily flow capacity of 9.63 mgd. Additionally, the WWTP (combined East and West treatment trains) is permitted for a maximum month organic loading capacity of 20,289 pounds of BOD5 per day (lbs. BOD5/day). The West WWTP has a maximum month flow capacity of 8.43 mgd and a maximum month organic loading capacity of 17,739 lbs. BOD/day. A summary of the hydraulic and organic loading capacities of each treatment train is summarized below.

	Hydraulic Capacity		**Organic Capacity**
	Annual Average (mgd)	**Maximum Month (mgd)**	**Maximum Month (lbs. BOD/day)**
East WWTP	1.20	1.20	2,550
West WWTP	5.90	8.43	17,739

[8] Extracted from Engineer's Assessment

Combined	7.10	9.63	20,289

Solids production and handling occurs in several stages. Raw sludge from the Primary Clarifiers is pumped directly to one of the two (2) Primary Anaerobic Digesters. Waste Activated Sludge from the biological system is gravity thickened before also being pumped to one of the two (2) Primary Anaerobic Digesters. After digestion, the stabilized biosolids are transferred to an aerated Sludge Holding Tank before being dewatered by one of two (2) Centrifuges. A Sludge Dryer ("Biosolids Drying Facility") provides drying of dewatered biosolids. Dried biosolids are disposed of at a landfill.

The Biosolids Drying Facility reduces operating costs for the Wastewater System, and, at the same time, creates the opportunity to convert a waste product into fertilizer or an energy source. The Wastewater System's sludge averages approximately 24% solid and 76% water. By using a dryer, the sludge becomes approximately 94% solid and 6% water. Using this process, only 1/5th of the amount of dewatered sludge has to be disposed of for approximately 20% of the disposal cost, or at no cost at all as a result of local farmers taking and using byproduct from the WWTP in farming operations. The biosolids meet the most stringent trace element limits, Class A pathogen, and vector reduction standards set forth by the Pennsylvania Department of Environmental Protection.

The Wastewater System continues operation of an USEPA-approved Industrial Pretreatment Program. Five (5) significant industrial users are connected to the system, of which two (2) are considered categorical industrial users by definition:

> BFK Corporation
> Godiva Chocolates
> FR&S / Pioneer Crossing Landfill
> SFS Intek (Categorical Industrial User)
> Arkema, Inc. (Categorical Industrial User)

All permitted industrial users are inspected and sampled, and all have submitted the required self-monitoring reports under the terms of their industrial discharge permits. The Township's 2017 Pretreatment Annual Report indicated that there were no industrial discharge violations or significant non-compliances during the year.

The Wastewater System routinely receives hauled leachate from several landfills, assorted commercial and industrial waste, residential septage, grease, and sludge that is delivered to the WWTP by multiple contract haulers. Hauled waste is discharged from the tanker trucks at several customized discharge locations throughout the WWTP. Grease is discharged into the Primary Clarifier scum pit and pumped directly to the Primary Anaerobic Digester.

COLLECTION SYSTEM

The Wastewater System's collection system collects domestic wastes and industrial wastes through 123 miles of gravity sewers and convey the wastes to the WWTP. In addition, six (6) pumping stations convey less than 3% of the total collection system flow to the WWTP. Township personnel are responsible for operation and maintenance of the WWTP, as well as the Wastewater System's collection system and pumping stations. Collection system maintenance consists of regular flushing of main lines, maintenance of rights-of-way, and repair and replacement of sewer lines, as needed. The Wastewater System's collection system is considered to be in satisfactory condition. Repair and replacement of damaged main lines and manholes is performed in a timely manner.

The Wastewater System also provides service to St. Lawrence Borough and a portion Lower Alsace and Alsace Townships under Inter-municipal Agreements. Areas included under agreement are the Borough of St. Lawrence, and small portions of the Alsace Township and Lower Alsace Township, all located in Berks County. Except for the billing agreement with Lower Alsace Township, none of the current Inter-municipal Agreements between the Township and St. Lawrence, Alsace Township, or Lower Alsace Township contain termination provisions

The St. Lawrence Borough collection system contains multiple connection points to the Wastewater System's collection system including a portion of Antietam Creek Trunk Sewer located within the Borough, and owned by the Borough. Shady Lane Estates in Alsace Township is connected the Wastewater System. Various properties within Lower Alsace Township connect to the Antietam Creek Trunk Sewer where it is located within Lower Alsace Township.

The Wastewater System's collection system is divided into three main drainage basins where waste is conveyed to the WWTP though the Schuylkill River, Heisters Creek and Antietam Creek Trunk Sewers. The Schuylkill River Trunk Sewer begins at the WWTP and continues along the southern border of the Township and the Schuylkill River, then turning north along East Neversink Road ending at S.R. 422. The Schuylkill River Trunk Sewer is 15-inches in diameter up to the connection point of the Antietam Creek Trunk Sewer where it is enlarged to 30-inches in diameter up to the WWTP.

The Heisters Creek Trunk Sewer begins at the WWTP and continues upstream along the Heisters Creek, where it branches to the collection system. The Heisters Creek Trunk Sewer ranges in diameter from 8-inches at its upper reaches to 16-inches at the connection point to the Schuylkill River Trunk Sewer.

The Antietam Creek Trunk Sewer begins at the Schuylkill River Trunk Sewer at the southern border of the Township and extends north through St. Lawrence Borough near Butter Lane. The Antietam Creek Trunk Sewer ranges in diameter from 12-inches at its upper reaches to 27-inches at the connection point to the Schuylkill River Trunk Sewer. St. Lawrence Borough and parts of Lower Alsace and Alsace Townships are served by the Antietam Creek Trunk Sewer and the WWTP.

The Wastewater System includes six (6) pumping stations within its collection system: Lincoln Road, Buddies Place, Pottstown Avenue, South Baumstown, Pineland Road, and Glen Oley. All six (6) pumping stations are maintained and inspected by WWTP operators and Township maintenance personnel on a regular basis. Pumping station inspections typically occur three (3) times per week, except at the Lincoln Road Pumping Station, which is checked daily. Cleaning, repairs, and routine maintenance items are performed regularly.

Inspection logs for various pieces of equipment are also posted at each pumping station. Preventative maintenance to the pumping stations in 2017 included flushing wet wells, exercising valves every three months and operating back-up generators, under load, according to manufacturer specifications.

A summary of the pumping stations' capacity and recent historical flow of each pumping station is summarized below.

Pumping Station	Rated Capacity (MGD)	Annual Average Daily Flow (MGD)					
		2012	2013	2014	2015	2016	2017
Lincoln Road	1.08	0.074	0.076	0.081	0.073	0.074	0.079
Buddies Place	0.206	0.007	0.009	0.009	0.008	0.007	0.006
Pottstown Ave	0.238	0.007	0.008	0.009	0.007	0.007	0.009
South Baumstown	0.242	0.009	0.009	0.010	0.010	0.010	0.010
Pineland Road	0.055	0.027	0.002	0.002	0.002	0.002	0.001
Glen Oley	0.308	0.006	0.006	0.007	0.006	0.007	0.008

APPRAISAL PROCEDURES AND RESULTS

The purpose of this appraisal of Exeter Township, Pennsylvania's wastewater system is the determination of the fair market value of the wastewater's property plant and equipment as of January 1, 2018. The report was prepared based on the 2018-2019 Uniform Standards of Professional Practices (USPAP) and is intended to meet the criteria established with Title 66 (Public Utilities) of the Pennsylvania Consolidated Statues (PS CS) Section 1329: Valuation of acquired water and wastewater systems, collectively referred to as Act 12 of the Pennsylvania legislator's 2016 legislative session (Act 12). The intended users of this appraisal are Pennsylvania-American Water Company and Pennsylvania Public Utility Commission.

The value established in this appraisal was based on the definition of Market Value as:

> *"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 14th Edition, page 58.*

In conducting this appraisal, we utilized several sources of data:

- Annual (year-end) Exeter Township, Pennsylvania wastewater operational financial statements cover the period 2010 through 2017.

- The Gannett Fleming Valuation and Rate Consultants Engineer's Assessment of Exeter, Pennsylvania wastewater facilities' inventory at August 2018.

- The Handy-Whitman (water industry) Index of Public Utilities Construction Costs for northeastern United States, AUS Consultant General Plant Cost Indexes for the period 1946 through January 1, 2018, and various cost indexes published by the United States Bureau of Labor Statistics (US BLS).

- We conducted interviews and discussions with Pennsylvania-American Water Company personnel.

In preparing this fair market value appraisal of the Exeter's wastewater system's property, plant and equipment, and its operations; the cost, income, and market approaches to value were considered. Primary reliance was placed on the cost approach for the property, plant and equipment, with the income approach and market approaches being utilized to confirm the overall value of the wastewater system's operation. Detailed explanation of each approach to value is included below.

Cost Approach - The philosophy in the cost approach to value is that the maximum value of a property is established by the cost to acquire or build a similar property. In this appraisal, the cost approach to value was analyzed using reproduction/replacement cost approach.

Reproduction cost and replacement cost are defined as:

> Reproduction cost – "The estimated cost to construct, at current prices as of the effective date of the appraisal, an exact duplicate or replica of the [property] being appraised, using the same materials, construction standards, design, layout, and quality of workmanship and embodying all the deficiencies, super-adequacies, and obsolescence of the subject [property]."[9]
>
> Replacement cost – "The estimated cost to construct, at current prices as of the effective appraisal date, a substitute for the [property] being appraised using modern materials and current standards, design and layout."[10]
>
> In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new.

The trended original cost method was utilized in preparing the replacement cost new. "Trending is a method of estimating a property's replacement cost new in which an *index* or *trend factor* is applied to the property's *historical cost* to convert the known cost into

[9] The Appraisal of Real Estate, 13th Edition. Page 385
[10] ibid

an indication of current cost. Simply put, trending reflects the movement of price over time."[11] In the trended original cost method, Exeter's investment in wastewater plant and equipment is restated to costs reflective of the appraisal date, by the application of cost trends to the property's original investment. AUS Consultants utilized the Engineer's Assessment performed by Gannett Fleming Valuation and Rate Consultants, LC (Engineer's Assessment tab) as the starting point of the Cost Approach. Utilizing the Engineer's Assessment of Exeter's original cost in property, plant and equipment AUS Consultants developed the plant's depreciated original cost and the replacement cost new less depreciation at January 1, 2018 (Cost Approach tab).

Reproduction Cost New - The cost trends are applied to each of the various investment categories (plant accounts) by original year of placement for that investment. The cost indexes used in these studies were the Handy-Whitman Index of Public Utility Construction Costs for the water industry of the northeastern region of the United States, AUS Consultants of General Plant Indexes, and various United States Bureau of Labor Statistics (US BLS) indexes.

[11] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 59

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
January 1, 2018

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)	(4a)	(4b)	(5)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence
		Index Series	Table	Line Reference	Lookup	AUS Input		years	years
	Non-Depreciable								
	Land & Land Rights						Non-Depr		
	Depreciable								
353.00	**Land & Land Rights**								
353.10	Land & Land Rights	USBLS	PPI	3	USBLS3	1.000	**Non-Depr**	**0**	0%
353.20	Land & Land Rights - Collection	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.30	Land & Land Rights - Pumping	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.40	Land & Land Rights - Treatment	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
354.00	**Stuctures & Improvements**						**R4.0**	**45**	
354.30	Stuctures & Improvements - Pumping	HW	W-1	8	HWW-18	1.000	R4.0	45	0%
354.40	Stuctures & Improvements - Treatment	HW	W-1	15	HWW-115	1.000	R4.0	55	0%
355.00	**Generating Equipment**	USBLS	PPI	4	USBLS4	1.000	**R3.0**	**35**	0%
355.30	Generating Equipment - Pumping	USBLS	PPI	4	USBLS4	1.000	R3.0	35	0%
360.00	**Mains Force**						R3.0	60	
360.21	Collection Sewers - Force - Mains	HW	W-1	44	HWW-144	1.000	R3.0	60	0%
360.211	Collection Sewers - Force - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	60	0%
360.213	Collection Sewers - Force - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	60	0%
360.23	Collection Sewers - Force - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	65	0%
360.31	Air Release	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
360.41	Valves	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
361.00	**Mains Gravity**						**R3.0**	**80**	
361.12	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.211	Collection Sewers - Gravity - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	80	0%
361.212	Collection Sewers - Gravity - Mains - VCP	HW	W-1	36	HWW-136	1.000	R3.0	80	0%
361.213	Collection Sewers - Gravity - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	80	0%
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	44	HWW-144	0.100	R3.0	80	0%
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	80	0%
361.24	Collection Sewers - Gravity - Manholes Repairs	HW	W-1	45	HWW-145	0.100	R3.0	80	0%
361.71	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
363.00	**Service Laterals**	HW	W-1	39	HWW-139	1.000	**R3.0**	**55**	0%
363.20	Service Laterals	HW	W-1	39	HWW-139	1.000	R3.0	55	0%
364.00	**Flow Measuring Devices**	HW	W-1	40	HWW-140	1.000	**R3.0**	**35**	0%
364.20	Flow Measuring Devices	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
365.20	Flow Measuring Installations	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
371.00	**Pumping Equipment**	HW	W-1	9	HWW-19	1.000	**R3.0**	**35**	0%
371.30	Pumping Equipment	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
371.32	Pumping Equipment - Grinder	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
380.00	**Treatment and Disposal Equipment**						**R3.0**	**45**	
380.40	Treatment and Disposal Equipment	HW	W-1	17	HWW-117	1.000	R3.0	45	0%
390.00	**General Plant**						**R3.0**	**12**	
390.70	Office Furniture and Equipment	AUS	T-1	15	AUST-115	1.000	R3.0	12	0%
391.70	Transportation Equipment	AUS	T-1	4	AUST-14	1.000	R3.0	10	0%
392.70	Stores Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0
393.70	Tools, Shop, & Garage Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0%
394.70	Laboratory Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	20	0%
395.70	Power Operated Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	15	0%
396.70	Communications Equipment	USBLS	PPI	2	USBLS2	1.000	R3.0	12	0%
397.70	Miscellaneous Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
398.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
399.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%

The following table presents the development of the cost approach for a portion of account 361 Collection Mains (this example will be used to describe the entire cost approach:

Pennsylvania-American Water Company												
Exeter Wastewater System												
Wastewater System												
Investor-Owned Utility												
As of January 1, 2018												
(0)		(0.1)	(0.2)	(0.5)	(1)	(1.5)	(2)	(2.5)	(3a)	(3b)	(3c)	(4)
Account		Account Description	Description 1	Description 2	Placement Year	Earliest Trend Year	Investment	Costing Parameter	Placement Date Cost Index	Appraisal Date Cost Index	Cost Translator	Reproduction Cost New (RCN)
							OC $s					RCN $s
Input				Input	Input	Input	Input	Input	Input	Input	Calculation	Calculation
Exeter Engineers' Assessment Data		Exeter Engineers' Assessment Data	Exeter Engineers' Assessment Data	Exeter Engineers' Assessment Data	Exeter Engineers' Assessment Data	AUS Input	Exeter Engineers' Assessment Data	AUS Input	Cost Indices	Cost Indices	Col (3b) / (3a)	Col (2) * (3c)
Account		AccountDesc	Description	Description2	Year1	Year2	OC	CostIndexTable	YearIndex	APPCostIndex	Translator	RCN
360.211	360.211	COLLECTION SEWERS - FORCE - MAINS	PVC - 3-INCH	466 FT	1990	1990	17,235.23	HWW-138	211	389.5	1.846	31,816.23
360.213	360.213	COLLECTION SEWERS - FORCE - MAINS	DI - 6-INCH	2,707 FT	1995	1995	86,013.91	HWW-135	341	834.8	2.448	210,562.05
360.213	360.213	COLLECTION SEWERS - FORCE - MAINS	DI - 8-INCH	6,338 FT	1995	1995	327,960.55	HWW-135	341	834.8	2.448	802,847.43
360.211	360.211	COLLECTION SEWERS - FORCE - MAINS	PVC - 2-INCH	211 FT	2005	2005	11,070.25	HWW-138	288.5	389.5	1.350	14,944.84
360.211	360.211	COLLECTION SEWERS - FORCE - MAINS	PVC - 8-INCH	4,104 FT	2005	2005	281,906.21	HWW-138	288.5	389.5	1.350	380,573.38
360.21 Total		**COLLECTION SEWERS - FORCE - MAINS**					724,186.15					1,440,743.93

Using the trended original cost method, Exeter's investment in this example of account 361.211 Collection Mains – Force of $724,186 was determined to have a reproduction cost new of $1,440,744. When the trended cost method is applied to each of Exeter's investment in plant, property and equipment of $68,404,345 was determined to have a reproduction cost new of $209,865,528.

Replacement Cost New - In the wastewater industry the property's reproduction costs and replacement costs are quite similar; therefore, the property's cost new was determined based on its replacement cost new. In this instance the reproduction costs and replacement costs are the same hence I used reproduction and replacement cost interchangeably. The exception to this was the investment associated with the mains relining (361.22) and the manhole repairs (361.24) wherein the replacement cost as estimated at 10% of their reproduction cost. The replacement cost new was determined to be $209,693,218.

Replacement Cost New Less Depreciation - The replacement cost described above reflects the cost of new property; however, the Exeter's wastewater system property is not new and has experienced normal depreciation and potentially functional and or economic obsolescence. These various forms of depreciation are defined as follows:

> Normal depreciation/deterioration, akin to physical deterioration, is "loss in value caused by wear, tear, age and use."[12]

[12] The Dictionary of Real Estate Appraisal, 4th Edition

Functional obsolescence is “the loss in value or usefulness of a property caused by inefficiencies or inadequacies of the property itself, when compared to a more efficient of less costly replacement property that new technology has developed.”[13]

Economic, or external, obsolescence is defined as “A loss in value caused by factors outside a property”[14] and is most often indicated by insufficient earning.

Based on our experience in regard to: water and wastewater depreciation studies and our analysis of Exeter’s wastewater system operating performance: Exeter’s property experiences normal depreciation but not any significant functional or economic obsolescence (see Income Approach).

In order to ascertain the service lives of the various types of Exeter’s property, plant and equipment, we considered AUS Consultants’ past water and wastewater depreciation studies, interviews with Pennsylvania-American’s personnel, and documents provided by Exeter. Through our experience and the above described interviews, the following normal depreciation parameters of survival/retirement characteristics and service lives were determined for Exeter’s wastewater utility property:

[13] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition. Page 67.
[14] The Appraisal of Real Estate, 13th Edition, page 442.

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
January 1, 2018

Summary of Account Costing and Depreciation Parameters Used in the Depreciation Original Cost and the Depreciated Replacement Cost New Studies

(1)	(2)	(3a)	(3b)	(3c)	(3d)	(3e)	(4a)	(4b)	(5)
Account Number	Description	Costing Parameters				Reproduction to Replacement Cost Factor	Iowa Survivor / Retirement Curve	Normal Service Life	Economic Obsolescence
		Index Series	Table	Line Reference	Lookup	AUS Input		years	years
	Non-Depreciable								
	Land & Land Rights						Non-Depr		
	Depreciable								
353.00	**Land & Land Rights**								
353.10	Land & Land Rights	USBLS	PPI	3	USBLS3	1.000	**Non-Depr**	**0**	0%
353.20	Land & Land Rights - Collection	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.30	Land & Land Rights - Pumping	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
353.40	Land & Land Rights - Treatment	USBLS	PPI	1	USBLS1	1.000	Non-Depr	0	0%
354.00	**Stuctures & Improvements**						**R4.0**	**45**	
354.30	Stuctures & Improvements - Pumping	HW	W-1	8	HWW-18	1.000	R4.0	45	0%
354.40	Stuctures & Improvements - Treatment	HW	W-1	15	HWW-115	1.000	R4.0	55	0%
355.00	**Generating Equipment**	USBLS	PPI	4	USBLS4	1.000	**R3.0**	**35**	0%
355.30	Generating Equipment - Pumping	USBLS	PPI	4	USBLS4	1.000	R3.0	35	0%
360.00	**Mains Force**						R3.0	60	
360.21	Collection Sewers - Force - Mains	HW	W-1	44	HWW-144	1.000	R3.0	60	0%
360.211	Collection Sewers - Force - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	60	0%
360.213	Collection Sewers - Force - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	60	0%
360.23	Collection Sewers - Force - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	65	0%
360.31	Air Release	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
360.41	Valves	HW	W-1	44	HWW-144	1.000	R3.0	45	0%
361.00	**Mains Gravity**						**R3.0**	**80**	
361.12	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.21	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
361.211	Collection Sewers - Gravity - Mains - PVC	HW	W-1	38	HWW-138	1.000	R3.0	80	0%
361.212	Collection Sewers - Gravity - Mains - VCP	HW	W-1	36	HWW-136	1.000	R3.0	80	0%
361.213	Collection Sewers - Gravity - Mains - DI	HW	W-1	35	HWW-135	1.000	R3.0	80	0%
361.22	Collection Sewers - Gravity - Mains Relining	HW	W-1	44	HWW-144	0.100	R3.0	80	0%
361.23	Collection Sewers - Gravity - Manholes	HW	W-1	45	HWW-145	1.000	R3.0	80	0%
361.24	Collection Sewers - Gravity - Manholes Repairs	HW	W-1	45	HWW-145	0.100	R3.0	80	0%
361.71	Collection Sewers - Gravity - Mains	HW	W-1	44	HWW-144	1.000	R3.0	80	0%
363.00	**Service Laterals**	HW	W-1	39	HWW-139	1.000	**R3.0**	**55**	0%
363.20	Service Laterals	HW	W-1	39	HWW-139	1.000	R3.0	55	0%
364.00	**Flow Measuring Devices**	HW	W-1	40	HWW-140	1.000	**R3.0**	**35**	0%
364.20	Flow Measuring Devices	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
365.20	Flow Measuring Installations	HW	W-1	40	HWW-140	1.000	R3.0	35	0%
371.00	**Pumping Equipment**	HW	W-1	9	HWW-19	1.000	**R3.0**	**35**	0%
371.30	Pumping Equipment	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
371.32	Pumping Equipment - Grinder	HW	W-1	9	HWW-19	1.000	R3.0	35	0%
380.00	**Treatment and Disposal Equipment**						**R3.0**	**45**	
380.40	Treatment and Disposal Equipment	HW	W-1	17	HWW-117	1.000	R3.0	45	0%
390.00	**General Plant**						**R3.0**	**12**	
390.70	Office Furniture and Equipment	AUS	T-1	15	AUST-115	1.000	R3.0	12	0%
391.70	Transportation Equipment	AUS	T-1	4	AUST-14	1.000	R3.0	10	0%
392.70	Stores Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0
393.70	Tools, Shop, & Garage Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	35	0%
394.70	Laboratory Equipment	AUS	T-1	7	AUST-17	1.000	R3.0	20	0%
395.70	Power Operated Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	15	0%
396.70	Communications Equipment	USBLS	PPI	2	USBLS2	1.000	R3.0	12	0%
397.70	Miscellaneous Equipment	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
398.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%
399.70	Not Used	AUS	T-1	8	AUST-18	1.000	R3.0	20	0%

Normal Depreciation – The extent of the depreciation in the property was evaluated using age-life depreciation techniques. In age-life depreciation, the property's depreciation or condition is estimated using the following formula:

$$\text{Depreciation (\%)} = \frac{\text{Age (years) x100\%}}{\text{Service Life (years)}}$$

$$\text{Condition (\%)} = \frac{\text{Remaining Life (years) x (100\%)}}{\text{Service Life (years)}}$$

where: the property's Service Life = Age + Remaining Life

When the above depreciation lives are used to quantify the property's depreciation is applied to the replacement cost new of the example account 361 Collection Mains of $1,440,744 the replacement cost new less depreciation was determined to be $970,489.

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

(0)	(0.5)	(1)	(1a)	(4)	(5a)	(5b)	(5c)	(5d)	(5e)	(5f)	(5g)	(5h)	(6)			
Account	Description	Placement Year	Age at January 1, 2018 Appraisal Date	Replacement Cost New (RCN)	Retirement Dispersion Iowa-type	Normal Service Life (NSL)	Age as % of NSL	Iowa Lookup	Iowa Condition Percent of Percent New	Normal Remaining Life	Total Life Expectancy	Condition	Preliminary Cost Approach (RCN less Normal Depreciation)	RCN Weighted Age	RCN Weighted Normal Remaining Life	RCN Weighted Total Life Expectancy
			years	COR $s		years	% of NSL	Lookup	%	years	years	% of COR	CORLD $s	RCN $s * Years	RCN $s * Years	RCN $s * Years
Input	Input	Input	Calculation	Calculation	Input	Input	Calculation	Calculation	Lookup	Calculation	Calculation	Calculation	Calculation			
Exeter Data	Exeter Data	Exeter Data	2018.00-[(1)+0.5]	Col (4)	AUS Input	AUS Input	(1a)/(5b)	(5a)&(5c)	Iowa Life Table	(5b)*(5e)	(1a)+[(5f)	(5f)/(5g)	(4)*(5h)			
Account	Description	Year1	Age	RCN	Iowa	Life	AgeP	owaLookup	waCondition	Rem Life	Total Life	Condition	RCNLD			
360.211	COLLECTION SEWERS - FORCE - MAINS	1990	27.50	31,816.23	R3.0	60.0	46	R3.0046	0.57150	34.29	61.79	55.494417%	17,656.23	874,946.00	1,090,979.00	1,965,925.00
360.213	COLLECTION SEWERS - FORCE - MAINS	1995	22.50	210,562.05	R3.0	60.0	38	R3.0038	0.64088	38.45	60.95	63.084495%	132,832.01	4,737,646.00	8,096,111.00	12,833,757.00
360.213	COLLECTION SEWERS - FORCE - MAINS	1995	22.50	802,847.43	R3.0	60.0	38	R3.0038	0.64088	38.45	60.95	63.084495%	506,472.25	18,064,067.00	30,869,484.00	48,933,551.00
360.211	COLLECTION SEWERS - FORCE - MAINS	2005	12.50	14,944.84	R3.0	60.0	21	R3.0021	0.79673	47.80	60.30	79.270315%	11,846.82	186,811.00	714,363.00	901,174.00
360.211	COLLECTION SEWERS - FORCE - MAINS	2005	12.50	380,573.38	R3.0	60.0	21	R3.0021	0.79673	47.80	60.30	79.270315%	301,681.72	4,757,167.00	18,191,408.00	22,948,575.00
360.21 Total	**COLLECTION SEWERS - FORCE - MAINS**		19.87	1,440,743.93						40.92	60.79		970,489.03	28,620,637.00	58,962,345.00	87,582,982.00

When the above depreciation lives are used to quantify the property's depreciation is applied to each of Exeter's investment in plant, property and equipment the replacement cost new (RCN) of $209,693,218, the resultant RCN less depreciation (RCNLD) was found to be $99,589,819 detailed as follows:

Pennsylvania-American Water Company
Exeter Wastewater System
Exeter Township, Berks County, Pennsylvania
Wastewater System
Investor-Owned Utility

Summary of Original Cost, Average Service Life/Curve, Replacement Cost and Depreciated Replacement Cost
As of January 1, 2018

Account No.	Description	Original Cost	Cost Index	Cost Translator	Reproduction Cost New	Reproduction to Replacement Cost Factor	Replacement Cost New	Average Age	Weighted RCN Age	Iowa Survivor Curve and Life	Average Normal Remaining Life	Weighted RCN Average Normal Remaining Life	Average Total Life Expectancy	Weighted RCN Average Total Life Expectancy	Condition	Depreciated Replacement Cost	Economic Obsolescence	Fair Market Value
353.20	Land & Land Rights - Collection	336,068.94	USBLS1	2.23	749,404.75	1.000	749,404.75	32.60	24,434,285.00	Non-Depr	-	-	-	-	100.00%	749,404.75	0.00%	749,404.75
353.30	Land & Land Rights - Pumping	63,244.16	USBLS1	1.58	99,930.18	1.000	99,930.18	22.17	2,215,422.00	Non-Depr	-	-	-	-	100.00%	99,930.18	0.00%	99,930.18
353.40	Land & Land Rights - Treatment	735,535.35	USBLS1	3.075	2,261,697.09	1.000	2,261,697.09	39.72	89,823,729.00	Non-Depr	-	-	-	-	100.00%	2,261,697.09	0.00%	2,261,697.09
354.30	Stuctures & Improvements - Pumping	1,000,471.00	HWW-18	2.18	2,181,008.75	1.000	2,181,008.75	23.09	50,359,151.00	R4.0 45 yrs	22.70	49,513,519.00	45.79	99,872,670.00	49.62%	1,082,243.87	0.00%	1,082,243.87
354.40	Stuctures & Improvements - Treatment	36,457,669.12	HWW-115	3.057	111,449,475.20	1.000	111,449,475.20	32.99	3,676,737,065.00	R4.0 55 yrs	24.21	2,698,338,995.00	57.20	6,375,076,059.00	42.99%	47,912,068.89	0.00%	47,912,068.89
355.30	Generating Equipment - Pumping	46,258.60	USBL54	1.547	71,562.06	1.000	71,562.06	24.50	1,753,270.00	R3.0 35 yrs	13.39	958,216.00	37.89	2,711,487.00	35.34%	25,289.42	0.00%	25,289.42
360.21	Collection Sewers - Force - Mains	724,186.15	HWW-144	1.989	1,440,743.93	1.000	1,440,743.93	19.87	28,620,637.00	R3.0 60 yrs	40.92	58,962,345.00	60.79	87,582,982.00	67.36%	970,489.03	0.00%	970,489.03
360.23	Collection Sewers - Force - Manholes	165,868.09	HWW-145	1.642	272,340.40	1.000	272,340.40	19.48	5,304,528.00	R3.0 65 yrs	46.33	12,616,233.00	65.80	17,920,763.00	70.42%	191,793.42	0.00%	191,793.42
361.21	Collection Sewers - Gravity - Mains	15,360,150.52	HWW-144	3.266	50,172,506.70	1.000	50,172,506.70	38.45	1,928,923,877.00	R3.0 80 yrs	45.03	2,259,336,879.00	83.48	4,188,260,756.00	54.35%	27,267,923.87	0.00%	27,267,923.87
361.22	Collection Sewers - Gravity - Mains Relining	161,438.00	HWW-144	1.12	180,828.45	0.100	18,082.84	9.21	166,575.00	R3.0 80 yrs	70.90	1,282,079.00	80.11	1,448,653.00	8.85%	16,003.65	0.00%	16,003.65
361.23	Collection Sewers - Gravity - Manholes	4,110,550.96	HWW-145	2.907	11,949,309.18	1.000	11,949,309.18	36.87	440,541,620.00	R3.0 80 yrs	46.36	553,983,646.00	83.23	994,525,265.00	56.11%	6,704,939.15	0.00%	6,704,939.15
361.24	Collection Sewers - Gravity - Manholes Repairs	10,179.00	HWW-145	1.044	10,626.88	0.100	1,062.69	2.50	2,657.00	R3.0 80 yrs	77.64	82,507.00	80.14	85,164.00	9.69%	1,029.54	0.00%	1,029.54
363.20	Service Laterals	8,107,147.46	HWW-139	3.376	27,369,203.97	1.000	27,369,203.97	35.96	984,283,481.00	R3.0 55 yrs	23.93	654,884,859.00	59.89	1,639,168,341.00	41.12%	11,253,482.31	0.00%	11,253,482.31
364.20	Flow Measuring Devices	28,200.34	HWW-140	1.422	40,090.31	1.000	40,090.31	12.75	511,209.00	R3.0 35 yrs	23.30	934,195.00	36.05	1,445,404.00	65.35%	26,198.65	0.00%	26,198.65
365.20	Flow Measuring Installations	95,497.64	HWW-140	2.583	246,670.40	1.000	246,670.40	26.50	6,536,764.00	R3.0 35 yrs	11.92	2,940,312.00	38.42	9,477,076.00	31.03%	76,530.76	0.00%	76,530.76
371.30	Pumping Equipment	180,108.68	HWW-19	2.109	379,859.84	1.000	379,859.84	18.15	6,893,209.00	R3.0 35 yrs	18.78	7,134,775.00	36.93	14,027,979.00	51.62%	196,073.11	0.00%	196,073.11
371.32	Pumping Equipment - Grinder	61,593.68	HWW-19	2.326	143,245.00	1.000	143,245.00	20.20	2,894,167.00	R3.0 35 yrs	17.06	2,443,058.00	37.26	5,337,225.00	46.43%	66,506.40	0.00%	66,506.40
380.40	Treatment and Disposal Equipment	515,491.49	HWW-117	1.117	575,784.83	1.000	575,784.83	3.68	2,119,410.00	R3.0 45 yrs	41.35	23,805,188.00	45.03	25,928,600.00	91.83%	528,742.73	0.00%	528,742.73
390.70	Office Furniture and Equipment	89,011.30	AUST-115	1.026	91,282.84	1.000	91,282.84	3.68	335,833.00	R3.0 12 yrs	8.50	775,557.00	12.18	1,111,395.00	69.89%	63,799.45	0.00%	63,799.45
391.70	Transportation Equipment	24,623.01	AUST-14	1.121	27,609.14	1.000	27,609.14	14.93	412,158.00	R3.0 10 yrs	0.90	24,724.00	15.82	436,882.00	8.46%	2,336.52	0.00%	2,336.52
393.70	Tools, Shop, & Garage Equipment	42,074.30	AUST-17	1.134	47,694.46	1.000	47,694.46	7.98	380,601.00	R3.0 35 yrs	27.39	1,306,258.00	35.37	1,686,860.00	77.63%	37,023.29	0.00%	37,023.29
394.70	Laboratory Equipment	80,810.59	AUST-17	1.19	96,139.85	1.000	96,139.85	9.74	936,735.00	R3.0 20 yrs	11.05	1,062,375.00	20.79	1,999,109.00	53.59%	51,524.13	0.00%	51,524.13
395.70	Power Operated Equipment	-	AUST-18	0	-	-	-	-	-	R3.0 15 yrs	-	-	-	-	0.00%	-	0.00%	-
396.70	Communications Equipment	3,996.00	USBLS2	0.979	3,912.08	1.000	3,912.08	6.50	25,429.00	R3.0 12 yrs	6.06	23,707.00	12.56	49,136.00	48.25%	1,887.52	0.00%	1,887.52
397.70	Miscellaneous Equipment	4,170.76	AUST-18	1.103	4,601.61	1.000	4,601.61	7.80	35,887.00	R3.0 20 yrs	12.83	59,035.00	20.63	94,922.00	63.04%	2,900.82	0.00%	2,900.82
	TOTAL PLANT	$ 68,404,345		3.068	$ 209,865,528	0.999	$ 209,693,218	34.59	$ 7,254,247,699		30.16	$ 6,330,472,462	64.18	$ 13,468,246,728	47.45%	$ 99,589,819	0.00%	$ 99,589,819

The preliminary cost approach to value of Exeter's wastewater utility property was found to be $99,589,819.

Income Approach

The income approach to value establishes the value of the property based on its economic returns. There are two generally accepted procedures in performing an income analysis: the direct capitalization of anticipated income, and the discounted cash flow procedures.

In the direct capitalization approach, anticipated earnings are capitalized directly into value using a market-required return. Exeter's wastewater operation will be moving from a municipal operation, wherein economic returns are not the primary objective of the operation to a private (investor owned) rate regulated wastewater utility operation in which economic returns are one of the objectives of the operation; therefore, the direct capitalization of earnings approach was not utilized in this appraisal.

In the discounted cash flow (DCF) approach, the property's economic returns are forecast for future periods. The cash flows (after-tax debt-free cash flows) from operations are discounted to the appraisal date using a market derived discount resulting in the DCF approach's income indicator of value. Use of the DCF approach allows the appraiser to address the property's historical operating experience and its migration, in future periods, to an operation as a rate regulated operation; thus making the DCF approach preferable.

In preparing this appraisal's DCF analysis, first the results from Exeter's wastewater utility's operations was evaluated based on an analysis of historical operating performances over the period 2010 through 2017 (Income Approach tab). In the analysis of the operating statistics such as revenues and their growth, various operating expenses those expenses were stated as function of their typical drivers (revenues, plant investment, income from operations, etc). Details provided in Income Approach tab. Using the above described analyses the results of future periods operations were forecast based on the migration of Exeter's historical operations type experience over time to operations of the Exeter's wastewater operation similar to a public investor-owned water/wastewater utility. The forecasts are detailed in the Income Approach tab.

Finally, the resultant cash flows from future period operations of the Exeter's wastewater system were discounted to the appraisal date using a discount market derived discount rate for a public investor-owned water/wastewater utility (Income Approach Tab – Cost of Capital / Required Return section). The following table presents the results of the discounted cash flow analysis:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Potential Purchaser: Investor-Owned Utility
As of January 1, 2018
Discounted Cash Flow Analysis

Discount Rate:			7.19%										
Capitalization Rate:			5.67%										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Period	Age	Revenues	O&M Expenses	Tax Depreciation	Cash Flow from Operations	Taxable Income before State & Federal Taxes	State and Federal Taxes @ 28.89%	Capital Expenditures	Change in Working Capital	Net Cash Flows	Period Present Worth Factor (PW)	PW of Cashflow	Accumulated PW of Cashflows
					(3)-(4)	(6)-(5)	(7) *28.89%			(3)-(4)-(8)-(9)-(10)		(11)*(12)	Sum (13)
1	0.5	9,664,515	2,566,310	3,912,895	7,098,205	3,185,310	920,236	1,411,155	(213,383)	4,980,197	0.966	4,810,870	4,810,870
2	1.5	9,761,160	2,647,124	3,961,115	7,114,036	3,152,921	910,879	1,429,959	(5,605)	4,778,803	0.901	4,305,702	9,116,572
3	2.5	9,858,772	2,730,555	4,010,755	7,128,217	3,117,462	900,635	1,449,037	(5,662)	4,784,207	0.841	4,023,518	13,140,090
4	3.5	9,957,360	2,816,691	4,061,846	7,140,669	3,078,823	889,472	1,468,397	(5,718)	4,788,518	0.784	3,754,198	16,894,288
5	4.5	11,052,670	2,905,623	4,114,421	8,147,047	4,032,626	1,165,026	1,488,038	(63,528)	5,557,511	0.732	4,068,098	20,962,386
6	5.5	11,273,723	2,997,447	4,168,513	8,276,276	4,107,763	1,186,733	1,507,965	(12,821)	5,594,399	0.683	3,820,975	24,783,361
7	6.5	11,499,197	3,092,260	4,283,302	8,406,937	4,123,635	1,191,318	1,750,771	(13,077)	5,477,925	0.637	3,489,438	28,272,799
8	7.5	11,729,181	3,190,168	4,353,324	8,539,013	4,185,689	1,209,246	1,781,820	(13,339)	5,561,286	0.594	3,303,404	31,576,203
9	8.5	12,667,515	3,291,272	4,425,889	9,376,243	4,950,354	1,430,157	1,813,467	(54,424)	6,187,043	0.554	3,427,622	35,003,825
10	9.5	13,427,566	3,395,679	4,501,072	10,031,887	5,530,815	1,597,853	1,845,726	(44,083)	6,632,391	0.517	3,428,946	38,432,771
11	10.5	13,696,117	3,503,505	4,578,949	10,192,612	5,613,663	1,621,787	1,878,610	(15,576)	6,707,791	0.482	3,233,155	41,665,926
12	11.5	13,970,039	3,614,865	4,659,597	10,355,174	5,695,577	1,645,452	1,912,130	(15,887)	6,813,479	0.450	3,066,066	44,731,992
13	12.5	15,087,642	3,729,879	4,730,149	11,357,763	6,627,614	1,914,718	1,946,302	(64,821)	7,561,564	0.420	3,175,857	47,907,849
14	13.5	15,389,395	3,848,672	4,816,514	11,540,723	6,724,209	1,942,624	1,981,137	(17,502)	7,634,464	0.392	2,992,710	50,900,559
15	14.5	16,312,759	3,971,376	4,905,898	12,341,383	7,435,485	2,148,112	2,016,650	(53,555)	8,230,176	0.365	3,004,014	53,904,573
16	15.5	16,312,759	4,098,124	4,764,210	12,214,635	7,450,425	2,152,428	1,686,951	-	8,375,256	0.341	2,855,962	56,760,535
17	16.5	17,291,525	4,229,050	4,836,367	13,062,475	8,226,108	2,376,523	1,710,730	(56,768)	9,031,990	0.318	2,872,173	59,632,708
18	17.5	17,291,525	4,364,305	4,841,729	12,927,220	8,085,491	2,335,898	1,734,870	-	8,856,452	0.297	2,630,366	62,263,074
19	18.5	17,291,525	4,504,038	4,847,193	12,787,487	7,940,294	2,293,951	1,759,376	-	8,734,160	0.277	2,419,362	64,682,436
20 and beyond	19.5	17,983,186	4,648,405	4,923,552	13,334,781	8,411,229	2,430,004	1,784,260	(40,117)	9,160,634	4.550	41,680,885	106,363,321
			70,145,348					34,357,351					
Age									19.5				
PW(Age) = 1/(1+Discount Rate)$^{(Age)}$									0.258				
PW to Perpetuity = 1/Capitalization Rate									17.637				
$PW_{(20and\ Beyond)}$ = PW to Perpetuity * PW $Factor_{(19.5)}$									4.55				

Based on the above described discounted cash flow analysis, the Income Approach to value of the Exeter's wastewater property and its operations was determined to be $106,363,321.

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 using recent Pennsylvania wastewater

systems and market value to book value ratios based on investor owned water utilities reported in Value Line Investment Survey.

Market Sales – In the comparable sale market approach the sales of Pennsylvania municipal wastewater systems to investor owned water/wastewater utilities were used to insure comparability. The sale of the City of McKeesport, Pennsylvania wastewater system to Pennsylvania-American Water and the sales of New Garden Township's sewer utility, Limerick Wastewater system and East Bradford's wastewater collection system to Aqua Pennsylvania, Inc. were analyzed in relationship to those properties' depreciated original cost and replacement cost new less depreciation (Market Approach tab).

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Comparable Sales Approach

Market Sales Basis

Description	New Garden Wastewater System	McKeesport Wastewater System	Limerick Wastewater System	East Bradford Wastewater Collection System		Simple Average / Standard Deviation	Remove Outliers Simple Average / Standard Deviation	Weighted Average	Remove Outliers Weighted Average / Standard Deviation	Use
System Description										
Type of System	Wastewater Collection & Treatment	Wastewater Collection & Treatment	Wastewater Collection & Treatment	Wastewater Collection Only						
System Attributes										
Purchase Price	29,500,000	159,000,000	75,100,000	5,000,000				268,600,000	263,600,000	
	11%	59%	28%	2%	100%					
Acquirer	Aqua-PA	PA-American	Aqua-PA	Aqua-PA						
Date										
Customers										
Original Cost										
Depreciated Original Cost (AUS Consultants) OCLD	18,567,728	101,915,080	46,153,867	5,383,591				172,020,266	166,636,675	
Purchase Price to OCLD	1.5888	1.5601	1.6272	0.9287		1.4262	1.592	1.5614	1.5819	1.5819
Variance to Simple Mean	0.1626	0.1339	0.201	-0.4975		0.2882	0.0275			
Variance to Wtd Mean	0.0274	-0.0013	0.0658	-0.6327					0.0161	
Replacement Cost New less Depreciation RCNLD	30,615,410	160,301,491	86,086,756	9,236,581				286,240,238	277,003,657	
Purchase Price to RCNLD	0.9636	0.9919	0.8724	0.5413		0.8423	0.9426	0.9384	0.9516	0.9516
Variance to Simple Mean	0.1213	0.1496	0.0301	-0.301		0.1793				
Variance to Wtd Mean	0.0252	0.0535	-0.066	-0.3971					0.0244	
						0.207	0.0624			

Financial Market Ratios – In the market approach based on market financial ratios were based on market data of companies (nine) in the water industry as reported in Value Line Investment Surveys (January 2018) were analyzed. In the analysis, the companies' stock (market) and debt (book) per share are compared as a ratio to the book value per share.

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
January 1, 2018

Comparable Sales Approach

Financial Basis[1]

	Industry Averages	American & Aqua Averages	American States Water	American Water	Aqua America	California Water	Connecticut Water	Middlesex Water	SJW Corp	York	
Price per Share			39.23	69.05	31.39	26.59	43.81	31.05	36.41	29.87	
Book value per share			12.77	28.25	9.78	13.41	20.02	12.74	18.83	8.52	
Market to Book Equity Ratio			3.07	2.44	3.21	1.98	2.19	2.44	1.93	3.51	
Minimum	1.93	2.44									
Mean	2.60	2.825		2.44	3.21						
Standard Deviation	0.56	0.385									
Weighted Market to Debt Ratio	2.61		5,396.12	46,004.33	23,553.34	3,614.75	2,316.09	1,583.17	2,131.69	1,649.47	86,248.96
Median	2.44	2.825									
Maximum	3.51	3.21									
Debt (Total) $s millions			325.8	6,544.0	1,795.9	552.5	180.5	144.9	418.9	87.3	
Outstanding Shares (millions)			36.50	178.28	176.54	47.88	20.02	16.23	18.83	12.81	
Debt per share			8.93	36.71	10.17	11.54	9.02	8.93	22.25	6.81	
Equity (Total) $s millions			1,431.90	12,310.23	5,541.59	1,273.13	877.08	503.94	685.60	382.63	
Total Capital (Debt + Equity)			1,757.70	18,854.23	7,337.49	1,825.63	1,057.58	648.84	1,104.50	469.93	33,055.90
			0.05	0.57	0.22	0.06	0.03	0.02	0.03	0.01	0.99
Market Value per Share (Equity+Debt)			48.16	105.76	41.56	38.13	52.83	39.98	58.66	36.68	
Book Value per Share (Equity+Debt)			21.7	64.96	19.95	24.95	29.04	21.67	41.08	15.33	
Market to Book (Total Capital) Ratio			2.22	1.63	2.08	1.53	1.82	1.84	1.43	2.39	
Minimum	1.43	1.63									
Mean	1.87	1.855		1.63	2.08						
Standard Deviation	0.32	0.225									
Weighted Market to Book (Debt&Equity) Ratio	1.77		3,902.08	30,732.40	15,261.98	2,793.21	1,924.79	1,193.87	1,579.44	1,123.14	58,510.91
Variance to Wtd Mean	0.0817		0.45	(0.14)	0.31	(0.24)	0.05	0.07	(0.34)	0.62	
Median	1.83	1.855									
Maximum	2.39	2.08									

1. Value Line Investment Survey January 12, 2018

The following table summarizes both the comparable sales and financial market ratio analysis and the Market Approach conclusion of this appraisal:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Market Approach Summary

Comparable Sales	Book Ratios	Purchase Price to Depreciated Original Cost (Book Value)	Indicated Market Value
Depreciated Original Cost (AUS Consultants) OCLD	40,057,633.92	1.5819	63,367,171
Replacement Cost New less Depreciation RCNLD	99,589,818.55	0.9516	94,769,671
Average			79,068,421
Use (RCNLD)			94,769,671

Financial Markets	Market Value per Share to Book Value per Share
Market to Book (equity)	2.61
Market to Book (equity and debt)	1.77
Use (equity and debt)	1.77

Market Conclusion	Investor Purchaser Owned Value to Depreciated Original Cost (Book Value)		
Exeter Wastewater System	Exeter Wastewater System		
AUS Depreciated Original Cost	40,057,634	1.77	70,902,012

Market Value	Indicated Valus $s
Minimum	63,367,171
Mean	76,346,285
Median	70,902,012
Maximum	94,769,671
Use (RCNLD)	**94,769,671**

The market approach conclusion of this appraisal was determined to be $94,769,671.

Cost Approach Revisited – Before concluding this appraisal's fair market value, the preliminary cost approach conclusion of $99,589,819 needs to be evaluated to determine if external obsolescence exists in the preliminary reproduction cost new less depreciation conclusion. The appraisal literature, in regards to developing a cost approach states:

> "The last step in the implementation of the cost approach is to estimate *economic obsolescence*. Economic obsolescence (sometimes called "external obsolescence") has been previously defined as the loss in value or usefulness of a property caused by factors external to the asset. These factors include increased cost of raw materials, labor, utilities (without an offsetting increase in product price); reduced demand for the product; increased competition; environmental or other regulations; or similar factors.
>
> The difficulty in measuring the full effect of economic obsolescence is one of the weaknesses of the cost approach. Because economic obsolescence is usually a function of outside influences that affect an entire business (i.e., all tangible and intangible assets) rather than individual assets or isolated groups of assets, it is sometimes measured using the income approach or by using the income approach to help identify the existence of economic influences on value. However, the cost approach can be used to measure some forms of economic obsolescence."[15]

The above described income approach value conclusion of $106,363,321 for the Exeter's future wastewater system and the market approach conclusion of $94,769,671 compared to the cost approach conclusion of $99,589,819 indicates no significant external obsolescence exists in the cost approach conclusion of $99,589,819. Applying 0% external obsolescence to our example account of 361 Collection Mains Gravity the fair market value was determined as follow:

[15] Valuing Machinery and Equipment: The Fundamentals of Appraising Machinery and Technical Assets, Second Edition, pp. 96-97.

Pennsylvania-American Water Company					
Exeter Wastewater System					
Wastewater System					
Investor-Owned Utility					
As of January 1, 2018					
(0)	(0.5)	(1)	(6)	(7)	(8)
Account	Description	Placement Year	Preliminary Cost Approach	Economic Obsolescence	Fair Market Value
			CORLD $s	% of Preliminary Cost Approach	Appraisal Date Value $s
Input		Input	Calculation	Input	Calculation
Exeter Data	Exeter Data	Exeter Data	RCNLD	Economic Obsolescence Analysis	(6) * [1.00-(7)]
Account	Description	Year	Prelim RCNLD	EO%	FMV
360.211	COLLECTION SEWERS - FORCE - MAINS	1990	17,656.23	0.00%	17,656.23
360.213	COLLECTION SEWERS - FORCE - MAINS	1995	132,832.01	0.00%	132,832.01
360.213	COLLECTION SEWERS - FORCE - MAINS	1995	506,472.25	0.00%	506,472.25
360.211	COLLECTION SEWERS - FORCE - MAINS	2005	11,846.82	0.00%	11,846.82
360.211	COLLECTION SEWERS - FORCE - MAINS	2005	301,681.72	0.00%	301,681.72
360.21 Total	**COLLECTION SEWERS - FORCE - MAINS**		970,489.03		970,489.03

Therefore, the cost approach conclusion of $99,589,819 can be considered the final cost approach conclusion as follows:

Pennsylvania-American Water Company
Exeter Wastewater System
Exeter Township, Berks County, Pennsylvania
Wastewater System
Investor-Owned Utility

Summary of Original Cost, Average Service Life/Curve, Replacement Cost and Depreciated Replacement Cost
As of January 1, 2018

Account No.	Description	Original Cost	Cost Index	Cost Translator	Reproduction Cost New	Reproduction to Replacement Cost Factor	Replacement Cost New	Average Age	Weighted RCN Age	Iowa Survivor Curve and Life	Average Normal Remaining Life	Weighted RCN Average Normal Remaining Life	Average Total Life Expectancy	Weighted RCN Average Total Life Expectancy	Condition	Depreciated Replacement Cost	Economic Obsolescence	Fair Market Value
353.20	Land & Land Rights - Collection	336,068.94	USBLS1	2.23	749,404.75	1.000	749,404.75	32.60	24,434,285.00	Non-Depr	-	-	-	-	100.00%	749,404.75	0.00%	749,404.75
353.30	Land & Land Rights - Pumping	63,244.16	USBLS1	1.58	99,930.18	1.000	99,930.18	22.17	2,215,422.00	Non-Depr	-	-	-	-	100.00%	99,930.18	0.00%	99,930.18
353.40	Land & Land Rights - Treatment	735,535.35	USBLS1	3.075	2,261,697.09	1.000	2,261,697.09	39.72	89,823,729.00	Non-Depr	-	-	-	-	100.00%	2,261,697.09	0.00%	2,261,697.09
354.30	Stuctures & Improvements - Pumping	1,000,471.00	HWW-18	2.18	2,181,008.75	1.000	2,181,008.75	23.09	50,359,151.00	R4.0 45 yrs	22.70	49,513,519.00	45.79	99,872,670.00	49.62%	1,082,243.87	0.00%	1,082,243.87
354.40	Stuctures & Improvements - Treatment	36,457,669.12	HWW-115	3.057	111,449,475.20	1.000	111,449,475.20	32.99	3,676,737,065.00	R4.0 55 yrs	24.21	2,698,338,995.00	57.20	6,375,076,059.00	42.99%	47,912,068.89	0.00%	47,912,068.89
355.30	Generating Equipment - Pumping	46,258.60	USBLS4	1.547	71,562.06	1.000	71,562.06	24.50	1,753,270.00	R3.0 35 yrs	13.39	958,216.00	37.89	2,711,487.00	35.34%	25,289.42	0.00%	25,289.42
360.21	Collection Sewers - Force - Mains	724,186.15	HWW-144	1.989	1,440,743.93	1.000	1,440,743.93	19.87	28,620,637.00	R3.0 60 yrs	40.92	58,962,345.00	60.79	87,582,982.00	67.36%	970,489.03	0.00%	970,489.03
360.23	Collection Sewers - Force - Manholes	165,868.09	HWW-145	1.642	272,340.40	1.000	272,340.40	19.48	5,304,528.00	R3.0 65 yrs	46.33	12,616,233.00	65.80	17,920,763.00	70.42%	191,793.42	0.00%	191,793.42
361.21	Collection Sewers - Gravity - Mains	15,360,150.52	HWW-144	3.266	50,172,506.70	1.000	50,172,506.70	38.45	1,928,923,877.00	R3.0 80 yrs	45.03	2,259,336,879.00	83.48	4,188,260,756.00	54.35%	27,267,923.87	0.00%	27,267,923.87
361.22	Collection Sewers - Gravity - Mains Relining	161,438.00	HWW-144	1.12	180,828.45	0.100	18,082.84	9.21	166,575.00	R3.0 80 yrs	70.90	1,282,079.00	80.11	1,448,653.00	8.85%	16,003.65	0.00%	16,003.65
361.23	Collection Sewers - Gravity - Manholes	4,110,550.96	HWW-145	2.907	11,949,309.18	1.000	11,949,309.18	36.87	440,541,620.00	R3.0 80 yrs	46.36	553,983,646.00	83.23	994,525,265.00	56.11%	6,704,939.15	0.00%	6,704,939.15
361.24	Collection Sewers - Gravity - Manholes Repairs	10,179.00	HWW-145	1.044	10,626.88	0.100	1,062.69	2.50	2,657.00	R3.0 80 yrs	77.64	82,507.00	80.14	85,164.00	9.69%	1,029.54	0.00%	1,029.54
363.20	Service Laterals	8,107,147.46	HWW-139	3.376	27,369,203.97	1.000	27,369,203.97	35.96	984,283,481.00	R3.0 55 yrs	23.93	654,884,859.00	59.89	1,639,168,341.00	41.12%	11,253,482.31	0.00%	11,253,482.31
364.20	Flow Measuring Devices	28,200.34	HWW-140	1.422	40,090.31	1.000	40,090.31	12.75	511,209.00	R3.0 35 yrs	23.30	934,195.00	36.05	1,445,404.00	65.35%	26,198.65	0.00%	26,198.65
365.20	Flow Measuring Installations	95,497.64	HWW-140	2.583	246,670.40	1.000	246,670.40	26.50	6,536,764.00	R3.0 35 yrs	11.92	2,940,312.00	38.42	9,477,076.00	31.03%	76,530.76	0.00%	76,530.76
371.30	Pumping Equipment	180,108.68	HWW-19	2.109	379,859.84	1.000	379,859.84	18.15	6,893,209.00	R3.0 35 yrs	18.78	7,134,775.00	36.93	14,027,979.00	51.62%	196,073.11	0.00%	196,073.11
371.32	Pumping Equipment - Grinder	61,593.68	HWW-19	2.326	143,245.00	1.000	143,245.00	20.20	2,894,167.00	R3.0 35 yrs	17.06	2,443,058.00	37.26	5,337,225.00	46.43%	66,506.40	0.00%	66,506.40
380.40	Treatment and Disposal Equipment	515,491.49	HWW-117	1.117	575,784.83	1.000	575,784.83	3.68	2,119,410.00	R3.0 45 yrs	41.35	23,809,188.00	45.03	25,928,600.00	91.83%	528,742.73	0.00%	528,742.73
390.70	Office Furniture and Equipment	89,011.30	AUST-115	1.026	91,282.84	1.000	91,282.84	3.68	335,833.00	R3.0 12 yrs	8.50	775,557.00	12.18	1,111,395.00	69.89%	63,799.45	0.00%	63,799.45
391.70	Transportation Equipment	24,623.01	AUST-14	1.121	27,609.14	1.000	27,609.14	14.93	412,158.00	R3.0 10 yrs	0.90	24,724.00	15.82	436,882.00	8.46%	2,336.52	0.00%	2,336.52
393.70	Tools, Shop, & Garage Equipment	42,074.30	AUST-17	1.134	47,694.46	1.000	47,694.46	7.98	380,601.00	R3.0 35 yrs	27.39	1,306,258.00	35.37	1,686,860.00	77.63%	37,023.29	0.00%	37,023.29
394.70	Laboratory Equipment	80,810.59	AUST-17	1.19	96,139.85	1.000	96,139.85	9.74	936,735.00	R3.0 20 yrs	11.05	1,062,375.00	20.79	1,999,109.00	53.59%	51,524.13	0.00%	51,524.13
395.70	Power Operated Equipment	-	AUST-18	0	-	-	-	-	-	R3.0 15 yrs	-	-	-	-	0.00%	-	0.00%	-
396.70	Communications Equipment	3,996.00	USBLS2	0.979	3,912.08	1.000	3,912.08	6.50	25,429.00	R3.0 12 yrs	6.06	23,707.00	12.56	49,136.00	48.25%	1,887.52	0.00%	1,887.52
397.70	Miscellaneous Equipment	4,170.76	AUST-18	1.103	4,601.61	1.000	4,601.61	7.80	35,887.00	R3.0 20 yrs	12.83	59,035.00	20.63	94,922.00	63.04%	2,900.82	0.00%	2,900.82
	TOTAL PLANT	$ 68,404,345		3.068	$ 209,865,528	0.999	$ 209,693,218	34.59	$ 7,254,247,699		30.16	$ 6,330,472,462	64.18	$ 13,468,246,728	47.45%	$ 99,589,819	0.00%	$ 99,589,819

Value Conclusion

The Fair Market Value of Exeter's wastewater property, plant and equipment and its operation was determined to be $101,817,000 as follows:

Pennsylvania-American Water Company
Exeter Wastewater System
Wastewater System
Investor-Owned Utility
As of January 1, 2018

Fair Market Value Appraisal

Appraisal Approach		Investor-owned Utility	Weight	Wtd Valuation Indications
Cost Approach				
Depreciated Replacement Cost New	$	99,589,819		
Cost Approach Conclusion		99,589,819	50%	49,794,909
Income Approach		106,363,321		
Income Approach Conclusion		106,363,321	40%	42,545,328
Market Approach				
Market Approach Conclusion		94,769,671	10%	9,476,967
Appraisal Conclusion	$	101,817,204	100%	101,817,204
Conclusion (cost approach)	$	99,589,819		

As the purpose of this appraisal was to fulfill the requirements of Section 1329 of the PA CS in the establishment of value for rate making of Exeter's wastewater property, plant

and equipment the cost approach conclusion of $99,589,819 is consistent with the purpose of the appraisal. This cost approach conclusion is detailed (Cost Approach tab of this report). As the cost approach work papers details our value conclusion by National Association of Regulatory Utility Commissioners' (NARUC) Uniform System of Accounts (USOA) for the wastewater industry account classifications and the installation year of the property this detail can be used to establish the booked value for future accounting and rate making.

Compliance with Uniform Standards of Professional Appraisal Practice (USPAP) 2018-2019

Fulfillment of Requirements for a Personal Property Appraisal and Report

- State the identity of the client and any intended users, by name or type:
  Pennsylvania-American Water Company and the Pennsylvania Public Utility Commission

- State the intended use of the appraisal
  To establish the Fair Market Value of The Township of Exeter, PA's Wastewater System

- Describe information sufficient to identify the property, real, personal, and intangible, involved in the appraisal, including the physical and economic property characteristics relevant to the assignment.

  The Township of Exeter, PA's wastewater treatment and collection property consists of collection mains and laterals of various sizes and types. The property is in good condition based on physical inspections and reviews or operating statements. The property is an operating wastewater system the economics of which were analyzed based on seven years of operating financials which were incorporated in to the income approach to value analysis in this appraisal.

- State the real property interests appraised
  Exeter owns land on several parcels. The land is used primarily for its treatment facility and various pump stations.

- State the type and definition of value and city the source of the definition, including whether the opinion of value is in terms of cash or of financing terms equivalent to cash, or based on non-market financing or financing with unusual conditions or incentives
  - *Market Value definition:*
    "The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress." The Appraisal of Real Estate, 14th Edition, page 58.

- State the effective date of the appraisal and the date of the report
  The effective date of the appraisal is January 1, 2018 and the appraisal report date is September 1, 2018.

- Describe sufficient information to disclose to the client and any other intended users of the appraisal the scope of work used to develop the appraisal

The appraisal considered all three approaches to value: the cost, income and market. Briefly, the scopes of work for each are as follows:

Cost Approach – The cost approach utilized the trended cost method utilizing the investment inventory developed by AUS Consultants from its depreciated original cost study. The Handy Whitman Index of Public Utility Construction Costs for the water industry were used in the trending. Depreciation was assessed based on straight line age-life depreciation method based on service life expectation for each of the various account categories.

Income Approach – The income approach utilized the discounted cash flow (DCF) method; the DCF method facilitates the development of cash flows from operations as the property migrates from municipal operation to a regulated investor owned operation. Exeter's operating experience was analyzed (2010-2017) in order to estimate the initial cash flows. The operations were forecast for 19 periods in the future and a 20th period which is intended to reflect operation beyond that time. The discount rate was developed based on market debt and equity rates at the appraisal date.

Market Approach – The market approach was developed based on market comparable sales of Pennsylvania wastewater properties and market to book ratios developed for the water industry based on information published by Value Line Investment Surveys at the appraisal date.

Valuation Approaches Reconciliation - The appraisal conclusion was based on reconciliation of each of the approaches and the intended purpose of the appraisal.

- Clearly and conspicuously:
  - State all extraordinary assumptions and hypothetical conditions;

    There were no extraordinary assumptions or hypothetical conditions in this appraisal.

  - State that their use might have affected the assignment results

    Not applicable.

- Clearly and accurately disclose all assumptions, extraordinary assumptions, hypothetical conditions, and limiting conditions used in the assignment

  Not applicable.

- Describe the information analyzed, the appraisal procedures followed, and the reasoning that supports the analyses, opinions, and conclusions

  See scope of work above.

- State the use of the real estate existing as of the date of value and the use of the real estate reflected in the appraisal – when reporting an opinion of market value, describe the support and rationale for the appraiser's opinion of the highest and best use of the real estate

  The real estate is used for Exeter's wastewater treatment plants and various pumping stations.

- State and explain any permitted departures from specific requirements of STANDARD 1 and the reason for excluding any of the usual valuation approaches. The appraisal then becomes a limited appraisal – a limited appraisal report must contain a prominent section that clearly identifies the extent of the appraisal process performed and the departures taken

  No departures for Standard 1 were made.

- Include a signed certification in accordance with Standards Rule 2-3

  Contained in Narrative Report.

AUS Consultants, Valuation and Depreciation Services Group certify that, to the best of its knowledge and belief:

- The statements of fact contained in this report are true and correct.

- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.

- AUS Consultants, Valuation and Depreciation Services Group has performed an appraisal of Exeter, PA's Wastewater System previously in the last three year.

- AUS Consultants, Valuation and Depreciation Services Group, nor its professional staff has any present or prospective interest in the property that is the subject of this report, and has no interest or bias with respect to the parties involved.

- We have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

- Our engagement in this assignment is not contingent upon developing or reporting predetermined results.

- Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

- Our analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice 2018-2019.

- The signers of this report (David Sheffer) have made a personal inspection of the property that is the subject of this report.

- All individuals who participated in the preparation of this report and who are Senior Members of the American Society of Appraisers are recertified as required by the mandatory recertification as set out in the constitution by-laws and administrative rules of the American Society of Appraisers.

- Individuals providing significant appraisal assistance to the person signing this certification include: David A. Sheffer, Principal, AUS Consultants, Valuation and Depreciation Services Group and Gannett Fleming Valuation and Rate Consultants, LC's Engineers Assessment.

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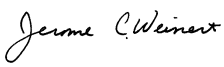
AUS Consultants, Valuation and Depreciation Services Group

By:



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