c. **Section 3: Projected Cost of Service Allocations.** In this section we discuss the projection of water~~,~~ and wastewater~~, and stormwater~~ cost of service for the initial test year of FY 2017, as follows:

Topics Addressed	Question
Overall Summary of Cost of Service Steps	Q33
WATER: Summary of the Cost of Service for test year FY 2017	Q34
WATER: Details of the functional cost allocation	Q35 to Q43
WATER: Details of the customer type cost allocation	Q44 to Q47
WASTEWATER: Summary of Cost of Service for test year FY 2017	Q49
WASTEWATER: Details of the functional cost allocation	Q50 to Q57
WASTEWATER: Details of the customer type cost allocation	Q58 to Q62

Section 4: Projection of Cost of Service Water~~, Sewer,~~ and ~~Stormwater~~ Wastewater Rates. In this section, we discuss the projection of water~~,~~ and wastewater (sanitary sewer~~,~~ and stormwater) rates for the initial test year of FY 2017, as follows:

Topics Addressed	Question
WATER: Summary of Retail Cost of Service Rates for test year FY 2017	Q48
WASTEWATER: Summary of Retail Cost of Service Rates for test year FY 2017	Q63 to Q65

Q20. WHAT DOES A COST OF SERVICE STUDY INVOLVE AND CAN YOU PROVIDE A BRIEF DESCRIPTION FOR EACH PART OF THE STUDY?

A. A Cost of Service analysis consists of three parts: (1) Revenue Requirements, (2) Cost of Service Allocations, and (3) Rate Design.

Revenue Requirements: Simply put, the Revenue Requirements part of a Cost of Service study establishes how much money the utility needs to meet its operating and capital obligations. When the revenues generated from existing user charges and other sources of revenue are insufficient to cover operating and capital costs, one or more revenue adjustments may be required. The Water Department has legal requirements and bond covenants that require that its revenue requirements use receipt-based revenue projections or a legally-enacted basis for analysis. The Revenue Requirements part of the Cost of Service study includes a review of operations and maintenance (O&M) expenses, debt service payments, funding for specific reserves, and the cost of capital improvement projects that the utility does not fund via debt or contributions from third parties.

Black & Veatch reviewed the revenue requirements of the water and wastewater utilities to determine whether utility revenues are sufficient to cover all the cash expenditures for the study period. Section 2 of this testimony provides additional details on how we project revenue and revenue requirements using historical customer type service demands, revenue receipts, and operating and capital cost trends.

"*Operating Revenues"* and "*Other Revenues*." Table C-3 (Exhibit BV-E1) presents the projection of operating and other revenues for the water and wastewater utilities, respectively, for the study period.

Total Water Receipts:	**Total Sanitary Sewer Receipts:**	**Total Stormwater Receipts:**
FY 2017: $266.7 Million	FY 2017: $245.0 Million	FY 2017: $152.1 Million
FY 2018: $257.9 Million	FY 2018: $234.6 Million	FY 2018: $150.9 Million

Projection of Operating Revenues Under Existing Rates

The total operating revenues for the water and wastewater utilities include the following sources of revenues:

a. Retail Water and Sanitary Sewer Service and Volume charges and Stormwater Management Service Charges

b. Wholesale contract customers water and sewer charges

a. Retail Operating Revenues

The operating revenue is calculated for each customer type as listed in the inset box to the right, through a two-step process.

- First, pProjected water and wastewater gross billings are calculated by applying the FY 2016 schedules of usage rates and service charges to the projections of water sales and number of customer accounts, respectively. The water sales and number of customer accounts are projected based on the historical trends determined from the data provided by the Water Department.

Customer Types

General Customers

- Residential
- Senior Citizens
- Commercial
- Industrial
- Public Utilities

Others

- Housing Authority
- Charities & Schools
- Hospital & Universities
- Hand Billed
- City Leased

City

- City

Fire Protection

- Public & Private

Groundwater

- Bucks County: The historical charges for water service provided to Bucks County included an annual fixed charge to recover allocated capital costs and certain fixed operating expenses, a commodity charge applicable to metered usage for the recovery of power and chemical expenses, and a demand charge per unit of measured maximum demand to recover other operation and maintenance expenses. However, no revenues are projected during the study period for this customer, as Bucks County is no longer a water contract customer.
- Aqua Pennsylvania: The Water Department's Service to Aqua Pennsylvania commenced in Fiscal Year 2002. Water charges for this service include a commodity charge that is designed to recover power and chemical costs and a fixed charge that is designed to recover allocated capital costs and all other allocated operation and maintenance expenses, excluding power and chemical costs.

Projected Aqua Receipts:

FY 2017: $3.69 Million

FY 2018: $3.69 Million

Wastewater: Wholesale wastewater service is provided to ten (10) suburban customers on a contractual basis. Contractual rates for wastewater service generally consist of charges for operation and maintenance expense and certain capital costs associated with the collection and treatment facilities used in providing the service.

Projected Wastewater Contract Receipts

FY 2017: $31.7 Million

FY 2018: $31.7 Million

Projection of "Other Operating" and "Non-Operating" Revenues

Other Operating Revenue consists of penalties on overdue bills for retail service customers and other miscellaneous income from permits and licenses, fines, operating grants, and transfers from the Debt ~~Service~~ Reserve Fund to the ~~Operating~~ Revenue Fund. A key component that negatively impacts the projection of the other operating

revenue is the 'contra revenue' estimated for the *Low Income Affordability Discount Program* ("Affordability Program"). The Affordability Program is expected to be launched effective July 1, 2017 (FY 2018), and hence cause a revenue reduction beginning FY 2018. The reduction in revenue receipts due to the Affordability Program discounts is estimated to increase from $16.1 million in FY 2018 to $18.6 million by FY 2021. The supplemental testimony on the Affordability Program provides additional details on the Water Department's proposed program.

Non-operating Income of the Water Department consists primarily of interest earnings on the amounts within certain funds and accounts~~. under the authorizing revenue bond ordinance (the 1989 General Ordinance).. Interest income recognizes the current revenue bond ordinance requirement which provides for the transfer of all interest earnings from investment of the Debt Service Reserve Fund, the Residual Fund, and the Rate Stabilization Fund to the Operating Fund of the Water Department. Projections of interest income are based on the projected average balances in these funds. Interest earnings in the Debt Service Reserve Fund Reserves in excess of $4,994,000 are transferred to the Operating Fund.~~ ~~Under the~~ In accordance with the authorizing revenue bond ordinance (the 1989 General Ordinance), interest earnings in the Debt Reserve Fund, Revenue Fund, ~~Sinking Fund,~~ and the Rate Stabilization Fund are credited as revenue to the Revenue Fund. Interest Earnings in the Debt Reserve ~~Account~~ Fund ~~of the Sinking Fund~~ are credited ~~as revenue to the Revenue Fund~~ to the extent that they represent the excess of the amounts needed to fulfill the Debt Service Requirement and the amounts (up to

$4,994,000) permitted to be credited under the 1989 General Ordinance to the Residual Fund for transfer to the City's General Fund.

Actual annual fund valuations and interest earnings are based on a mark-to-market valuation which the City performs at end of the fiscal year. For the Debt Service Reserve Fund, a comparison of the mark-to-market and the debt service reserve requirement is subsequently compared to the debt service reserve interest owed to the City in accordance with the General Ordinance. Up to $4,994,000 of the annual interest earnings on the Debt Service Reserve Fund is transferred to the City via the Residual Fund. .

The differential between market-to-market and the Debt Service Reserve Fund requirement results in either a transfer from Operating Fund of the Water Department to the Debt Service Reserve Fund, if there is a deficiency in the Debt Service Reserve Fund, or a transfer from the Debt Service Reserve Fund to the Operating Fund of the Water Department, if there is an excess in the Debt Service Reserve Fund. As noted above, projected transfers from the Debt Service Reserve Fund to the Operating Fund are included as other operating revenue.

Q23. PLEASE BRIEFLY DESCRIBE THE PROJECTIONS OF OPERATION AND MAINTENANCE EXPENSE FOR THE STUDY PERIOD WHICH ARE SUMMARIZED IN TABLE W-2 AND TABLE WW-2 OF EXHIBIT BV-E1.

A. The Fiscal Year 2016 operating budget is utilized as the starting base for the projections of Operation and Maintenance (O&M) expenses for Fiscal Year 2017 through FY 2021. The O&M expenses, for Fiscal Year 2016, are determined based

factor is assumed based upon the most recent three-year average of Water Department chemical costs, and validated with the three year average of the Producer Price Index.

Other Expenses: For other expense categories, Black & Veatch has used an annual escalation factor of three percent (3%) based upon the recent three year average cost increases, as well as a review of various cost indices.

Interdepartmental Charges: Interdepartmental charges represent the Water Fund's proportionate charge for services provided directly by other City departments and agencies, including the Water Revenue Bureau, which has the responsibility for the collection of revenue for water and wastewater service provided by the Water Department. Other interdepartmental charges are for services provided by the Law Department, Fleet Management, the Finance Department (including pension, pension obligation, and benefits), Public Properties, Division of Technology and other departments and agencies of the City. Interdepartmental charges were estimated by Black & Veatch to increase from $164.4 million in FY 2016 to $195.9 million in FY 2021.

Q24. PLEASE DESCRIBE THE WATER DEPARTMENT'S PROJECTED CAPITAL IMPROVEMENT PROGRAM (CIP) AND THE INDICATED FINANCING OF THE PROGRAM DURING THE STUDY PERIOD.

A. Tables W-3 and WW-3 summarize the Water Department's capital improvement program for Fiscal Years 2016 through 2021 on an encumbrance basis. Encumbrance reflects the total cost of each project in the year construction of the project is scheduled to commence. Costs shown in Tables W-3 and WW-3 reflect the estimated total costs of the various projects, which will be financed with amounts available in

the Construction Fund, ~~from~~ the annual Capital Account Deposit~~of the Construction Fund~~, amounts transfer~~reds~~ from the Residual Fund to the Construction Fund, and the proceeds of the issuance and sale of revenue bonds.

Projection of CIP Costs (Tables W-3 and WW-3)

The FY 2016 CIP costs reflect the Water Department's FY 2016 cost levels. The Water Department presents the FY 2017 through FY 2021 CIP costs based on the FY 2017 levels. Accordingly, an annual inflation allowance of four percent (4%) has been applied to the CIP costs beginning with Fiscal Year 2018. The inflation allowance is based upon a review of the ENR Construction Cost Index and the Handy-Whitman Construction Cost Index. The cash flow adjustment indicated in Line 9 of Table W-3 and Line 10 of Table WW-3 represents the net result of carrying forward costs which are encumbered in one year, but which do not become a cash expenditure until a subsequent year. Line 10 on Table W-3 and Line 11 on WW-3 show the net cash expenditures to be financed from the sale of revenue bonds and other sources of capital.

Projected Capital Improvement Flow of Funds (Tables W-4 and WW-4)

Tables W-4 and WW-4 present an estimate of the flow of funds in the Construction Fund of the Water Department.

- *Bond Proceeds:* Line 1 indicates the projected total revenue bond principal amounts projected to be issued, during the second half of each of the Fiscal Years 2017 through 2021, to finance the proposed

Bond Issuance Projection
FY 2017: $270.0 Million
FY 2018: $275.0 Million
FY 2019: $280.0 Million
FY 2020: $270.0 Million
FY 2021: $285.0 Million

capital improvements of the water and wastewater utilities. ~~There was~~ N~~n~~o bond issuance is planned for ~~in~~ FY 2016.

- *Debt Service Reserve:* As shown in Lines 2 through 4, in addition to funding construction costs, the bond issuance proceeds are also used to fund required deposits into the ~~d~~Debt ~~S~~service ~~r~~Reserve ~~f~~Fund and pay the costs of bond issuance. The balance of ~~deposit into~~ the Debt ~~Service~~ Reserve Fund must equal~~s~~ the maximum future annual debt service estimated for the outstanding and proposed bonds. The debt service is estimated based on a 30 year amortization schedule and an annual interest rate of 5.25% for each of the bond issues proposed during FY 2017 through FY 2020, and 5.50% for FY 2021. The proposed bonds in fiscal year 2017 reflect interest only payments through fiscal year 2018.

- *Capital Account Deposit:* In addition to funds from bond proceeds, Line 8 shows that during the six year projected study period a total of approximately $135.5 million ~~from the~~ of Capital Account Deposit~~s~~ ~~of the Construction Fund~~ will be available to finance water and wastewater capital improvements. In addition, Line 10 indicates that $246.9 million will be available from the Residual Fund as another major source of funding of the capital improvement program.

- *Interest Income:* Interest income on annual average balances in the Construction Fund and the Debt ~~Service~~ Reserve Fund are shown on Lines 11 and 19. The interest earnings in the Construction Fund, which primarily consists of bond proceeds, are not available to the Revenue Fund as a part of

Operating Fund, a payment may be made to the City's General Fund which does not exceed the lowest of (i) the amount of interest earnings in the Debt ~~Service~~ Reserve Fund ~~Reserves~~ transferred to the Operating Fund during the fiscal year or (ii) $4,994,000. Projected annual payments for the study period are summarized in the tabulation below:

	Water Utility	Wastewater Utility
Fiscal Year 2016	$313,000	$475,000
Fiscal Year 2017	$316,000	$478,000
Fiscal Year 2018	$318,000	$478,000
Fiscal Year 2019	$306,000	$481,000
Fiscal Year 2020	$306,000	$460,000
Fiscal Year 2021	$325,000	$458,000

Capital Account Deposit: The second additional revenue requirement is the required Capital Account Deposit. Under the 1989 General Ordinance, the City covenants to make a deposit to the Capital Account of the Construction Fund ~~Deposit~~ in each fiscal year, in an amount not less than one percent (1%) of the total value of the net assets of the Water Department (the "Capital Account Deposit"). The amounts accumulated in the Capital Account ~~Deposits~~ are to be used by the Water Department to finance capital improvements ~~for~~ to the water and wastewater systems.

The total annual Capital Account Deposits for each utility are summarized below:

	Water Utility	Wastewater Utility
Fiscal Year 2016	$8,711,000	$12,504,000
Fiscal Year 2017	$8,929,000	$12,817,000
Fiscal Year 2018	$9,152,000	$13,137,000
Fiscal Year 2019	$9,381,000	$13,466,000
Fiscal Year 2020	$9,615,000	$13,802,000
Fiscal Year 2021	$9,856,000	$14,147,000

Tables W-6 and WW-6 present an estimate of the interest earnings payment, and the ~~c~~Capital ~~a~~Account ~~d~~Deposit, for the water and wastewater utilities.

Q27. PLEASE DESCRIBE ANY FURTHER REQUIREMENTS THAT MUST BE ADDRESSED IN DETERMINING THE OVERALL LEVELS OF WATER AND WASTEWATER REVENUES NEEDED?

A. Yes. There are three additional revenue requirements that need to be addressed, (i) 1989 General Ordinance Requirement, (ii) Assured Guaranty Municipal Corp (AGM) Insurance Requirement, and (iii) Water Rate Board Ordinance Requirement.

i. 1989 General Ordinance Requirement: In addition to meeting cash revenue requirements (effectively the operation and maintenance expenses and annual capital costs), ~~the authorizing revenue bond ordinance (~~the 1989 General Ordinance~~)~~ ~~stipulates~~ requires that, during any given fiscal year, the Water Department's revenues (for both water and wastewater service combined), must be sufficient to satisfy the following debt service coverage obligations.

Bond Coverage Minimum
Senior Debt Coverage: 1.2
Total Coverage: 1.0

In the first instance, the 1989 General Ordinance requires that, during any given fiscal year the Water Department must, at a minimum, impose, charge, and collect in each fiscal year such water and wastewater rents, rates, fees, and charges as shall yield net revenues which shall be equal to at least 1.20 times the debt service requirements for such fiscal year (excluding the principal and interest payments in respect of Subordinated Bonds). Line 4 in Table C-2 (Exhibit BV-E1) presents the projected Senior Debt Coverage for the study period.

In addition, in each fiscal year, water and wastewater rents, rates, fees, and charges shall yield net revenues which shall be at least equal to 1.00 times the sum of the following:

a. the debt service requirements for such fiscal year (including debt service requirements in respect of Subordinated Bonds);

b. amounts required to be deposited into the Debt Reserve ~~Account~~ Fund during such fiscal year;

c. the principal or redemption price of and interest on General Obligation Bonds issued to fund capital expenditures of the water and wastewater systems payable during such fiscal year;

d. debt service requirements on interim debt payable during such fiscal year; and

e. the Capital Account Deposit ~~to the Construction Fund~~ for such fiscal year (less any amounts transferred from the Residual Fund to the Capital Account during such fiscal year).

Line 5 in Table C-2 (Exhibit BV-E1) presents the projected Total Coverage for the study period.

ii. AGM Insurance Requirement: In addition to the rate covenant of the 1989 General Ordinance described above, the City has agreed with Assured Guaranty Municipal Corporation (AGM) that for so long as the Series 2005A Bonds, the Series 2005B Bonds, and the portion of the Series 2010A Bonds insured by AGM are outstanding, the City will ~~to~~ establish rates and charges for use by the Water and Wastewater systems sufficient to yield Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of,

such fiscal year) at least equal to 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year.

Further, any calculation by a consulting engineer of projected rate covenant compliance in connection with the proposed issuance of additional Bonds for each fiscal year ending on or after June 30, 2000, must ~~state~~ confirm that Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of, such fiscal year) in each fiscal year included in the projection period are projected to be at least 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year.

Line 6 in Table C-2 (Exhibit BV-E1) presents the projected Senior Debt Coverage from current revenues (Insurance Requirement) for the study period.

iii. Water Rate Board Ordinance Requirement: Section 13-101(4)(a) of the City Code sets the floor for the amounts that rates and charges must generate to support the System. The rates and charges must yield to the City at least an amount equal to the sum of:

1. Operating expenses of the City in respect of the water, sewer, storm water systems;

2. Debt service on all obligations of the City in respect of the water, sewer, storm water systems,

3. In respect of water, sewer and storm water revenue obligations of the City, such additional amounts as will be required to comply with any rate covenant and sinking fund reserve requirements approved by ordinance of Council in connection with the authorization or issuance of water, sewer and storm water revenue bonds, and

Q30. ARE THERE ANY OTHER CONSIDERATIONS THAT WERE REFLECTED IN EXAMINING THE OVERALL NEED FOR AN INCREASE IN WATER AND WASTEWATER REVENUES?

A. Yes. The Department must also establish rates and charges to meet the financial management requirements of the 1989 General Ordinance with respect to, among other things, (1) maintaining the Rate Stabilization Fund; (2) financing a portion of major annual capital improvement requirements directly from annual system revenues; and (3) making required deposits into the Residual Fund of any monies remaining after payment of all current cash obligations.

Q31. WOULD YOU PLEASE BRIEFLY SUMMARIZE THE ABOVE REQUIREMENTS OF THE 1989 GENERAL ORDINANCE?

A. *Rate Stabilization Fund:* Balances in the Rate Stabilization Fund, as its name implies, are intended to help stabilize or level the magnitude of future increases in water and wastewater rates. Available funds, from annual system revenues are deposited into the Rate Stabilization Fund, generally as a result of complying with the minimum 1.20 bond coverage covenant. Additional revenues result from the 20 percent coverage being in excess of revenue bond debt and other cash related capital requirements. ~~When~~ Under the 1989 General Ordinance~~s~~, when revenues are deposited into the Rate Stabilization Fund, they are excluded from eligibility as Net Revenues in the numerical calculation of annual debt service coverage. Conversely, when revenues are transferred from the Rate Stabilization into the Revenue Fund, they are then included as Net Revenues in the debt service coverage computation.

It should be noted that the Water Department has utilized the Rate Stabilization Fund balances in the past several years to "manage" its revenue increases such that they are effectively used to provide the minimum required 1.20 coverage level stipulated in the 1989 General Ordinance. The Rate Stabilization Fund balance is projected to decrease from $169,196,000 at the end of Fiscal Year 2016 to $111,006,000 at the end of Fiscal Year 2018 (which is the end of the two-year rate increase period). The projected revenue increases were established, taking in to consideration this anticipated draw down from the Rate Stabilization Fund. A targeted combined minimum balance of approximately $125 million in the Rate Stabilization Fund and the Residual Fund (discussed below) is believed to be an appropriate level of working capital for an organization with the level of revenues and expenses of the Water Department.

Cash Financing of Capital Program: In discussions among the Water Department and the Water Department's financial advisor, Public Financial Management (PFM) it ~~was~~ has been determined that the Water Fund should transition from the minimum 1.2 requirement to a higher coverage level of 1.35 beginning FY 2019, consistent with industry financial management best practices. Such an approach will also provide for more revenues to be deposited into the Residual Fund in order to be used to provide additional cash funding of major capital improvements. The financial markets and the rating agencies have been encouraging the Water Department to rely less on debt financing of its major capital improvements. Reducing the reliance on debt financing will result in a stronger credit profile. Moving to the higher coverage level will accomplish this and will support the Water Department's objective of ~~improving its~~

~~bond ratings over time~~ maintaining financial practices and policies that result in high quality investment grade bond ratings so as to ensure the lowest practical cost of debt necessary to finance the Water Department's long-term capital program.

As previously discussed in response to Q23, ~~U~~under the 1989 General Ordinance, there is a mandatory annual revenue requirement referred to as the Capital Account Deposit. ~~The amount of this requirement, at a minimum, is set equal to one percent of the net investment in Water Department assets.~~ This annual requirement, which ranges from approximately $21.2 million to $24.0 million during the study period, is to be used for financing major capital improvements directly from annual system revenues.

Residual Fund: After meeting the annual cash obligation for operation and maintenance expenses, payment of debt service, the Capital Account Deposit, and transfers to/from the Rate Stabilization Fund, any remaining revenues ~~monies~~ are deposited ~~in~~to the Residual Fund. Balances in the Residual Fund may be used for retirement of debt, payment of capital expenditures, and any other payments as provided by the 1989 General Ordinance. For purposes of projections over the study period, we have generally shown the balances in the Residual Fund to be utilized for financing of the major capital improvement program.

An annual balance of approximately $15 million is projected to be maintained in the Residual Fund during each year of the study period as reflected in Line 38 in Table C-1 (Exhibit BV-E1).

Q32. WOULD YOU PLEASE SUMMARIZE THE OVERALL RELATIONSHIP OF THE PROJECTION OF REVENUE UNDER EXISTING RATES AND REVENUE REQUIREMENTS FOR THE STUDY PERIOD?

A. Table C-1 (Exhibit BV-E1) presents a cash flow statement of projected revenues and revenue and rate covenant requirements for water and wastewater utility operations for the projected period of Fiscal Years 2016 through 2021. The financial projections provide a clear indication of the adequacy of the Department's revenues in complying with the stipulations of the 1989 General Ordinance. As indicated on Lines 4 through 9 in Table C-1, annual increases in revenue are required beginning in Fiscal Year 2017. A 5.42% revenue adjustment is necessary in each of the two fiscal years of FY 2017 and FY 2018. The increase in each of these two fiscal years is assumed to be at the beginning of the fiscal year.

As indicated in Lines 26 and 30 in Table C-1, the debt service coverage requirements discussed previously would be met with these overall levels of increase in revenues. Annual cash requirements for the combined water and wastewater utilities would also be met with these levels of increase as indicated by the positive balances shown in Line 34 of Table C-1.

Tables W-6 and WW-6 show the projected cash flow for the water and wastewater utilities, respectively. The revenue requirements projected for FY 2017 and FY 2018, respectively, for the ~~W~~water and ~~W~~wastewater utilities are then used in the development of the test year cost of service to be allocated for each utility. As indicated in Table W-6, an overall increase in revenue of 5.00 percent (or

Operating Costs: Operating expense consists of operation and maintenance expense, direct interdepartmental charges applicable to the utility, deposit to the Rate Stabilization Fund, and a portion of the year end revenue balance which is deposited into the Residual Fund. An additional element of operation and maintenance expense, which is recognized in the cost of service study for the water utility, is the cost of treating and disposing of water treatment plant sludge ~~which~~ that is discharged into the City's wastewater system. This projected expense of $10,952,000 is shown in Line 3 of Table W-7. A corresponding credit for this amount is shown in the wastewater cost of service in Table WW-7.

Capital Costs: Capital costs consist of debt service on existing and proposed bonds, the Capital Account Deposit, and a portion of the year end revenue balance which is deposited into the Residual Fund.

Further, additional credits to both operating expense and capital costs are provided from interest earnings on various funds. The total Fiscal Year 2017 test year cost of service to be met from water sales revenue, shown in Line 12 of Table W-7, is $267,277,000.

Q35. AFTER HAVING DETERMINED THE TEST YEAR TOTAL COST OF SERVICE TO BE RECOVERED FROM RATES FOR WATER SERVICE, WHAT IS THE NEXT STEP IN THE ALLOCATION OF THESE COSTS TO THE VARIOUS TYPES OF CUSTOMERS SERVED BY THE UTILITY?

- The non-operating interest income which is assigned to operation and maintenance expense (Line 27) is allocated in proportion to the allocation of the Administrative and General costs (Line 21 of Table W-10).
- The total net operation and maintenance expense to be recovered from water rates ($185,387,000) is shown on Line 28 of Table W-10.

Q44. AFTER COSTS ARE ALLOCATED TO FUNCTIONAL COST COMPONENTS, WHAT IS THE NEXT STEP IN THE OVERALL COST OF SERVICE ANALYSIS?

A. As indicated in the response to Q36, the next step in the cost of service analysis is to distribute the retail costs of the water utility to customer types. To do this, customers with similar characteristics are grouped together into to specific customer types. For each customer type, the units of service are determined for each of the five cost components to which the capital costs and operation and maintenance costs were allocated.

Water utility customers are grouped into two distinct categories, namely, *Inside City Retail* and *Outside City Wholesale.* The types of customers within the Inside City Retail and Outside City Wholesale categories ~~has~~ have already been discussed in response to Q22.

Q45. PLEASE EXPLAIN THE METHODOLOGY YOU USED TO DETERMINE THE CUSTOMER TYPE LEVEL UNITS OF SERVICE FOR EACH COST COMPONENT OF THE WATER UTILITY.

(Volume, Capacity, BOD, and Suspended Solids), Meters, and Bills]. is determined. The unit cost is derived by dividing the total cost allocated to each expense category and cost component by the total applicable units of service.

- ***Step 2:*** The retail customer type responsibility for service is then obtained by applying unit costs of service to the number of units for which each customer type is responsible.

Determination of Retail Unit Costs: The development of retail unit costs involves the following two sub-tasks:

- ***Estimate of the Inside City Rate of Return:*** The capital cost revenue requirement of the system less depreciation is considered the equivalent of return on investment. The system return on investment is recovered from both *Inside City Retail* and *Outside City Wholesale customers.* The *Inside City Retail* rate of return requirement is calculated as follows:
  - As previously discussed in Q50, the total return on investment in the system required in the test year amounts to $107,865,000. This return when applied to the test year system plant investment of $2,120,961,000, results in an overall system rate of return requirement of 5.10 percent.
  - As previously discussed in Q61, for purposes of this study, a return on investment of $4,054,000 has been allocated to the wholesale customers.
  - The wholesale customer's return on investment of $4,054,000 and the estimated test year management fee revenue of $3,561,000 is deducted from the total system return on investment of $107,865,000, to allocate the