TENNESSEE-AMERICAN WATER COMPANY, INC.

DOCKET NO. 24-00032

DIRECT TESTIMONY

OF

HAROLD WALKER, III

ON

CASH WORKING CAPITAL

SPONSORING PETITIONER'S EXHBIIT:

TAWC Exhibit HW-1

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Harold Walker, III. My business address is 1010 Adams Avenue, Audubon, Pennsylvania, 19403.

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

A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager, Financial Studies.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. My educational background, business experience and qualifications are provided as an Appendix to this testimony.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE A REGULATORY BODY?

A. Yes, I have submitted regulatory testimony on various subjects, including cash working capital, before regulatory commissions in 26 states.

II. SCOPE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to recommend appropriate working capital allowances for inclusion in Tennessee-American Water Company's ("TAWC" or the "Company") rate base. My recommendations are based upon the results of a lead-lag study that was

performed under my direct supervision.

Q. HAVE YOU PREPARED AN EXHIBIT PRESENTING THE RESULTS OF YOUR STUDIES?

A. Yes. I have prepared TAWC Exhibit HW-1 which contains the 33 Schedules identified as Schedule HW-1 through Schedule HW-33 summarizing the Company's working capital claim in this proceeding.

III. PRINCIPLES OF CASH WORKING CAPITAL

Q. WHAT IS CASH WORKING CAPITAL?

A. Cash working capital is the amount of funds necessary to finance the day-to-day operations of the Company.

Q. HOW IS CASH WORKING CAPITAL TREATED FOR RATEMAKING PURPOSES?

A. Cash working capital is included in the determination of a utility's rate base.

Q. WHY IS CASH WORKING CAPITAL INCLUDED AS AN ELEMENT OF RATE BASE?

A. Cash working capital bridges the gap between the time when funds are provided to the Company by investors to allow the Company to provide service to customers, and the time revenues are received from customers as reimbursement for these services. Working capital is included in rate base to compensate investors for the use of their funds over and above their investment in plant, and to provide investors with a return

on the funds required by the Company for daily operations.

Q. HOW WAS THE CASH WORKING CAPITAL REQUIREMENT DETERMINED?

A. I conducted a lead-lag study to determine the timing of TAWC's cash inflows and outflows, and analyze the level of funding required to operate on a day-to-day basis. In Tennessee, a utility's cash working capital is measured by calculating: (1) the amount of time elapsed between when the Company provides a service to its customers and when the Company receives payments from its customers; and (2) the amount of time elapsed between when the Company receives goods and services and when the Company pays its suppliers for those goods and services. The difference between these two elapsed periods of time is known as the "net lag."

The net lag is multiplied by the average daily cost of service (or revenue requirement) to determine the cash working capital requirement.

Q. PLEASE DESCRIBE THE COMPONENTS OF A CASH WORKING CAPITAL ANALYSIS.

A. The two primary components of a cash working capital analysis are revenue lags and expense leads. The revenue lag is the elapsed time between the delivery of a company's product to its customers and when a company receives payment for the delivery of the product. Investor-provided funds are required to keep a company running during the revenue lag time period, when the revenue stream is temporarily insufficient to finance daily operational needs.

The expense lead is the elapsed time between when a good or service is

provided to a company and when a company pays its supplier for the good or service. During the expense lead time period, cash received from customers may temporarily exceed a company's payments to its suppliers for goods or services, and the excess may be used to offset investor-provided funds.

The net difference between the revenue lag and expense lead determines a company's cash working capital requirement.

Q. GENERALLY SPEAKING, HOW DID YOU CALCULATE THE REVENUE LAG?

A. The revenue lag is the sum of three distinct components: the service period lag, the billing lag, and the collection lag.

Q. WHAT IS THE SERVICE PERIOD LAG?

A. The service period lag is the average time between meter readings. The average, or mid-point, between meter readings, based on monthly meter readings, is roughly 19 days. The mid-point service period lag is produced by dividing the service period of roughly 37 days based on monthly meter readings by two.

Q. WHAT IS THE BILLING LAG?

A. The billing lag is the time from the meter reading date to the date the customer is billed. On the customer billing date, the bill is mailed to the customer, and the total billing amount for the cycle is recorded to TAWC's accounts receivable. The bills are prepared and mailed roughly 3 days after meters are read.

Q. WHAT IS THE COLLECTION LAG?

A. The collection lag is the average number of days from the date the bills are mailed to

customers to the date payments are received by TAWC. This was determined by summing the daily accounts receivable balance during the 12 months ended December 31, 2023 (recent period available at the time of filing) and dividing by the sum of the daily receipts for the same period.

Q. GENERALLY SPEAKING, HOW DID YOU CALCULATE THE EXPENSE LEAD?

A. The expense lead is the sum of two distinct components: the service lead and the payment lead. The service lead is the average time that a service or good was provided to the Company. If a service or good was provided for 20 days, the 20-day service period is divided by two to produce a midpoint of 10 days for the service period lead. The payment lead is the number of days from the end of the service period to the payment date for the service or good. If payment for the service or good was provided on the 30th day and the end of the service period was the 20th day, the payment lead is 10 days (30 days – 20 days). TAWC's expenses can be separated into five major sub-accounts: operating and maintenance expense, depreciation expense, taxes other than income taxes, income taxes, and after-tax operating income. In each of these sub-accounts, the lead days were calculated for each invoice or account by adding the midpoints of the service periods (the service lead) to the date the Company paid the invoices or accounts (the payment lead).

Q. WHY ARE MIDPOINTS USED IN CASH WORKING CAPITAL ANALYSIS?

A. Midpoints are used to determine the average period during which a service or good is rendered or provided, prior to, or subsequent to, payment for the service. The midpoint assumes that service is provided evenly over the service and payment period. For

example, if a service is provided over a 30-day period prior to the payment for service, then on average, service was provided for 15 days (30÷2) before payment.

Q. WHAT DATA SET DID YOU UTILIZE IN YOUR LEAD-LAG STUDIES?

A. The data sets were selected after developing an understanding of the Company's collections, payment policies, and procedures. I requested representative data sets from the Company. Once the requested raw data had been provided, data validation was performed by comparing an actual invoice or a bill with data from the utility's systems to ensure accuracy.

The revenue lag data set included an accounts receivable analysis of the beginning balance, the daily charges to this balance as bills were processed and mailed, and the daily receipts for all the days of the year during the 12 months ended December 31, 2023. The revenue lag data set also included an analysis of the cycle billing, the beginning and ending service dates (meter read dates), the total amount of billings (revenues), and the date bills were mailed (or posted).

The expense lead data set was based on information generated from the Company's central accounts payable system. The expense lead data sets for the 12 months ended December 31, 2023 were analyzed to develop the service beginning and ending dates, the amount purchased, and the date of payment. Generally speaking, sampling was randomly done for the invoices within each expense and tax category. In instances where there were large differences in the dollar amount of the invoices in a single expense category, sampling was focused on the largest invoices within the expense category. For example, the larger purchased water accounts were sampled instead of the smaller purchased water accounts. The samples analyzed averaged 93%

of the Company's total expense and tax dollars.[1]

Q. WHAT TIME PERIOD DOES YOUR LEAD-LAG STUDY ENCOMPASS?

A. The lead-lag studies in this case analyzed the net revenues and the associated net cost of service during the 12 months which ended on December 31, 2023, to derive the lag (lead) days. The lag (lead) days were then used to develop the pro forma weighted net revenue requirement for the 12-months which ended on December 31, 2025 (i.e., attrition year), and the associated weighted cost of service to calculate the Company's working capital requirement.

IV. RESULTS OF THE LEAD-LAG STUDY

Q. WHAT ARE THE RESULTS OF THE LEAD-LAG STUDIES?

A. Schedule HW-1 summarizes TAWC's cash working capital requirements. The cash working capital requirement for TAWC is $4,503,000.

Q. PLEASE DESCRIBE SCHEDULE HW-1.

A. As shown on Schedule HW-1, the cash working capital requirement is based on the net lag days required to finance each cost of service line item. The net lag day calculations are a result of subtracting their respective expense lead days from the revenue lag days to determine the appropriate net lag days, which was multiplied by the average operating funds per day (expenses / 365 days) line item. The lag days for the receipt of the revenue requirement is developed on Schedule HW-2. The lead days for the cost of service line items are developed on Schedules HW-4 through HW-33, and the

[1] Sampling for the total expense and tax dollars paid totaled 93% and reflected a range of sampling from 34% to 100% of the total line item dollars (or expenses). The least amount of sampling, 34%, occurred for line item "Miscellaneous Expenses."

schedule references for the lead days for the cost of service line items is shown on page 1 of Schedule HW-3.

Q. HOW DID YOU CALCULATE THE WORKING CAPITAL REQUIREMENTS SHOWN IN SCHEDULE HW-1?

A. The process used to determine TAWC 's cash working capital requirement, shown on page 1 of Schedule HW-1, is the same for each line item shown. Because the process is the same, I will discuss the purchased water expense line item (first line item) as a means of explaining the methodology used for each line item.

The purchased water expense line item amount of $194,199 was multiplied by the purchased water expense 37.9 lead days to determine a weighted purchased water expense amount (dollar days) of $7,360,127. A similar process was followed for each cost of service (operating fund) line item. Each cost of service (operating fund) line item's weighted amount (dollar days) was summed to determine the total weighted amount (dollar days) of $2,138,872,761. This total weighted amount (dollar days) was divided by the sum of the cost of service (operating fund) line item, $84,279,914, to calculate the 25.4 net operating funds lead days ($2,138,872,761 ÷ $84,279,914 = 25.4 days).

The 25.4 net operating funds lead days was subtracted from the 44.9 revenue lag days to determine the 19.5 net lag days (44.9 – 25.4 = 19.5). The 19.5 net lag days was multiplied by the average daily operating funds of $230,904 ($84,279,914 ÷ 365 days) to determine TAWC's cash working capital requirement of $4,503,000

($4,502,626 rounded) as shown on Schedule HW-1.

Q. PLEASE EXPLAIN THE PROCEDURES USED TO DETERMINE THE REVENUE LAG.

A. Schedule HW-2 summarizes the development of the 44.9-day revenue lag days determined in the lead-lag study during the 12 months ended December 31, 2023. The Company's 44.9-day revenue lag is developed on page 1 of Schedule HW-2. The revenue lags reflect the Company's service, billings, and collections frequencies.

Q. PLEASE EXPLAIN THE PROCEDURES USED TO DETERMINE THE SERVICE PERIOD AND THE BILLING LAG DAYS FOR CUSTOMER REVENUES.

A. The lag days for TAWC's service period and the billing lag are developed on page 2 of Schedule HW-2. As mentioned previously, the service period lag was measured from the midpoint of the service period to the meter reading date, and the billing lag was measured from the meter reading date to the billing date.

A weighted average service period lag of 18.7 days is shown on page 2 of Schedule HW-2. TAWC's bills are prepared, mailed, and recorded to accounts receivable 2.7 days after meters are read. Adding the service period lag to the billing lag produces a combined 21.4-day service period and billing lag (18.7 days + 2.7 days = 21.4 days) as shown on page 2 of Schedule HW-2.

Q. PLEASE DESCRIBE THE PROCEDURE USED TO CALCULATE THE COLLECTION LAG.

A. As mentioned previously, the collection lag is the average number of days from the

date the bills were mailed to the date payments are received, and was determined by summing the daily accounts receivable balance during the test year and dividing by the sum of the daily test year receipts. This results in an average collection lag of 23.5 days as shown on page 3 of Schedule HW-2.

Q. PLEASE SUMMARIZE THE TOTAL REVENUE LAG.

A. The total revenue lag of 44.9 lag days is the result of adding the 21.4-day service period and billing lag and an average collection lag of 23.5 days as shown on page 1 of Schedule HW-2.

Q. PLEASE EXPLAIN THE CALCULATION OF LEAD DAYS FOR THE COST OF SERVICE EXPENSES SHOWN ON SCHEDULE HW-1.

A. For each cost of service expense item that is shown, the lead days were calculated for each invoice or account based on the midpoints of the service periods to the dates the Company paid the invoices or accounts. Schedule HW-3 shows the schedule references for the cost of service lead days for the Company.

Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE OPERATING AND MAINTENANCE EXPENSES SUB-ACCOUNT LINE ITEMS SHOWN ON SCHEDULE HW-1?

A. For the operating and maintenance expense sub-accounts line items shown, the lead days were determined for each invoice or account sampled based on the midpoints of the service periods to the dates the Company paid the invoices or accounts. As explained previously, sampling was randomly done for the invoices within each

expense and tax category.

For example, the weighted average lead days purchased water equal 37.9 days (see Schedule HW-4). The lead days for purchased water were calculated for each invoice examined based on the midpoints of the service periods to the dates the Company paid the invoices. In total, 99% of the purchased water expenses were sampled. Similar analyses were conducted for fuel and power (see Schedule HW-5), chemicals (see Schedule HW-6), waste disposal (see Schedule HW-7), salaries and wages (see Schedule HW-8), pension (see Schedule HW-9), group insurance (see Schedule HW-10), other benefits (see Schedule HW-11), service company (see Schedule HW-12), contracted services (see Schedule HW-13), building maintenance and services (see Schedule HW-14), telecommunication expenses (see Schedule HW-15), postage, printing and stationary (see Schedule HW-16), general office expense (see Schedule HW-17), employee related expense travel & entertainment (see Schedule HW-18), miscellaneous expenses (see Schedule HW-19), rents (see Schedule HW-20), transportation (see Schedule HW-21), customer accounting (see Schedule HW-22), insurance - other (see Schedule HW-23), and maintenance - other (see Schedule HW-24).

Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE DEPRECIATION AND AMORTIZATION EXPENSE SUB-ACCOUNT LINE ITEMS SHOWN ON SCHEDULE HW-1?

A. For the depreciation and amortization expense line item, a zero lead has been assigned because the full amount of the depreciation expense is deducted from rate base when

the expense is recorded.

Q. PLEASE EXPLAIN IN MORE DETAIL WHY A ZERO LEAD DAY SHOULD BE ASSIGNED TO THE DEPRECIATION AND AMORTIZATION LINE ITEM?

A. A zero lag has been assigned because accumulated depreciation, the contra account for the depreciation expense, has been deducted from rate base. The accumulated depreciation account balance always includes an uncollected amount of depreciation expense that is equal to the revenue requirement lag days (i.e., 44.9 days). Assigning a zero lag recognizes that investor funding occurred but it has not yet been recovered from customers.

Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE TAXES OTHER THAN INCOME TAXES SUB-ACCOUNT LINE ITEMS SHOWN ON SCHEDULE HW-1?

A. For most of the taxes other than income taxes sub-account line items shown, the lead days were calculated based on the midpoint of the tax liability period to the payment date, weighted by the actual amount paid. The exception to this was payroll taxes, where the lead days were calculated based on the midpoint of the tax liability period to the payment date. These tax sub-accounts are shown on Schedules HW-25 through HW-29. These taxes include property taxes (see Schedule HW-25), utility tax (see Schedule HW-26), payroll taxes (see Schedule HW-27), gross receipts tax (see

Schedule HW-28), and franchise tax (see Schedule HW-29).

Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE INCOME TAXES SUB-ACCOUNT LINE ITEMS SHOWN ON SCHEDULE HW-1?

For the state taxes (current) and federal taxes (current) sub-account line items shown, the lead days were calculated based on the midpoint of the tax period to the payment date, weighted by the percent of the payment required. The derivation of the state taxes (current) 44.3 lead days is shown on Schedule HW-30 and the derivation of the federal taxes (current) 36.5 lead days is shown on Schedule HW-31. A zero lead has been assigned for deferred taxes because they are deducted from rate base, as they are recorded as part of accumulated deferred taxes.

Q. PLEASE EXPLAIN IN MORE DETAIL WHY ZERO EXPENSE LEAD DAYS SHOULD BE ASSIGNED TO THE DEFERRED TAXES LINE ITEM.

A. A zero lead has been assigned to deferred taxes because accumulated deferred taxes have been deducted from rate base as a source of cost-free funds. The deferred taxes account balance always includes an uncollected amount of deferred tax expense that is equal to the revenue requirement lag days (*i.e.*, 44.9 days). Therefore, the recorded amount of accumulated deferred taxes deducted from rate base overstates the actual amount of available cost-free capital by an amount equal to the revenue requirement lag days. Assigning a zero lead recognizes that a portion of these cost-free funds have not been collected from customers. That is, TAWC collects cash associated with its deferred tax liability from customers in the same way it collects all other revenues – with a revenue lag of 44.9 days. Mathematically, the recorded amount of deferred taxes that is subtracted from rate base is overstated by a portion of the uncollected revenue

requirement related to deferred taxes, because, like all other revenues, it is uncollected from customers for 44.9 days.

Q. HOW WERE THE LEAD DAYS DETERMINED FOR THE AFTER-TAX OPERATING INCOME SUB-ACCOUNT LINE ITEMS SHOWN ON SCHEDULE HW-1?

A. For the interest expense sub-account line items, the lead days were calculated based on the midpoint of the interest period to the payment date. The derivation of the interest expense lead days is shown on Schedules HW-32 and HW-33. I assigned a zero lead day to net income, or return on invested capital, because net income is the property of investors when it is earned. Further, net income is earned when service is provided. However, when service is provided, the net income is not collected simultaneously as is evidenced by the existence of the revenue requirement lag days. This situation is remedied by assigning a zero lead day to net income in recognition that these earnings have not been recovered from customers.

Q. PLEASE SUMMARIZE YOUR DETERMINATION OF THE WORKING CAPITAL REQUIREMENT SHOWN ON SCHEDULE HW-1.

A. The amount of working capital required to finance the recovery of TAWC's cost of service is $4,503,000.

V. <u>CONCLUSION</u>

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Professional Qualifications
of
Harold Walker, III
Manager, Financial Studies
Gannett Fleming Valuation and Rate Consultants, LLC.

EDUCATION

Mr. Walker graduated from Pennsylvania State University in 1984 with a Bachelor of Science Degree in Finance. His studies concentrated on securities analysis and portfolio management with an emphasis on economics and quantitative business analysis. He has also completed the regulation and the rate-making process courses presented by the College of Business Administration and Economics Center for Public Utilities at New Mexico State University. Additionally, he has attended programs presented by The Institute of Chartered Financial Analysts (CFA).

Mr. Walker was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. He is also a member of the Society of Utility and Regulatory Financial Analysts (SURFA) and has attended numerous financial forums sponsored by the Society. The SURFA forums are recognized by the Association for Investment Management and Research (AIMR) and the National Association of State Boards of Accountancy for continuing education credits.

Mr. Walker also obtained a license as a Municipal Advisor Representative (Series 50) by Municipal Securities Rulemaking Board (MSRB) and Financial Industry Regulatory Authority (FINRA).

BUSINESS EXPERIENCE

Prior to joining Gannett Fleming Valuation and Rate Consultants, LLC., Mr. Walker was employed by AUS Consultants - Utility Services. He held various positions during his eleven years with AUS, concluding his employment there as a Vice President. His duties included providing and supervising financial and economic studies on behalf of investor owned and

municipally owned water, wastewater, electric, natural gas distribution and transmission, oil pipeline and telephone utilities as well as resource recovery companies.

In 1996, Mr. Walker joined Gannett Fleming Valuation and Rate Consultants, LLC. In his capacity as Manager, Financial Studies and for the past twenty years, he has continuously studied rates of return requirements for regulated firms. In this regard, he supervised the preparation of rate of return studies in connection with his testimony and in the past, for other individuals. He also assisted and/or developed dividend policy studies, nuclear prudence studies, calculated fixed charge rates for avoided costs involving cogeneration projects, financial decision studies for capital budgeting purposes and developed financial models for determining future capital requirements and the effect of those requirements on investors and ratepayers, valued utility property and common stock for acquisition and divestiture, and assisted in the private placement of fixed capital securities for public utilities.

Head, Gannett Fleming GASB 34 Task Force responsible for developing Governmental Accounting Standards Board (GASB) 34 services, and educating Gannett Fleming personnel and Gannett Fleming clients on GASB 34 and how it may affect them. The GASB 34 related services include inventory of assets, valuation of assets, salvage estimation, annual depreciation rate determination, estimation of depreciation reserve, asset service life determination, asset condition assessment, condition assessment documentation, maintenance estimate for asset preservation, establishment of condition level index, geographic information system (GIS) and data management services, management discussion and analysis (MD&A) reporting, required supplemental information (RSI) reporting, auditor interface, and GASB 34 compliance review.

In 2004, Mr. Walker was elected to serve on the Board of Directors of SURFA. Previously, he served as an ex officio director as an advisor to SURFA's existing President. In 2000, Mr. Walker was elected President of SURFA for the 2001-2002 term. Prior to that, he was elected to serve on the Board of Directors of SURFA during the period 1997-1998 and 1999-2000. He also previously served on the Pennsylvania Municipal Authorities Association, Electric Deregulation Committee.

EXPERT TESTIMONY

Mr. Walker has submitted testimony on various topics before regulatory commissions in 26 states including: Alaska, Arizona, Colorado, Connecticut, Delaware, Hawaii, Idaho, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, Nevada, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. His testimonies covered various subjects including lead-lag studies, fair rate of return, fair market value, the taking of natural resources, benchmarking, appropriate capital structure and fixed capital cost rates, depreciation, purchased water adjustments, synchronization of interest charges for income tax purposes, valuation, cash working capital, financial analyses of investment alternatives, and fair value. The following tabulation provides a listing of the electric power, natural gas distribution, telephone, wastewater, and water service utility cases in which he has been involved as a witness.

Client	Docket No.
Alpena Power Company	U-10020
Armstrong Telephone Company - Northern Division	92-0884-T-42T
Armstrong Telephone Company - Northern Division	95-0571-T-42T
Artesian Water Company, Inc.	90 10
Artesian Water Company, Inc.	06 158
Aqua Illinois Consolidated Water Divisions and Consolidated Sewer Divisions	11-0436
Aqua Illinois Hawthorn Woods Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Hawthorn Woods Water Division	07 0620/07 0621/08 0067
Aqua Illinois Kankakee Water Division	10-0194
Aqua Illinois Kankakee Water Division	14-0419
Aqua Illinois Vermilion Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Water Division	07 0620/07 0621/08 0067
Aqua Pennsylvania, Inc	A-2022-3034143

Aqua Pennsylvania Wastewater Inc	A-2016-2580061
Aqua Pennsylvania Wastewater Inc	A-2017-2605434
Aqua Pennsylvania Wastewater Inc	A-2018-3001582
Aqua Pennsylvania Wastewater Inc	A-2019-3008491
Aqua Pennsylvania Wastewater Inc	A-2019-3009052
Aqua Pennsylvania Wastewater Inc	A-2019-3015173
Aqua Pennsylvania Wastewater Inc	A-2021-3024267
Aqua Pennsylvania Wastewater Inc	A-2021-3026132
Aqua Pennsylvania Wastewater Inc	A-2021-3027268
Aqua Pennsylvania Wastewater Inc	A-2023-3041695
Aqua Virginia - Alpha Water Corporation	Pue-2009-00059
Aqua Virginia - Blue Ridge Utility Company, Inc.	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Earlysville Forest Water Company	Pue-2009-00059
Aqua Virginia - Heritage Homes of Virginia	Pue-2009-00059
Aqua Virginia - Indian River Water Company	Pue-2009-00059
Aqua Virginia - James River Service Corp.	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Water)	Pue-2009-00059
Aqua Virginia - Lake Shawnee	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Wastewater)	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Water)	Pue-2009-00059
Aqua Virginia - Mountainview Water Company, Inc.	Pue-2009-00059
Aqua Virginia - Powhatan Water Works, Inc.	Pue-2009-00059
Aqua Virginia - Rainbow Forest Water Corporation	Pue-2009-00059
Aqua Virginia - Shawnee Land	Pue-2009-00059
Aqua Virginia - Sydnor Water Corporation	Pue-2009-00059
Aqua Virginia - Water Distributors, Inc.	Pue-2009-00059
Atlantic City Sewerage Company	WR21071006
Berkshire Gas Company	18-40

Berkshire Gas Company	22-20
Bermuda Water Company, Inc	W-01812A-22-0256
Borough of Brentwood	A-2021-3024058
Borough of Hanover	R-2009-2106908
Borough of Hanover	R-2012-2311725
Borough of Hanover	R-2014-242830
Borough of Hanover	R-2021-3026116
Borough of Hanover	P-2021-3026854
Borough of Royersford	A-2020-3019634
Butler Area Sewer Authority	A-2020-3019634
Chaparral City Water Company	W 02113a 04 0616
California-American Water Company	CIVCV156413
Connecticut-American Water Company	99-08-32
Connecticut Water Company	06 07 08
Citizens Utilities Company	
Colorado Gas Division	-
Citizens Utilities Company	
Vermont Electric Division	5426
Citizens Utilities Home Water Company	R 901664
Citizens Utilities Water Company	
of Pennsylvania	R 901663
City of Beaver Falls	A-2022-3033138
City of Bethlehem - Bureau of Water	R-00984375
City of Bethlehem - Bureau of Water	R 00072492
City of Bethlehem - Bureau of Water	R-2013-2390244
City of Bethlehem - Bureau of Water	R-2020-3020256
City of Dubois – Bureau of Water	R-2013-2350509
City of Dubois – Bureau of Water	R-2016-2554150
City of Lancaster Sewer Fund	R-00005109
City of Lancaster Sewer Fund	R-00049862
City of Lancaster Sewer Fund	R-2012-2310366
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Water Fund	R-00984567
City of Lancaster Water Fund	R-00016114
City of Lancaster Water Fund	R 00051167

City of Lancaster Water Fund	R-2010-2179103
City of Lancaster Water Fund	R-2014-2418872
City of Lancaster Water Fund	R-2021-3026682
City of Lancaster Water Fund	P-2022-3035591
Coastland Corporation	15-cvs-216
Commonwealth Edison Company	23-0728
Consumers Pennsylvania Water Company Roaring Creek Division	R-00973869
Consumers Pennsylvania Water Company Shenango Valley Division	R-00973972
Country Knolls Water Works, Inc.	90 W 0458
East Resources, Inc. - West Virginia Utility	06 0445 G 42T
Elizabethtown Water Company	WR06030257
ENSTAR Natural Gas Company	U-22-081
Falls Water Company, Inc.	FLS-W-23-01
Forest Park, Inc.	19-W-0168 & 19-W-0269
Hampton Water Works Company	DW 99-057
Hidden Valley Utility Services, LP	R-2018-3001306
Hidden Valley Utility Services, LP	R-2018-3001307
Illinois American Water Company	16-0093
Illinois American Water Company	22-0210
Indian Rock Water Company	R-911971
Indiana Natural Gas Corporation	38891
Jamaica Water Supply Company	-
Kane Borough Authority	A-2019-3014248
Kentucky American Water Company, Inc.	2007 00134
Kentucky American Water Company, Inc.	2023-00191
Middlesex Water Company	WR 89030266J
Millcreek Township Water Authority	55 198 Y 00021 11
Missouri-American Water Company	WR 2000-281
Missouri-American Water Company	SR 2000-282
Missouri-American Water Company	WR-2022-0303
Mount Holly Water Company	WR06030257
Nevada Power Company d/b/a NV Energy	20-06003
Nevada Power Company d/b/a NV Energy	23-06007
New Jersey American Water Company	WR 89080702J

New Jersey American Water Company	WR 90090950J
New Jersey American Water Company	WR 03070511
New Jersey American Water Company	WR-06030257
New Jersey American Water Company	WR08010020
New Jersey American Water Company	WR10040260
New Jersey American Water Company	WR11070460
New Jersey American Water Company	WR15010035
New Jersey American Water Company	WR17090985
New Jersey American Water Company	WR19121516
New Jersey American Water Company	WR22010019
New Jersey Natural Gas Company	GR19030420
New Jersey Natural Gas Company	GR21030679
Newtown Artesian Water Company	R-911977
Newtown Artesian Water Company	R-00943157
Newtown Artesian Water Company	R-2009-2117550
Newtown Artesian Water Company	R-2011-2230259
Newtown Artesian Water Company	R-2017-2624240
Newtown Artesian Water Company	R-2019-3006904
North Maine Utilities	14-0396
Northern Indiana Fuel & Light Company	38770
Oklahoma Natural Gas Company	PUD-940000477
Palmetto Utilities, Inc.	2020-281-S
Palmetto Wastewater Reclamation, LLC	2018-82-S
Pennichuck Water Works, Inc.	DW 04 048
Pennichuck Water Works, Inc.	DW 06 073
Pennichuck Water Works, Inc.	DW 08 073
Pennsylvania-American Water Company	A-2023-3039900
Pennsylvania Gas & Water Company (Gas)	R-891261
Pennsylvania Gas & Water Co. (Water)	R 901726
Pennsylvania Gas & Water Co. (Water)	R-911966
Pennsylvania Gas & Water Co. (Water)	R-22404
Pennsylvania Gas & Water Co. (Water)	R-00922482
Pennsylvania Gas & Water Co. (Water)	R-00932667
Philadelphia Gas Works	R-2020-3017206
Philadelphia Gas Works	R-2023-3037933
Public Service Company of North Carolina, Inc.	G-5, Sub 565

Public Service Electric and Gas Company	ER181010029
Public Service Electric and Gas Company	GR18010030
Presque Isle Harbor Water Company	U-9702
Sierra Pacific Power Company d/b/a NV Energy	19-06002
Sierra Pacific Power Company d/b/a NV Energy	22-06014
St. Louis County Water Company	WR-2000-844
Suez Water Delaware, Inc.	19-0615
Suez Water Idaho, Inc.	SUZ-W-20-02
Suez Water New Jersey, Inc.	WR18050593
Suez Water New Jersey, Inc.	WR20110729
Suez Water Owego-Nichols, Inc.	17-W-0528
Suez Water Pennsylvania, Inc.	R-2018-3000834
Suez Water Pennsylvania, Inc.	A-2018-3003519
Suez Water Pennsylvania, Inc.	A-2018-3003517
Suez Water Rhode Island, Inc.	Docket No. 4800
Suez Water Owego-Nichols, Inc.	19-W-0168 & 19-W-0269
Suez Water New York, Inc.	19-W-0168 & 19-W-0269
Suez Westchester, Inc.	19-W-0168 & 19-W-0269
Town of North East Water Fund	9190
Township of Exeter	A-2018-3004933
United Water New Rochelle	W-95-W-1168
United Water Toms River	WR-95050219
Upper Pottsgrove Township	A-2020-3021460
Valley Township (water)	A-2020-3019859
Valley Township (wastewater)	A-2020-3020178
Valley Water Systems, Inc.	06 10 07
Veolia Water Idaho, Inc.	VEO-W-22-02
Veolia Water Delaware, Inc.	23-0598
Veolia Water New York, Inc.	23-W-0111
Virginia American Water Company	PUR-2018-00175
Virginia American Water Company	PUR-2021-00255
Virginia American Water Company	PUR-2023-00194
West Virginia-American Water Company	15-0676-W-42T
West Virginia-American Water Company	15-0675-S-42T
Wilmington Suburban Water Corporation	94-149
York Water Company	R-901813

York Water Company	R-922168
York Water Company	R-943053
York Water Company	R-963619
York Water Company	R-994605
York Water Company	R-00016236
Young Brothers, LLC	2019-0117

TAWC Exhibit HW-1

BEFORE THE
TENNESSEE PUBLIC UTILITY COMMISSION

DOCKET NO. 24-_____

TENNESSEE-AMERICAN WATER COMPANY, INC.

Lead-Lag Schedules

Schedule HW-1 Through Schedule HW-33

To Accompany the

Direct Testimony of Harold Walker, III

On Lead-Lag Study – Cash Working Capital

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

INDEX TO SCHEDULES

TENNESSEE AMERICAN WATER COMPANY
SUMMARY OF CALCULATION OF CASH WORKING CAPITAL REQUIREMENTS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Line No.	Description	2025 Attrition Year Amount	Days	Weighted Amount
1.	Net Operating Funds:			
2.	Operating Expenses			
3.	Purchased Water	$194,199	37.9	$7,360,127
4.	Fuel And Power	3,062,540	28.0	85,751,113
5.	Chemicals	2,307,000	48.3	111,428,108
6.	Waste Disposal	749,848	65.7	49,265,035
7.	Salaries and Wages	6,530,376	10.5	68,568,947
8.	Pension	617,976	(1.2)	(741,572)
9.	Group Insurance	410,655	10.5	4,311,874
10.	Other Benefits	597,111	9.0	5,374,002
11.	Service Company	8,619,395	(5.0)	(43,096,973)
12.	Contracted Services	965,973	48.5	46,849,691
13.	Building Maintenance and Services	331,819	45.2	14,998,219
14.	Telecommunication Expenses	352,479	21.5	7,578,299
15.	Postage, Printing and Stationary	18,215	17.5	318,763
16.	General Office Expense	195,684	13.9	2,720,008
17.	Employee Related Expense Travel & Entertainment	212,165	47.9	10,162,704
18.	Miscellaneous Expenses	941,278	45.9	43,204,660
19.	Rents	29,986	(234.9)	(7,043,675)
20.	Transportation	425,092	49.1	20,872,017
21.	Customer Accounting	577,099	61.8	35,664,691
22.	Insurance - Other	1,205,118	(59.8)	(72,066,056)
23.	Maintenance - Other	1,691,308	12.1	20,464,832
24.	Depreciation & Amortization	15,755,585	0.0	0
25.	Taxes Other Than Income			
26.	Property Taxes	4,920,461	218.1	1,073,152,544
27.	Utility Tax	286,779	269.0	77,143,551
28.	Payroll Taxes	488,083	10.5	5,124,872
29.	Gross Receipts Tax	1,042,348	(157.5)	(164,169,810)
30.	Franchise Tax	981,976	44.3	43,452,438
31.	Income Taxes			
32.	Current State Taxes	702,278	44.3	31,075,819
33.	Current Federal Taxes	2,326,185	36.5	84,905,748
34.	Deferred Taxes	2,903,162	0.0	0
35.	Utility Net Operating Income			
36.	Long Term Debt Interest	6,093,421	92.8	565,469,469
37.	Short Term Debt Interest	243,737	14.6	3,558,560
38.	Net Income	17,853,725	0.0	0
39.	Net Operating Funds	$83,633,057	25.5	$2,131,658,005
40.	Revenue Lag Days		44.9	
41.	LESS: Net Operating Funds Lead Days		25.5	
42.	Net Lag		19.4	
43.	Average Daily Operating Funds ($83,633,057 ÷ 365 days) =		229,132	
44.	Cash Working Capital Requirement ($229,132 x 19.4 Days) =		4,447,853	
45.	**Use Rounded Cash Working Capital**		**$4,448,000**	

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF TOTAL REVENUE LAG DAYS

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Description	Total Company
Operating Revenues - Water, Sewer, & Other:	
Service Period & Billing Lag Days:	
(From mid-point of service period to A/R Posting Date. See page 2 of this Schedule)	21.4
Collection Lag:	
(Sum of daily accounts receivable balance divided by the sum of daily receipts. See page 3 of this Schedule)	23.5
Total Revenue Lag Days	44.9

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF SERVICE PERIOD AND BILLING LAG DAYS

Description	Total Company
Weighted Service Lag (October 2023)	$117,308,952
Billing Total (October 2023)	6,257,488
Service Lag Days	18.7
Weighted Billing Lag (October 2023)	17,196,795
Billing Total (October 2023)	6,257,488
Billing Lag Days	2.7
Total Service Period & Billing Lag Days for Monthly Billing	21.4

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF COLLECTION LAG DAYS

Description	Total Company
Sum of Net Daily Accounts Receivable Balance in a Year	$1,558,085,413
Plus:	
Uncollectibles Deducted From A/R Balance	(382,661)
Sum of Daily Accounts Receivable Balance in Test Year	$1,557,702,752
Beginning Accounts Receivable Balance	$4,143,784
Ending Accounts Receivable Balance	3,875,354
Change in Accounts Receivables for Test Year	($268,430)
The Sum of Daily Revenue For Test Year	$66,087,192
Less	
Change in Accounts Receivables for Test Year	(268,430)
The Sum of Daily Receipts in Test Year	$66,355,622
Sum of Daily Accounts Receivable Balance in Test Year	$1,557,702,752
Divided By the Sum of Daily Receipts in Test Year	66,355,622
Total Service Period Collection Lag	23.5

TENNESSEE AMERICAN WATER COMPANY
SUMMARY OF NET OPERATING FUNDS LEAD DAYS
BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Description	Schedule Reference	Amount	Weighted Amount	(Lead)/ Lag Days
(1)	(2)	(3)	(4)	(5)=(4)/(3)
Net Operating Funds				
Purchased Water	Schedule HW-4	176,427	6,682,550	37.9
Fuel And Power	Schedule HW-5	2,619,870	73,445,897	28.0
Chemicals	Schedule HW-6	2,145,687	103,696,934	48.3
Waste Disposal	Schedule HW-7	685,403	45,018,363	65.7
Salaries and Wages	Schedule HW-8	5,130,093	53,865,974	10.5
Pension	Schedule HW-9	685,000	(813,275)	(1.2)
Group Insurance	Schedule HW-10	2,190,360	22,998,782	10.5
Other Benefits	Schedule HW-11	599,132	5,374,555	9.0
Service Company	Schedule HW-12	8,105,422	(40,228,048)	(5.0)
Contracted Services	Schedule HW-13	1,241,405	60,258,198	48.5
Building Maintenance and Services	Schedule HW-14	209,997	9,497,837	45.2
Telecommunication Expenses	Schedule HW-15	302,154	6,487,297	21.5
Postage, Printing and Stationary	Schedule HW-16	11,912	208,616	17.5
General Office Expense	Schedule HW-17	61,502	855,477	13.9
Employee Related Expense Travel & Entertainment	Schedule HW-18	120,241	5,753,992	47.9
Miscellaneous Expenses	Schedule HW-19	216,845	9,956,866	45.9
Rents	Schedule HW-20	7,197	(1,690,428)	(234.9)
Transportation	Schedule HW-21	494,974	24,316,845	49.1
Customer Accounting	Schedule HW-22	79,183	4,896,982	61.8
Insurance - Other	Schedule HW-23	1,158,018	(69,228,536)	(59.8)
Maintenance - Other	Schedule HW-24	413,717	4,995,794	12.1
Depreciation & Amortization *				0.0
Property Taxes	Schedule HW-25	3,475,867	758,054,704	218.1
Utility Tax	Schedule HW-26	243,452	65,488,679	269.0
Payroll Taxes	Schedule HW-27	663,197	6,963,565	10.5
FUTA	Schedule HW-27	4,571	47,995	10.5
FICA	Schedule HW-27	649,999	6,824,991	10.5
STUTA	Schedule HW-27	8,627	90,579	10.5
Gross Receipts Tax	Schedule HW-28	1,023,554	(161,209,755)	(157.5)
Franchise Tax	Schedule HW-29			44.3
Current State Taxes	Schedule HW-30			44.3
Current Federal Taxes	Schedule HW-31			36.5
Deferred Taxes *				0.0
Long Term Debt Interest	Schedule HW-32	4,317,142	400,538,335	92.8
Short Term Debt Interest	Schedule HW-33	354,936	5,198,514	14.6
Net Income *				0.0

* - Lead days are assumed to be 0.

TENNESSEE AMERICAN WATER COMPANY
OPERATING EXPENSES & TAXES SAMPLE SIZES USED IN THE
LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Description	Per Books	Sample Size	Percentage Sampled	
(1)	(2)	(3)	(4)=(3)/(2)	
Partial Expenses & Taxes				
1. Purchased Water	$177,451	$176,427	99%	
2. Fuel and Power	871,816	2,619,870	301%	(1)
3. Chemicals	2,505,288	2,145,687	86%	
4. Waste Disposal	688,679	685,403	100%	
5. Salaries and Wages	5,719,662	5,130,093	90%	
6. Pension	588,298	685,000	116%	(2)
7. Group Insurance	190,533	2,190,360	1150%	(2)
8. Other Benefits	494,871	599,132	121%	(2)
9. Service Company	8,134,614	8,105,422	100%	
10. Contracted Services	990,301	1,241,405	125%	(1)
11. Building Maintenance and Services	307,330	209,997	68%	
12. Telecommunication Expenses	313,503	302,154	96%	
13. Postage, Printing and Stationary	13,211	11,912	90%	
14. General Office Expense	159,833	61,502	38%	
15. Employee Related Expense Travel & Entertainment	196,355	120,241	61%	
16. Miscellaneous Expenses	635,049	216,845	34%	
17. Rents	8,429	7,197	85%	
18. Transportation	438,484	494,974	113%	(2)
19. Customer Accounting	84,683	79,183	94%	
20. Insurance - Other	1,267,232	1,158,018	91%	
21. Maintenance - Other	1,219,651	413,717	34%	
22. Property Taxes	3,901,685	3,475,867	89%	
23. Utility Tax	243,452	243,452	100%	
24. Payroll Taxes	422,483	663,197	157%	(3)
25. FUTA	3,053	4,571	150%	(2)
26. FICA	411,379	649,999	158%	(2)
27. STUTA	8,051	8,627	107%	(2)
28. Gross Receipts Tax	985,923	1,023,554	104%	(1)
29. Franchise Tax	0	0 (4)	100%	
30. Current State Taxes	(100,507)	(100,507) (4)	100%	
31. Current Federal Taxes	497,746	497,746 (4)	100%	
32. Long Term Debt Interest	4,759,960	4,317,142	91%	
33. Short Term Debt Interest	354,936	354,936	100%	
Total (Excluding Sub-Accounts)	$35,085,028	$36,106,372	93%	

Notes: (1) Sampling based on date paid not date of accrual..
(2) Sample amount is greater than 100% of expense because it includes the capital portion, employee contributions, or deferred amounts.
(3) Based on the sampling for line items 25-27.
(4) Sampling based on statutory dates.

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR PURCHASED WATER

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	41.2	$17,097.53	$704,003.64
February-23	110.0	3,947.16	434,324.64
March-23	37.9	8,713.51	330,128.91
April-23	43.3	7,369.93	319,467.71
May-23	38.2	16,061.33	613,812.98
June-23	34.4	12,320.92	423,340.98
July-23	34.1	20,050.03	683,935.76
August-23	34.9	14,937.14	521,478.18
September-23	34.8	16,975.46	590,321.16
October-23	33.8	20,666.67	698,508.08
November-23	35.0	22,027.05	770,775.98
December-23	36.4	16,259.99	592,452.02
Total Purchased Water	37.9	$176,426.72	$6,682,550.01

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR FUEL AND POWER

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	28.4	$238,718.23	$6,782,050.38
February-23	28.8	228,350.04	6,574,159.78
March-23	24.5	207,851.06	5,087,275.15
April-23	27.3	197,917.24	5,407,517.95
May-23	26.4	193,711.53	5,123,257.59
June-23	29.0	205,382.46	5,949,544.39
July-23	28.4	195,113.08	5,532,519.41
August-23	26.4	263,832.67	6,955,281.34
September-23	32.5	199,609.57	6,491,664.47
October-23	28.1	269,646.44	7,577,353.56
November-23	28.1	236,677.95	6,641,158.44
December-23	29.1	183,059.41	5,324,114.57
Total Fuel And Power	28.0	$2,619,869.68	$73,445,897.00

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR CHEMICALS

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
February-23	48.8	$81,481.29	$3,975,378.23
March-23	52.6	233,106.40	12,267,587.20
April-23	45.2	131,751.46	5,960,986.19
May-23	47.2	175,994.96	8,309,701.84
June-23	46.1	197,115.94	9,091,947.94
July-23	44.6	205,944.70	9,191,660.84
August-23	54.9	208,116.41	11,416,919.29
September-23	48.6	258,813.76	12,588,738.66
October-23	48.1	196,068.30	9,429,784.59
November-23	48.1	194,241.10	9,337,820.77
December-23	46.1	263,052.66	12,126,408.28
Total Chemicals	48.3	$2,145,686.98	$103,696,933.83

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR WASTE DISPOSAL

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
February-23	31.0	$28,799.56	$893,272.25
March-23	183.6	21,703.52	3,984,235.77
April-23	65.2	160,141.59	10,439,176.12
May-23	63.9	117,643.57	7,517,630.95
June-23	49.6	25,499.62	1,264,253.03
July-23	59.1	71,447.12	4,222,957.58
August-23	59.5	11,865.57	706,001.42
September-23	68.0	9,923.58	674,803.44
October-23	58.3	77,711.45	4,528,438.24
November-23	57.6	55,003.97	3,166,164.42
December-23	72.1	105,663.08	7,621,429.90
Total Waste Disposal	65.7	$685,402.63	$45,018,363.10

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR SALARIES AND WAGES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Facts	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
All company employees are paid for a two week period (i.e., Days 1 through 14).			
Pay date is five days following the end of the payroll period (i.e., Day 19, where 19 = 14 + 5).			
Third party vendor, ADP, recives funds 1 day before paydays (i.e., Day 18, where 18 = 19 - 1).			
Non-Union Salaries (5 days)			
LEAD [18 - 7.5 = 10.5; where 7.5 = (1 + 14 = 15 ÷ 2 = 7.5)]	10.5	$1,487,104.92	$15,614,601.66
Union Labor (5 days)			
LEAD [18 - 7.5 = 10.5; where 7.5 = (1 + 14 = 15 ÷ 2 = 7.5)]	10.5	3,642,987.86	38,251,372.53
Total Salaries And Wages	10.5	$5,130,092.78	$53,865,974.19

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR PENSION

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
February-23	0.5	$157,950.00	$78,975.00
May-23	(1.0)	161,850.00	-161,850.00
August-23	(1.5)	182,600.00	-273,900.00
November-23	(2.5)	182,600.00	-456,500.00
Total Pension	(1.2)	$685,000.00	-$813,275.00

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR GROUP INSURANCE

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	10.5	$168,481.62	$1,769,057.01
February-23	10.5	166,078.81	1,743,827.51
March-23	10.5	166,146.10	1,744,534.05
April-23	10.5	169,819.33	1,783,102.97
May-23	10.5	254,637.07	2,673,689.24
June-23	10.5	171,061.88	1,796,149.74
July-23	10.5	171,686.82	1,802,711.61
August-23	10.5	172,722.98	1,813,591.29
September-23	10.5	167,685.59	1,760,698.70
October-23	10.5	166,152.98	1,744,606.29
November-23	10.5	249,705.34	2,621,906.07
December-23	10.5	166,181.64	1,744,907.22
Total Group Insurance	10.5	$2,190,360.16	$22,998,781.68

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR OTHER BENEFITS

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	7.6	$43,357.03	$327,677.41
February-23	9.0	44,023.31	396,275.95
March-23	10.9	66,908.02	727,457.03
April-23	9.8	46,760.31	459,672.19
May-23	8.9	46,027.61	407,406.78
June-23	8.6	45,825.16	393,188.86
July-23	6.3	50,124.40	316,837.50
August-23	9.5	68,756.84	653,001.85
September-23	8.9	47,187.78	419,778.13
October-23	8.8	47,143.53	416,762.21
November-23	9.9	48,112.31	474,794.69
December-23	8.5	44,906.11	381,701.94
Total Other Benefits	9.0	$599,132.41	$5,374,554.52

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR SERVICE COMPANY

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	(4.0)	$723,663.03	-$2,894,652.12
February-23	(5.5)	615,413.85	-3,384,776.18
March-23	(7.0)	621,336.24	-4,349,353.68
April-23	(3.5)	724,562.03	-2,535,967.11
May-23	(6.0)	601,039.03	-3,606,234.18
June-23	(6.5)	654,355.85	-4,253,313.03
July-23	(4.0)	764,300.15	-3,057,200.60
August-23	(6.0)	635,790.21	-3,814,741.26
September-23	(3.5)	654,244.63	-2,289,856.21
October-23	(4.0)	803,844.64	-3,215,378.56
November-23	(6.5)	639,633.56	-4,157,618.14
December-23	(4.0)	667,239.26	-2,668,957.04
Total Service Company	(5.0)	$8,105,422.48	-$40,228,048.09

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR CONTRACTED SERVICES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	24.4	$34,066.34	$832,911.23
February-23	43.3	49,060.66	2,122,242.10
March-23	54.3	88,091.96	4,779,457.90
April-23	38.7	91,774.64	3,554,519.09
May-23	51.0	85,285.87	4,345,942.72
June-23	89.9	103,207.06	9,282,572.74
July-23	57.5	76,081.02	4,376,306.70
August-23	58.3	62,881.09	3,664,603.57
September-23	68.9	114,608.20	7,897,697.75
October-23	54.7	82,474.92	4,509,081.16
November-23	47.7	111,798.76	5,334,672.99
December-23	27.9	342,074.35	9,558,190.18
Total Contracted Services	48.5	$1,241,404.87	$60,258,198.11

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR BUILDING MAINTENANCE AND SERVICES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	22.5	$7,981.79	$179,335.58
February-23	22.4	7,906.89	177,399.97
March-23	(1.3)	7,551.78	-9,874.15
April-23	32.0	12,522.95	400,311.02
May-23	41.2	12,577.46	518,088.24
June-23	45.8	19,161.02	876,850.62
July-23	51.1	25,632.88	1,310,979.48
August-23	49.3	24,425.07	1,205,337.10
September-23	50.9	35,060.47	1,784,785.54
October-23	43.9	16,845.06	738,991.71
November-23	53.4	14,615.49	781,046.65
December-23	59.7	25,715.87	1,534,585.45
Total Building Maintenance And Services	45.2	$209,996.73	$9,497,837.18

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR TELECOMMUNICATION EXPENSES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	21.2	$16,902.42	$358,917.85
February-23	24.1	16,929.86	408,854.35
March-23	7.1	29,403.77	208,954.10
April-23	29.7	22,105.61	657,584.99
May-23	32.0	13,563.74	434,306.53
June-23	32.1	19,214.53	616,480.39
July-23	29.6	26,772.06	791,757.57
August-23	(25.0)	50,826.56	-1,272,658.34
September-23	24.9	15,486.45	385,617.87
October-23	53.2	34,880.38	1,855,321.54
November-23	43.5	40,904.81	1,778,820.60
December-23	17.4	15,164.17	263,339.82
Total Telecommunication Expenses	21.5	$302,154.36	$6,487,297.25

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR POSTAGE, PRINTING AND STATIONARY

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	20.4	$4,004.24	$81,510.36
February-23	15.3	676.88	10,362.56
March-23	3.9	447.15	1,755.09
April-23	14.2	656.94	9,345.83
May-23	11.0	425.84	4,675.84
June-23	15.7	713.89	11,239.01
July-23	19.3	1,150.47	22,169.38
August-23	17.9	869.67	15,594.15
September-23	18.5	348.70	6,460.66
October-23	16.8	1,260.22	21,201.22
November-23	15.7	845.79	13,258.07
December-23	21.6	512.15	11,043.87
Total Postage, Printing And Stationary	17.5	$11,911.94	$208,616.04

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR GENERAL OFFICE EXPENSE

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	4.6	$1,357.85	$6,191.94
February-23	15.3	3,907.98	59,908.60
March-23	26.8	4,238.37	113,531.88
April-23	36.6	12,290.25	450,408.28
May-23	18.0	2,081.43	37,502.44
June-23	12.6	1,945.26	24,524.50
July-23	5.3	3,158.97	16,835.96
August-23	(61.2)	7,861.35	-480,912.34
September-23	23.7	4,695.98	111,273.82
October-23	22.8	4,175.62	95,091.99
November-23	37.2	3,825.47	142,317.90
December-23	23.3	11,963.26	278,802.50
Total General Office Expense	13.9	$61,501.79	$855,477.47

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR EMPLOYEE RELATED EXPENSE TRAVEL & ENTERTAINMENT

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	(164.0)	$1,600.00	-$262,400.00
February-23	28.1	4,372.46	122,974.12
March-23	30.9	7,167.07	221,482.04
April-23	42.5	8,086.17	343,736.70
May-23	38.3	8,222.80	314,680.95
June-23	62.7	16,865.78	1,057,131.37
July-23	54.1	4,201.57	227,242.30
August-23	52.0	18,618.60	967,739.20
September-23	53.6	15,932.40	853,628.22
October-23	56.3	15,654.50	881,010.39
November-23	59.7	13,080.72	781,001.69
December-23	38.2	6,439.08	245,765.50
Total Employee Related Expense Travel & Entertainment	47.9	$120,241.15	$5,753,992.48

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR MISCELLANEOUS EXPENSES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
March-23	68.5	$2,111.00	$144,603.50
April-23	25.7	31,752.65	817,101.71
May-23	58.3	18,627.40	1,085,439.88
June-23	44.3	6,375.46	282,130.36
July-23	46.1	10,807.64	498,768.34
August-23	33.0	31,340.11	1,034,573.76
September-23	44.2	9,775.64	432,239.13
October-23	45.0	2,144.00	96,480.00
November-23	57.2	54,783.90	3,131,769.10
December-23	49.5	49,127.04	2,433,760.08
Total Miscellaneous Expenses	45.9	$216,844.84	$9,956,865.86

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR RENTS

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
June-23	(184.5)	$281.38	-$51,914.61
July-23	23.0	25.00	575.00
November-23	(238.7)	6,716.72	-1,603,005.75
December-23	(207.5)	173.89	-36,082.18
Total Rents	(234.9)	$7,196.99	-$1,690,427.54

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR TRANSPORTATION

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
February-23	25.9	$39,459.65	$1,023,542.39
April-23	50.0	75,761.56	3,788,901.42
May-23	27.6	36,371.08	1,003,570.88
August-23	51.7	114,969.36	5,945,015.59
September-23	105.4	35,433.29	3,735,478.14
October-23	25.5	49,559.71	1,263,772.61
November-23	29.0	59,149.64	1,715,339.56
December-23	69.3	84,270.16	5,841,224.65
Total Transportation	49.1	$494,974.45	$24,316,845.24

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR CUSTOMER ACCOUNTING

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	61.0	$3,467.86	$211,492.28
February-23	61.2	6,489.48	397,198.34
March-23	58.7	7,379.49	432,920.37
April-23	60.7	6,496.37	394,415.14
May-23	58.0	6,761.15	392,073.30
June-23	60.8	7,167.20	435,991.50
July-23	60.7	7,150.58	433,937.48
August-23	68.7	6,770.58	465,155.15
September-23	66.5	6,747.58	448,642.83
October-23	63.9	7,030.20	448,905.90
November-23	61.4	6,573.93	403,725.37
December-23	60.5	7,148.24	432,524.24
Total Customer Accounting	61.8	$79,182.66	$4,896,981.89

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR INSURANCE - OTHER

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	(160.2)	$430,720.11	-$68,987,442.70
February-23	(32.3)	182,510.82	-5,895,850.28
April-23	57.4	176,038.55	10,103,947.50
May-23	(147.6)	16,670.98	-2,460,056.93
July-23	(10.7)	176,038.55	-1,880,849.09
October-23	(0.6)	176,038.55	-108,284.17
Total Insurance - Other	(59.8)	$1,158,017.56	-$69,228,535.67

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR MAINTENANCE - OTHER

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	7.1	$75,050.11	$535,853.07
February-23	4.3	53,683.93	232,342.49
March-23	2.5	8,411.54	20,903.08
April-23	5.7	30,270.84	173,220.94
May-23	5.2	15,867.36	81,908.82
June-23	37.1	10,198.07	378,387.63
July-23	21.9	6,107.34	133,822.02
August-23	28.2	82,116.37	2,312,534.21
September-23	10.8	19,246.39	207,513.25
October-23	6.5	44,603.12	288,987.36
November-23	7.9	12,701.00	100,211.50
December-23	9.6	55,461.25	530,109.88
Total Maintenance - Other	12.1	$413,717.32	$4,995,794.24

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR PROPERTY TAXES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
February-23	215.0	$3,419,116.43	$735,194,580.17
September-23	624.3	31,117.02	19,427,698.57
October-23	121.0	5,115.32	618,953.72
November-23	137.1	20,518.56	2,813,471.96
Total Property Taxes	218.1	$3,475,867.33	$758,054,704.42

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR UTILITY TAX

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
March-23	269.0	$243,452.34	$65,488,679.46
Total Utility Tax	269.0	$243,452.34	$65,488,679.46

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR PAYROLL TAXES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Facts	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
All company employees are paid for a two week period (i.e., Days 1 through 14).			
Pay date is five days following the end of the payroll period (i.e., Day 19, where 19 = 14 + 5).			
Third party vendor, ADP, recives funds 1 day before paydays (i.e., Day 18, where 18 = 19 - 1).			
FUTA (5 days)			
LEAD [18 - 7.5 = 10.5; where 7.5 = (1 + 14 = 15 ÷ 2 = 7.5)]	10.5	$4,570.92	$47,994.66
FICA (5 days)			
LEAD [18 - 7.5 = 10.5; where 7.5 = (1 + 14 = 15 ÷ 2 = 7.5)]	10.5	649,999.11	6,824,990.66
STUTA (5 days)			
LEAD [18 - 7.5 = 10.5; where 7.5 = (1 + 14 = 15 ÷ 2 = 7.5)]	10.5	$8,626.60	$90,579.30
Total Payroll Taxes	10.5	$663,196.63	$6,963,564.62
FUTA	10.5	$4,570.92	$47,994.66
FICA	10.5	649,999.11	6,824,990.66
STUTA	10.5	8,626.60	90,579.30
Total Payroll Taxes	10.5	$663,196.63	$6,963,564.62

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR GROSS RECEIPTS TAX

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
July-23	(157.5)	$1,023,554.00	-$161,209,755.00
Total Gross Receipts Tax	(157.5)	$1,023,554.00	-$161,209,755.00

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR FRANCHISE TAX

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Service Period		Payment	(Lead)/		Weighted
From	To	Date	Lag Days	Amount	Amount
(1)	(2)	(3)	(4)	(5)	(6)
Franchise Tax					
1/1/22	12/31/22	1/15/23	197.0	25%	49.3
1/1/23	12/31/23	4/15/23	(78.0)	25%	(19.5)
1/1/23	12/31/23	6/15/23	(17.0)	25%	(4.3)
1/1/23	12/31/23	9/15/23	75.0	25%	18.8
Total Franchise Tax			44.3	100%	44.3

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR CURRENT STATE TAXES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Service Period		Payment	(Lead)/		Weighted
From	To	Date	Lag Days	Amount	Amount
(1)	(2)	(3)	(4)	(5)	(6)
State Income Taxes (Current)					
1/1/22	12/31/22	1/15/23	197.0	25%	49.3
1/1/23	12/31/23	4/15/23	(78.0)	25%	(19.5)
1/1/23	12/31/23	6/15/23	(17.0)	25%	(4.3)
1/1/23	12/31/23	9/15/23	75.0	25%	18.8
Total State Income Taxes (Current)			44.3	100%	44.3

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR CURRENT FEDERAL TAXES

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Service Period		Payment	(Lead)/		Weighted
From	To	Date	Lag Days	Amount	Amount
(1)	(2)	(3)	(4)	(5)	(6)
Federal Income Taxes (Current)					
1/1/23	12/31/23	4/15/23	(78.0)	25%	(19.5)
1/1/23	12/31/23	6/15/23	(17.0)	25%	(4.3)
1/1/23	12/31/23	9/15/23	75.0	25%	18.8
1/1/23	12/31/23	12/15/23	166.0	25%	41.5
Total Federal Income Taxes (Current)			36.5	100%	36.5

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR LONG TERM DEBT INTEREST

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
March-23	93.0	$1,202,696.02	$111,850,729.86
June-23	92.0	865,250.00	79,603,000.00
September-23	93.0	1,202,696.02	111,850,729.86
December-23	92.9	1,046,500.00	97,233,875.00
Total Long Term Debt Interest	92.8	$4,317,142.04	$400,538,334.72

TENNESSEE AMERICAN WATER COMPANY

CALCULATION OF LAG DAYS FOR SHORT TERM DEBT INTEREST

BASED ON LEAD-LAG STUDY FOR THE TWELVE MONTHS ENDED DECEMBER 31, 2023

Month of Payment	(Lead)/ Lag Days	Amount	Weighted Amount
(1)	(2)	(3)	(4)
January-23	15.0	$44,359.11	$665,386.65
February-23	13.5	51,092.95	689,754.83
March-23	15.0	45,008.11	675,121.65
May-23	15.2	74,035.33	1,128,685.93
June-23	14.5	39,361.17	570,736.97
July-23	15.0	50,815.91	762,238.65
August-23	15.0	17,164.11	257,461.65
October-23	15.0	4,818.08	72,271.20
November-23	14.5	6,129.78	88,881.81
December-23	13.0	22,151.92	287,974.96
Total Short Term Debt Interest	14.6	$354,936.47	$5,198,514.29

BEFORE THE TENNESSEE PUBLIC UTILITY COMMISSION
NASHVILLE, TENNESSEE

PETITION OF TENNESSEE-AMERICAN WATER COMPANY TO CHANGE AND INCREASE CERTAIN RATES AND CHARGES	))))	**DOCKET NO. 24-_____**

VERIFICATION

STATE OF New Jersey)
)
COUNTY OF Gloucester)

I, HAROLD WALKER, III, being duly sworn, state that I am authorized to testify on behalf of Tennessee-American Water Company in the above-referenced docket, that if present before the Commission and duly sworn, my testimony would be as set forth in my pre-filed testimony in this matter, and that my testimony herein is true and correct to the best of my knowledge, information, and belief.

HAROLD WALKER, III

Sworn to and subscribed before me
this 25 day of April, 2024.

Heather L Marquette
Notary Public

My Commission Expires: July 23, 2024

HEATHER L. MARQUETTE
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 7/23/2024