

Capital Region Water

WATER AND WASTEWATER RATE STUDY REPORT

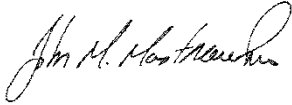
For Fiscal Year 2017

November 30, 2016



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For Fiscal Year 2017



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APPENDICES

Appendix A - Wholesale Wastewater Rate Calculation Details

ACRONYMS AND ABBREVIATIONS

CRW	Capital Region Water
EDU	Equivalent Dwelling Unit
FY	Fiscal Year
I&I	Inflow and Infiltration
LCSWMA	Lancaster County Solid Waste Management Authority
MHI	Median Household Income
O&M	Operating and Maintenance
PENNVEST	Pennsylvania Infrastructure Investment Authority
PRAG	Public Resources Advisory Group
U.S. EPA	United States Environmental Protection Agency

1 INTRODUCTION

1.1 Rate Study Scope and Objectives

This water and sewer rate study report was prepared for Capital Region Water (“CRW”) for the purpose of reviewing and updating CRW’s water and wastewater rates for fiscal year (“FY”) 2017 and providing planning level estimates of rate increases in FY 2018 through FY 2021. CRW’s fiscal year begins on January 1 of each year.

The specific objectives of this rate study included the evaluation of:

1. Water system costs to be recovered from all customers and recommended rate revenue increases for FY 2017 through FY 2021 (“the forecast period”).
2. The water rate structure based on a specific rate structure alternative requested by CRW.
3. Wastewater system costs allocable to Suburban communities to determine the resulting unit rates for Suburban customers in FY 2017.
4. Wastewater system costs to be recovered from City customers and recommended retail rate revenue increases for FY 2017 through FY 2021.
5. Water and wastewater rates of similar utilities for the purpose of comparing CRW’s proposed FY 2017 rates to the rates of other utilities located within the region.

1.2 Background

CRW is a municipal authority that owns and manages the greater Harrisburg area’s water and wastewater systems and infrastructure. The water system includes a supply, treatment and distribution system that serves approximately 20,700 accounts in Harrisburg (“the City”), the Borough of Penbrook, and parts of various outlying municipalities, including the Townships of Susquehanna and Lower Paxton. CRW’s water system also provides the water quantities and pressures needed to serve municipal fire hydrants and residential and commercial fire sprinkler systems.

The primary source of drinking water is the William T. DeHart Dam and Reservoir located 20 miles northeast of the City in the Clarks Valley Watershed. The Dam and Reservoir collect water from a watershed that is approximately 22 square miles. The Susquehanna River provides CRW with a backup water supply and is only used during severe drought or emergency. Raw water flows by gravity from the DeHart Reservoir to be treated at CRW’s Robert E. Young Water Services Center. The treatment facility is capable of producing 20.0 million gallons per day of drinking water. Treated water is pumped and held in three finished water storage reservoirs in Reservoir Park. The finished water storage reservoirs have a combined capacity of approximately 40.0 million gallons. In addition, the water system includes over 20 miles of forty-two inch diameter transmission mains, 250 miles of distribution piping ranging from four to forty-two inches in diameter, more than 1,600 fire hydrants and 5,340 valves, and five hydrant interconnections with United Water, Inc.

The wastewater system owned and operating by CRW includes an Advanced Wastewater Treatment Facility, a conveyance system, and wastewater and stormwater collection systems located within the City limits. Overall, the wastewater system includes approximately 48 miles of sanitary sewers, 29 miles of stormwater sewers, and 87 miles of combined sanitary and stormwater sewers.

The wastewater collection system provides service to customers located within the City. The conveyance and treatment systems provide wastewater conveyance and treatment services to City and Suburban wholesale customers. Suburban wholesale customers include Susquehanna Township, Susquehanna Township Authority, Lower Paxton Township, Lower Paxton Township Authority, Swatara Township, Swatara Township Authority, Paxtang Borough, Penbrook Borough, Steelton Borough, and the Steelton Borough Authority.

1.3 Rate Study Process

The proposed water rates were calculated by estimating the water system's rate revenue requirements in FY 2017 and the remaining years of the forecast period, and adjusting the water rates such that they generate sufficient revenues to match the rate revenue need. In addition, water rate design alternatives were developed based on CRW's pricing objectives.

The Suburban wholesale wastewater rates in FY 2017 were developed by completing the following steps:

1. Estimating the wastewater system rate revenue requirement.
2. Allocating the revenue requirement to cost factors attributable to City retail customers and Suburban wholesale customers.
3. Calculating the wholesale rates by dividing the costs attributable to Suburban customers (with adjustments) by the applicable units of service.

The wastewater retail rates were developed by estimating the wastewater system's rate revenue requirement for each year of the forecast period, subtracting the revenue estimated to be received from Suburban wholesale customers, and adjusting the retail wastewater rate such that it generates sufficient revenue to match the retail rate revenue need.

In addition, information on water and wastewater rates was obtained for comparable utilities located within the region. Estimated bills were calculated for these utilities and for CRW based on the water and wastewater rates proposed as part of this report in order to determine how CRW's proposed FY 2017 rates compare to those of similar utilities.

2 THE WATER SYSTEM

2.1 Existing Water Rates

CRW's existing water rate structure includes a fixed charge, which is assessed by meter size, and a uniform volumetric rate. The fixed charge, known as the Ready to Serve Charge, is assessed on a monthly basis. The Ready to Serve Charge and the volumetric rate are the same for both inside and outside-city customers. The existing rate structure generates approximately 28.5 percent of the rate revenue from the Ready to Serve Charge and approximately 71.5 percent from the volumetric rate.

The existing water rates are shown in Table 2-1.

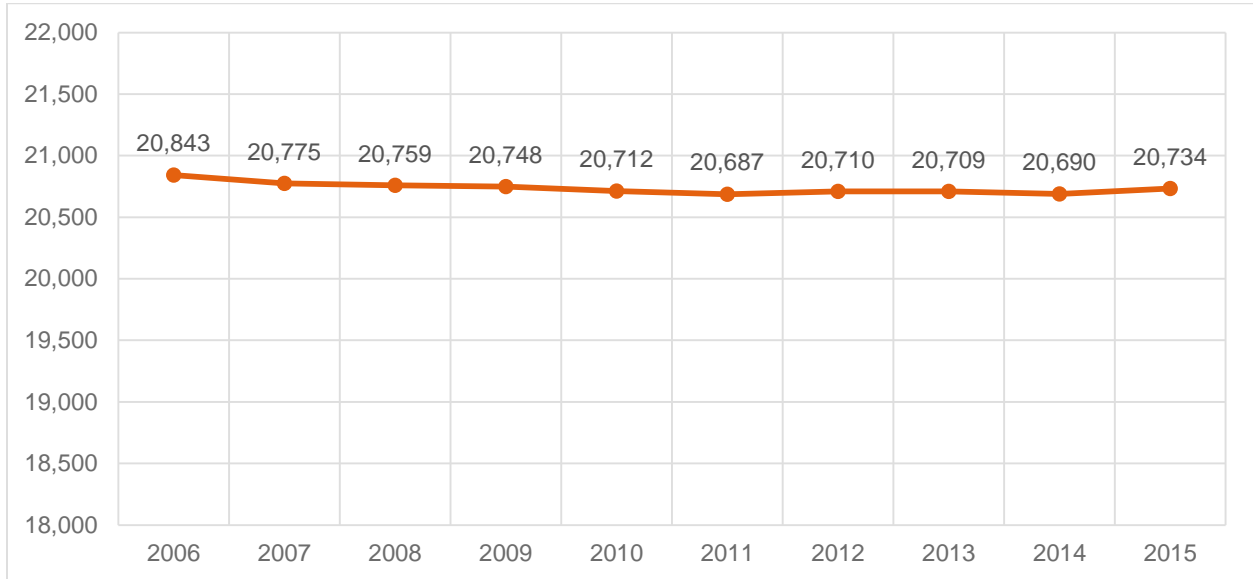
**Table 2-1:
Existing (2016) Water Rates**

Rate Component	
<u>Ready to Serve Charge:</u>	
<u>Meter Size</u>	<u>Monthly</u>
5/8"	\$6.22
3/4"	\$13.48
1"	\$27.03
1-1/2"	\$57.90
2"	\$106.15
3"	\$296.73
4"	\$530.72
6"	\$1,433
8"	\$2,547
10"	\$3,599
12"	\$5,732
	Cost per
<u>Volume:</u>	<u>1,000 gallons</u>
All	\$7.88

2.2 Customer Growth

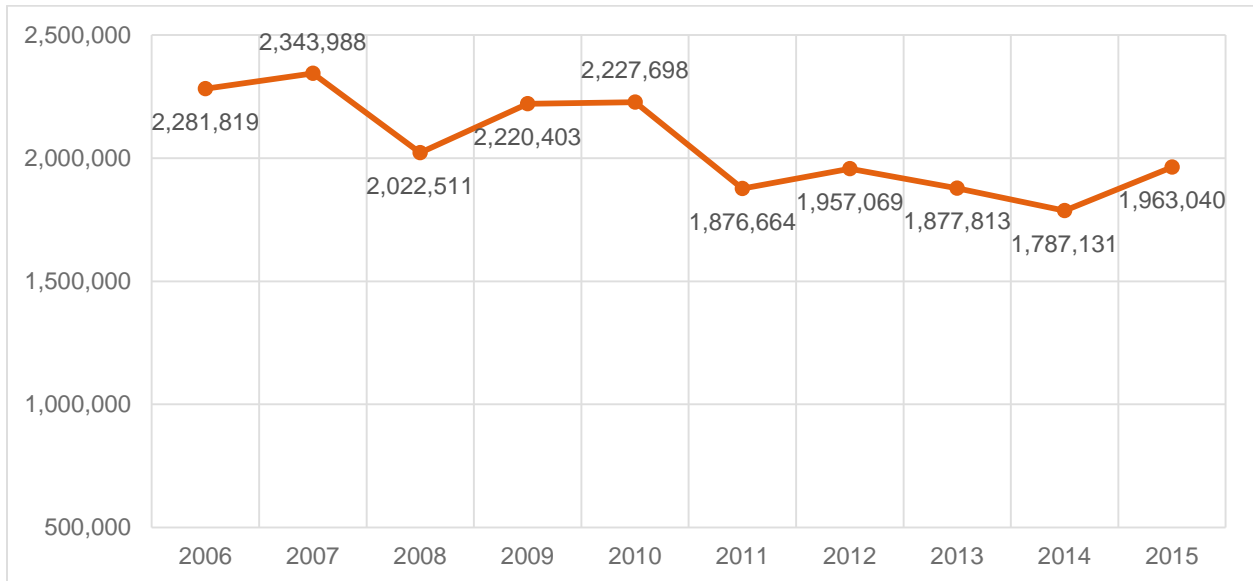
The projection of water rate revenues was derived from anticipated water rates in future years and assumptions regarding customer growth rates based on historical trends in the growth or decline of accounts and billed consumption. The historical number of accounts and billed water consumption from FY 2006 to FY 2015 are shown in Figure 2-1 and Figure 2-2, respectively. Figure 2-1 shows that the number of accounts has remained relatively flat over the past ten years, but water consumption has declined at an average rate of approximately 1.7 percent per year over the past ten years. Similarly, the average consumption per account has declined from approximately 109,500 gallons per account in 2006 to approximately 94,700 gallons per account in FY 2015, which corresponds to an average decline in consumption per account of approximately 1.6 percent per year.

**Figure 2-1:
Historical Number of Water Accounts**



Source: Historical billing data provided by CRW.

**Figure 2-2:
Historical Annual Water Consumption (1,000 gal.)**



Source: Historical billing data provided by CRW.

Based on the historical trends shown in Figure 2-1 and Figure 2-2, and discussions with CRW regarding their expectations of future declines in water consumption, the following growth estimates were incorporated into the financial forecast, as shown in Table 2-2.

**Table 2-2:
Growth Estimates**

Description:	Year-Over-Year Growth				
	FY2017	FY2018	FY2019	FY2020	FY2021
Customer Accounts:	0.1%	0.1%	0.1%	0.1%	0.1%
Billed Water Consumption:	-9.2%	-0.9%	-0.8%	-0.8%	-0.7%

As shown in Table 2-2, water customer accounts were assumed to increase by 0.1 percent per year, while billed water consumption was assumed to decrease by 9.2 percent year-over-year in FY 2017 and 0.9 to 0.7 percent per year over the remaining years of the forecast period. The 9.2 percent decrease in billed water consumption in FY 2017 reflects the expectation that the Lancaster County Solid Waste Management Authority (“LCSWMA”) will receive treated water from CRW at a negotiated rate of \$4.70 per 1,000 gallons beginning in FY 2017. LCSWMA’s anticipated revenue of approximately \$695,000 in FY 2017 was forecasted separately from other rate revenues, as it was assumed that the negotiated rate with LCSWMA would remain unchanged over the forecast period. It was estimated that LCSWMA uses approximately 147.9 million gallons of water per year, which represents approximately 8.3 percent of the total billed water consumption of the system.

2.3 Fiscal Policies

2.3.1 Target Cash Reserve Balances

2.3.1.1 Water Revenue Fund and the Operating Reserve Account

CRW collects water system revenues within the Water Revenue Fund. Once deposited, funds are transferred to the Operating Account to pay monthly operating expenses. Remaining funds are then transferred to other accounts and funds of the system, as required. In addition, the Trust Indenture¹, originally dated January 1, 1991 and amended and restated as of April 1, 2014 (the “Water Trust Indenture”), established an Operating Reserve Account within the Water Revenue Fund. The purpose of this account is to pay for unanticipated operating expenses or to cover expenditures in a given month when current revenues are insufficient. The Water Trust Indenture states that CRW shall maintain an amount in this account equal to at least 60 days (one sixth) of budgeted operating expenses for the current fiscal year.

Total operating expenses, as defined under the Water Trust Indenture, were projected over the forecast period as shown in Table 2-3. The table also shows the required minimum balance of the Operating Reserve Account and the annual transfers into the account that are necessary to meet the Water Trust Indenture requirement. The projected beginning balance in the account in FY 2017 of \$1,479,896 was

¹ Amended and Restated Trust Indenture, originally dated as of January 1, 1991, between Capital Region Water and the Bank of New York Mellon Trust Company, N.A., amended and restated as of April 1, 2014, and supplemented by a First Supplemental Trust Indenture, dated as of January 1, 2015, and supplemented by a Second Supplemental Trust Indenture, dated as of April 1, 2016.

based on a balance of \$1,004,015, as of September 2016, and an assumed transfer of \$475,881 from the Water Revenue Fund to the Operating Reserve Account during the remaining months of FY 2016.

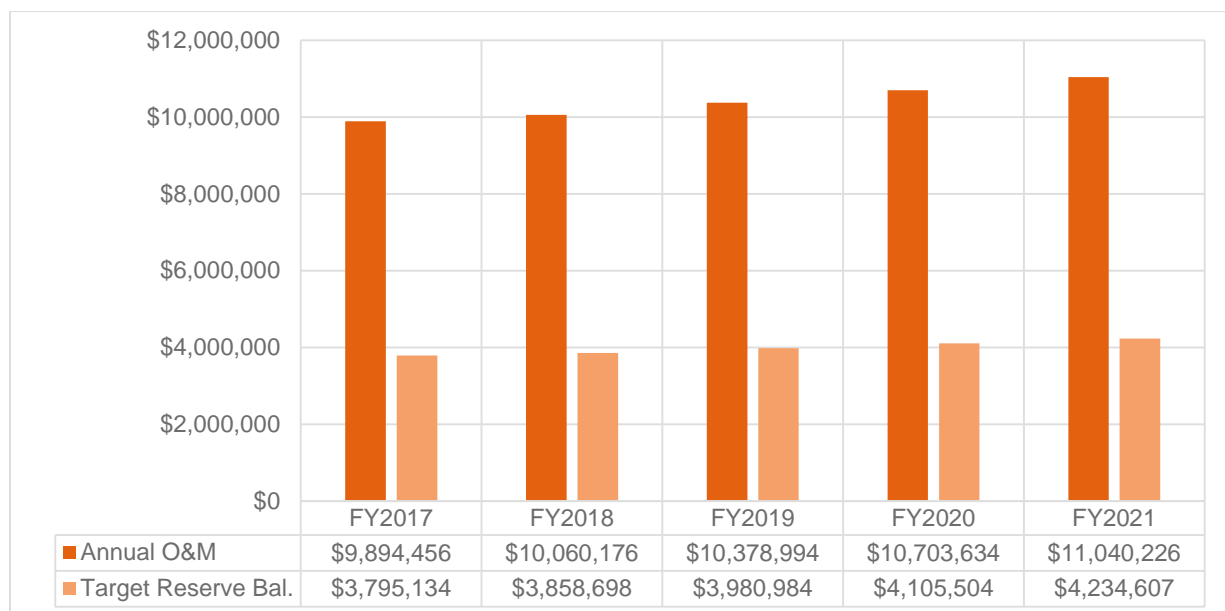
**Table 2-3:
Projected Year-End Water Operating Reserve Account Requirements**

Description	FY2017	FY2018	FY2019	FY2020	FY2021
Total Operating Expenses	\$ 9,749,445	\$10,015,786	\$10,327,107	\$10,649,845	\$10,984,457
Required ORA Balance	\$ 1,624,907	\$ 1,669,298	\$ 1,721,184	\$ 1,774,974	\$ 1,830,743
Projected Beginning Balance	<u>1,479,896</u>	<u>1,624,907</u>	<u>1,669,298</u>	<u>1,721,184</u>	<u>1,774,974</u>
Transfer from Revenue Fund	\$ 145,012	\$ 44,390	\$ 51,887	\$ 53,790	\$ 55,769

As shown in Table 2-3, annual transfers into the Operating Reserve Account ranging from approximately \$44,000 to \$145,000 are anticipated to be needed over the forecast period. In addition, it should be noted that it was assumed that monies in the Operating Reserve Account are not available to fund operating or capital costs of the system over the forecast period.

CRW has established a cash management target of maintaining a total operating reserve, including amounts in the Operating Reserve Account, at a minimum of 200 days of operating and maintenance (“O&M”) expenses, a level customary within the industry for water utilities with strong credit ratings. Given that CRW is required to maintain an operating reserve of 60 days of O&M expenses, per the Water Trust Indenture, an additional operating reserve level equal to 140 days of O&M expenses was included as a minimum cash target for the Water Revenue Fund. This amount, combined with funds held in the Operating Reserve Account, provides CRW with a 200 day operating reserve. CRW’s annual O&M expenses were projected to be approximately \$9.9 million to \$11.0 million over the forecast period, which would require an operating reserve target that ranges between approximately \$3.8 million and \$4.2 million over the forecast period in order to meet the 140 day reserve target, as shown in Figure 2-3.

**Figure 2-3:
Projected Year-End Minimum Target Reserve Balances for the Water Revenue Fund**



The amount of unrestricted and available cash in the Water Revenue Fund as of the beginning of FY 2017 was projected to be approximately \$9.4 million. This amount was estimated based on the amount of working capital attributable to the water system as reported in CRW's FY 2015 audited financial statements. This amount was adjusted by actual cash revenues and expenditures (through July 2016) and forecasted cash revenues and expenditures (from August to December 2016), as provided by CRW, to derive the beginning FY 2017 cash balance in the Water Revenue Fund. Cash received from the conservation easement at the DeHart Watershed Property (approximately \$4.4 million) in FY 2016 was not included in the FY 2017 beginning cash balance of the Water Revenue Fund.

2.3.1.2 Contingency Account

The Water Revenue Fund also includes a Contingency Account. Monies remaining in the fund after all expenditures and transfers have been made are "swept" into this account. These funds can be applied to payment of capital additions or any other purpose relating solely to the water system as may be designated by resolution of CRW. As of September 2016, the balance in this account was \$3,134,791. It should be noted that this amount was not counted toward the minimum reserve targets shown in Figure 2-3 and the water rates proposed as part of this report did not assume the use of funds from the Contingency Account.

2.3.1.3 Renewal and Replacement Fund

CRW also maintains a Renewal and Replacement Fund to pay for extraordinary maintenance and repairs to the water system or to pay for the cost of capital additions. As of September 2016, the balance in the Renewal and Replacement Fund was \$945,323. The Water Trust Indenture states that the minimum balance to be maintained in the fund shall be the greater of \$500,000 or an amount set forth by CRW's consulting engineer. As CRW's consulting engineer, it is recommended that the fund's minimum balance be equal to at least 1.0 percent of net fixed assets. Therefore, based on the net book value of the system's capital assets being depreciated as of December 31, 2015, the Fund would be required to maintain a minimum balance of approximately \$573,000. Given this amount and the projected cost of future capital projects, no funds were anticipated to be transferred from the Water Revenue Fund to the Renewal and Replacement Fund in any year of the forecast period. Furthermore, the financial projections included as part of this report did not assume the use of monies from this fund.

2.3.2 Debt Service Coverage Requirements

Debt service coverage is the amount of net operating revenue (operating revenue less operating expenditures) available to fund annual principal and interest payments on outstanding debt. Currently, CRW's outstanding debt related to the water system is comprised of the Series 2008 Revenue Refunding Bonds, the Series 2016A and B Revenue Refunding Bonds, and a 2015 loan with the Pennsylvania Infrastructure Investment Authority ("PENNVEST"). The projected annual debt service payments for these issues were provided by CRW's financial advisor, Public Resources Advisory Group ("PRAG").

The required level of debt service coverage associated with the CRW's outstanding debt is described in Section 7.01 of the Water Trust Indenture and is summarized below.

“The Authority covenants that:

(a) it has adopted and will charge, maintain and collect throughout its service area so long as any Bonds remain Outstanding and funds for their payment have not been provided, service rates, rents and other charges, which (after making due and reasonable allowances for prompt payment discounts, if any, contingencies and a margin of error in the estimates), shall generate Net Revenues (exclusive of Assessment Revenues, including connection and tapping fees, which shall constitute Gross Revenues) which shall be sufficient in each Fiscal Year to provide funds to pay (1) an amount not less than 120% of the Debt Service Requirements with respect to its Outstanding Bonds in such Fiscal Year, (2) any amount required to replenish the Debt Service Reserve Fund in full and (3) the amount due in such Fiscal Year on all Subordinated Debt. For purposes of this covenant, Net Revenues may be increased as a result of any transfers from the Rate Stabilization Fund to the Water Revenue Fund and shall be decreased as a result of any transfers from the Contingency Account to the Rate Stabilization Fund in any Fiscal Year, subject to the limitations set forth in Section 6.08;

A management target for debt service coverage, at a level of 1.35 times or greater with respect to annual debt service payments related to the current and future outstanding senior lien debt of the system, was incorporated into the financial projections to place CRW in a strong financial position in regard to debt service coverage. Senior lien debt was assumed to include all current and future outstanding Revenue Bond debt and the 2015 PENNVEST loan.

2.4 Water Revenue and Expenses

The projection of water system O&M expenses over the forecast period was prepared based on preliminary budget figures for FY 2017, as provided by CRW. In general, O&M expenses were comprised of costs related to salaries and wages, employee benefits, insurance, utilities, chemicals, professional services, and general administrative costs. In addition, O&M expenses also included administrative costs of CRW, in the amount of approximately \$2.8 million in FY 2017, which have been allocated to the water system.

Individual O&M expenses were classified as labor, benefits, insurance, chemicals, utilities, legal, or general and escalated in future years based on the corresponding assumed cost escalation factor. The escalation factors for each of the expense classifications are provided in Table 2-4 and were developed based on discussions with CRW management.

**Table 2-4:
O&M Cost Escalation Factors**

Expense Classification	Escalator
Labor	3.0%
Benefits	6.0%
Insurance	3.0%
Chemicals	4.0%
Utilities	3.0%
Legal	5.0%
General	2.8%

Capital improvement projects and expenditures related to minor capital purchases were escalated at a rate of 3.0 percent per year.

In general, CRW’s non-rate revenues were comprised of fireline charges, penalties on past due accounts, interest income, tapping fees, and other miscellaneous revenues. Non-rate revenues, with the exception of interest income, were expected to remain constant over the forecast period; therefore, these items were not escalated in future years. Interest income was calculated based on the average annual balance in the Water Revenue Fund and an interest earnings rate of approximately 0.3 percent per year.

2.5 Capital Plan

The projection of water system capital expenditures was based on a schedule of future capital project costs as provided in the 2016 Consulting Engineer’s Annual Report for the water system and adjusted based on other projects included in the plan by CRW management. The annual capital project costs related to supply, transmission, treatment, distribution, and other miscellaneous projects anticipated to be incurred over the forecast period are shown in Table 2-5. The capital plan in FY 2018 through FY 2021 continues to be a work in progress and it is possible that additional project costs may be added as CRW continues to refine its capital plan for these years.

**Table 2-5:
Water System Capital Plan**

Description	FY2017	FY2018	FY2019	FY2020	FY2021
Supply System	\$ 355,000	\$ -	\$ -	\$ -	\$ -
Transmission System	412,500	1,030,000	1,060,900	1,092,727	1,125,509
Water Treatment Plant	6,412,000	1,030,000	-	-	-
Distribution System	3,058,955	-	-	-	337,653
Miscellaneous	2,903,500	3,811,000	3,182,700	3,662,449	3,939,281
Total	\$13,141,955	\$ 5,871,000	\$ 4,243,600	\$ 4,755,176	\$ 5,402,442

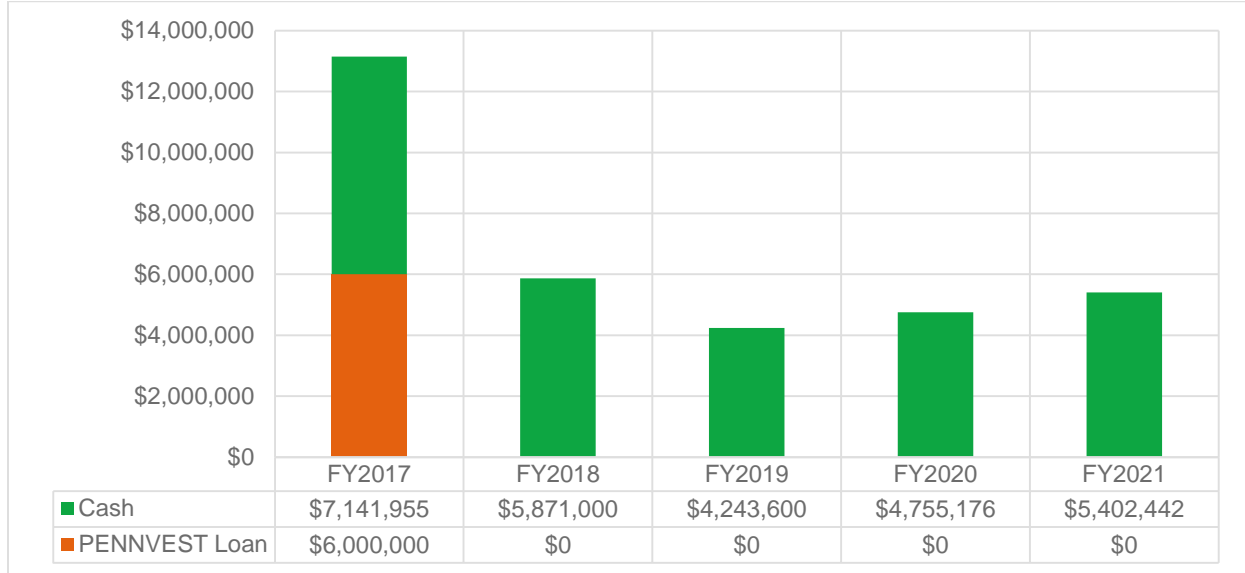
Note: Capital project costs shown in this table were provided in 2017 dollars and escalated at a rate of 3.0 percent per year in future years in the financial projections.

2.5.1 Capital Project Funding

Funding of the capital project expenditures shown in Table 2-5 were based on discussions with CRW management and CRW’s financial advisor, PRAG. The capital projects were assumed to be funded with a new PENNVEST loan and cash generated from current revenues and unrestricted cash on-hand. A summary of the funding sources for the projected capital project costs are shown in Figure 2-4.

The new PENNVEST loan was assumed hold a subordinate claim to the net revenues of the water system, and was assumed to have level annual debt service payments, an annual interest rate of 1.5 percent, and a repayment term of 20 years.

**Figure 2-4:
Capital Project Funding Sources**



Note: Capital project costs shown in this figure were provided in 2017 dollars and escalated at a rate of 3.0 percent per year in future years in the financial projections.

2.6 Water System Rate Revenue Requirements

The calculation of water system rate revenue requirements over the forecast period is shown in Table 2-6. Rate revenue requirements include O&M expenses, minor capital outlays, debt service, and cash funded capital project expenditures. Non-rate revenues were subtracted from the revenue requirements in order to determine the annual net rate revenue requirements. When positive, the Sources and Uses of Funds amounts (Line 12) represent the use of cash from current revenues to fund capital project costs. When negative, these amounts represent the accumulation of cash to be carried over into future years. Table 2-6 also shows an adjustment to O&M and capital expenses for revenue from other sources. These adjustments are made to net out non-rate revenues, such as fireline charges, penalties, or interest income, in order to derive the amount that needs to be generated from rate revenues.

**Table 2-6:
Projected Water Rate Revenue Requirements**

Line No.	Description	Fiscal Year Ending December 31					
		Projected FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
O&M Expenses and Transfers Out							
1	Operation and Maintenance Expense	\$ 8,169,567	\$ 9,749,445	\$ 10,015,786	\$ 10,327,107	\$ 10,649,845	\$ 10,984,457
2	Transfer to Operating Reserve Account	475,881	145,012	44,390	51,887	53,790	55,769
3	Total O&M and Transfers Out	\$ 8,645,448	\$ 9,894,456	\$ 10,060,176	\$ 10,378,994	\$ 10,703,634	\$ 11,040,226
Capital Expenditures							
4	Debt Service	\$ 9,844,283	\$ 10,319,638	\$ 10,727,338	\$ 11,424,338	\$ 11,426,338	\$ 11,423,838
5	Minor Capital Outlay	110,197	109,500	112,905	116,412	120,025	123,745
6	Pay-Go Cash Funded Capital	4,825,252	7,141,955	5,871,000	4,243,600	4,755,176	5,402,442
7	Total Capital Expenditures	\$ 14,779,732	\$ 17,571,093	\$ 16,711,243	\$ 15,784,350	\$ 16,301,539	\$ 16,950,025
8	Total O&M and Capital Expenses	\$ 23,425,181	\$ 27,465,549	\$ 26,771,419	\$ 26,163,344	\$ 27,005,173	\$ 27,990,251
Less Revenue From Other Sources							
9	Miscellaneous Revenue	\$ 583,949	\$ 898,021	\$ 589,743	\$ 587,810	\$ 588,180	\$ 588,560
10	LCSWMA Revenue	-	695,130	695,130	695,130	695,130	695,130
11	Interest Income	591,641	500,000	500,000	500,000	500,000	500,000
12	Sources & Uses of Funds	1,877,010	4,107,382	1,411,136	(122,286)	(124,520)	(129,104)
13	Total Revenue from Other Sources	\$ 3,052,599	\$ 6,200,533	\$ 3,196,009	\$ 1,660,653	\$ 1,658,790	\$ 1,654,587
Adjustment for Revenue From Other Sources							
14	Operation and Maintenance Expenses	\$ 7,469,859	\$ 7,801,306	\$ 8,275,303	\$ 8,596,054	\$ 8,920,324	\$ 9,256,535
15	Capital Expenses	12,902,723	13,463,711	15,300,107	15,906,637	16,426,058	17,079,129
16	Total Rate Revenue Requirement	\$ 20,372,581	\$ 21,265,016	\$ 23,575,410	\$ 24,502,691	\$ 25,346,383	\$ 26,335,664
17	Projected Rate Revenue Increase		11.7%	11.5%	4.5%	4.0%	4.4%

As shown in Table 2-7 (Line 17), a rate revenue increase is recommended in each year to pay for the O&M expenses of the system, to fund capital costs, to account for the reduced rate that was negotiated with LCSWMA, to offset the slight decline in billed water consumption that was projected, and to meet the fiscal requirements related to minimum cash reserves and debt service coverage. A rate revenue increase of 11.7 percent was projected to be needed in FY 2017, while rate revenue increases of 11.5 percent, 4.5 percent, 4.0 percent, and 4.4 percent were projected to be needed in FY 2018, FY 2019, FY 2020, and FY 2021, respectively.

2.7 Proposed Water Rates

Two water rate alternatives were prepared for CRW's consideration. Alternative 1 applies the water rate increases proportionally to both the Ready to Serve Charge and the volumetric rate. Alternative 2 keeps the volume rate unchanged and applies the rate increase necessary to generate the targeted revenue to only the Ready to Serve Charge. The proposed water rates under Alternative 1 for FY 2017 through FY 2021 are shown in Table 2-7 and are based on the existing rates and the recommended rate revenue increases calculated in Table 2-6. This rate structure alternative generates approximately 31 percent of rate revenue from the Ready to Serve Charge and approximately 69 percent from the volume rate.

**Table 2-7:
Proposed Water Rates – Alternative 1**

Rate Component						
<i>Ready to Serve Charge (Monthly):</i>						
Meter Size	Existing FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Base Charge 5/8"	\$6.22	\$6.95	\$7.75	\$8.10	\$8.42	\$8.79
3/4"	\$13.48	\$15.06	\$16.80	\$17.55	\$18.25	\$19.06
1"	\$27.03	\$30.20	\$33.68	\$35.20	\$36.60	\$38.21
1-1/2"	\$57.90	\$64.69	\$72.14	\$75.39	\$78.39	\$81.85
2"	\$106.15	\$118.60	\$132.26	\$138.22	\$143.72	\$150.06
3"	\$296.73	\$331.53	\$369.71	\$386.37	\$401.74	\$419.46
4"	\$530.72	\$592.97	\$661.25	\$691.04	\$718.54	\$750.24
6"	\$1,433	\$1,601	\$1,785	\$1,866	\$1,940	\$2,026
8"	\$2,547	\$2,846	\$3,173	\$3,316	\$3,448	\$3,600
10"	\$3,599	\$4,021	\$4,484	\$4,686	\$4,873	\$5,088
12"	\$5,732	\$6,404	\$7,142	\$7,464	\$7,761	\$8,103
<i>Volume Charge (\$ per 1,000 gallons):</i>						
All customers	\$7.88	\$8.80	\$9.82	\$10.26	\$10.67	\$11.14

The proposed water rates under Alternative 2 for FY 2017 through FY 2021 are shown in Table 2-8. As shown in the table, the additional rate revenue required each year is obtained by increasing the Ready to Serve Charge. There is no increase to the volume charge as it remains at \$7.88 per 1,000 gallons in FY 2017 and in the remaining years of the forecast period. Implementing higher fixed charges is a trend in the industry in order to improve revenue stability and respond to trends of declining water consumption.

This rate structure alternative generates 41 percent of rate revenue from the Ready to Serve Charge in FY 2017. The proportion of rate revenue generated from this charge increases each year to reach 54 percent in FY 2021. Correspondingly, the volume rate generates 59 percent of rate revenue in FY 2017 and decreases each year to reach 46 percent in FY 2021.

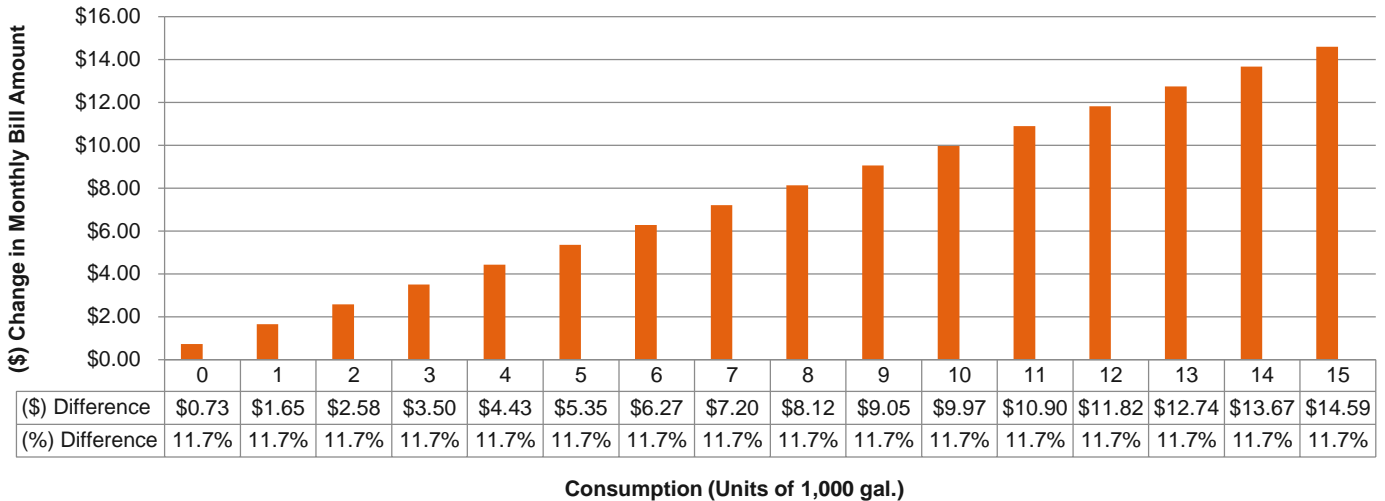
**Table 2-8:
Proposed Water Rates – Alternative 2**

Rate Component						
<i>Ready to Serve Charge (Monthly):</i>						
Meter Size	Existing FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Base Charge 5/8"	\$6.22	\$9.87	\$12.60	\$13.75	\$14.80	\$16.02
3/4"	\$13.48	\$21.39	\$27.30	\$29.80	\$32.09	\$34.71
1"	\$27.03	\$42.89	\$54.74	\$59.76	\$64.34	\$69.60
1-1/2"	\$57.90	\$91.88	\$117.25	\$128.01	\$137.81	\$149.08
2"	\$106.15	\$168.44	\$214.96	\$234.68	\$252.66	\$273.32
3"	\$296.73	\$470.86	\$600.88	\$656.02	\$706.27	\$764.02
4"	\$530.72	\$842.16	\$1,075	\$1,173	\$1,263	\$1,367
6"	\$1,433	\$2,274	\$2,902	\$3,168	\$3,411	\$3,690
8"	\$2,547	\$4,042	\$5,158	\$5,631	\$6,062	\$6,558
10"	\$3,599	\$5,711	\$7,288	\$7,957	\$8,566	\$9,267
12"	\$5,732	\$9,096	\$11,607	\$12,672	\$13,643	\$14,759
<i>Volume Charge (\$ per 1,000 gallons):</i>						
All customers	\$7.88	\$7.88	\$7.88	\$7.88	\$7.88	\$7.88

2.8 Customer Bill Impact

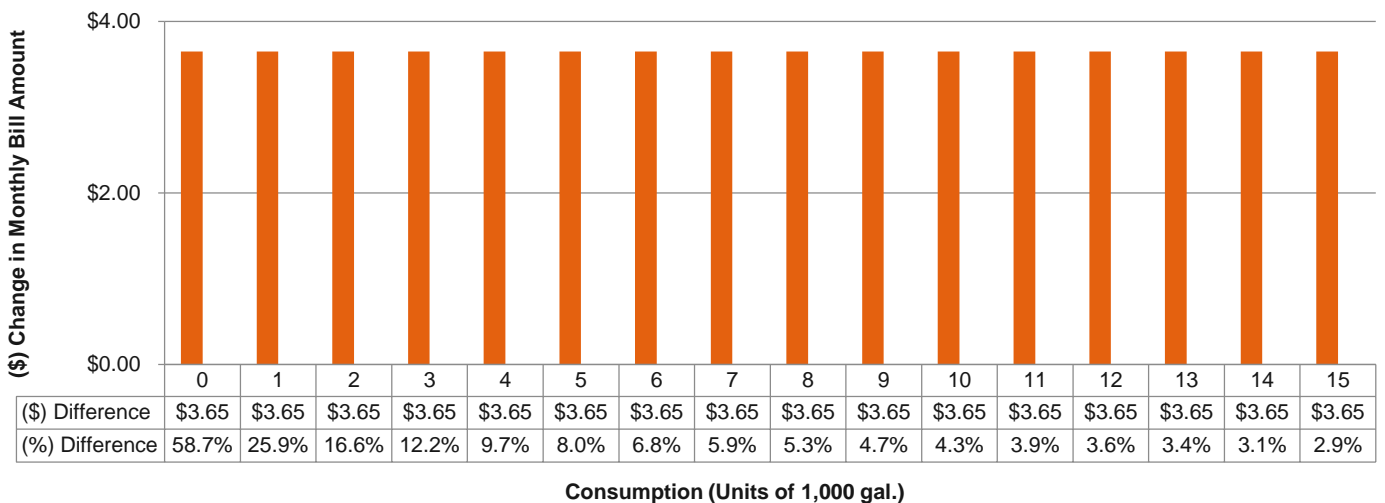
Residential customer bill impacts associated with the proposed water rates under Alternative 1 and Alternative 2 are provided in Figure 2-5 and Figure 2-6, respectively, across a range of monthly consumption levels. As shown in Figure 2-5, as compared to the existing (FY 2016) water rates, a residential customer using 5,000 gallons of water per month would experience an increase in their water bill of approximately \$5.35, or about 11.7 percent, per month. In addition, it should be noted that under this alternative, the dollar increase in the monthly bill amount becomes larger as the level of consumption rises. However, the percentage increase to a customer's bill remains the same across all levels of consumption, at approximately 11.7 percent.

**Figure 2-5:
Residential (5/8" meter) Water Bill Impact – Alternative 1 (FY 2017)**



The residential water bill impacts under Alternative 2 are shown in Figure 2-6. As shown in the figure, a residential customer using 5,000 gallons of water per month would experience an increase in their water bill of approximately \$3.65, or about 8.0 percent, per month, as compared to the existing water rates. It should be noted that customers using less than 5,000 gallons per month would experience a higher percentage increase to their water bill, while customers using more would experience a lower percentage increase to their bill. However, under this alternative, the dollar increase in the monthly bill amount remains the same at all levels of consumption.

**Figure 2-6:
Residential (5/8" meter) Water Bill Impact – Alternative 2 (FY 2017)**



2.9 Water System Cash Flow Projection

A cash flow forecast for the water system for FY 2017 through FY 2021 was prepared and is shown in Table 2-9, based on the recommended rate revenue increases shown in Table 2-6. As shown in the cash flow forecast, unrestricted cash within the Water Revenue Fund is anticipated to be maintained at a level of at least 140 days of O&M expenses. Furthermore, with the anticipated \$475,881 transfer of cash from the Water Revenue Fund to the Operating Reserve Account that is expected to occur near the end of FY 2016, as well as the projected transfers in future years, it is anticipated that the cash balance in the Operating Reserve Account will be maintained at a level equal to approximately 60 days of O&M expenses. Therefore, in total, it is anticipated that CRW will maintain operating reserves of at least 200 days of O&M expenses over the forecast period between its Water Revenue Fund and Operating Reserve Account. In addition, it should be noted that this amount is in addition to the cash held within the Contingency Account and Renewal and Replacement Fund. Combining all cash accounts, including the Contingency Account, Renewal and Replacement Fund, Operating Reserve Account, and Water Revenue Fund, it is anticipated that CRW will maintain cash reserves of between 335 and 405 days of cash over the forecast period.

The projected debt service coverage levels over the forecast period are also shown in Table 2-9. Net revenues were calculated to be 1.35 times senior lien debt service in FY 2017, which is higher than the debt service coverage requirement of 1.20, as stated in the Water Trust Indenture. Coverage levels of at least 1.44 times the annual debt service associated with all senior lien debt are projected in each of the remaining years of the forecast period.

**Table 2-9:
Water System Cash Flow Projection**

Line No.	Description	Actual 2015	Budget FY2016	Projected FY2016	2017	2018	2019	2020	2021
Revenues									
1	Sales to Inside City Customers	\$16,457,888	\$17,835,974	\$17,798,618	\$18,589,755	\$20,610,755	\$21,422,680	\$22,161,555	\$23,027,761
2	Sales to Outside City Customers	2,272,696	2,573,963	2,573,963	2,675,262	2,964,655	3,080,011	3,184,828	3,307,903
3	Sales to LCSWMA ¹	-	-	-	695,130	695,130	695,130	695,130	695,130
4	Penalties	416,033	300,000	591,641	500,000	500,000	500,000	500,000	500,000
5	Private Fire Protection Service	316,477	472,075	315,388	316,000	316,000	316,000	316,000	316,000
6	Grant Funds	282,101	-	-	-	-	-	-	-
7	Interest Income	13,714	29,136	-	21,971	13,693	11,760	12,130	12,510
8	Other Revenue	297,121	155,337	268,561	560,050	260,050	260,050	260,050	260,050
9	Total Revenues	\$20,056,030	\$21,366,485	\$21,548,171	\$23,358,167	\$25,360,283	\$26,285,630	\$27,129,693	\$28,119,355
Operating Expenses									
Personnel:									
10	Management	\$ 404,489	\$ 390,463	\$ 568,582	\$ 549,153	\$ 570,708	\$ 593,215	\$ 616,720	\$ 641,272
11	Distribution	556,188	952,240	800,499	1,028,787	1,070,548	1,114,216	1,159,887	1,207,663
12	Treatment	1,325,939	1,258,917	1,454,551	1,454,378	1,512,682	1,573,615	1,637,309	1,703,903
13	Other	81,542	15,000	101,250	101,250	101,250	101,250	101,250	101,250
Operations:									
14	Management	394,232	460,246	462,710	490,611	505,141	520,101	535,504	551,363
15	Distribution	180,911	699,740	240,857	690,120	709,443	729,308	749,728	770,721
16	Treatment	1,166,076	1,310,516	1,065,483	1,042,574	1,073,190	1,104,856	1,137,593	1,171,427
17	Other	204,218	413,100	160,662	595,000	936,420	955,629	975,661	996,556
18	CRW Administrative Fund Expenses	2,404,134	2,877,419	2,877,419	2,759,571	2,836,839	2,916,270	2,997,926	3,081,868
19	Engineering Services	23,385	-	410,720	1,020,000	681,564	700,648	720,266	740,433
20	Shared Services	(21,896)	-	-	-	-	-	-	-
21	Bank and Trustee Fees	49,970	72,144	26,834	18,000	18,000	18,000	18,000	18,000
22	Total Operating Expenses	\$ 6,769,188	\$ 8,449,785	\$ 8,169,567	\$ 9,749,445	\$10,015,786	\$10,327,107	\$10,649,845	\$10,984,457
Other Expenses									
23	Minor Capital Outlay	\$ 290,896	\$ 429,590	\$ 110,197	\$ 109,500	\$ 112,905	\$ 116,412	\$ 120,025	\$ 123,745
24	Transfers to Operating Reserve Account	-	-	475,881	145,012	44,390	51,887	53,790	55,769
Debt Service									
Existing Debt Service									
25	Revenue Bonds, Series 2002A, B, C and Series 2004	\$ 7,626,004	\$ 7,737,412	\$ 5,948,223	\$ -	\$ -	\$ -	\$ -	\$ -
26	Revenue Refunding Bonds, Series of 2008	3,555,300	3,555,300	3,462,722	3,370,144	3,370,144	3,370,144	3,370,144	3,370,144
27	Revenue Refunding Bonds, Series A of 2016	-	-	564,565	4,096,100	7,017,000	7,714,000	7,716,000	7,713,500
28	Revenue Refunding Bonds, Series B of 2016	-	-	17,283	2,513,200	-	-	-	-
29	2015 PENNVEST Loan	25,975	177,443	177,443	309,049	309,049	309,049	309,049	309,049
New Debt Service									
30	Revenue Bonds	-	-	-	-	-	-	-	-
31	2017 PENNVEST Loan	-	-	-	352,445	352,445	352,445	352,445	352,445
32	Total Debt Service	\$11,207,279	\$11,470,155	\$10,170,236	\$10,640,938	\$11,048,638	\$11,745,638	\$11,747,638	\$11,745,138
33	Interest Earnings - DSRF	(775,600)	(775,689)	(325,953)	(321,300)	(321,300)	(321,300)	(321,300)	(321,300)
34	Total Debt Service, Net	\$10,431,679	\$10,694,466	\$ 9,844,283	\$10,319,638	\$10,727,338	\$11,424,338	\$11,426,338	\$11,423,838
35	Capital Projects Funded with Cash	2,697,717	3,973,400	4,825,252	7,141,955	5,871,000	4,243,600	4,755,176	5,402,442
36	Total Expenditures	\$20,189,480	\$23,547,241	\$23,425,181	\$27,465,549	\$26,771,419	\$26,163,344	\$27,005,173	\$27,990,251
37	Revenues Over (Under) Expenditures	\$ (133,450)	\$ (2,180,756)	\$ (1,877,010)	\$ (4,107,382)	\$ (1,411,136)	\$ 122,286	\$ 124,520	\$ 129,104
38	Beginning Balance	\$ 6,818,491	\$11,254,226	\$11,254,226	\$ 9,377,216	\$ 5,269,834	\$ 3,858,698	\$ 3,980,984	\$ 4,105,504
39	Revenues Over (Under) Expenditures	(133,450)	(2,180,756)	(1,877,010)	(4,107,382)	(1,411,136)	122,286	124,520	129,104
40	PENNVEST Loan (2015) Proceeds	4,569,185	-	-	-	-	-	-	-
41	Ending Balance	\$11,254,226	\$ 9,073,470	\$ 9,377,216	\$ 5,269,834	\$ 3,858,698	\$ 3,980,984	\$ 4,105,504	\$ 4,234,607
42	Ending Balance - Days O&M	607	392	396	194	140	140	140	140
43	Target Reserve Balance (140 days O&M)	2,596,401	3,241,013	3,316,062	3,795,134	3,858,698	3,980,984	4,105,504	4,234,607
44	Projected Rate Increase	8.6%	9.7%	9.7%	11.7%	11.5%	4.5%	4.0%	4.4%
45	DSC (Senior debt, 1.20x DS required)	1.28	1.21	1.31	1.35	1.48	1.44	1.49	1.55
46	DSC (All debt, 1.0x DS required)	1.27	1.21	1.31	1.31	1.43	1.40	1.44	1.50
47	Capital Projects - Cash Funded				\$ 7,141,955	\$ 5,871,000	\$ 4,243,600	\$ 4,755,176	\$ 5,402,442
48	Capital Projects - Funded with New Debt				6,000,000	-	-	-	-
49	Capital Projects - Total				\$13,141,955	\$ 5,871,000	\$ 4,243,600	\$ 4,755,176	\$ 5,402,442

¹Refers to Lancaster County Solid Waste Management Authority. Revenues calculated based on billed consumption of 147,900,000 gallons and a negotiated rate of \$4.70 per 1,000 gallons.

3 THE WASTEWATER SYSTEM

3.1 Existing Wastewater Rates

CRW's existing wastewater rate structure is comprised of volumetric rates that differ based on service area, level of service provided, and the results of a cost of service evaluation. Customers located within the City pay for retail wastewater service, while customers located in the Suburban communities pay for wholesale wastewater service. The rates differ based on the service being provided by CRW. For example, customers located within the City utilize CRW's treatment, conveyance, and collection systems and their rates reflect their proportionate share of the cost of operating and maintaining these facilities. However, customers located in the Suburban communities outside the City operate their own collection systems and only utilize CRW's treatment and conveyance facilities. Therefore, the wastewater rates paid by these communities exclude costs attributable to CRW's collection system. In addition to operating its own collection system, the Borough of Steelton also maintains its own conveyance system and discharges wastewater directly to CRW's Advanced Wastewater Treatment Plant. Therefore, its wholesale rate is different than the other Suburban communities, as it reflects only its proportionate share of the costs associated with the use of CRW's treatment facilities.

The existing wastewater rates for all customers are provided in Table 3-1.

**Table 3-1:
Existing (FY 2016) Retail and Wholesale Wastewater Rates**

Customer Class	Cost per 1,000 gal.
Retail (City) Customers:	
Utilization	\$5.26
Maintenance	\$0.79
Total	\$6.05
Wholesale Customers:	
Suburban	\$3.17
Steelton	\$1.96

The Inter-Municipal Agreement between CRW and the Suburban communities, dated September 5, 1976, contains pricing provisions that specify how the wholesale rates are established. A summary of the pertinent sections of the Inter-Municipal Agreement is provided below. References to the City in the excerpt below should be read as CRW.

- 5.02. *Each Municipality agrees to pay the City for sewage transport, treatment, and disposal services rendered by the City with respect to sewage and wastes emanating from each such Municipality...in accordance with Schedule A of the Agreement.*
- 5.03. *Each Municipality agrees to pay to the City for each Industrial Establishment, a surcharge for pollutant load for all sewage and waste discharged to the Harrisburg Facilities and emanating from or containing a pollutant load of such strength character as to be classified*

as “high strength” by application of generally accepted engineering principles, or provisions of any Grant Agreement, or any state or federal law or regulation, which surcharge shall be determined by the City.

- 5.04. ...City agrees to deliver to each Municipality, a statement of any adjustments to the rates and charges for the next calendar year no later than December 1 of any year. The City will cause its Consulting Engineers to prepare and deliver to it no later than October 1 of each year, a report which shall include estimates of Operating Expenses, and other expenditures, costs, revenues, and changes to the rates for the next calendar year.
- 5.06. Each Municipality covenants to pay all taxes and assessments including income, profits, property, franchise, excise, and/or other taxes levied or assessed by Federal, State or any municipal government against the City upon or by reason of payment or receipt of any sums payable by such Municipality hereunder to the City.
- 6.02. Each of the Joint Municipalities agrees to pay to the City for sewage transportation, treatment, and disposal, the following separate and distinct charges for customers of any of the Joint Municipalities discharging sewage and wastes to City sewer collection lines referred to in Section 6.01:.
- A. An amount equal to the amount charged per customer for sewage and wastes discharged through the Harrisburg Conveyance System; and
 - B. An amount equal to the separate amount charged per customer in the City as a sewer maintenance charge (as distinguished from sewer treatment charge).
- 6.07. If the City during the term hereof shall incur extra-ordinary costs in repairs to or in replacement of that part of its sewer lines governed by Article VI, to which sewage and wastes are discharged by one or more of the Joint Municipalities, any such Joint Municipality using that part of the sewer lines shall pay to the City such increased annual fees as are adequate to compensate the City for such additional costs...
- 6.08. If any Joint Municipality during the term hereof shall incur extraordinary costs in repair to or replacements of that part of its sewer collection system used jointly with the City, the City agrees to equitably share in the costs of such extraordinary repairs or replacements or to reduce annual fees paid by such Joint Municipality to the City under this Article VI...

Schedule A Rates and Charges for Sewage Services

1. The categories of rates and charges to be paid to the City for sewage transportation, treatment, and disposal services in accordance with Section 5.02 are as follows:
 - (a) Separate rates shall be applied to customers of the City, to customers of the Municipalities discharging wastes through the Harrisburg Conveyance System, and to customers of the Municipalities discharging wastes through the Steelton Conveyance System.
 - (b) For each Residence served by metered water service and for each Non-Residential establishment, a rate per 1,000 gallons of water used shall be charged, subject however to minimum charges. Water used for Non-Residential establishments shall be determined by

water meter or by estimates made by the Municipality in accordance with generally accepted engineering standards and practices.

(c) For each Residence not served by metered water service, a flat rate shall be charged.

2. The rates and charges described above shall be determined in accordance with the following:

(a) Rates apply to all customers of the Municipalities and the City shall be based upon a uniform distribution of the estimated amount to be received allocable to the Operating Expenses of the Harrisburg Facilities, subject to (c).

(b) Rates applied to customers in the Municipalities shall equal the rates applied to customers of the City, plus 15 percent of the portion of the City rates that is based on upon the estimated amount to be received allocable to Lease Rental payments and a margin of the same, as required under the Lease, subject to (c).

(c) Rates applied to customers of the Municipalities discharging wastes through the Steelton Conveyance System shall be based on the Harrisburg Facilities annual revenue requirements allocated only to the sewage treatment plant.

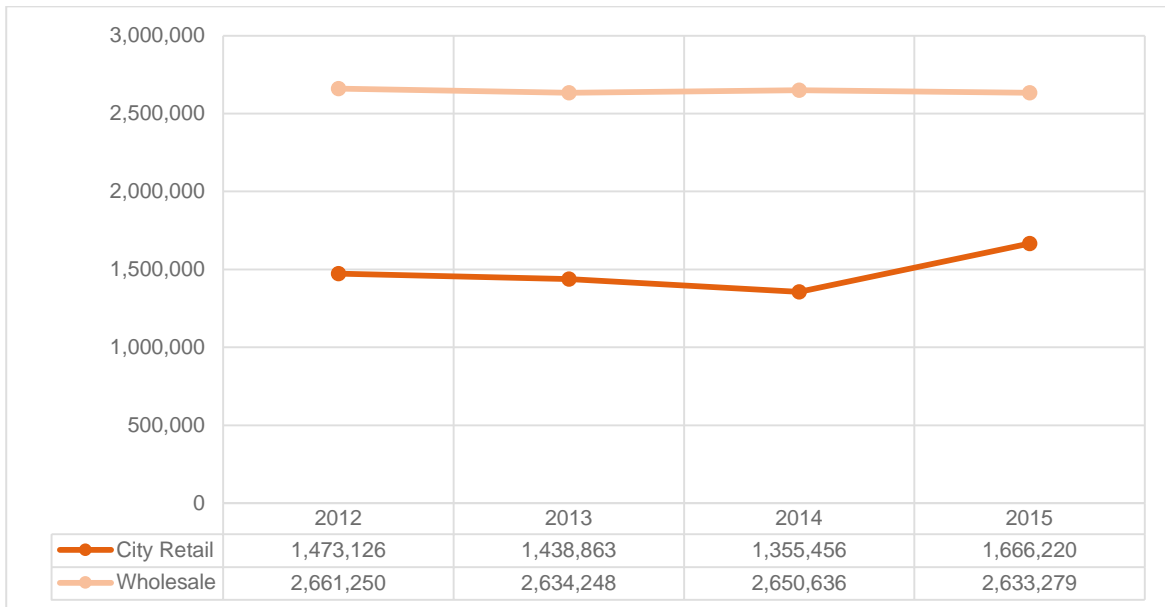
(d) The flat rate for Residences shall be based on the rate for customers with metered water service and an average water usage applicable to Residences in the service area of the Harrisburg Facilities.

(e) The minimum rates shall be those minimum rates which are imposed within each of the Municipalities and the City, respectively.

3.2 Customer Growth

The projection of retail wastewater rate revenue was derived from anticipated future wastewater rates, as well as estimates of future billed wastewater flows attributable to both City and Suburban customers. The historical annual billed volume for City retail and Suburban wholesale customers from FY 2012 to FY 2015 is shown in Figure 3-1.

**Figure 3-1:
Historical Billed Wastewater Volume (1,000 gal.)**



Source: Historical billing data provided by CRW.

As shown in Figure 3-1, the billed volume for City retail customers had declined each year since 2012, before increasing by approximately 23 percent in FY 2015. The significant increase in this year may be due to CRW’s continued meter repair and replacement work, as older customer meters continue to be repaired or replaced with new and more accurate meters. The billed volume for Suburban wholesale customers over the historical period shown has been relatively flat. Based on historical trends and discussions with CRW management, a decline in billed volume ranging from 0.9 percent to 0.7 percent per year from FY 2017 through FY 2021, was assumed over the forecast period for City retail customers. No change in billed volume attributable to Suburban wholesale customers was assumed over the forecast period.

3.3 Fiscal Policies

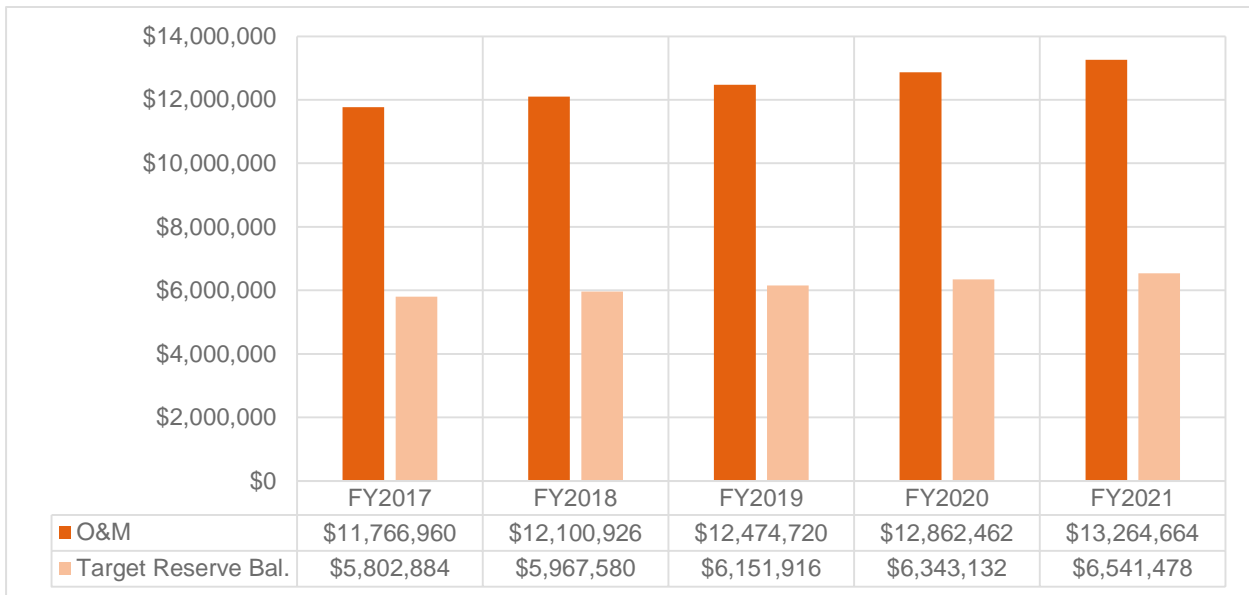
3.3.1 Target Cash Reserve Balance

3.3.1.1 Wastewater Revenue Fund

Wastewater system revenues are deposited in CRW’s Wastewater Revenue Fund upon receipt. Once deposited, funds are transferred to the Operating Account to pay monthly operating expenses. Excess funds are then transferred and held within CRW’s Renewal, Replacement, and Redemption Fund. Currently, there is no minimum level of reserves required to be maintained in the Wastewater Revenue Fund. However, the financial forecast included in this report for the Wastewater Revenue Fund includes a minimum operating reserve target of 180 days of O&M expenses. CRW’s O&M expenses were projected to range from approximately \$11.8 million to \$13.3 million from FY 2017 through FY 2021,

which correspond to annual minimum reserve targets that range between approximately \$5.8 million to \$6.5 million over the forecast period, as shown in Figure 3-2.

**Figure 3-2:
Projected Year-End Target Reserve Balances**



The amount of unrestricted and available cash in the Wastewater Revenue Fund as of the beginning of FY 2017 was projected to be approximately \$17.1 million. This amount was estimated based on the amount of working capital attributable to the wastewater system as reported in CRW's FY 2015 audited financial statements. This amount was adjusted by actual revenues and expenditures (through July 2016) and projected revenues and expenditures (for August to December 2016) in FY 2016, as provided by CRW, to derive the beginning FY 2017 cash balance in the Wastewater Revenue Fund.

3.3.1.2 Renewal, Replacement, and Redemption Fund

The wastewater system also includes a Renewal, Replacement, and Redemption Fund. Cash remaining from the Wastewater Revenue Fund after funding the Operating Account and the payment of debt service are "swept" into this fund. In addition to extraordinary operating expenses, expenditures related to capital additions or other liabilities solely allocable to the wastewater system may be paid from this fund. In addition, outstanding bonds may be redeemed or purchased with monies from this fund. As of September 2016, the balance of this fund was \$8,991,451. There is no minimum amount of cash targeted to be maintained in this fund and it should be noted that the calculated wholesale rates and the proposed retail rates did not assume the use of monies from this fund.

3.3.2 Debt Service Coverage

Debt service coverage is the amount of net operating revenue (operating revenue less operating expenditures) available to fund annual principal and interest payments on outstanding debt. Currently, CRW's outstanding debt related to the wastewater system is comprised of the 1998 PENNVEST loan, the

2009 PENNVEST loan, the Series 2014B Revenue Bonds, and the 2014 PENNVEST loan. The projected annual debt service payments were provided by CRW's financial advisor, PRAG. In addition, new debt was assumed to be incurred over the forecast period to fund future capital project costs as described in Section 3.5.

The required level of debt service coverage on outstanding debt is described in Article V, Section 501 (a) of the Trust Indenture² (the "Wastewater Trust Indenture") and is summarized below.

"The Authority covenants that (a) it has adopted and will charge, maintain and collect throughout its service area so long as any Bonds remain Outstanding and funds for their payment have not been provided, service rates, rents and other charges, which (after making due and reasonable allowances for prompt payment discounts, if any, contingencies and a margin of error in the estimates), shall generate Pledged Revenues (exclusive of Assessment Revenues, including connection and tapping fees which constitute Pledged Revenues) which shall be sufficient in each Fiscal Year to provide funds to pay (1) the Operating Expenses of the Authority, (2) an amount not less than 110% of the Debt Service Requirements with respect to its Outstanding Parity Obligations in such Fiscal Year, (3) any amount required to replenish the Debt Service Reserve Fund in full and (4) funds sufficient to pay the amount due in such Fiscal Year on all Subordinated Debt."

Therefore, based on the provisions of the Wastewater Trust Indenture and to place CRW in a strong financial position in regard to debt service coverage, the debt service coverage target was recommended by PRAG at a level of 1.25 times or greater, with respect to debt service related to all senior debt. Senior lien debt was assumed to include all current and future Revenue Bond issues and all existing PENNVEST loans.

3.4 Wastewater Revenue and Expense Projections

The projection of wastewater O&M expenses over the forecast period was prepared based on preliminary budget figures for FY 2017. In general, O&M expenses were comprised of costs related to salaries and wages, employee benefits, insurance, utilities, chemicals, professional services, and general administrative costs. In addition, O&M expenses also included administrative costs of CRW, in the amount of approximately \$2.8 million in FY 2017, which have been allocated to the wastewater system. Individual O&M expenses were classified as labor, benefits, insurance, chemicals, utilities, or general and administrative costs, and escalated in future years based on the corresponding escalation factor. The escalation factors for each of the expense classifications are provided in Table 3-2 and were developed based on discussions with CRW staff.

² Trust Indenture, dated March 1, 2014 between the Harrisburg Authority and the Manufacturers and Traders Trust Company as Trustee.

**Table 3-2:
O&M Cost Escalation Factors**

Expense Classification	Escalator
Labor	3.0%
Benefits	6.0%
Insurance	3.0%
Chemicals	4.0%
Utilities	3.0%
Legal	5.0%
General	2.8%

Capital improvement projects and expenditures related to minor capital purchases were escalated at a rate of 3.0 percent per year.

CRW's non-rate revenues were comprised of penalties for late payment, sludge handling charges, electricity sales, pretreatment fees, interest income, and other miscellaneous revenues. All non-rate revenues, with the exception of interest income, were expected to remain constant over the forecast period; therefore, these items were not escalated in future years. Interest income was calculated in each year based on the average annual balance in the Wastewater Revenue Fund and an interest earnings rate of approximately 0.3 percent per year.

3.5 Capital Plan

The projection of wastewater system capital project expenditures was based on capital project costs summarized in the 2016 Consulting Engineer's Annual Report for the wastewater system and planning level projections of capital project costs in future years, as provided by CRW. The annual capital project costs relating to collection, conveyance, pump station improvements, treatment plant, and the Long-Term Control Plan, as well as other miscellaneous capital project costs anticipated to be incurred over the forecast period, are shown in Table 3-3.

**Table 3-3:
Wastewater System Capital Plan**

Description	FY2017	FY2018	FY2019	FY2020	FY2021
Collection	\$ 10,794,750	\$ 11,762,600	\$ -	\$ -	\$ -
Conveyance	8,244,500	1,900,350	1,909,620	2,130,818	1,322,473
Pump Station Improvements	-	5,716,500	13,022,548	218,545	-
Wastewater Treatment Plant	9,415,530	7,673,500	312,252	1,414,346	331,268
Long-Term Control Plan	2,328,773	462,236	253,314	260,914	268,741
Miscellaneous	1,677,500	463,500	-	-	-
Total	\$ 32,461,053	\$ 27,978,686	\$ 15,497,733	\$ 4,024,623	\$ 1,922,482

Note: Capital project costs shown in this table were provided in 2017 dollars and escalated at a rate of 3.0 percent per year in future years in the financial projections.

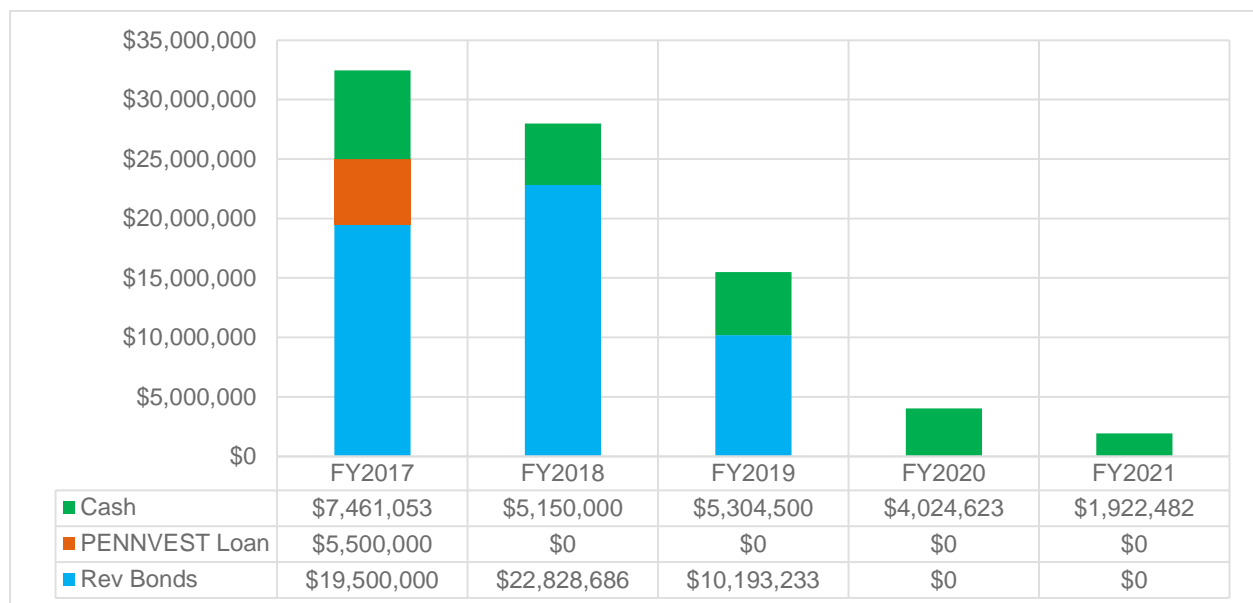
3.5.1 Capital Project Funding

A summary of the funding sources for projected capital project costs is shown in Figure 3-3. Based on discussions with CRW management and CRW's financial advisor, PRAG, the capital project expenditures in FY 2017, as shown in Table 3-3, were assumed to be funded with cash (generated from current

revenues or from unrestricted cash on-hand), a new 2017 PENNVEST loan, and a new Revenue Bond issue in FY 2017. The Revenue Bond issue in FY 2017 was assumed with level annual debt service, an annual interest rate of 5.0 percent, and a term of 30 years. The 2017 PENNVEST loan was assumed to hold a subordinate claim to the net revenues of the system, and was assumed with level annual debt service, an annual interest rate of 1.5 percent, and a repayment term of 20 years.

Additional new Revenue Bonds were also assumed to be issued in FY 2018 and FY 2019. These issues were assumed with level annual debt service, an annual interest rate of 5.0 percent, and a term of 30 years.

**Figure 3-3:
Capital Project Funding Sources**



Note: Capital project costs shown in this table were provided in 2017 dollars and escalated at a rate of 3.0 percent per year in future years in the financial projections.

3.6 Wholesale Rate Calculation

3.6.1 Cost Categorization

The rate revenue requirement for FY 2017 was allocated to Treatment, Conveyance, Collection, and City-Only cost categories in order to calculate the Suburban wholesale rates in FY 2017. The costs included in these categories are discussed below:

- Treatment – Costs are related to wastewater treatment and are shared by all users of the system.
- Conveyance – Costs are related to the use of conveyance facilities and are shared by all users of the system, except customers whose wastewater flow is conveyed through the Steelton conveyance system.
- Collection – Costs are related to the City’s collection system and only apply to City customers.

- City-Only – Costs are related to system costs or revenues associated with City customers and are not associated with other users of the system.

In addition, administrative costs were first categorized into a separate administrative cost category and then subsequently re-allocated among the four categories listed above.

The capital revenue requirement in FY 2017 included costs attributable to existing debt service, new debt service, and cash-funded capital. Project costs that were assumed to be funded with the 2017 PENNVEST loan included design and construction costs related to the headworks screening projects. Therefore, the resulting annual debt service on this loan in FY 2017 was allocated to the “Treatment” cost category. Projects that were assumed to be funded with the new Revenue Bond issue in FY 2017 or from cash on hand and current revenues included the following:

- Projects related to cogeneration, digester, primary clarifier, solids thickening improvement, and the cryogenic oxygen distillation facility, as well as a bio-solids master plan. These projects were allocated to the “Treatment” cost category.
- Projects related to repair work on the Paxton Creek, Asylum Run, and Arsenal Boulevard sewer lines. These projects were allocated to the “Conveyance” cost category.
- Various collection system repair and replacement projects. These projects were allocated to the “Collection” cost category.
- Projects related to the Nine Minimum Controls Plan, Long-Term Control Plan compliance, combined sewer overflow outfall remediation, as well as wet weather related projects. These projects were allocated one third each to the “Treatment,” “Conveyance,” and “Collection” cost categories.
- Storm water related projects were allocated to the “Collection” cost category.
- Other miscellaneous projects, such as vehicle purchases and extraordinary repair and replacement work, were allocated one third each to the “Treatment”, “Conveyance”, and “Collection” cost categories.

A summary of the resulting revenue requirement categorizations for FY 2017 is provided in Table 3-4. The O&M and capital rate revenue requirements represent annual O&M and capital costs less their respective miscellaneous revenue offsets. The amount offset by miscellaneous revenue was approximately \$625,000, which was largely comprised of revenues received related to penalties, sludge handling, sale of electric, interest income, and pretreatment fees.

**Table 3-4:
Summary of Cost Categorization Results**

Description	Treatment	Conveyance	Collection	City-Only	Total
Operating Revenue Requirement	\$ 5,919,382	\$ 2,186,936	\$ 1,814,531	\$ 1,407,860	\$11,328,709
Allocation %	52%	19%	16%	12%	100%
Capital Revenue Requirement	\$ 4,374,247	\$ 3,988,439	\$ 4,043,378	\$ 200,000	\$12,606,065
Allocation %	35%	32%	32%	2%	100%
Total	\$10,293,629	\$ 6,175,375	\$ 5,857,909	\$ 1,607,860	\$23,934,774

3.6.2 Cost Allocation

The categorized costs were allocated to City and Suburban customers based on each customer's proportionate usage of the system. A summary of the wastewater flows attributable to City customers and to each of the Suburban customers is shown in Table 3-5.

**Table 3-5:
Customer Units of Service**

Customer Class	Non-Metered Consumption EDU's	Non-Metered Consumption (1,000 gal.) ¹	Metered Consumption (1,000 gal.)	Total Consumption (1,000 gal.)	Extraneous Wastewater Flow ² (1,000 gal.)	Total Wastewater Volume (1,000 gal.)
City of Harrisburg	-	-	1,666,220	1,666,220	1,261,825	2,928,045
Penbrook Borough	1,348	87,604	10,120	97,724	74,006	171,729
Paxtang Borough	667	43,355	5,322	48,677	36,863	85,540
Swatara Township - via Harrisburg	-	-	394,940	394,940	299,087	694,028
Swatara Township - via Steelton	-	-	52,894	52,894	40,057	92,951
Lower Paxton Township	13,262	862,030	180,218	1,042,248	789,292	1,831,540
Susquehanna Township	10,889	707,790	172,850	880,641	666,907	1,547,548
Steelton Borough	-	-	116,155	116,155	87,964	204,119
Total	26,166	1,700,779	2,598,719	4,299,499	3,256,001	7,555,500

Source: Based on FY 2015 billing data provided by the City.

¹One EDU was assumed to equal 65,000 gallons of residential non-metered consumption per year.

²Calculated as the difference between total annual wastewater flow volume received at the AWTF in FY 2015 less billed volume for FY 2015. Extraneous flow volumes were allocated among customer classes based upon their proportionate billed volume amounts.

The units of service for flat rate customers with non-metered consumption was historically assumed to be 65,000 gallons per year. As shown in Table 3-6, the five year average of consumption per residential account, from 2011 to 2015, for customers located in the City and in the Suburban communities receiving water service from CRW, was approximately 45,000 gallons per year. This is lower than the historical assumption used by CRW for its flat rate customers. Given that the historical data indicates that billed water consumption per equivalent dwelling unit ("EDU") is less than what has been assumed, CRW should consider adjusting its usage assumptions for flat rate customers.

**Table 3-6:
Historical Water Consumption per Residential Account**

Year	Billed Water Consumption (Gallons)	Number of Customers	Annual Billed Water Consumption per Customer (Gallons)
2011	738,166,914	18,426	40,061
2012	835,840,867	18,454	45,293
2013	829,975,715	18,456	44,971
2014	766,619,649	18,440	41,574
2015	987,569,000	18,728	52,732
5-Year Historical Average			44,926

Source: Continuing Disclosure Annual Report for Capital Region Water for the fiscal year ending December 31, 2015.

The units of service were based on metered and billed water consumption, which implicitly assumes that inflow and infiltration (“I&I”) flow volumes are proportional to the billed water consumption amounts. As a result, I&I costs were also implicitly distributed proportionally to billed flows. CRW continues to collect wastewater flow data at various locations throughout the system. In the future, as this flow data becomes available and is validated, CRW should test the validity of this assumption and adjust the allocation of I&I costs as warranted by the data.

The units of service were distributed to the four cost categories based on each customer’s use of the wastewater system. This is shown in Table 3-7.

**Table 3-7:
Allocation of Units of Service to Cost Categories**

Customer Class	Allocation (%)			
	Treatment	Conveyance	Collection	City-Only
City of Harrisburg	100%	100%	100%	100%
Penbrook Borough	100%	100%	0%	0%
Paxtang Borough	100%	100%	0%	0%
Swatara Township - via Harrisburg	100%	100%	0%	0%
Swatara Township - via Steelton	100%	0%	0%	0%
Lower Paxton Township	100%	100%	0%	0%
Susquehanna Township	100%	100%	0%	0%
Steelton Borough	100%	0%	0%	0%

The unit cost of service was calculated by dividing the categorized costs by the units of service applicable to each cost category. The unit cost of service for O&M and capital costs is shown in Table 3-8.

**Table 3-8:
Unit Cost of Service**

Description	Treatment	Conveyance	Collection	City-Only
Units of Service (1,000 gallons)	4,299,499	4,130,449	1,666,220	1,666,220
Operating Revenue Requirement	\$ 5,919,382	\$ 2,186,936	\$ 1,814,531	\$ 1,407,860
Capital Revenue Requirement	4,374,247	3,988,439	4,043,378	200,000
Sources and Uses	-	-	-	(5,943,011)
Operating Unit Cost (\$/1,000 gallons)	\$1.38	\$0.53	\$1.09	\$0.84
Capital Unit Cost (\$/1,000 gallons)¹	\$1.02	\$0.97	\$2.43	-\$3.45

¹The negative capital unit cost in the “City-Only” category reflects uses of cash and other adjustments.

3.6.3 Wholesale Rate Calculation

The FY 2017 wholesale rates were calculated for Suburban customers based on the calculated unit cost of service for each cost category and each customer’s use of the wastewater system. For example, the City does not provide collection service to Suburban customers. Therefore, the wholesale rates exclude the unit cost for the “Collection” category. Similarly, a separate wholesale rate is shown for customers discharging wastewater through the Steelton conveyance system, as the wholesale rate for these customers excludes the unit rate associated with the costs incurred by CRW to convey wastewater to its treatment plant.

The calculated wholesale rates for FY 2017 for Suburban customers and for customers using the Steelton conveyance system are shown in Table 3-9. The O&M and capital components of the rates, by cost category, are also shown in this table. Additional wholesale rate calculation details are provided in Appendix A of this report. The table also shows an estimated unit rate adjustment for a “true-up” of the FY 2016 wholesale rate to both Suburban and Steelton customers. The downward adjustment in the calculated Suburban rate represents a per unit estimate of the surplus revenue generated from Suburban and Steelton customers in FY 2016 above the estimated actual cost of service. Note that while no true-up provision is included in the Inter-Municipal Agreement between CRW and the Suburban communities, a true-up calculation has been included in the rate calculations at the direction of CRW.

**Table 3-9:
Calculated Wholesale Rates (FY 2017)**

Description	Customer Class		
	City	Suburbs ¹	Steelton ²
O&M Rate			
Treatment	\$1.38	\$1.38	\$1.38
Conveyance	\$0.53	\$0.53	\$0.00
Collection	\$1.09	\$0.00	\$0.00
Other	<u>\$0.84</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total O&M Rate (\$/1,000 gallons)	\$3.84	\$1.91	\$1.38
Capital Charge (Lease Rental Rates) ³			
Treatment	\$1.02	\$1.17	\$1.17
Conveyance	\$0.97	\$1.11	\$0.00
Collection	\$2.43	\$0.00	\$0.00
Other ⁴	<u>-\$1.72</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total Capital Charge (\$/1,000 gallons)	\$2.69	\$2.28	\$1.17
Total Rate (\$/1,000 gallons)	\$6.53	\$4.19	\$2.55
Less: Prior Year True-Up	<u>\$0.00</u>	<u>-\$0.78</u>	<u>-\$0.44</u>
Adjusted Total Rate (\$/1,000 gal.)	\$6.53	\$3.41	\$2.11
Existing Rate (\$/1,000 gal.)	\$6.05	\$3.17	\$1.96
Percent Increase / Decrease	8.0%	7.5%	7.5%

¹Includes Penbrook and Paxtang Borough, Swatara, Lower Paxton, and Susquehanna Township.

²Steelton Borough and a portion of Swatara do not share in the conveyance system costs.

³Reflects a 15 percent adjustment to the unit costs per Section 2b of Schedule A of the Inter-Municipal Agreement.

⁴Uses of cash and other adjustments.

The true-up amount was estimated by updating the FY 2016 budgeted costs used to calculate the existing (FY 2016) wholesale rates with the projected actuals for FY 2016, as provided by CRW. The FY 2016 projected actuals include actual revenues and expenses for the first seven months of the fiscal year and forecasted amounts for the remaining five months. In addition, the FY 2014 units of service were updated with billing data from FY 2015.

Based on the true-up calculations, the existing FY 2016 wholesale rates were projected to generate approximately \$1.9 million and \$74,000 in excess revenue from Suburban and Steelton customers, respectively. These amounts were divided by the projected units of service in FY 2017 for Suburban and Steelton customers to generate a credit of \$0.78 per 1,000 gallons for Suburban customers and \$0.44 per 1,000 gallons for Steelton customers.

It should be noted that the wholesale rates calculated as part of this report were based on one EDU representing 65,000 gallons of wastewater volume per year. However, if an estimate of 45,000 gallons per EDU was used to represent the annual wastewater volume of flat rate Suburban customers, the adjusted total unit rate charged to Suburban and Steelton customers would be \$4.00 and \$2.46, respectively, in FY 2017, with the true-up adjustment.

3.7 Wastewater System Rate Revenue Requirements

The calculation of the rate revenue requirements for City customers is shown in Table 3-10. Rate revenue requirements include O&M expenses, debt service, minor capital outlays, and cash funded capital project expenditures. Non-rate revenues (i.e. interest earnings, penalties, sludge handling, sale of electric, interest income, pretreatment fees, and other miscellaneous revenues) were subtracted from the expenses in order to determine the annual wastewater rate revenue requirement. Wholesale rate revenue, which was estimated by multiplying the wholesale rates calculated in Section 3.6 by the estimated amount of Suburban customer wastewater flow in FY 2017, was included in the calculation in Table 3-10 (Line 7) and serves to offset the City's rate revenue requirements. In addition, when positive, the Sources and Uses of Funds amounts (Line 10) represent the use of cash from current revenues to fund capital project costs. When negative, these amounts represent the accumulation of cash to be carried over into future years.

**Table 3-10:
Wastewater Rate Revenue Requirements for City Customers**

Line No.	Description	Fiscal Year Ending December 31					
		Projected FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
1	Operation and Maintenance Expense	\$12,382,736	\$11,766,960	\$12,100,926	\$12,474,720	\$12,862,462	\$13,264,664
	Capital Expenditures						
2	Debt Service	\$ 1,642,915	\$ 5,145,512	\$ 6,668,393	\$ 7,391,436	\$ 7,391,618	\$ 7,401,016
3	Minor Capital Outlay	178,069	186,090	191,673	197,423	203,346	209,446
4	Pay-Go Cash Funded Capital	<u>3,838,231</u>	<u>7,461,053</u>	<u>5,150,000</u>	<u>5,304,500</u>	<u>4,024,623</u>	<u>1,922,482</u>
5	Total Capital Expenditures	\$ 5,659,215	\$12,792,655	\$12,010,066	\$12,893,359	\$11,619,586	\$ 9,532,943
6	Total O&M and Capital Expenses	\$18,041,952	\$24,559,614	\$24,110,992	\$25,368,078	\$24,482,048	\$22,797,608
	Less Revenue From Other Sources						
7	Wholesale Revenue	\$ 8,150,659	\$ 8,750,993	\$10,671,300	\$11,940,228	\$11,195,684	\$10,227,323
8	Miscellaneous Revenue	733,112	582,500	582,500	582,500	582,500	582,500
9	Interest Income	74,466	42,341	29,298	22,425	19,354	19,641
10	Sources & Uses of Funds	<u>446,958</u>	<u>5,943,011</u>	<u>2,751,807</u>	<u>1,830,421</u>	<u>216,636</u>	<u>(407,423)</u>
11	Total Revenue from Other Sources	\$ 9,405,195	\$15,318,844	\$14,034,905	\$14,375,574	\$12,014,174	\$10,422,041
	Adjustment for Revenue From Other Sources						
12	Operation and Maintenance Expenses	\$ 3,424,499	\$ 2,391,126	\$ 817,828	\$ (70,434)	\$ 1,064,923	\$ 2,435,201
13	Capital Expenses	<u>5,212,258</u>	<u>6,849,644</u>	<u>9,258,259</u>	<u>11,062,938</u>	<u>11,402,950</u>	<u>9,940,366</u>
14	Total Rate Revenue Requirement	\$ 8,636,757	\$ 9,240,770	\$10,076,087	\$10,992,504	\$12,467,874	\$12,375,566
15	Actual / Projected Rate Revenue Increase	0.0%	8.0%	10.0%	10.0%	14.3%	0.0%

As shown in Table 3-10 (Line 15), a rate increase in annual City retail rate revenue is anticipated to be needed each year, from FY 2017 through FY 2020, to fund the annual costs of the system. The rate revenue increase is projected to be 8.0 percent in FY 2017, 10.0 percent in FY 2018 and FY 2019, and 14.3 percent in FY 2020. No rate revenue increase is projected to be needed in FY 2021.

3.8 Proposed City Retail and Wholesale Wastewater Rates

The proposed City retail wastewater rates for FY 2017 through FY 2021 are shown in Table 3-11 and are based on the existing retail rates and the recommended rate revenue increases shown in Table 3-10.

**Table 3-11:
Proposed Retail Wastewater Rates**

Description	Existing FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
<u>Volume (\$/1,000 gallons)</u>						
Sewer Utilization Charge	\$5.26	\$5.68	\$6.25	\$6.87	\$7.86	\$7.86
Sewer Maintenance Charge	<u>\$0.79</u>	<u>\$0.85</u>	<u>\$0.94</u>	<u>\$1.03</u>	<u>\$1.18</u>	<u>\$1.18</u>
Total	\$6.05	\$6.53	\$7.19	\$7.91	\$9.04	\$9.04

As an alternative to the current rate structure, which recovers the required rate revenue solely from a volumetric charge, CRW could consider adding a fixed charge to recover a portion of the capital costs of the system on a fixed revenue basis. Some wastewater utilities recover a portion of the cost of treating I&I from a fixed charge and a portion from a volume charge to reflect that the number of connections in the wastewater system reflects the size of the system and the greater potential for infiltration through poor joints and cracked pipes, and the inflow through roof and foundation drains. In addition, some wastewater utilities recover a portion of annual debt service with a fixed charge to better match fixed costs with a fixed revenue stream. We understand that CRW does not currently wish to modify its existing wastewater rate structure; however, in the future, it is recommended that CRW consider these alternatives further.

The calculated wholesale rates for FY 2017 and the projected wholesale rates for FY 2018 through FY 2021 are shown in Table 3-12. The rates shown in FY 2017 represent the adjusted total rates for that year. The rates projected for FY 2018 through FY 2021 were based on projected O&M costs, debt service, and capital project expenditures in these years, as well as FY 2015 billing data, as no growth or decline in billed volume for Suburban wholesale customers was assumed in future years.

**Table 3-12:
Calculated (FY 2017) and Projected (FY 2018-2021) Suburban Wastewater Rates**

Description	Existing FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
<u>Suburban Customers (\$/1,000 gal.):</u>						
Calculated Rate	\$3.17	\$4.19	\$4.13	\$4.67	\$4.35	\$3.97
True-Up Adjustment	<u>\$0.00</u>	<u>-\$0.78</u>	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total Adjusted Rate	\$3.17	\$3.41	\$4.13	\$4.67	\$4.35	\$3.97
<u>Steelton Customers (\$/1,000 gal.):</u>						
Calculated Rate	\$1.96	\$2.55	\$2.94	\$2.49	\$2.85	\$2.65
True-Up Adjustment	<u>\$0.00</u>	<u>-\$0.44</u>	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total Adjusted Rate	\$1.96	\$2.11	\$2.94	\$2.49	\$2.85	\$2.65

The significant increase in the Suburban rate in FY 2019 is largely due to approximately \$14.1 million in conveyance system related projects that are scheduled to be completed in that year, which include Front Street Pump Station improvements, Spring Creek Pump Station improvements, and Front Street interceptor repairs. In addition, the significant increase in the Steelton rate in FY 2018 is largely

attributable to an increase in treatment related capital projects that are scheduled to be completed in that year, which include approximately \$1.4 million and \$5.8 million for digester improvements and solids thickening improvements, respectively. The significant increase in the Steelton rate in FY 2020 is mainly the result of year over year increases to treatment related O&M costs, as well as a higher proportion of treatment related capital projects in that year.

Based on the recommended rate revenue increases shown in Table 3-11, a cash flow forecast for the wastewater system for FY 2017 through FY 2021 was prepared and is shown in Table 3-13. The cash flow forecast shows cash on hand of at least 180 days within the Wastewater Revenue Fund and debt service coverage levels of at least 1.41 times the debt service related to current and future outstanding senior lien debt. It should be noted that the ending cash balance on Line 37 does not include cash held within the Renewal, Replacement, and Redemption Fund or any other restricted cash of the system, as the financial forecast did not assume use of these monies to fund O&M or capital costs in any year of the forecast period.

**Table 3-13:
Wastewater System Cash Flow Projection**

Line No.	Description	Actual FY2015	Budgeted FY2016	Projected FY2016	FY2017	Fiscal Year Ending December 31st FY2018	FY2019	FY2020	FY2021
Revenues									
1	Sales to Public Authorities	\$ 7,678,698	\$ 8,151,558	\$ 8,150,659	\$ 8,750,993	\$10,671,300	\$11,940,228	\$11,195,684	\$10,227,323
2	Sales to City Customers	8,205,734	8,354,525	8,636,757	9,240,770	10,076,087	10,992,504	12,467,874	12,375,566
3	Penalties	195,187	120,000	324,512	275,000	275,000	275,000	275,000	275,000
4	Sludge Handling Charges	262,519	300,000	138,100	140,000	140,000	140,000	140,000	140,000
5	Electricity Sales	152,506	142,000	108,156	108,000	108,000	108,000	108,000	108,000
6	Grant Funds	46,450	-	62,579	-	-	-	-	-
7	Interest Income	73,638	77,542	74,466	42,341	29,298	22,425	19,354	19,641
8	Other Revenue	111,031	106,900	99,765	59,500	59,500	59,500	59,500	59,500
9	Total Revenues	\$16,725,763	\$17,252,525	\$17,594,994	\$18,616,604	\$21,359,185	\$23,537,658	\$24,265,412	\$23,205,030
Operating Expenses									
Personnel:									
10	Management	\$ 468,163	\$ 499,405	\$ 449,768	\$ 563,970	\$ 585,957	\$ 608,907	\$ 632,867	\$ 657,889
11	Treatment	1,465,691	1,356,799	1,458,625	1,455,338	1,513,820	1,574,946	1,638,849	1,705,668
12	Maintenance	559,488	579,459	569,698	617,154	642,417	668,844	696,492	725,425
13	Field Maintenance	572,331	826,568	737,732	1,014,841	1,055,635	1,098,274	1,142,851	1,189,462
14	Other	59,466	325,000	333,332	350,000	350,000	350,000	350,000	350,000
Operations:									
15	Management	597,475	613,294	505,646	582,449	572,529	589,450	606,872	624,809
16	Treatment	1,844,965	3,042,800	2,489,756	2,488,784	2,558,239	2,630,325	2,705,068	2,782,509
17	Maintenance	261,217	315,275	146,289	190,472	195,805	201,288	206,924	212,718
18	Field Maintenance	195,499	1,217,382	1,857,809	356,306	361,834	367,570	373,510	379,656
19	Other	120,787	426,500	369,685	823,500	848,714	874,742	901,612	929,353
Other Operating Expenses:									
20	CRW Administrative Fund Expense	2,464,472	2,877,419	2,877,419	2,759,571	2,836,839	2,916,270	2,997,926	3,081,868
21	Shared Services	360,219	532,000	532,000	520,000	534,560	549,528	564,914	580,732
22	Total Operating Expenses	\$ 8,969,773	\$12,611,901	\$12,327,759	\$11,722,384	\$12,056,350	\$12,430,144	\$12,817,886	\$13,220,088
Other Expenses									
23	Minor Capital Outlay	\$ 25,259	\$ 35,360	\$ 178,069	\$ 186,090	\$ 191,673	\$ 197,423	\$ 203,346	\$ 209,446
24	CRW Bank and Trustee Fees	33,335	44,575	54,977	44,576	44,576	44,576	44,576	44,576
Debt Service									
Existing Debt Service									
25	1998 PENNVEST Loan	\$ 94,584	\$ 94,588	\$ 94,588	\$ 88,965	\$ -	\$ -	\$ -	\$ -
26	2009 PENNVEST Loan	104,172	110,802	110,802	114,120	114,120	114,120	114,120	114,120
27	Series 2014 Revenue Bonds, Series B	543,756	844,261	844,261	2,055,711	2,055,368	2,058,553	2,058,735	2,060,088
28	2014 PENNVEST Loan	-	593,264	593,264	1,186,527	1,186,527	1,186,527	1,186,527	1,194,571
New Debt Service									
29	Revenue Bonds	-	716,390	-	1,377,114	2,989,303	3,709,162	3,709,162	3,709,162
30	2017 PENNVEST Loan	-	-	-	323,075	323,075	323,075	323,075	323,075
31	Total Debt Service	\$ 742,512	\$ 2,359,305	\$ 1,642,915	\$ 5,145,512	\$ 6,668,393	\$ 7,391,436	\$ 7,391,618	\$ 7,401,016
32	Capital Projects Funded with Cash	\$ 3,618,608	\$ 4,068,281	\$ 3,838,231	\$ 7,461,053	\$ 5,150,000	\$ 5,304,500	\$ 4,024,623	\$ 1,922,482
33	Total Revenue Requirements	\$13,389,487	\$19,119,422	\$18,041,952	\$24,559,614	\$24,110,992	\$25,368,078	\$24,482,048	\$22,797,608
34	Revenues Over (Under) Expenditures	\$ 3,336,276	\$ (1,866,897)	\$ (446,958)	\$ (5,943,011)	\$ (2,751,807)	\$ (1,830,421)	\$ (216,636)	\$ 407,423
35	Beginning Balance	\$14,195,688	\$17,531,964	\$17,531,964	\$17,085,006	\$11,141,995	\$ 8,390,189	\$ 6,559,768	\$ 6,343,132
36	Revenues Over (Under) Expenditures	3,336,276	(1,866,897)	(446,958)	(5,943,011)	(2,751,807)	(1,830,421)	(216,636)	407,423
37	Ending Balance	\$17,531,964	\$15,665,067	\$17,085,006	\$11,141,995	\$ 8,390,189	\$ 6,559,768	\$ 6,343,132	\$ 6,750,554
38	Ending Balance - Days O&M	711	452	504	346	253	192	180	186
39	Target Reserve Balance (180 days O&M)	4,439,889	6,241,550	6,106,555	5,802,884	5,967,580	6,151,916	6,343,132	6,541,478
40	Projected City Rate Increase	0.0%	0.0%	0.0%	8.0%	10.0%	10.0%	14.3%	0.0%
41	DSC (Senior debt, 1.10x DS required)	10.34	1.95	3.13	1.43	1.46	1.57	1.62	1.41
42	DSC (All debt, 1.0x DS required)	10.34	1.95	3.13	1.34	1.39	1.50	1.55	1.35
43	Capital Projects - Cash Funded				\$ 7,461,053	\$ 5,150,000	\$ 5,304,500	\$ 4,024,623	\$ 1,922,482
44	Capital Projects - Funded with New Debt				25,000,000	22,828,686	10,193,233	-	-
45	Capital Projects - Total				\$32,461,053	\$27,978,686	\$15,497,733	\$ 4,024,623	\$ 1,922,482

4 WATER AND WASTEWATER BILL COMPARISON

CRW's proposed water and wastewater rates were compared to the rates currently in effect for other utilities within the region by calculating and comparing estimated water and wastewater bills for residential, commercial, and industrial customers. In addition to CRW, the following utilities were included in the comparison of estimated water and wastewater bills:

- City of Pittsburgh, PA
- City of Altoona, PA
- City of Williamsport, PA
- City of Bethlehem, PA
- City of Philadelphia, PA
- City of Allentown, PA
- Pennsylvania American Water
- City of Erie, PA
- City of Lancaster, PA
- United Water (Water only)
- Steelton Water Authority (Water only)

Monthly bills were estimated for residential, commercial, and industrial customers based on an assumed amount of water consumption, wastewater flow, and meter size. Table 4-1 shows the assumed amount of monthly water consumption, monthly wastewater flow, and meter size for each customer type. The amount of wastewater flow was assumed to be equal to the amount of water consumption for each customer type.

**Table 4-1:
Customer Usage and Meter Size Characteristics**

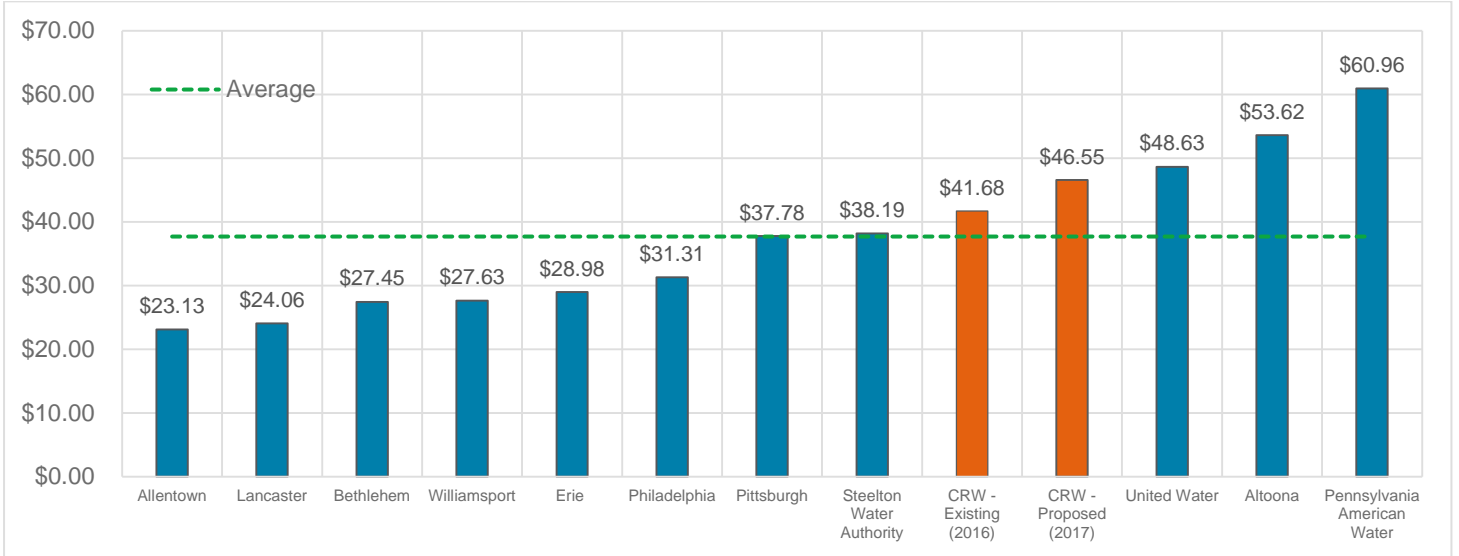
Customer Type	Monthly Usage (Gallons)	Monthly Usage (CCF)	Meter Size
Residential	4,500	6.02	5/8"
Commercial	50,000	66.84	1"
Industrial	500,000	668.40	4"

CCF = One hundred cubic feet

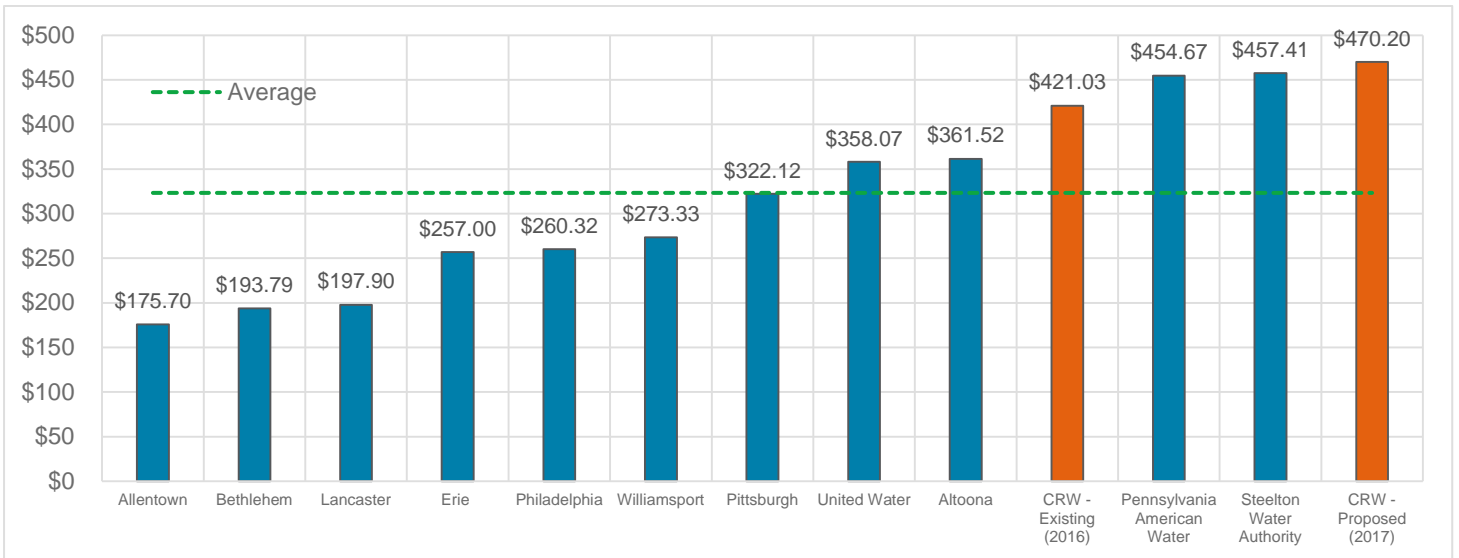
4.1 Water Bill Comparison

The comparison of estimated monthly water bills is shown by customer type in Figure 4-1, Figure 4-2, and Figure 4-3. CRW's existing water rates, as well as its proposed FY 2017 water rates, under Alternative 1, were included in each comparison. As mentioned in Section 2.7 of this report, Alternative 1 proposes a proportional increase to both the Ready to Serve Charge and the volume rate. In addition, a line representing the average of the estimated bills for all utilities included in the comparison is shown in each figure.

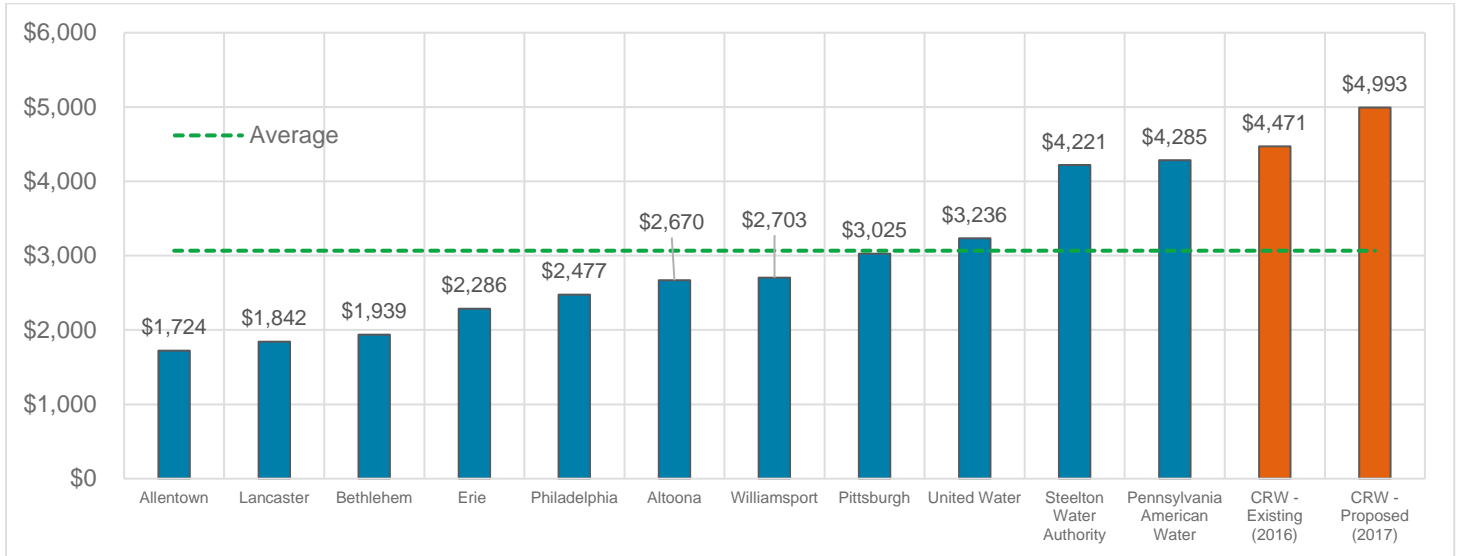
**Figure 4-1:
Estimated Water Bill Comparison - Residential**



**Figure 4-2:
Estimated Water Bill Comparison – Commercial**



**Figure 4-3:
Estimated Water Bill Comparison – Industrial**



As shown in Figure 4-1, CRW's existing and FY 2017 monthly bill for residential customers was more than the average of all utilities surveyed. The existing and FY 2017 monthly bills for commercial and industrial customers were also higher than the average of all utilities surveyed, as shown in Figure 4-2 and Figure 4-3. In addition, given the proposed Alternative 1 rates, CRW's estimated monthly residential bill was less than three other utilities, and its estimated monthly commercial and industrial bills were the highest of all the utilities surveyed.

CRW's proposed FY 2017 retail water rates were compared to the City of Harrisburg's median household income ("MHI") to provide a high-level indication of community financial capability. Based on the residential bill amount estimated using 4,500 gallons per month, the annual water bill projected in FY 2017 for a typical customer was estimated to be \$558.60 (\$46.55 x 12). According to the latest U.S. Census Bureau data, the MHI within the City of Harrisburg was \$32,476. Therefore, the estimated annual water bill is approximately 1.7 percent of the City's MHI. The United States Environmental Protection Agency ("U.S. EPA") considers annual water bills that are less than 2.5 percent of MHI to place a relatively low financial burden on the community.³

4.2 Wastewater Bill Comparison

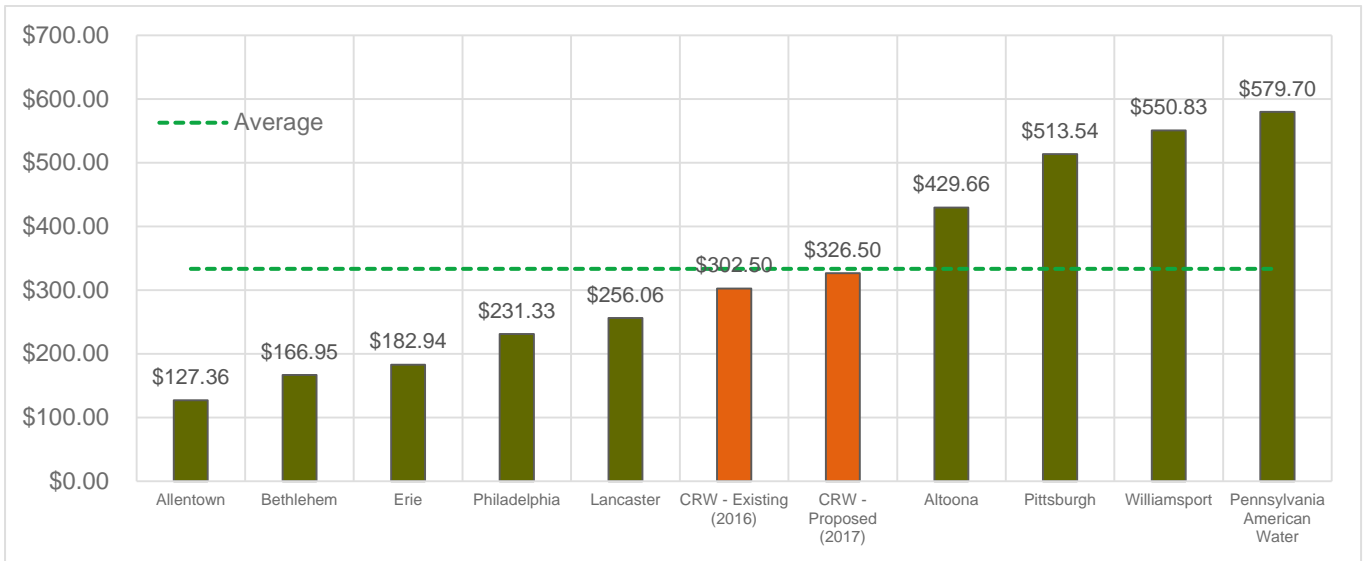
The comparison of estimated monthly wastewater bills is shown by customer type in Figure 4-4, Figure 4-5, and Figure 4-6. In addition, a line representing the average of all estimated bills for utilities included in the comparison is shown in each figure.

³ Affordability Assessment Tool for Federal Water Mandates, U.S. Conference of Mayors, American Water Works Association and Water Environment Federation, 2013.

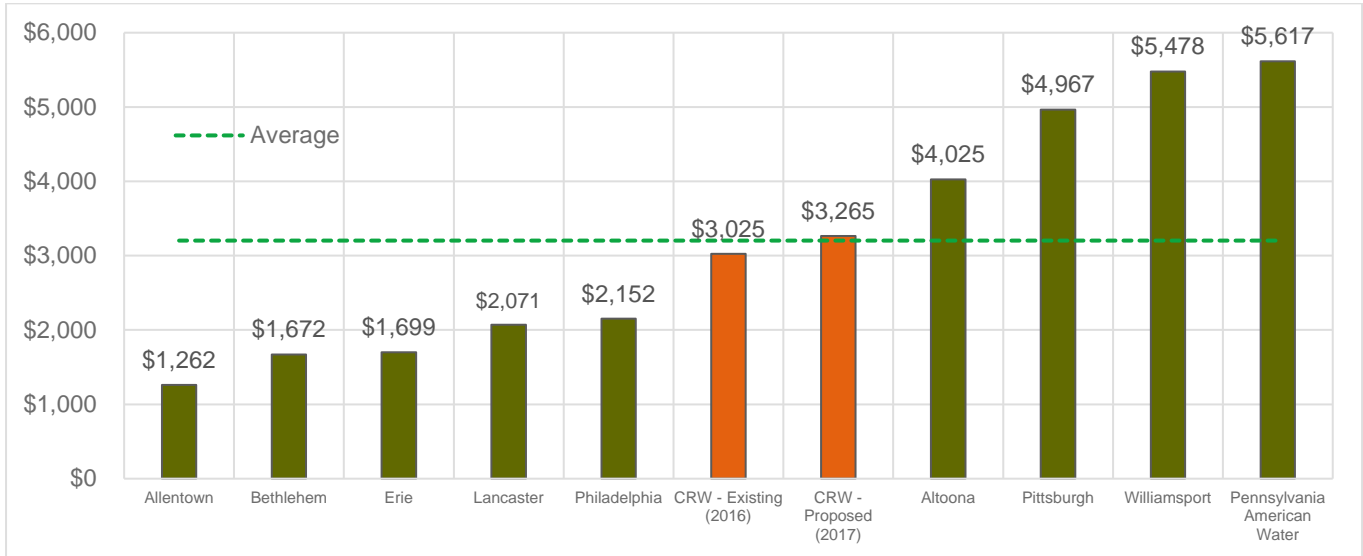
**Figure 4-4:
Estimated Wastewater Bill Comparison – Residential**



**Figure 4-5:
Estimated Wastewater Bill Comparison – Commercial**



**Figure 4-6:
Estimated Wastewater Bill Comparison – Industrial**



As shown in each of the figures, CRW's estimated monthly wastewater bills for both its existing and proposed retail rates for residential, commercial, and industrial customers were below the average estimated monthly bills of all utilities included in the survey, with the exception of CRW's industrial bill under the proposed FY 2017 retail rate. CRW's estimated residential bill based on the proposed FY 2017 rate was less than six other utilities that were surveyed, its commercial bill was less than four other utilities, and its industrial bill was also less than four other utilities that were surveyed.

CRW's proposed FY 2017 wastewater retail rates were also compared to the City of Harrisburg's MHI to provide a high level indication of community financial capability. Based on the residential bill amount estimated using 4,500 gallons per month, the projected annual wastewater bill for a typical retail customer was estimated to be \$352.68 ($\29.39×12). According to the latest U.S. Census Bureau data, the MHI within the City of Harrisburg was \$32,476. Therefore, the estimated annual wastewater bill is approximately 1.1 percent of the City's MHI. The U.S. EPA considers annual wastewater bills that are less than 2.0 percent to place a relatively low financial burden on the community.⁴

⁴ Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development, U.S. EPA Office of Water and Office of Wastewater Management, 1997.

5 CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions and recommendations of this rate study:

5.1 Water System

- A water rate revenue increase of 11.7 percent is recommended in FY 2017 to adequately fund the costs of the water system. Two water rate alternatives were prepared for CRW's consideration. Alternative 1 keeps the existing rate structure and applies the rate increases proportionally between the Ready to Serve Charge and the volumetric rate. Alternative 2 increases the Ready to Serve Charge and keeps the volume rate unchanged. Implementing higher fixed charges is a trend in the industry in order to improve revenue stability and respond to trends of declining water consumption.
- If CRW selects Alternative 1, then it is recommended that the monthly Ready to Serve Charge for a customer with a 5/8" meter be increased from \$6.22 to \$6.95 per month, and the volume charge be increased from \$7.88 per 1,000 gallons to \$8.80 per 1,000 gallons at the beginning of fiscal year FY 2017. This rate structure alternative generates approximately 31 percent of rate revenues from the Ready to Serve Charge and approximately 69 percent from the volume rate.
- The recommended water rate increase in FY 2017 (under Alternative 1) would raise the typical residential bill by \$4.87 per month, from \$41.68 to \$46.55 assuming consumption of 4,500 gallons per month. This increase, if adopted, corresponds to a water rate increase of 11.7 percent for the typical residential customer. Water rate increases of 11.5 percent in FY 2018, 4.5 percent in FY 2019, 4.0 in FY 2020, and 4.4 percent in FY 2021 are anticipated to cover projected costs and to meet fiscal requirements and targets in these years.
- If CRW selects Alternative 2, then it is recommended that the monthly Ready to Serve Charge for a customer with a 5/8" meter be increased from \$6.22 to \$9.87 per month in FY 2017, and the volume charge be unchanged at \$7.88 per 1,000 gallons. This rate structure alternative generates approximately 41 percent of rate revenue from the Ready to Serve Charge in FY 2017. The proportion of rate revenue generated from this charge increases each year to reach 54 percent in FY 2021. Correspondingly, the volume rate generates 59 percent of rate revenue in FY 2017 and decreases each year to reach 46 percent in FY 2021.
- The recommended water rate increase in FY 2017 (under Alternative 2) would raise the residential bill for a typical customer consuming 4,500 gallons per month by \$3.65 per month, from \$41.68 to \$45.33. This increase, if adopted, corresponds to an 8.8 percent water rate increase for a typical residential customer, with higher rate increases on a percentage basis for customers with lower consumption than a typical customer.
- The decision to proceed with Alternative 1 or Alternative 2 should consider the stability of revenues, as well as the impact on customers. Alternative 2 provides more revenue stability since it generates a larger proportion of total revenue from the Ready to Serve Charge. However, under Alternative 2,

increasing the Ready to Serve Charge and not the volumetric rate will result in higher bill increases on a percentage basis than Alternative 1 for customers that consume less than 4,000 gallons of water per month.

- Based on the results of the rate comparison, CRW's proposed FY 2017 water rates were noted to be higher than most of the other utilities included in the comparison. For example, the monthly residential water bill based on proposed FY 2017 rates for a customer using 4,500 gallons per month was fourth highest among the 12 utilities that were surveyed. The monthly bill based on proposed rates for commercial customers using 50,000 gallons per month was the highest among the utilities that were surveyed, while the monthly bill based on proposed rates for industrial customers using 500,000 gallons per month was also the highest among the utilities that were surveyed.
- The FY 2017 water rates proposed under Alternative 1 were compared to the City of Harrisburg's MHI to provide a high level indication of community financial capability. Based on the residential bill amount calculated using 4,500 gallons per month, the annual water bill for FY 2017 was projected to be \$558.60, which is approximately 1.7 percent of the City's MHI of \$32,476. The U.S. EPA considers annual water bills that are less than 2.5 percent of MHI to place a relatively low financial burden on the community.

5.2 Wastewater System

- A retail wastewater rate revenue increase of 8.0 percent is recommended in FY 2017. In addition, retail rate revenue increases of 10.0 percent are projected in FY 2018 and FY 2019, and 14.3 percent in FY 2020, to cover projected costs and to meet fiscal requirements and targets in these years. No retail rate revenue increase is projected for FY 2021.

In the future, CRW should consider adding a fixed charge to the City retail wastewater rate structure to recover a portion of the capital costs of the system on a fixed revenue basis. Some wastewater utilities recover a portion of the cost of treating inflow and infiltration from a fixed charge and a portion from a volume charge to reflect that the number of connections in the wastewater system reflects the size of the system and the greater potential for infiltration through poor joints and cracked pipes, and the inflow through roof and foundation drains. In addition, some wastewater utilities recover a portion of annual debt service with a fixed charge to better match fixed costs with a fixed revenue stream.

- The wastewater cost of service evaluation results indicate that the unit cost of providing wastewater and conveyance service to Suburban wholesale customers will increase from \$3.17 per 1,000 gallons in FY 2016 to \$3.41 per 1,000 gallons in FY 2017, and the unit cost of providing wastewater service to Steelton will increase from \$1.96 per 1,000 gallons to \$2.11 per 1,000 gallons.
- While no true-up provision is included in the Inter-Municipal Agreement between CRW and the Suburban communities, a true-up calculation was included in the rate calculations, at the direction of CRW, to address surplus revenue generated in FY 2016 by the Suburban customers. The FY

2016 true-up will result in a downward adjustment in FY 2017 of approximately \$0.78 per 1,000 gallons for Suburban customers (excluding Steelton) and a downward adjustment of \$0.44 per 1,000 gallons for Steelton.

- The units of service for flat rate wastewater customers with non-metered consumption was assumed to be 65,000 gallons per year, as part of the Suburban wholesale rate calculation. An analysis of the average consumption per residential account was completed using data from FY 2011 to FY 2015. This analysis indicates that the average residential consumption per account has decreased to approximately 45,000 gallons per year. As such, CRW should continue to monitor this and consider adjusting its usage assumption for flat rate customers if this trend continues in the future.
- Based on the results of the rate comparison, CRW's wastewater rates were noted to be comparable to the other utilities included in the survey. For example, the monthly residential bill based on proposed rates for customers discharging 4,500 gallons per month was less than six of the 10 utilities surveyed. The monthly commercial bill based on proposed rates for customers discharging 50,000 gallons per month was less than four of the 10 utilities surveyed, while its monthly industrial bill under proposed rates for a customer discharging 500,000 gallons per month was also less than four of the 10 utilities.
- The proposed FY 2017 retail wastewater rates were compared to the City of Harrisburg's MHI to provide a high level indication of community financial capability. Based on the residential bill amount calculated using 4,500 gallons per month, the annual wastewater bill in FY 2017 for a typical residential retail customer was projected to be \$352.68, which is approximately 1.1 percent of the City's MHI of \$32,476. The U.S. EPA considers annual wastewater bills that are less than 2.0 percent of MHI to place a relatively low financial burden on the community.

6 DISCLOSURES AND LIMITATIONS

In preparation of this report and the conclusions contained herein, Arcadis has relied on these assumptions and information provided by CRW, its financial advisor, and others with respect to conditions which may exist or events which may occur in the future. Arcadis has not independently verified the accuracy of the information provided by CRW and others and accepts no responsibility for the completeness or accuracy of any documents or information upon which the report is based and which was provided to us by CRW or any other third party. While we believe such sources are reliable and the information obtained to be accurate and appropriate for the analysis undertaken and the conclusions reached herein, as is often the case, there may be differences between actual and projected results, some of the estimates used in this report will not be realized, and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the data and results projected in this report and actual results achieved, and those differences may be material.

The contents of this report are relevant as of the original date of the report and do not incorporate any facts or information which may have come into existence after the date of the report. Neither Arcadis nor

its parent corporation, or their respective subsidiaries and affiliates, makes any warranty, expressed or implied, with respect to the opinions and conclusions contained in this report.

In the completion of the rate study for CRW, Arcadis is (a) not recommending any action regarding municipal financial products or the issuance of municipal securities; (b) is not acting as a registered municipal advisor to CRW and does not owe a fiduciary duty to CRW pursuant to Section 15B of the Securities Exchange Act of 1934, as amended by the Dodd-Frank Wall Street Reform and Consumer Protection Act, with respect to the information and material contained in this report. CRW should discuss any information and material prepared in connection with this report with any and all internal or external registered municipal advisors that it deems appropriate before acting on this information and material.

APPENDIX A

Wholesale Wastewater Rate Calculation Details



Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc	Allocation %					Allocation \$				
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
Operations Management - Personnel													
1	Salaries & Wages	\$ 392,921	1	57.7%	15.0%	27.3%	0.0%	0.0%	\$ 226,807	\$ 58,968	\$ 107,145	\$ -	\$ -
2	Overtime Pay	-	1	57.7%	15.0%	27.3%	0.0%	0.0%	-	-	-	-	-
3	BU Comp Adjustment	2,140	1	57.7%	15.0%	27.3%	0.0%	0.0%	1,235	321	584	-	-
4	Bonuses	-	1	57.7%	15.0%	27.3%	0.0%	0.0%	-	-	-	-	-
5	Sick Leave Buyback	-	1	57.7%	15.0%	27.3%	0.0%	0.0%	-	-	-	-	-
6	Payroll Taxes	30,222	1	57.7%	15.0%	27.3%	0.0%	0.0%	17,445	4,536	8,241	-	-
7	Health Benefits	115,200	1	57.7%	15.0%	27.3%	0.0%	0.0%	66,497	17,289	31,414	-	-
8	Life/Disab Insurance	2,100	1	57.7%	15.0%	27.3%	0.0%	0.0%	1,212	315	573	-	-
9	Pension Contribution	19,753	1	57.7%	15.0%	27.3%	0.0%	0.0%	11,402	2,964	5,386	-	-
10	Workers Comp Ins Prem	864	1	57.7%	15.0%	27.3%	0.0%	0.0%	499	130	236	-	-
11	Unemployment Comp	770	1	57.7%	15.0%	27.3%	0.0%	0.0%	444	115	210	-	-
Operations Management - Operations													
12	Conferences	\$ 2,500	5	40.0%	30.0%	30.0%	0.0%	0.0%	\$ 1,000	\$ 750	\$ 750	\$ -	\$ -
13	Tuition and Training	12,700	5	40.0%	30.0%	30.0%	0.0%	0.0%	5,080	3,810	3,810	-	-
14	Travel and Mileage	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
15	Lodging	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
16	Meals	500		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	500	-
17	Memberships and Dues	1,380		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	1,380	-
18	Office Supplies	2,575		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,575	-
19	Office Equip Rpr/Mntc	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
20	Telephone & Internet	16,000		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	16,000	-
21	Subscriptions	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
22	Printing	2,300		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,300	-
23	Postage	1,000		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	1,000	-
24	Meals/Entertainment	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
25	Mileage	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
26	Licenses	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
27	Uniforms	17,000	1	57.7%	15.0%	27.3%	0.0%	0.0%	9,813	2,551	4,636	-	-
28	Personal Safety	1,250	1	57.7%	15.0%	27.3%	0.0%	0.0%	722	188	341	-	-
29	CS Maintenance	5,000		0.0%	0.0%	100.0%	0.0%	0.0%	-	-	5,000	-	-
30	Advertising	700		100.0%	0.0%	0.0%	0.0%	0.0%	700	-	-	-	-
31	Software License Fees	44,500		33.3%	33.3%	33.4%	0.0%	0.0%	14,819	14,819	14,863	-	-
32	Rentals and Leases	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
33	Auto Insurance	22,678	12	72.8%	26.8%	0.4%	0.0%	0.0%	16,517	6,066	94	-	-
34	Commercial Prop Ins	162,476	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	162,476	-
35	Crime Insurance	1,277	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	1,277	-
36	Flood Insurance	26,355	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	26,355	-
37	General Liab Ins	139,268	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	139,268	-
38	Pollution Liab Ins	36,197	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	36,197	-
39	Umbrella Liab Ins	45,382	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	45,382	-
40	Deductible/Retention/Claims	25,000	6	0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	25,000	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc	Allocation %					Allocation \$				
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
41	Vehicle Service Contr	12,000	14	74.2%	25.3%	0.5%	0.0%	0.0%	8,909	3,034	57	-	-
42	Motor Fuels & Lubric	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
43	Tires and Batteries	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
44	Vehicle Parts & Supp	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
45	Streets and Roads	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
46	Permits	2,500		100.0%	0.0%	0.0%	0.0%	0.0%	2,500	-	-	-	-
47	Other Contr Maint	1,160		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	1,160	-
48	Misc Contr Serv	750		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	750	-
49	Project Services	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
50	Vehicles	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
51	Computer Software	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
52	Office Equipment	6,000		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	6,000	-
53	Office Furniture	10,000		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	10,000	-
54	Operations Equip	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
Operations Treatment - Personnel													
55	Salaries & Wages	\$ 769,008	2	76.3%	20.5%	3.3%	0.0%	0.0%	\$ 586,491	\$ 157,306	\$ 25,211	\$ -	\$ -
56	Overtime Pay	115,351	2	76.3%	20.5%	3.3%	0.0%	0.0%	87,974	23,596	3,782	-	-
57	BU Comp Adjustment	76,901	2	76.3%	20.5%	3.3%	0.0%	0.0%	58,649	15,731	2,521	-	-
58	Bonuses	-	2	76.3%	20.5%	3.3%	0.0%	0.0%	-	-	-	-	-
59	Sick Leave Buyback	-	2	76.3%	20.5%	3.3%	0.0%	0.0%	-	-	-	-	-
60	Payroll Taxes	73,536	2	76.3%	20.5%	3.3%	0.0%	0.0%	56,083	15,042	2,411	-	-
61	Health Benefits	307,200	2	76.3%	20.5%	3.3%	0.0%	0.0%	234,289	62,840	10,071	-	-
62	Life/Disab Insurance	3,500	2	76.3%	20.5%	3.3%	0.0%	0.0%	2,669	716	115	-	-
63	Pension Contribution	48,063	2	76.3%	20.5%	3.3%	0.0%	0.0%	36,656	9,832	1,576	-	-
64	Workers Comp Ins Prem	57,418	2	76.3%	20.5%	3.3%	0.0%	0.0%	43,790	11,745	1,882	-	-
65	Unemployment Comp	4,361	2	76.3%	20.5%	3.3%	0.0%	0.0%	3,326	892	143	-	-
Operations Treatment - Operations													
66	Conferences	\$ -		100.0%	0.0%	0.0%	0.0%	0.0%	\$ -	\$ -	\$ -	\$ -	\$ -
67	Tuition and Training	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
68	Travel and Mileage	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
69	Lodging	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
70	Meals	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
71	Memberships and Dues	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
72	Office Supplies	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
73	Licenses	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
74	Uniforms	-	2	76.3%	20.5%	3.3%	0.0%	0.0%	-	-	-	-	-
75	Personal Safety	-	2	76.3%	20.5%	3.3%	0.0%	0.0%	-	-	-	-	-
76	Misc Supplies/Expenses	7,200		100.0%	0.0%	0.0%	0.0%	0.0%	7,200	-	-	-	-
77	Rentals and Leases	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
78	Medical/Laboratory	61,150		100.0%	0.0%	0.0%	0.0%	0.0%	61,150	-	-	-	-
79	Chemicals	590,923		100.0%	0.0%	0.0%	0.0%	0.0%	590,923	-	-	-	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc	Allocation %					Allocation \$				
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
80	Water	84,200		100.0%	0.0%	0.0%	0.0%	0.0%	84,200	-	-	-	-
81	Electricity	1,046,819		100.0%	0.0%	0.0%	0.0%	0.0%	1,046,819	-	-	-	-
82	Heat	32,456		100.0%	0.0%	0.0%	0.0%	0.0%	32,456	-	-	-	-
83	Refuse	442,912		100.0%	0.0%	0.0%	0.0%	0.0%	442,912	-	-	-	-
84	Tools and Hardware	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
85	Equipment Repr/Mntce	20,000		100.0%	0.0%	0.0%	0.0%	0.0%	20,000	-	-	-	-
86	Vehicle Service Contr	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
87	Motor Fuels & Lubric	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
88	Tires and Batteries	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
89	Vehicle Parts & Supp	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
90	Permits	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
91	CEAR Recommended O&M	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
92	Disaster Recovery Sys	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
93	Custodial	9,000		100.0%	0.0%	0.0%	0.0%	0.0%	9,000	-	-	-	-
94	Maint Serv Contracts	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
95	Oth Contracted Mntce	77,267		100.0%	0.0%	0.0%	0.0%	0.0%	77,267	-	-	-	-
96	Service Contracts	116,856		100.0%	0.0%	0.0%	0.0%	0.0%	116,856	-	-	-	-
97	Nutrient Credits	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
98	Vehicles	-	14	74.2%	25.3%	0.5%	0.0%	0.0%	-	-	-	-	-
99	Equipment	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
100	Office Equipment and Furniture	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
Operations Maintenance - Personnel													
101	Salaries & Wages	\$ 352,373	3	67.4%	30.0%	2.6%	0.0%	0.0%	\$ 237,438	\$ 105,712	\$ 9,223	\$ -	\$ -
102	Overtime Pay	18,676	3	67.4%	30.0%	2.6%	0.0%	0.0%	12,584	5,603	489	-	-
103	BU Comp Adjustment	21,142	3	67.4%	30.0%	2.6%	0.0%	0.0%	14,246	6,343	553	-	-
104	Bonuses	-	3	67.4%	30.0%	2.6%	0.0%	0.0%	-	-	-	-	-
105	Sick Leave Buyback	-	3	67.4%	30.0%	2.6%	0.0%	0.0%	-	-	-	-	-
106	Payroll Taxes	30,003	3	67.4%	30.0%	2.6%	0.0%	0.0%	20,217	9,001	785	-	-
107	Health Benefits	153,600	3	67.4%	30.0%	2.6%	0.0%	0.0%	103,500	46,080	4,020	-	-
108	Life/Disab Insurance	650	3	67.4%	30.0%	2.6%	0.0%	0.0%	438	195	17	-	-
109	Pension Contribution	19,610	3	67.4%	30.0%	2.6%	0.0%	0.0%	13,213	5,883	513	-	-
110	Workers Comp Ins Prem	18,279	3	67.4%	30.0%	2.6%	0.0%	0.0%	12,317	5,484	478	-	-
111	Unemployment Comp	2,822	3	67.4%	30.0%	2.6%	0.0%	0.0%	1,901	846	74	-	-
Operations Maintenance - Operations													
112	Conferences	\$ -		60.0%	30.0%	10.0%	0.0%	0.0%	\$ -	\$ -	\$ -	\$ -	\$ -
113	Tuition and Training	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
114	Travel and Mileage	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
115	Lodging	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
116	Meals	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
117	Memberships and Dues	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
118	Office Supplies	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc		Allocation %				Allocation \$				
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
119	Licenses	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
120	Uniforms	-	3	67.4%	30.0%	2.6%	0.0%	0.0%	-	-	-	-	-
121	Personal Safety	4,200	3	67.4%	30.0%	2.6%	0.0%	0.0%	2,830	1,260	110	-	-
122	Misc Supplies/Expenses	24,720		60.0%	30.0%	10.0%	0.0%	0.0%	14,832	7,416	2,472	-	-
123	Rental Equipment	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
124	Medical/Laboratory	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
125	Tools and Hardware	9,270		60.0%	30.0%	10.0%	0.0%	0.0%	5,562	2,781	927	-	-
126	Mechanical Equip Part	148,320		100.0%	0.0%	0.0%	0.0%	0.0%	148,320	-	-	-	-
127	Vehicle Service Contr	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
128	Motor Fuels & Lubric	37,000	14	74.2%	25.3%	0.5%	0.0%	0.0%	27,468	9,356	176	-	-
129	Tires and Batteries	2,900	14	74.2%	25.3%	0.5%	0.0%	0.0%	2,153	733	14	-	-
130	Vehicle Parts & Supp	25,000	14	74.2%	25.3%	0.5%	0.0%	0.0%	18,560	6,321	119	-	-
131	Streets and Roads	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
132	Snow Control	10,000		60.0%	40.0%	0.0%	0.0%	0.0%	6,000	4,000	-	-	-
133	Asphalt	7,800		60.0%	40.0%	0.0%	0.0%	0.0%	4,680	3,120	-	-	-
134	Concrete	9,200		60.0%	40.0%	0.0%	0.0%	0.0%	5,520	3,680	-	-	-
135	Pipe Connections	22,152		60.0%	40.0%	0.0%	0.0%	0.0%	13,291	8,861	-	-	-
136	CEAR Recommended O&M	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
137	Building Maintenance	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
138	Util Plant Fuels/Lub	35,000		60.0%	40.0%	0.0%	0.0%	0.0%	21,000	14,000	-	-	-
139	Building Renov/Upgrad	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
140	Shared Services	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
141	Maint Serv Contracts	10,000		100.0%	0.0%	0.0%	0.0%	0.0%	10,000	-	-	-	-
142	Misc Contr Serv	2,500		100.0%	0.0%	0.0%	0.0%	0.0%	2,500	-	-	-	-
143	Project Mgmt Services	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
144	Vehicles	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
145	Heavy Equipment	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
146	Operations Equipment	12,500		100.0%	0.0%	0.0%	0.0%	0.0%	12,500	-	-	-	-
147	Plant Equipment	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
148	Mntc Computer Software	-		60.0%	30.0%	10.0%	0.0%	0.0%	-	-	-	-	-
Field Maintenance - Personnel													
149	Salaries & Wages	\$ 579,976	4	3.8%	34.8%	61.4%	0.0%	0.0%	\$ 22,048	\$ 201,796	\$ 356,132	\$ -	\$ -
150	Overtime Pay	57,998	4	3.8%	34.8%	61.4%	0.0%	0.0%	2,205	20,180	35,613	-	-
151	BU Comp Adjustment	31,899	4	3.8%	34.8%	61.4%	0.0%	0.0%	1,213	11,099	19,587	-	-
152	Bonuses	-	4	3.8%	34.8%	61.4%	0.0%	0.0%	-	-	-	-	-
153	Sick Leave Buyback	-	4	3.8%	34.8%	61.4%	0.0%	0.0%	-	-	-	-	-
154	Payroll Taxes	51,245	4	3.8%	34.8%	61.4%	0.0%	0.0%	1,948	17,830	31,467	-	-
155	Health Benefits	230,400	4	3.8%	34.8%	61.4%	0.0%	0.0%	8,759	80,165	141,476	-	-
156	Life/Disab Insurance	800	4	3.8%	34.8%	61.4%	0.0%	0.0%	30	278	491	-	-
157	Pension Contribution	33,494	4	3.8%	34.8%	61.4%	0.0%	0.0%	1,273	11,654	20,567	-	-
158	Workers Comp Ins Prem	25,439	4	3.8%	34.8%	61.4%	0.0%	0.0%	967	8,851	15,621	-	-
159	Unemployment Comp	3,591	4	3.8%	34.8%	61.4%	0.0%	0.0%	137	1,249	2,205	-	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc	Allocation %				Allocation \$					
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
Field Maintenance - Operations													
160	Conferences	-		20.0%	70.0%	10.0%	0.0%	0.0%	\$ -	\$ -	\$ -	\$ -	\$ -
161	Tuition and Training	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
162	Travel and Mileage	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
163	Lodging	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
164	Meals	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
165	Memberships and Dues	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
166	Office Supplies	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
167	Telephone & Internet	7,200	4	3.8%	34.8%	61.4%	0.0%	0.0%	274	2,505	4,421	-	-
168	Licenses	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
169	Uniforms	-	4	3.8%	34.8%	61.4%	0.0%	0.0%	-	-	-	-	-
170	Personal Safety	14,600	4	3.8%	34.8%	61.4%	0.0%	0.0%	555	5,080	8,965	-	-
171	Misc Supplies/Expenses	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
172	Rental Equipment	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
173	Medical/Laboratory	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
174	FMtc Water	20,600		0.0%	100.0%	0.0%	0.0%	0.0%	-	20,600	-	-	-
175	Electricity	135,546	13	0.0%	95.3%	4.7%	0.0%	0.0%	-	129,175	6,371	-	-
176	Tools and Hardware	12,360		20.0%	70.0%	10.0%	0.0%	0.0%	2,472	8,652	1,236	-	-
177	Vehicle Service Contr	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
178	Motor Fuels & Lubric	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
179	Tires and Batteries	1,000	14	74.2%	25.3%	0.5%	0.0%	0.0%	742	253	5	-	-
180	Vehicle Parts & Supp	40,000	14	74.2%	25.3%	0.5%	0.0%	0.0%	29,695	10,114	190	-	-
181	Permits	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
182	CEAR Recommended O&M	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
183	Disaster Recovery Sys	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
184	FMtc Shared Services	520,000		0.0%	50.0%	50.0%	0.0%	0.0%	-	260,000	260,000	-	-
185	Maint Serv Contracts	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
186	Other Contracted Maintenance	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
187	Misc Contr Serv	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
188	Water Meter Mtce Asses	125,000		0%	0%	0%	0%	100%	-	-	-	-	125,000
189	FMnt Fines and Settlements	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
190	FMnt Vehicles	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
191	FMnt Heavy Equipment	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
192	FMnt Operations Equipment	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
193	FMnt Plant Equipment	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
194	FMnt Computer Software	-		20.0%	70.0%	10.0%	0.0%	0.0%	-	-	-	-	-
Other Operating Expenses													
195	Legal Services	98,000		0.0%	0.0%	0.0%	100.0%	0.0%	\$ -	\$ -	\$ -	\$ 98,000	\$ -
196	Financial Advisor Fees	12,000		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	12,000	-
197	Engineering Services	490,000	15	40.3%	25.6%	23.9%	10.2%	0.0%	197,550	125,550	116,900	50,000	-
198	CEAR/Rate Study Consultant	62,500		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	62,500	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc		Allocation %			Allocation \$					
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
199	Other Prof Serv Fees	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
200	Sponsorship Inc AWTF OpenHouse	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
202	Community Outreach	161,000		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	161,000
203	OPEB Retirement Benefits	350,000	7	51.4%	25.2%	23.5%	0.0%	0.0%	179,764	88,068	82,169	-	-
204	Trustee/Bank Fees	44,576		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	44,576	-
205	Additional O&M from Wastewater CEAR	-		0.0%	100.0%	0.0%	0.0%	0.0%	-	-	-	-	-
CRW Administrative Fund Expenses													
206	Salaries & Wages	959,553		0.0%	0.0%	0.0%	100.0%	0.0%	\$ -	\$ -	\$ -	\$ 959,553	\$ -
207	-Salaries & Wages (City Billing Related)	336,125		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	336,125
208	BU Comp Adjustment	12,637		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	12,637	-
209	Mgmt Adjustment	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
210	Overtime Pay	4,556		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	4,556	-
211	Payroll Taxes	74,721		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	74,721	-
212	-Payroll Taxes (City Billing Related)	25,714		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	25,714
213	Health Benefits	247,693		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	247,693	-
214	-Health Benefits (City Billing Related)	128,856		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	128,856
215	Life/Disability Insurance	8,970		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	8,970	-
216	-Life/Disability Insurance (City Billing Related)	840		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	840
217	Pension Contribution	48,837		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	48,837	-
218	-Pension Contribution (City Billing Related)	16,806		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	16,806
219	Workers Comp Insurance	16,332		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	16,332	-
220	-Workers Comp Insurance (City Billing Related)	3,361		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	3,361
221	Unemployment Comp	3,233		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	3,233	-
222	-Unemployment Comp (City Billing Related)	1,701		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	1,701
223	Employment Test	3,037		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	3,037	-
224	Recruitment	2,784		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,784	-
225	Misc EE Relations	6,075		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	6,075	-
226	Conferences	11,678		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	11,678	-
227	Tuition and Training	6,444		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	6,444	-
228	Travel and Mileage	7,069		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	7,069	-
229	Lodging	13,136		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	13,136	-
230	Meals	2,169		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,169	-
231	Memberships and Dues	12,655		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	12,655	-
232	Office Supplies	15,186		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	15,186	-
233	Office Equip Repr & Mntce	14,083		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	14,083	-
234	Telephone & Internet	23,995		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	23,995	-
235	Subscriptions	2,308		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,308	-
236	Postage	4,070		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	4,070	-
237	Meals/Entertainment	4,617		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	4,617	-
238	Mileage	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
239	Software License Fees	13,744		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	13,744	-
240	Payroll/HR Service Fees	13,631		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	13,631	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc		Allocation %			Allocation \$					
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
241	Bank Fees	61		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	61	-
242	Misc Supplies/Expense	2,126		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	2,126	-
243	Document Management	5,062		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	5,062	-
244	Office Lease	102,814		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	102,814	-
245	Parking Rentals	40,943		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	40,943	-
246	Advertising & Public Notic	1,012		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	1,012
247	Community Outreach	37,080		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	37,080
248	Raindrop Carnival	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
249	Volunteer Appreciation Day	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
250	City Beautiful H2O Art Contest	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
251	Printing/Printer Mntce	7,396		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	7,396	-
252	Website Maintenance	607		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	607	-
253	CRW Sponsorships	2,531		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	2,531
254	Sponsorship Inc Raindrop Carn	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
255	Sponsorship Inc Volunteer Appr	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
256	Sponsorship Inc CB Art Contest	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
257	Public Officials Insurance	10,887		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	10,887	-
258	Travel Accident Insurance	496		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	496	-
259	Employee Dishonesty Bond	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
260	Cyber Liability Insurance	6,175		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	6,175	-
261	Deductible/Retention/Claims	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
262	Motor Fuels & Lubricants	304		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	304	-
263	Tires and Batteries	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
264	Vehicle Parts & Supplies	1,215		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	1,215	-
265	Legal Services - General	89,296		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	89,296	-
266	Legal Services - Other	80,994		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	80,994	-
267	Audit/Accounting Fees	70,872		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	70,872	-
268	Financial Advisor Fees	15,186		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	15,186	-
269	IT Support Services	28,297		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	28,297	-
270	Other Professional Service	-		0.0%	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-
271	Treasury Billing Equipment	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-
272	Treasury Mailing Services	73,437		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	73,437
273	Treasury Lockbox Fees	63,279		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	63,279
274	Treasury Merchant Fees	36,447		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	36,447
275	Treasury Security	2,885		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	2,885
276	Treasury Billing Software	33,549		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	33,549
277	Total Operating Expenses	\$ 11,953,050							\$ 5,145,014	\$ 1,663,331	\$ 1,354,437	\$ 2,740,642	\$ 1,049,625
	Less: Non-Rate Revenues												
278	Penalties	275,000		100.0%	0.0%	0.0%	0.0%	0.0%	\$ 275,000	\$ -	\$ -	\$ -	\$ -
279	Miscellaneous Revenue	1,000		100.0%	0.0%	0.0%	0.0%	0.0%	1,000	-	-	-	-
280	Lien Principal and Interest	12,000		100.0%	0.0%	0.0%	0.0%	0.0%	12,000	-	-	-	-

Table A.1

Capital Region Water
 Operating Expense Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc					Allocation %					Allocation \$					
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
281	Renewable Energy Credits	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-	-	-	-	-	-
282	Customer Refunds	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-	-	-	-	-	-
283	Misc Operation Sales	9,000		100.0%	0.0%	0.0%	0.0%	0.0%	9,000	-	-	-	-	-	-	-	-	-
284	Sludge Handling Charges	140,000		100.0%	0.0%	0.0%	0.0%	0.0%	140,000	-	-	-	-	-	-	-	-	-
285	Sale of Electric	108,000		100.0%	0.0%	0.0%	0.0%	0.0%	108,000	-	-	-	-	-	-	-	-	-
286	Contractor Waste Fees	6,000		100.0%	0.0%	0.0%	0.0%	0.0%	6,000	-	-	-	-	-	-	-	-	-
287	Pretreatment Fees	30,000		100.0%	0.0%	0.0%	0.0%	0.0%	30,000	-	-	-	-	-	-	-	-	-
288	Maintenance Charge	-		100.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-	-	-	-	-	-
289	Planning Module Fees	1,000		100.0%	0.0%	0.0%	0.0%	0.0%	1,000	-	-	-	-	-	-	-	-	-
290	Auditor Revenue Account	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-	-	-	-	-	-
291	Allowance for Doubtful Accounts	-		0.0%	0.0%	0.0%	0.0%	100.0%	-	-	-	-	-	-	-	-	-	-
292	Interest Income	42,341		100.0%	0.0%	0.0%	0.0%	0.0%	42,341	-	-	-	-	-	-	-	-	-
293	Net Operating Expenses	\$ 11,328,709							\$ 4,520,674	\$ 1,663,331	\$ 1,354,437	\$ 2,740,642	\$ 1,049,625					
294	Allocation % of Total	100%							40%	15%	12%	24%	9%					
Allocation of Administrative Expenses																		
295	Total Operating Expenses	\$ 11,953,050							\$ 5,145,014	\$ 1,663,331	\$ 1,354,437	\$ 2,740,642	\$ 1,049,625					
296	Less: Administrative Expenses	(2,740,642)							-	-	-	(2,740,642)	-					
297	Less: Electricity	(1,182,365)							(1,046,819)	(129,175)	(6,371)	-	-					
298	Adjusted Net Operating Expenses	\$ 8,030,043							\$ 4,098,195	\$ 1,534,156	\$ 1,348,067	\$ -	\$ 1,049,625					
299	Administration Category Allocation (%)	100%							51%	19%	17%	0%	13%					
300	Administration Category Allocation (\$)	\$ 2,740,642							\$ 1,398,708	\$ 523,605	\$ 460,093	\$ -	\$ 358,236					
301	Net O&M Expense Allocation (%)	100%							52%	19%	16%	0%	12%					
302	Net O&M Expense Allocation (\$)	\$ 11,328,709							\$ 5,919,382	\$ 2,186,936	\$ 1,814,531	\$ -	\$ 1,407,860					

Table A.2

Capital Region Water
 Capital Cost Allocation
 Wholesale Rate Cost Allocation Study

Line	Description	FY2017	Alloc	Allocation %					Allocation \$				
		Projected	Ref	Treat.	Conv.	Coll.	Admin.	City Only	Treat.	Conv.	Coll.	Admin.	City Only
1	Debt Service	\$ 3,445,323	10	91.5%	0.8%	7.8%	0.0%	0.0%	\$ 3,152,320	\$ 25,870	\$ 267,134	\$ -	\$ -
2	New Debt Service (Revenue Bonds)	1,377,114	11b	23.8%	30.0%	46.2%	0.0%	0.0%	328,389	413,134	635,591	-	-
3	New Debt Service (PennVest)	323,075	11c	100.0%	0.0%	0.0%	0.0%	0.0%	323,075	-	-	-	-
4	PayGo Capital Projects	7,461,053	11a	7.6%	47.6%	42.1%	0.0%	2.7%	570,631	3,549,601	3,140,820	-	200,000
5	Rev Req to meet 1.1 DSC, if applicable	-		0.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-	-
6	Total Capital Expenses	\$ 12,606,565							\$ 4,374,414	\$ 3,988,606	\$ 4,043,545	\$ -	\$ 200,000
7	Less: Non-Rate Revenues												
8	Sale of Scrap	500		33.4%	33.3%	33.3%	0.0%	0.0%	167	167	167	-	-
9	Net Capital Expenses	\$ 12,606,065							\$ 4,374,247	\$ 3,988,439	\$ 4,043,378	\$ -	\$ 200,000
10	Allocation % of Total	100%							35%	32%	32%	0%	2%
Allocation of Administrative Expenses													
11	Administration Category Allocation (%)	0%							0%	0%	0%	0%	0%
12	Administration Category Allocation (\$)	\$ -							\$ -	\$ -	\$ -	\$ -	\$ -
13	Net Capital Expense Allocation (%)	100%							35%	32%	32%	0%	2%
14	Net Capital Expense Allocation (\$)	\$ 12,606,065							\$ 4,374,247	\$ 3,988,439	\$ 4,043,378	\$ -	\$ 200,000

Table A.3

Capital Region Water
 Cost Allocation References
 Wholesale Rate Cost Allocation Study

Alloc		2017							Basis	Total	Basis	Treat.	Conv.	Coll.	Admin.	City Only	Total
Line	Ref	Description	Projected	Treat.	Conv.	Coll.	Admin.	City Only									
Management Division Personnel																	
1		Plant Superintendent (JR)	\$ 86,190	70.0%	15.0%	15.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 60,333	\$ 12,929	\$ 12,929	\$ -	\$ -	\$ 86,190	
2		Pretreatment Coordinator (RS)	\$ 57,960	70.0%	0.0%	30.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 40,572	\$ -	\$ 17,388	\$ -	\$ -	\$ 57,960	
3		Operations Supervisor (RH)	\$ 61,065	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 61,065	\$ -	\$ -	\$ -	\$ -	\$ 61,065	
4		Facility Maintenance Manager (JB)	\$ 77,625	40.0%	20.0%	40.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 31,050	\$ 15,525	\$ 31,050	\$ -	\$ -	\$ 77,625	
5		Field Maintenance Supervisor (KF)	\$ 65,000	0.0%	40.0%	60.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ -	\$ 26,000	\$ 39,000	\$ -	\$ -	\$ 65,000	
6		Administrative Assistant II (BR)	\$ 44,946	75.0%	10.0%	15.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	33,710	4,495	6,742	-	-	44,946	
7		Total:	\$ 392,786								\$ 226,730	\$ 58,948	\$ 107,108	\$ -	\$ -	\$ 392,786	
8	1	Management Personnel Allocation	100.0%								57.7%	15.0%	27.3%	0.0%	0.0%		
Treatment Division Personnel																	
9		Lab Technician I (2)	\$ 97,274	85.0%	0.0%	15.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 82,683	\$ -	\$ 14,591	\$ -	\$ -	\$ 97,274	
10		Laborer I (TBD)	\$ 40,044	80.0%	20.0%	0.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	32,035	8,009	-	-	-	40,044	
11		Operator I (6)	\$ 308,152	75.0%	23.0%	2.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	231,114	70,875	6,163	-	-	308,152	
12		Operator IV (8)	\$ 481,107	75.0%	23.0%	2.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	360,830	110,655	9,622	-	-	481,107	
13		Total:	\$ 926,577								\$ 706,662	\$ 189,538	\$ 30,376	\$ -	\$ -	\$ 926,577	
14	2	Treatment Division Personnel Allocation	100.0%								76.3%	20.5%	3.3%	0.0%	0.0%		
Maintenance Division Personnel																	
15		Electrician III (MM)	\$ 54,080	65.0%	30.0%	5.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 35,152	\$ 16,224	\$ 2,704	\$ -	\$ -	\$ 54,080	
16		Laborer I (2)	\$ 75,608	60.0%	30.0%	10.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	45,365	22,682	7,561	-	-	75,608	
17		Maintenance Worker I (JN)	\$ 46,185	70.0%	30.0%	0.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	32,330	13,856	-	-	-	46,185	
18		Maintenance Worker IV (4)	\$ 216,318	70.0%	30.0%	0.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	151,423	64,895	-	-	-	216,318	
19		Total:	\$ 392,191								\$ 264,269	\$ 117,657	\$ 10,265	\$ -	\$ -	\$ 392,191	
20	3	Maintenance Division Personnel Allocation	100.0%		8						67.4%	30.0%	2.6%	0.0%	0.0%		
Field Maintenance Division																	
21		Field Maintenance Worker II (3)	\$ 142,414	10.0%	10.0%	80.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 14,241	\$ 14,241	\$ 113,931	\$ -	\$ -	\$ 142,414	
22		Field Maintenance Worker III (SR)	\$ 52,684	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	-	26,342	26,342	-	-	52,684	
23		Field Maintenance Worker I (8)	\$ 362,534	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	-	181,267	181,267	-	-	362,534	
24		Field Maintenance Worker IV (2)	\$ 112,241	10.0%	10.0%	80.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	11,224	11,224	89,793	-	-	112,241	
25		Total:	\$ 669,873								\$ 25,466	\$ 233,075	\$ 411,333	\$ -	\$ -	\$ 669,873	

Table A.3

Capital Region Water
 Cost Allocation References
 Wholesale Rate Cost Allocation Study

Alloc		2017							Basis	Total	Treat.	Conv.	Coll.	Admin.	City Only	Total
Line	Ref	Description	Projected	Treat.	Conv.	Coll.	Admin.	City Only								
26	4	Field Maintenance Division Personnel Allocation	100.0%		12					3.8%	34.8%	61.4%	0.0%	0.0%		
27	5	All Staff / Uniform Allocation	100.0%	40%	30%	30%	0%	0%	100.0%	Estimated based on most up-to-date staff allocations.	40.0%	30.0%	30.0%	0.0%	0.0%	100.0%
28	6	Insurance Allocation	100.0%	0%	0%	0%	100%	0%	100.0%	All non automobile related insurance fully allocated to Administration.	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
29	7	OPEB Allocation	100.0%	51%	25%	23%	0%	0%	100.0%	Based on allocation of all direct labor, including Administration / Management.	51.4%	25.2%	23.5%	0.0%	0.0%	100.0%
30		Shared Services Allocation														
31		Department of Public Works - Sweep Cleaning	520,000	0.0%	50.0%	50.0%	0.0%	0.0%	100.0%	Based on CRW's CIP funding plan.	-	260,000	260,000	-	-	520,000
32		Total	\$ 520,000							\$ -	\$ 260,000	\$ 260,000	\$ -	\$ -	\$ 520,000	
33	9	Total Shared Services Allocation	100.0%							0.0%	50.0%	50.0%	0.0%	0.0%		
CAPITAL EXPENSE ALLOCATIONS																
Debt Service Allocation																
34		1998 PENNVEST Loan	\$ 88,965	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	Projects financed related to sewage collection system.	-	-	88,965	-	-	88,965
35		2009 PENNVEST Loan	114,120	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Projects financed related to improvements and replacements to wastewater treatment facility.	114,120	-	-	-	-	114,120
36		2014 Revenue Bonds, Series B	2,055,711	90.1%	1.3%	8.7%	0.0%	0.0%	100.0%	Weighted average of projects funded with 2014 Revenue Bonds, Series B.	1,851,673	25,870	178,169	-	-	2,055,711
37		2014 PENNVEST Loan	1,186,527	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Projects financed related to improvements and replacements to wastewater treatment facility.	1,186,527	-	-	-	-	1,186,527
38		Total	\$ 3,445,323							\$ 3,152,320	\$ 25,870	\$ 267,134	\$ -	\$ -	\$ 3,445,323	
39	10	Total Debt Service Allocation	100.0%							91.5%	0.8%	7.8%	0.0%	0.0%		
PayGo Expense																
40		Projects Funded with Cash	\$ 7,461,053	7.6%	47.6%	42.1%	0.0%	2.7%	100.0%	Based on the projects specified as being funded with cash in FY 2017.	\$ 570,631	\$ 3,549,601	\$ 3,140,820	\$ -	\$ 200,000	\$ 7,461,053
41		Total	\$ 7,461,053							\$ 570,631	\$ 3,549,601	\$ 3,140,820	\$ -	\$ 200,000	\$ 7,461,053	
42	11a	PayGo Expense Allocation	100.0%							7.6%	47.6%	42.1%	0.0%	2.7%		
New Revenue Bonds																
43		Projects Funded with New Revenue Bonds	\$ 1,377,114	23.8%	30.0%	46.2%	0.0%	0.0%	100.0%	Based on the projects specified as being funded with Revenue Bond proceeds in FY 2017.	\$ 328,389	\$ 413,134	\$ 635,591	\$ -	\$ -	\$ 1,377,114
44		Total	\$ 1,377,114							\$ 328,389	\$ 413,134	\$ 635,591	\$ -	\$ -	\$ 1,377,114	
45	11b	New Revenue Bonds Allocation	100.0%							23.8%	30.0%	46.2%	0.0%	0.0%		
46		New PennVest Loan														
47		Projects Funded with New PennVest Loan	\$ 323,075	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Based on the projects specified as being funded with PennVest loan proceeds in FY 2017.	\$ 323,075	\$ -	\$ -	\$ -	\$ -	\$ 323,075
48		Total	\$ 323,075							\$ 323,075	\$ -	\$ -	\$ -	\$ -	\$ 323,075	
49	11c	New PennVest Loan Allocation	100.0%							100.0%	0.0%	0.0%	0.0%	0.0%		
Road Vehicles																
50		Vehicle G-3 - Chevrolet 1/2 Ton Pickup Truck	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
51		Vehicle G-5 - Chevrolet Lumina	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
52		Vehicle G-7 - Chevrolet S10 Pickup	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
53		Vehicle G-9 - Chevrolet Jimmy SUV	-	70.0%	30.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
54		Vehicle G-10 - Ford Pickup Truck	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
55		Vehicle G-12 - Chevrolet 1/2 Ton Pickup	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-
56		Vehicle G-14 - Chevrolet 3/4 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	-

Table A.3

Capital Region Water
 Cost Allocation References
 Wholesale Rate Cost Allocation Study

Alloc		2017						Total	Basis	Total	Total	Total	Total	Total	Total	
Line	Ref	Description	Projected	Treat.	Conv.	Coll.	Admin.									City Only
57		Vehicle G-15 - Chevrolet 1/2 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
58		Vehicle G-17 - Pickup Truck w/ Utility Body	-	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
59		Vehicle G-19 - Chevrolet 3/4 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
60		Vehicle G-20 - Chevrolet 3/4 Ton Pickup	-	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
61		Vehicle G-56 - Ford Taurus	-	70.0%	25.0%	5.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
62		Total	\$ -								\$ -	\$ -	\$ -	\$ -	\$ -	
63	12	Total Road Vehicle Insurance Allocation	100.0%								72.8%	26.8%	0.4%	0.0%	0.0%	
64	13	Sewer Field Maintenance - Electricity	100.0%	0%	95%	5%	0%	0%	100.0%	Based on proportional use of electricity at the Spring Creek, Front Street, and Market Street pump stations.	0.0%	95.3%	4.7%	0.0%	0.0%	100.0%
		Full Vehicle Listing														
65		Vehicle G-1 - <i>Removed from list</i>	\$ -						0.0%	Per email from MD 1018.	\$ -	\$ -	\$ -	\$ -	\$ -	
66		Vehicle G-2 - Navistar Dump Truck	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
67		Vehicle G-3 - Chevrolet 1/2 Ton Pickup Truck	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
68		Vehicle G-4 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
69		Vehicle G-5 - Chevrolet Lumina	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
70		Vehicle G-6 - International Vector	-	10.0%	85.0%	5.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
71		Vehicle G-7 - Chevrolet S10 Pickup	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
72		Vehicle G-8 - International Crane Truck	-	75.0%	25.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
73		Vehicle G-9 - Chevrolet Jimmy SUV	-	70.0%	30.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
74		Vehicle G-10 - Ford Pickup Truck	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
75		Vehicle G-11 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
76		Vehicle G-12 - Chevrolet 1/2 Ton Pickup	-	78.0%	22.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
77		Vehicle G-13 - LN8000	-	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
78		Vehicle G-14 - Chevrolet 3/4 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
79		Vehicle G-15 - Chevrolet 1/2 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
80		Vehicle G-16 - GMC Single Rear Axle Dump Truck	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
81		Vehicle G-17 - Pickup Truck w/ Utility Body	-	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
82		Vehicle G-18 - International 4900 Dump Truck	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
83		Vehicle G-19 - Chevrolet 3/4 Ton Pickup	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
84		Vehicle G-20 - Chevrolet 3/4 Ton Pickup	-	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
85		Vehicle G-22 - Case 721D Loader	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
86		Vehicle G-23 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
87		Vehicle G-25 - Ingersol Rand Air Compressor	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
88		Vehicle G-50 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
89		Vehicle G-51 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
90		Vehicle G-53 - Cat 721D Fork Lift	-	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
91		Vehicle G-55 - <i>Removed from list</i>	-						0.0%	Per email from MD 1018.	-	-	-	-	-	
92		Vehicle G-56 - Ford Taurus	-	70.0%	25.0%	5.0%	0.0%	0.0%	100.0%	Per email from MD 1018.	-	-	-	-	-	
93		Total	\$ -								\$ -	\$ -	\$ -	\$ -	\$ -	
94	14	Full Vehicle Allocation	100.0%								74.2%	25.3%	0.5%	0.0%	0.0%	
		Engineering Services Projects														
95		Asset Management	\$ 250,000	33.3%	33.3%	33.4%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	\$ 83,250	\$ 83,250	\$ 83,500	\$ -	\$ -	\$ 250,000
96		GIS	50,000	33.3%	33.3%	33.4%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	16,650	16,650	16,700	-	-	50,000
97		Cityworks	50,000	33.3%	33.3%	33.4%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	16,650	16,650	16,700	-	-	50,000
98		DBE Program Support	50,000	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	Updated in 2016 per CRW.	-	-	-	50,000	-	50,000
99		Energy Mgmt Study/Optimization Plan	90,000	90.0%	10.0%	0.0%	0.0%	0.0%	100.0%	Updated in 2016 per CRW.	81,000	9,000	-	-	-	90,000
		Total	\$ 490,000								\$ 197,550	\$ 125,550	\$ 116,900	\$ 50,000	\$ -	\$ 490,000
100	15	Engineering Services Allocation	100.0%								40.3%	25.6%	23.9%	10.2%	0.0%	

Table A.4

Capital Region Water
 Units of Service (FY 2015)
 Wholesale Rate Cost Allocation Study

Customer Class	Residential EDUs ¹	Commercial EDUs	Residential Non-Metered Flow (1,000 gallons)	Commercial Non-Metered Flow (1,000 gallons)	Residential Metered Flow (1,000 gallons)	Commercial Metered Flow (1,000 gallons)	Industrial Metered Flow (1,000 gallons)	Utility Metered Flow (1,000 gallons)	Public Metered Flow (1,000 gallons)	Other Metered Flow (1,000 gallons)	Total Flow (1,000 gallons)
City of Harrisburg	-	-	-	-	790,758	580,237	218,731	-	76,494	-	1,666,220
Penbrook Borough	1,348	-	87,604	-	-	10,120	-	-	-	-	97,724
Paxtang Borough	667	-	43,355	-	-	5,322	-	-	-	-	48,677
Swatara Township - via Harrisburg	-	-	-	-	394,940	-	-	-	-	-	394,940
Swatara Township - via Steelton	-	-	-	-	52,894	-	-	-	-	-	52,894
Lower Paxton Township	12,762	501	829,498	32,533	-	180,218	-	-	-	-	1,042,248
Susquehanna Township	10,889	-	707,790	-	-	172,850	-	-	-	-	880,641
Steelton Borough	-	-	-	-	101,268	14,887	-	-	-	-	116,155
Total	25,665	501	1,668,247	32,533	1,339,861	963,634	218,731	-	76,494	-	4,299,499

¹One EDU was assumed to equal 65,000 gallons of residential non-metered consumption per year.

Customer Class	Allocation (%)			
	Treatment	Conveyance	Collection	Other
City of Harrisburg	100%	100%	100%	100%
Penbrook Borough	100%	100%	0%	0%
Paxtang Borough	100%	100%	0%	0%
Swatara Township - via Harrisburg	100%	100%	0%	0%
Swatara Township - via Steelton	100%	0%	0%	0%
Lower Paxton Township	100%	100%	0%	0%
Susquehanna Township	100%	100%	0%	0%
Steelton Borough	100%	0%	0%	0%

Table A.5**Capital Region Water
Unit Cost of Service
Wholesale Rate Cost Allocation Study**

Description	Treatment	Conveyance	Collection	Admin.	City Only
Units of Service (1,000 gallons)	4,299,499	4,130,449	1,666,220		1,666,220
Operating Revenue Requirement	\$ 5,919,382	\$ 2,186,936	\$ 1,814,531	\$ -	\$ 1,407,860
Capital Revenue Requirement	4,374,247	3,988,439	4,043,378	-	200,000
Sources and Uses	-	-	-	-	(5,943,011)
Operating Unit Cost (\$/1,000 gallons)	\$1.38	\$0.53	\$1.09	\$0.00	\$0.84
Capital Unit Cost (\$/1,000 gallons)	\$1.02	\$0.97	\$2.43	\$0.00	-\$3.45

Table A.6

**Capital Region Water
City Retail and Suburban Wholesale Rate Summary (FY2017)
Wholesale Rate Cost Allocation Study**

Description	Customer Class		
	City	Suburbs ¹	Steelton ²
O&M Rate			
Treatment	\$1.38	\$1.38	\$1.38
Conveyance	\$0.53	\$0.53	\$0.00
Collection	\$1.09	\$0.00	\$0.00
Other	<u>\$0.84</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total O&M Rate (\$/1,000 gal.)	\$3.84	\$1.91	\$1.38
Capital Charge (Lease Rental Rates) ³			
Treatment	\$1.02	\$1.17	\$1.17
Conveyance	\$0.97	\$1.11	\$0.00
Collection	\$2.43	\$0.00	\$0.00
Other ⁴	<u>-\$1.72</u>	<u>\$0.00</u>	<u>\$0.00</u>
Total Capital Charge (\$/1,000 gal.)	\$2.69	\$2.28	\$1.17
Total Rate (\$/1,000 gal.)	\$6.53	\$4.19	\$2.55
Less: Prior Year True-Up	<u>\$0.00</u>	<u>-\$0.78</u>	<u>-\$0.44</u>
Adjusted Total Rate (\$/1,000 gal.)	\$6.53	\$3.41	\$2.11
Existing Rate (\$/1,000 gal.)	\$6.05	\$3.17	\$1.96
Percent Increase / Decrease	8.0%	7.5%	7.5%

¹ Penbrook and Paxtang Borough, and Swatara, Lower Paxton, and Susquehanna Township.

² Steelton Borough and a portion of Swatara do not share in the conveyance system costs.

³ Reflects a 15% adjustment to the unit costs per Section 2b of Schedule A of the Agreement.

⁴ Uses and contributions to cash and other adjustments.

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.