

CITY OF LANCASTER – SEWER FUND  
LANCASTER, PENNSYLVANIA

DIRECT TESTIMONY

OF

CONSTANCE E. HEPPENSTALL, SENIOR PROJECT MANAGER  
GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

REVENUE REQUIREMENT, COST OF SERVICE,  
COST ANALYSIS FOR INDUSTRIAL SURCHARGES

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: CITY OF LANCASTER – SEWER FUND  
DOCKET NO. R-2019-

DIRECT TESTIMONY OF CONSTANCE E. HEPPENSTALL

1 **1. Q. State your name and business address.**

2 A. My name is Constance E. Heppenstall. My business address is 1010  
3 Adams Avenue, Audubon, Pennsylvania.

4 **2. Q. By whom are you employed?**

5 A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC  
6 (“Gannett Fleming”).

7 **3. Q. Please state your position with Gannett Fleming and briefly describe**  
8 **your general duties and responsibilities.**

9 A. My position is Senior Project Manager. My duties and responsibilities  
10 include the preparation of accounting and financial data for revenue  
11 requirements and cash working capital claims, the allocation of cost of  
12 service to customer classifications, and the design of customer rates in  
13 support of public utility rate filings.

14 **4. Q. Have you presented testimony in rate proceedings before a regulatory**  
15 **agency?**

16 A. Yes. I have testified before the Pennsylvania Public Utility Commission, the  
17 Arizona Corporation Commission, the Kentucky Public Service Commission,  
18 the Missouri Public Service Commission, the Virginia State Corporation  
19 Commission, the Hawaii Public Utility Commission, the West Virginia Public  
20 Service Commission and the Indiana Utility Regulatory Commission,

1 **5. Q. What is your educational background?**

2 A. I have a Bachelor of Arts Degree in Economics from the University of  
3 Virginia, Charlottesville, Virginia and a Master's of Science in Industrial  
4 Administration from the Carnegie-Mellon University's Tepper School of  
5 Business, Pittsburgh, Pennsylvania.

6 **6. Q. Would you please describe your professional affiliations?**

7 A. I am a member of the American Sewer Works Association and the National  
8 Association of Water Companies. I am also a member of the Pennsylvania  
9 Municipal Authorities Association.

10 **7. Q. Briefly describe your work experience.**

11 A. I joined the Valuation and Rate Division of Gannett Fleming, Inc. in August  
12 2006, as a Rate Analyst and have since been promoted to Senior Project  
13 Manager. Prior to my employment at Gannett Fleming, Inc., I was a Vice  
14 President of PriMuni, LLP where I developed financial analyses to test  
15 proprietary software in order to ensure its pricing accuracy in accordance  
16 with securities industry's conventions. From 1987 to 2001, I was employed  
17 by Commonwealth Securities and Investments, Inc. as a public finance  
18 professional where I created and implemented financial models for public  
19 finance clients in order to create debt structures to meet clients' needs.  
20 From 1986 to 1987, I was a public finance associate with Mellon Capital  
21 Markets.

22 **8. Q. What is the purpose of your testimony in this proceeding?**

23 A. The purpose of my testimony is to explain and support the City of Lancaster  
24 -Sewer Fund ("City" or "Lancaster") revenue and expense claims, the

1 original cost measure of value, the cost of service allocation, and the  
2 proposed rate design, including industrial surcharges, based on the historic  
3 test year ended December 31, 2018, the future test year ending December  
4 31, 2019 and the fully projected future test year ending December 31, 2020.

5 **9. Q. Have you prepared exhibits which present and support the City's**  
6 **claims in this proceeding?**

7 A. Yes. Exhibit No. CEH-1 presents the City's revenue requirements for the  
8 twelve months ending December 31, 2018, 2019 and 2020, and the  
9 associated data required under 52 Pa. Code 53.52 of the Pennsylvania  
10 Public Utility Commission Tariff Regulations. Exhibit No. CEH-2 presents  
11 the City's cost of service study which allocates costs between inside and  
12 outside City customers, and Exhibit No. CEH-3 supplies a study of actual  
13 costs that develop the City's Industrial Strength Surcharges, per the Opinion  
14 and Order of the Pennsylvania Public Utility Commission in Docket No. R-  
15 2012-230366.

16 **10. Q. Please explain the contents of Exhibit No. CEH-1.**

17 A. Exhibit No. CEH-1 contains statements with respect to the specific reasons  
18 for the proposed increase in rates, an explanation of the City's revenue  
19 request and a summary of the proposed rate of return. The exhibit also  
20 includes schedules presenting the number of customers served, the income  
21 statements, pro forma revenue and expense statements, the balance sheet  
22 and a summary of the measure of value.

23 **11. Q. What is the total revenue requirement for the future test year ending**  
24 **December 31, 2020?**

1 A. The total revenue requirement as shown on the City's operating statement,  
2 column 10 on page 11 of Exhibit No. CEH-1 is \$20,066,927.

3 **12. Q. What are the components of the total revenue requirement?**

4 A. The revenue requirement consists of operation and maintenance expenses  
5 of \$13,626,474, depreciation expense of \$1,974,033, and net operating  
6 income of \$4,466,419.

7 **13. Q. How does the total revenue requirement of \$20,066,927 break down  
8 between inside and outside-City customers?**

9 A. The revenue requirement for inside-City customers is \$18,033,651 and the  
10 outside-City revenue requirement is \$2,033,277.

11  
12 **PRO FORMA OPERATION AND MAINTENANCE EXPENSES**

13 **14. Q. Please explain the development of the pro forma operation and  
14 maintenance expenses.**

15 A. The operation and maintenance expenses on line 4 of the operating  
16 statement on page 11 are brought forward from the pro forma operating  
17 expense statement on page 21, line 151. The statement begins on page 19.

18 The statement shows the operation and maintenance expenses per  
19 books for the twelve months ended December 31, 2018 in column 2,  
20 identified by account in column 1. The pro forma adjustments for the Historic  
21 Test Year (HTY) are shown in column 4 and referenced in column 3. The  
22 sum of columns 2 and 4 is shown in column 5 which is the pro forma  
23 operating expenses as of December 31, 2018. The pro forma adjustments  
24 for the Future Test Year (FTY) are shown in column 7 and referenced in

1 column 6. The sum of columns 5 and 7 is shown in column 8 which is the  
2 pro forma operating expenses as of December 31, 2019. The pro forma  
3 adjustments for the Fully Projected Future Test Year (FPFTY) are shown in  
4 column 10 and referenced in column 9. The sum of columns 8 and 10 is  
5 shown in column 11 which is the pro forma operating expenses as of  
6 December 31, 2020.

7  
8 **15. Q. Please explain the pro forma historic test year adjustments.**

9 A. Adjustment E-1 normalizes estimated rate case expense for this rate case  
10 over a 3-year period. The 3-year period is based on the interval between  
11 this and the City's next anticipated rate case. Estimated rate case  
12 expenses are based on a settlement in the case without full litigation and  
13 include professional consulting fees for revenue requirement, rate base,  
14 rate of return, and rate design exhibits, supporting data and testimony as  
15 well as legal fees and customer notice expenses.

16 Adjustment E-2 adjusts Pension Expense to credit the 2018 State Aid  
17 contribution to the Pension Plan.

18 Adjustment E-3 adjusts the level of depreciation expense to the ratemaking  
19 depreciation calculation from the amount recorded per books. The  
20 calculation of the ratemaking depreciation expense is found in Exhibit No.  
21 JJS-1, "Depreciation Study - Calculated Annual Depreciation Accruals as of  
22 December 31, 2018", sponsored by Mr. John Spanos.

23 Adjustment E-4 adjusts Overtime Expense to the three-year average of this  
24 expense.

1 Adjustment E-5 adjusts the expenses for the Maintenance of Vehicles and  
2 Trench Paving to the three-year average of these expenses.

3 Adjustment E-6 adjusts Sludge Processing costs for the 2018 contract rate.

4 **16. Q. Please explain the pro forma future test year adjustments.**

5 A. The pro forma future test year adjustments are set forth in Appendix B,  
6 pages 30 through 33.

7 Adjustment E-7 adjusts historic test year salaries and wages to reflect  
8 the pro forma labor expense for the sewer employees as of January 1, 2019.  
9 The wages and salaries were projected based on the City's projected staffing  
10 expense for 2019. The total pro forma salaries and wages are \$2,899,226  
11 subtracting the historic test year pro forma amount of \$2,791,142 from the  
12 pro forma amount results in an adjustment of \$108,084.

13 Adjustment E-8 adjusts overtime expense from the historic test year pro  
14 format amount to the future test year amount. The adjustment is based on  
15 the calculation of overtime expense using salaries and wage levels as of  
16 January 1, 2019.

17 Adjustment E-9 adjusts the level of depreciation expense to the  
18 ratemaking depreciation calculation from the historic test year amount to the  
19 future test year amount. The calculation of the ratemaking future test year  
20 depreciation expense is found in Exhibit No. JJS-2, "Depreciation  
21 Study - Calculated Annual Depreciation Accruals as of December 31, 2019",  
22 sponsored by Mr. John Spanos.

23 Adjustment E-10 adjusts Social Security and Medicare expense to  
24 reflect the increase in labor expense for the future test year.

1 Adjustment E-11 adjusts OPEB expense to reflect the City's 2019  
2 expense.

3 Adjustment E-12 adjusts Pension Expense to reflect the projected  
4 expense for 2019.

5 Adjustments E-13, E-14, E-15, and E-16 adjusts costs related to Dental  
6 Vision Insurance, Life Insurance, Insurance Package, and Indirect Costs to  
7 reflect 2019 costs.

8 Adjustment 17 adjusts chemical costs to reflect current chemical pricing.

9 Adjustment 18 adjusts Sludge Processing expense to reflect the 2019  
10 contract rate.

11 **17.Q. Please expense the pro forma fully projected future test year**  
12 **adjustments.**

13 A. The pro forma fully projected future test year adjustments are set forth in  
14 Appendix B, pages 34 through 35.

15 Adjustment E-19 adjusts future test year salaries and wages to  
16 reflect the pro forma labor expense for the sewer employees as of January 1,  
17 2020. The wages and salaries were projected based on the City's projected  
18 staffing expense for 2020. The total pro forma salaries and wages are  
19 \$2,971,707 subtracting the future test year pro forma amount of \$2,899,226  
20 from the pro forma amount results in an adjustment of \$72,481.

21 Adjustment E-20 adjusts overtime expense from the historic test year  
22 pro format amount to the future test year amount. The adjustment is based  
23 on the calculation of overtime expense using salaries and wage levels as of  
24 January 1, 2020.



1 Adjustment E-21 adjusts the level of depreciation expense to the  
2 ratemaking depreciation calculation from the future test year amount to the  
3 fully projected future test year amount. The calculation of the ratemaking  
4 future test year depreciation expense is found in Exhibit No. JJS-3,  
5 "Depreciation Study - Calculated Annual Depreciation Accruals as of  
6 December 31, 2020", sponsored by Mr. John Spanos.

7 Adjustment E-22 adjusts Social Security and Medicare expense to  
8 reflect the increase in labor expense for the fully projected future test year.

9 Adjustment E-23 adjusts Sludge Processing costs to reflect the 2020  
10 contract rate.

11 **MEASURE OF VALUE**

12 **18. Q. Please explain the original cost measure of value on page 14 of Exhibit**  
13 **No. CEH-1.**

14 A. The original cost measures of value as of December 31, 2018, December  
15 31, 2019 and December 31, 2020, are comprised of the original cost less  
16 the ratemaking book reserve for the total utility plant in service less  
17 contributions in aid of construction. These amounts are set forth in Exhibit  
18 No. CEH-1 and explained by Mr. John J. Spanos in City of Lancaster's  
19 Statement No. JJS-1, JJS-2 and JJS-3. Cash working capital, calculated by  
20 the rule-of-thumb method, is added to the net utility. The total original cost  
21 measure of value as of December 31, 2018 is \$57,641,101 as of December  
22 31, 2019 is \$57,856,028 and as of December 31, 2020 is \$62,049,353.  
23 These rate base amounts are brought forward to the operating statement on  
24 page 11 to determine the rates of return under present and proposed rates.

**PRO FORMA REVENUES**

1  
2 **19. Q. Please explain the development of pro forma revenues under present**  
3 **and proposed rates.**

4 A. The summary of pro forma revenues under present and proposed rates for  
5 Inside-City and Outside-City customers is presented on pages 8 and 9 of  
6 Exhibit No. CEH-1. The pro forma revenues under present rates for the  
7 HTY are developed by adding the pro forma historic test year revenue  
8 adjustments in column 4 to the revenues per books in column 2. The result  
9 is the pro forma historic test year revenues as of December 31, 2018 in  
10 column 5.

11 The pro forma revenues under present rates for the FTY are developed  
12 by adding the pro forma future test year revenue adjustments in column 7 to  
13 the pro forma historic test year revenues in column 5. The result is the pro  
14 forma future test year revenues as of December 31, 2019 in column 8.

15 The pro forma revenues under present rates for the FPFTY are  
16 developed by adding the pro forma future test year revenue adjustments in  
17 column 10 to the pro forma historic test year revenues in column 8. The  
18 result is the pro forma FPFTY as of December 31, 2020 in column 11.

19 The pro forma revenue adjustments are presented in Appendix A.

20 The pro forma revenues under proposed rates in column 14 are  
21 developed in Appendix C. The percent increase and the amount of  
22 increase for each customer classification is shown in columns 12 and 13,  
23 respectively.

1 **20. Q. Please explain the revenue adjustments under present rates for HTY in**  
2 **Appendix A.**

3 A. Adjustments R-1 and R-2 annualize revenue for the average annual gain or  
4 loss in the number of customers over four years for inside and outside-City  
5 customers, respectively. The change in the number of customers is  
6 multiplied by the average annual bill for each classification. One-half of the  
7 revenue is reflected in the adjustment assuming that the change in the  
8 number of customers occurred at mid-year.

9 Adjustment R-3 imputes revenues for City-owned properties that are not  
10 billed by the City. Present rates are applied to the billing units for the City-  
11 owned properties as of December 31, 2018.

12 Adjustment R-4 calculations the revised Industrial Surcharge revenue  
13 based on tariff rates.

14 **21. Q. Please explain the revenue adjustments under present rates for the**  
15 **FTY in Appendix A.**

16 A. Adjustments R-5 and R-6 annualize revenue for the projected gain in  
17 customers based on the annual gain or loss in the number of customers  
18 over four years, for inside and outside-City customers, respectively. The  
19 change in the number of customers is multiplied by the average annual bill  
20 for each classification.

21 **22. Q. Please explain the revenue adjustments under present rates for the**  
22 **FPFTY in Appendix A.**

23 A. Adjustments R-7 and R-8 annualize revenue for the projected gain in  
24 customers based on the annual gain or loss in the number of customers

1 over four years, for inside and outside-City customers, respectively. The  
2 change in the number of customers is multiplied by the average annual bill  
3 for each classification.

4 **23. Q. Describe the development of pro forma revenues under proposed**  
5 **rates.**

6 A. Schedule 1 in Appendix C, develops the pro forma revenues under proposed  
7 rates. Column 5 summarizes the application of proposed rates to the  
8 consumption analysis set forth on Schedule 2. The revenues under  
9 proposed rates in column 6 are determined by applying the adjustment  
10 factor to the revenues in column 5. Column 7 summarizes historic test year  
11 adjustments R-9 through R-12 from Schedule 3. These adjustments are the  
12 same as adjustments R-1 through R-4 except that proposed rates are used  
13 to determine the adjustment amount. The total pro forma HTY revenue  
14 under proposed rates, which is the sum of columns 6 and 8, are shown in  
15 column 9. Column 11 summarizes FTY adjustments R-12 and R-13 from  
16 Schedule 3. These adjustments are the same as adjustments R-5 and R-6  
17 except that proposed rates are used to determine the adjustment amount.  
18 The total pro forma future test year revenue under proposed rates, which is  
19 the sum of columns 9 and 11, are shown in column 12. Column 13  
20 summarizes FPFTY adjustments R-14 and R-15 from Schedule 4. These  
21 adjustments are the same as adjustments R-7 and R-8 except that  
22 proposed rates are used to determine the adjustment amount. The total pro  
23 forma future test year revenue under proposed rates, which is the sum of  
24 columns 12 and 14, are shown in column 15. The revenues in column 15

1 are brought forward to the revenue schedules on pages 7 and 8, column 11  
2 of the exhibit.

3 **24. Q. What is the rate of return based on revenues under proposed rates?**

4 A. Page 11 of Exhibit No. CEH-1 shows a rate of return under present rates and  
5 proposed rates for inside-City customers and outside-City customers  
6 combined of 7.20%. This rate of return is based on total pro forma  
7 revenues of \$20,129,238 less operating income deductions of \$15,662,175  
8 resulting in income available for return of \$4,467,064. The income available  
9 for return divided by the original cost measure of value of \$62,049,353  
10 results in a rate of return of 7.20%.

11 **25. Q. What is the rate of return for outside-City customers?**

12 A. For outside City customers, the rate of return of 7.20% is shown on page 13  
13 of Exhibit No. CEH-1. It is based on total pro forma revenues of \$2,095,614  
14 less operating income deductions of \$1,498,422 resulting in income  
15 available for return of \$597,193. The income available for return divided by  
16 the original cost measure of value of \$8,294,103, results in a rate of return  
17 of 7.20%.

18 **26. Q. Can the City support the a rate of return of 7.20%?**

19 A. Yes. The City can support a tax adjusted rate of return of 7.20% as shown  
20 on page 3 of Exhibit No. CEH-1 and in the direct testimony of Mr. Harold  
21 Walker, in the City of Lancaster's Statement No. HW-1.

22 **27. Q. How did you determine the operating revenue deductions and rate base  
23 associated with outside-City customers only?**

24 A. The cost of service associated with outside-City customers was based on a

1 cost of service allocation study presented in Exhibit No. CEH-2 and is  
2 described in the next section of this testimony.

3  
4  
5 **COST OF SERVICE**

6 **28. Q. Please describe Exhibit CEH-2.**

7 A. Exhibit CEH-2, titled "Cost of Service Allocation Study as of December 31,  
8 2020 and Proposed Customer Rates," is the report on the cost of service  
9 study prepared for the City. It sets forth the results of the study based on the  
10 estimated conditions during the twelve months ended December 31, 2020.

11 The information in the exhibit includes the allocation of cost of service, the  
12 factors on which the allocations were based, and a summary of the proposed  
13 rate design.

14 **29. Q. What was the purpose of the cost of service allocation study?**

15 A. The purpose of the study was to allocate the total cost of service to the  
16 several customer classifications served both inside and outside the City. The  
17 study provides a basis for determining the extent to which the revenues to be  
18 derived from each service area and customer classification are aligned with  
19 the cost of serving that classification. In the study, the total costs were  
20 allocated to inside-City residential, commercial, industrial, and municipal  
21 partners classes and outside-City residential, commercial and industrial  
22 classes.

23 The cost of service allocation study results in indications of the relative  
24 cost responsibilities of each class of customers. The allocated cost of

1 service is one of several criteria appropriate for consideration in designing  
2 customer rates to produce the required revenues.

3 **30. Q. What method of cost allocation was used in the study?**

4 A. The method I used for cost allocation incorporates the functional cost  
5 allocation methodology and the design-basis cost allocation methodology  
6 described in the text “Financing and Charges for Wastewater Systems”,  
7 Manual of Practice No. 27, published by the Water Environment Federation.  
8 This method is recognized for allocating the cost of providing wastewater  
9 service to customer classifications in proportion to the classifications' use of  
10 the commodity, facilities, and services. It is generally accepted as a sound  
11 method for allocating the cost of wastewater service.

12 **31. Q. Please describe the functional and design-based methods.**

13 A. Under the functional cost method, costs are assigned to cost components  
14 using predominant operational purposes as cost-causative factors rather  
15 than engineering design criteria. Under the design-basis method, costs are  
16 based on the allocation of net plant value using engineering design criteria.  
17 In this case, the allocation of capital related costs were primarily based on  
18 the percent of capacity assigned to the City (including flow from inside and  
19 outside-City customers) and Municipal Partners (MP's).

20 I have used a hybrid of these two methods to allocate costs for the City.  
21 In this approach, the design-basis is used to allocate capital costs, (rate  
22 base, depreciation, return and taxes) which reflects the design criteria's  
23 significant impact on sizing and construction costs as well as the sharing of  
24 such costs between the City and the several Municipal Partners. The

1 functional cost basis is applied to operating expenses that are more  
2 influenced by variations in actual or current operating results.

3 **32. Q. Please outline the procedure which you followed in the cost allocation**  
4 **study.**

5 A. The allocation of the cost of wastewater service is performed in a two-step  
6 process. The first step is to allocate costs to cost functions within each  
7 service area. The inside-City cost functions include sanitary, wet  
8 weather/I&I, customer costs, and Municipal Partners (MP's). Outside-City  
9 functions include sanitary, I&I, and customer costs.

10 The second step allocates the costs by function to the several customer  
11 classifications within each service area.

12 **33. Q. Please explain the first step allocation.**

13 A. The first step allocation to service areas and cost functions is performed on  
14 Schedule D of Exhibit CEH-2. The items of cost, which include operating  
15 expenses, depreciation expenses, and income available for return, are  
16 identified in column 1 of Schedule D. The cost of each item, shown in  
17 column 3, is allocated to the several cost functions within each service area  
18 based on the allocation factor referenced in column 2. The development of  
19 the allocation factors is presented in Schedule E.

20 For the purposes of this study, the MP's, even though they provide  
21 collection services to customers outside the City, are considered part of the  
22 inside-City service area because they are non-jurisdictional. The outside-  
23 City service area includes jurisdictional customers that the City serves  
24 directly and who are located outside the City limits.



1 **34. Q. Please describe the cost functions.**

2 A. Costs associated with collecting and treating sanitary sewage, that is, the  
3 sewage which customers deliver directly to the system, are allocated to the  
4 “Sanitary” cost function. Costs associated with collecting and treating wet  
5 weather flows and infiltration and inflow (I&I), are allocated to the “Wet  
6 Weather and I&I” (inside-City) or “I&I” (outside-City) cost functions. Such  
7 flows are not directly customer induced and reflect the fact that the collection  
8 system inside the City is a combined storm water and sanitary sewer system.  
9 The collection system outside the City (jurisdictional) is sanitary sewer  
10 system only but also collects normal I&I flow.

11 Costs associated with the transmission and treatment of wastewater  
12 flow from the MP’s (including sanitary and I&I from their collection systems)  
13 are allocated to the “Municipal Partners” cost function. Costs associated  
14 with meter reading, billing, collecting and accounting of customer bills are  
15 allocated to the customer cost function.

16 **35. Q. Please describe the allocation of costs associated with sanitary**  
17 **sewage flow.**

18 A. Operation and maintenance expenses associated with sanitary sewage flow  
19 include sludge disposal, power for aeration facilities, and chemicals other  
20 than chlorination, because these costs vary with the amount of sanitary  
21 sewage delivered to the treatment plant. Such costs are allocated using  
22 Factor 1, which is based on the average daily sanitary sewage flow for  
23 inside-City, MP’s and outside-city customers. The average daily sewage  
24 flow for retail customers is based on 90% of the billable water usage for such

1 customers to recognize that a portion of water usage is not returned to the  
2 sewer system.

3 The sanitary sewage flow for the MP's is based on the percent of  
4 sanitary sewage flow to total flow received at the wastewater treatment plant,  
5 averaged over a 5-year period. The sanitary sewage flow portion of average  
6 daily flow was assumed to be equal to the minimum day flow over a 12  
7 month period. This minimum flow was divided by average daily flow for that  
8 same 12 month period to develop the portion of sanitary sewage flow  
9 reflected in the average daily flow. A five-year average of these percentages  
10 was used to reflect a more normal level of flow, since 2018 was a wet year.

11 For capital costs, (depreciation and rate base), facilities designed for  
12 biological treatment processes or strength related facilities were first  
13 segregated between City capacity and Municipal Partners capacity. The  
14 portion assigned to the MP's was based on the percent capacity determined  
15 for the MP's at the time such facilities were constructed, which is reflected in  
16 the Contributions in Aid of Construction in Exhibit JJS-2. The MP's  
17 contributed their share of these facilities up front so no additional allocation  
18 to the MP's would be appropriate. An equal amount of contributions in aid of  
19 construction is credited to the MP's in order to properly reflect their upfront  
20 payments. The remaining portion of capital costs are allocated to inside and  
21 outside City retail customers using Factor 1-CAP, which excludes the MP  
22 flow.

23 **36. Q. Please describe the allocation of costs associated with total**  
24 **wastewater flow at the treatment plant.**

1       A. Total wastewater flow at the treatment plant includes inside and outside City  
2 sanitary sewage flow, wet weather and I&I flow, and MP flow. Costs  
3 associated with total wastewater flow, including pumping costs and flow-  
4 related costs at the treatment plant, are allocated using Factor 1A. These  
5 costs are allocated by function based on the relative flow for each function.  
6 The sanitary sewage flow is equal to 90% of the billed water flow as  
7 described above for Factor 1. The MP flow is the four-year average daily  
8 flow from the MP's. The infiltration and inflow (I&I) for outside-City  
9 customers is based on the five-year average of I&I recorded through the  
10 Maple Grove pumping station, which pumps a large portion of the outside-  
11 City customers' flow. This percentage of I&I to total flow is 35.95% through  
12 the pump station. The percentage is based on the assumption that the  
13 minimum flow for the year represents the sanitary flow through the Maple  
14 Grove pump station and the difference between the minimum flow and the  
15 average daily flow is the I&I flow for the outside-City customers.

16               For inside-City customers, the Wet Weather and I&I flow (which  
17 includes flow from the combined sewer system) was determined to be the  
18 difference between the 2018 average daily flow to the treatment plant of  
19 23.20 MGD and the sum of the inside sanitary sewage flow, the MP flow, the  
20 outside sanitary sewage flow and the outside I&I flow.

21               Capital costs associated with total wastewater flow include facilities  
22 sized to meet such demand, such as primary and final clarifiers, are  
23 allocated similarly as above (using Factor 1A-CAP), however the MP's flow  
24 is removed from the factor since the MP's have contributed the capital

1 related to their flow.

2 **37. Q. Please describe the allocation of Pumping Costs.**

3 A. The City was able determine through its GIS system, how many outside City  
4 customers' flow reaches certain pumping stations, including the Maple  
5 Grove, North, Main and Stevens pump stations. The costs related to these  
6 pumping stations were allocated to Outside City customers based on the  
7 assumed flow from these customers and an assumed I&I as compared to the  
8 total flow that travels through each pump station.

9 **38. Q. Please describe the allocation of costs related to the combined sewer  
10 system inside the City.**

11 A. Operation and maintenance labor and capital costs related to maintaining  
12 storm water facilities are allocated directly to inside-City wet weather and I&I  
13 function (Factor 2) only since such facilities only serve the combined sewer  
14 system inside the City. There are no combined sewer mains located in the  
15 outside-city service area.

16 **39. Q. Please describe the allocation of collection system labor.**

17 A. Allocation of collection system labor (other than storm water-related labor) is  
18 allocated using Factor 3, to inside and outside city functions based on the  
19 flows from Factors 1B and 1C, weighted by the length of mains located  
20 inside and outside the City. That is, the Factor 3 first determines that  
21 75.34% of the mains are located inside the City and the remaining 24.66%  
22 are located outside the City. These proportions are then assigned to inside  
23 City and outside City functions based on the relative flows in those service  
24 areas.

1 **40. Q. Please describe the allocation of other collection system operation and**  
2 **maintenance expenses.**

3 A. Allocation of other collection system operation and maintenance costs are  
4 allocated based on the composite allocation of collection system labor as  
5 shown in Factor 4.

6 **41. Q. Please describe the costs allocated to the customer cost function.**

7 A. Costs associated with meter reading and customer billing and collecting are  
8 allocated to inside and outside service areas based on the number of bills  
9 issues over a 12 month period, using Factor 6.

10 **42. Q. Please describe the composite allocation factors and other factors.**

11 A. Allocation of labor related payroll taxes, pensions and benefits and  
12 workmen's compensation are allocated based on the composite allocation of  
13 direct labor expense as shown in Factor 5.

14 Administrative and general costs are allocated (using Factor 7) on  
15 the basis of the allocated direct costs excluding those costs requiring little  
16 administrative and general expense, such as power, chemicals and sludge  
17 disposal expenses. Cash working capital is allocated on the same basis  
18 without excluding those expenses using Factor 9.

19 Annual depreciation accruals are allocated on the basis of the  
20 function of the facilities represented by the depreciation expense for each  
21 depreciable plant account. Income available for return was allocated based  
22 on the results of allocating the original cost measure of value as shown in  
23 Factor 10. Factor 8 is used to allocate other wastewater revenues based on  
24 the total allocated cost of service. Factor 11 allocates costs associated only

1 with the Municipal Partners directly to the MP function.

2 **43. Q. What were the sources of the total cost of service data set forth in the**  
3 **third column of Schedule D?**

4 A. The operating and maintenance expenses, depreciation expense and  
5 income available for return were based on data presented in Exhibit CEH-1  
6 and JJS-3 in support of the City's Supplement No. 39 to Tariff Water-Pa.  
7 P.U.C. No. 7

8 **44. Q. Please explain how the functional costs are allocated to customer**  
9 **classifications.**

10 A. The costs by function and service area are brought forward to Schedule B  
11 and are allocated to customer classifications using the allocation factors set  
12 forth in Schedule C.

13 Factors A-1 and A-2 allocate the inside and outside Sanitary cost  
14 function customer classifications based on the sanitary sewage flow for  
15 residential, commercial and industrial customers for each service area.

16 Factors B-1 and B-2 allocate the costs from wet weather and I&I  
17 functions to customer classifications based on a weighting of one-third flow  
18 and two-thirds based on the number of customers. This weighting  
19 recognizes that the amount of I&I is primarily a result of the length of  
20 collection mains and connections to the system but also takes into account  
21 that larger users may also have more impervious area resulting in more run-  
22 off.

23 Factors C-1 and C-2 allocate the customer costs to classifications  
24 based on the number of bills. Factor D allocates the Municipal Partners cost

1 function directly to the Municipal Partners classification.

2 **45. Q. What do the results of the cost allocation study show?**

3 A. Schedule A in Exhibit CEH-2 sets forth the results of the cost allocation study  
4 compared to revenues under present and proposed rates. The allocated  
5 cost of service for outside-City customers of \$2,015,261 supports the  
6 proposed revenue for outside-City customers of \$2,015,207.

7 **46. Q. Is the methodology of cost of service allocation described above the  
8 same as was used in Docket No. R-2012-2310366?**

9 A. Yes, it is.

10  
11  
12  
13 **PROPOSED RATES**

14 **47. Q. Please explain the proposed rate design.**

15 A. The proposed rate design for outside-City customers maintains a monthly or  
16 quarterly minimum charge by meter size plus a 3-tier declining block rate  
17 structure applicable to all classifications. A comparison of present and  
18 proposed inside-City and outside-City rates is set forth on page 24 of Exhibit  
19 CEH-2.

20 For consumption charges, the existing 3-tier, declining blocks were  
21 retained: First 75,000 gallons per quarter, next 925,000 gallons per quarter  
22 and all over 1,000,000 gallons per quarter. The rates for each of the blocks  
23 were increased by varying percentages in order to move class revenue more  
24 in line with the cost of service allocation results. Refer to Exhibit CEH-2,  
25 Schedule A for a comparison of revenues under present and proposed rates  
26 with the cost of service by customer classification.

27 **48. Q. What is the increase for an average outside-City residential customer?**

1 A. For an average residential customer with a 5/8-inch meter and usage of  
2 12,000 per quarter, the bill would increase by \$23.41 per quarter, from  
3 \$52.25 to \$75.66 or 44.8%. See Exhibit CEH-1, Appendix A, page 25.

4 **49. Q. What is the effect of the proposed outside-City rates on commercial  
5 and industrial customers?**

6 A. The bill for an average commercial customer with a 1-inch meter and  
7 230,000 gallons of usage per quarter would increase from \$708.15 to  
8 \$1,080.13 or 52.5%. An average industrial customer with a 2-inch meter and  
9 138,000 gallons of usage per month would increase from \$439.20 to \$609.63  
10 or 38.8%. See Exhibit CEH-1, Appendix A, pages 26-27.

11 **50. Q. Are rates for inside-City customers increasing also?**

12 A. Yes. The inside-City customers rates increase as shown on page 24 of  
13 Exhibit CEH-2. The inside-City rates are higher than the rates for the  
14 outside-City customers.

15 **51. Q. Did City to perform an analysis of the Industrial Surcharges for  
16 Biochemical Oxygen Demand (BOD) over 250 milligrams per liter, Total  
17 Suspended Solids (SS) over 250 milligrams per liter, Nitrogen (TN)  
18 concentration greater than 30 milligrams per later and Phosphorous  
19 (TP) greater than 10 milligrams per liter?**

20 A. Yes, the Pennsylvania Public Utility Commission Order in Docket No. R-  
21 2012-2310366 required the City to perform a cost analysis of the City's  
22 Industrial Surcharges for excess BOD, SS, TN and P. The analysis is  
23 included in Exhibit CEH-3. In the analysis the City allocated costs to Flow  
24 Costs—Collection, Flow Costs—Treatment, BOD, SS, Phosphorus and  
25 Nitrogen. The analysis used the revenue requirements used in Exhibit CEH-  
26 2. The results of the analysis are found on Schedule A of Exhibit CEH-3.

27 **52. Q. Did the City implement the rates based on the costs from Exhibit CEH-  
28 3?**



1           A.   Yes and no. The City implemented the indicated rates for BOD (\$0.38 per  
2                   pound) and SS (\$0.23 per pound) but made the decision, in the interest of  
3                   gradualism, to raise the surcharges for TN and TP by 50% or to \$0.675 per  
4                   pound, not to the full amount indicated by Exhibit CEH-3 of \$0.94 and \$0.78  
5                   respectively.

6   **53. Q. Does this conclude your direct testimony?**

7           A.   Yes, it does.

CONSTANCE E. HEPPENSTALL – LIST OF CASES TESTIFIED

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client/Utility</u>	<u>Subject</u>
1.	2010	AZ CC	W-01303A-09-0343 and SW-01303A-09-0343	Arizona American Water Company	Rate Consolidation
2.	2010	Pa PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Revenue Requirements
3.	2012	Pa PUC	R-2012-2311725	Hanover Borough	Cost of Service/Rev Reqmts.
4.	2012	Pa PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Revenue Requirements
5.	2013	Pa PUC	R-2013-2350509	City of DuBois – Bureau of Water	Revenue Requirements
6.	2013	Pa PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Revenue Requirements
7.	2014	Pa PUC	R-2014-2418872	City of Lancaster – Bureau of Water	Revenue Requirements
8.	2014	Pa PUC	R-2014-2428304	Hanover Borough	Revenue and Revenue Requirements
9.	2015	KY PSC	Case No.2015-000143	Northern Kentucky Water District	Cost of Service
10.	2016	Pa PUC	R-2016-2554150	City of DuBois – Bureau of Water	Cost of Service/Revenue Reqmts.
11.	2016	AZ CC	WS-01303A-16-0145	EPCOR Water Arizona, Inc.	Cost of service/Rate Design
12.	2017	MO PSC	WR-2017-0285	Missouri-American Water Company	Cost of Service/Rate Design
13.	2017	MO PSC	SR-2017-0286	Missouri-American Water Company	Cost of Service/Rate Design
14.	2017	VA SCC	PUR-2017-00082	Aqua Virginia, Inc.	Cost of Service/Rate Design
15.	2017	AZ CC	WS-01303A-17-0257	EPCOR Water Arizona, Inc.	Cost of Service/Rate Design
16.	2017	HI PUC	2017-0446	Hana Water Systems LLC – North	Cost of Service/Rate Design
17.	2017	HI PUC	2017-0447	Hana Water Systems LLC – South	Cost of Service/Rate Design
18.	2018	PA PUC	2018-3000834	SUEZ Water Pennsylvania, Inc.	Revenue Requirements
19.	2018	KY PSC	2018-00208	Water Service Corp. of KY	Cost of Service
20.	2018	WV PSC	18-0573-W-42T	West Virginia American Water Company	Cost of Service
21.	2018	IN IRC	50208	Indiana American Water Company	Cost of Service/Demand Study
22.	2018	KY PSC	2018-00291	Northern Kentucky Water District	Cost of Service
23.	2018	KY PSC	2018-00358	Kentucky American Water	Cost of Service
24.	2019	PA PUC	R-2019-3006904	Newtown Artesian Water Co.	Revenue Reqmts/Rate Design