FINAL DRAFT

March 2015

Prepared for City of Antioch, California

Water and Sewer Rates and Capacity Charges Study

Submitted by

MUNICIPAL FINANCIAL SERVICES

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Prepared for
City of Antioch, California
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MUNICIPAL FINANCIAL SERVICES
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AF	acre feet (equal to 325,851 gallons)
AMC	Antioch Municipal Code
AWWA	American Water Works Association
BOD	Biochemical Oxygen Demand
CAFR	Comprehensive Annual Financial Report
CCI	Construction Cost Index
CCWD	Contra Costa Water District
CIP	Capital Improvement Program
City	City of Antioch
DD	Delta Diablo
DSC	debt service coverage
DWR	Department of Water Resources
FY	Fiscal year (July 1 to June 30)
ENR	Engineering News Record
FY14	July 1, 2013 to June 30, 2014
gpd	gallons per day
HCF	Hundred Cubic Feet (equal to ~ 748.1 gallons)
mgd	million gallons per day
O&M	Operation and maintenance
SWRCB	State Water Resources Control Board
TSS	Total Suspended Solids

Executive Summary

The City of Antioch, in conjunction with Municipal Financial Services, has analyzed the adequacy of revenues from rates to meet projected expenditures of the water and sewer enterprise funds to determine whether revenues will be adequate to cover operating and maintenance costs as well as needed capital costs while meeting target reserve levels. Water rates and charges and Sewer Service Charges were developed for the five-year period Fiscal Year 2015 – 16 (FY16) through FY20.

Water Fund 611 Revenue Required from Rates

Water rates were developed to generate sufficient revenues to cover operating and maintenance expenditures and capital expenditures, and to meet target reserve levels. The approximate amount of revenues required from water rates for the five-year period, FY16 through FY20, is $167,480,000.

Beginning Balance, July 1, 2015	**$15,729,000**	
Expenditures		
Production, Service & Supplies	$102,208,000	*58%*
Distribution	$34,322,000	*20%*
Supervision	$17,571,000	*10%*
Capital Expenses	$14,271,000	*8%*
Meter Reading/Warehouse/Stores	$6,575,000	*4%*
Capital Reserve	$1,000,000	*1%*
Total Expenditures	**$175,947,000**	***100%***
Revenues		
Charges for Services	$167,480,000	*99%*
Warehouse/Stores	$1,400,000	*0.8%*
Investment Income and Other	$255,000	*0.2%*
Total Revenues	**$169,135,000**	***100%***
Net Revenues	($6,812,000)	
Ending Balance, June 30, 2020	**$8,917,000**	
Ending Balance 90 Days Cash Target	***$8,556,000***	

Projected capital expenditures in Fund 611 during the same time period are approximately $14,300,000. In addition to projected capital expenditures, an amount of $1,000,000 is allocated to a capital reserve as a funding source for future capital expenditures. A summary of the projected five-year expenditures, revenues, and fund balances is shown in the adjacent table.

Note that no debt service is proposed for this fund and that available fund balance is used to mitigate greater increases in water rates.

Water Fund 612 Revenue Projected from Capacity Charges

Water capacity charges were developed in accordance with applicable requirements found in the State of California Government Code. Capacity charges are intended to recover both a portion of the proposed Capital Improvement Program (CIP) cost, and utility rate payers' prior investment in capital facilities that support land development by providing capacity for new connections. Projected capital expenditures during the same time period are $7,695,000. The approximate amount of revenues projected from water capacity charges for the five-year period, FY16 through FY20, is $6,561,000. The available fund balance is reduced by approximately $1,100,000 during the five-year period.

Sewer Fund 621 Revenue Required from Sewer Service Charges

Sewer Service Charges were developed to generate sufficient revenues to cover operating and maintenance expenditures and capital expenditures, and to meet target reserve levels. The approximate amount of revenues required from sewer service charges for the five-year period, FY16 through FY20, is $29,861,000.

Projected capital expenditures in Fund 621 during the same time period are approximately $7,000,000. In addition to projected capital expenditures, an amount of $500,000 is allocated to a capital reserve as a funding source for future capital expenditures. A summary of the projected five-year expenditures, revenues, and fund balances is shown in the adjacent table.

Beginning Balance, July 1, 2015	**$10,373,000**	
Expenditures		
Collection	$22,269,000	*59%*
Supervision	$8,042,000	*21%*
Capital Expenses	$6,970,000	*18%*
Capital Reserve	$500,000	*1%*
Total Expenditures	**$37,781,000**	***100%***
Revenues		
Charges for Services	$29,861,000	*99%*
Investment Income and Other	$178,000	*1%*
Total Revenues	**$30,039,000**	***100%***
Net Revenues	($7,742,000)	
Ending Balance, June 30, 2020	**$2,631,000**	
Ending Balance 90 Days Cash Target	***$1,563,000***	

Note that no debt service is proposed for this fund and that available fund balance is used to mitigate greater increases in Sewer Service Charges.

Sewer Fund 622 Revenue Projected from Capacity Charges

Sewer capacity charges were developed in accordance with applicable requirements found in the State of California Government Code. Capacity charges are intended to recover both a portion of the proposed Capital Improvement Program cost, and utility rate payers' prior investment in capital facilities that support land development by providing capacity for new connections. Projected capital expenditures during the same time period are $2,500,000. The approximate amount of revenues projected from sewer capacity charges for the five-year period, FY16 through FY20, is $3,200,000.

Recommended Water Rates

Recommended water quantity rates and water meter service charges for FY16 – FY20 are listed in the table below. Note that Single Family water quantity rates for FY16 – FY20 are not uniform for each elevation zone. Uniform water quantity rates are replaced with inclining block (tiered) rates with two tiers of water use. The price break for the two tiers for FY16 and FY17 is 13 hundred cubic feet (HCF) per month. Water consumption less than or equal to 13 hundred cubic feet per month is charged the Tier 1 rate applicable to each elevation zone and water consumption greater than 13 HCF per month is charged the Tier 2 rate applicable to each elevation zone.

The price break decreases to 12 HCF for FY18 – FY20. The decrease in the price break reflects projections of continued water conservation. The development of inclining block rates is described in Section 3.

Table ES-1. Recommended Water Rates and Charges

Service Category	*effective dates >* Current	*7/1/2015* 2015-16	*7/1/2016* 2016-17	*7/1/2017* 2017-18	*7/1/2018* 2018-19	*7/1/2019* 2019-20
Quantity Rates, $/HCF			*HCF = hundred cubic feet (748 gallons)*			
Non-Single Family						
Zone I	$2.42	$2.99	$3.24	$3.73	$4.05	$4.44
Zone II	$2.51	$3.08	$3.33	$3.83	$4.16	$4.55
Zone III	$2.64	$3.15	$3.41	$3.92	$4.25	$4.65
Zone IV	$2.92	$3.32	$3.59	$4.10	$4.45	$4.86
Single Family						
Tier 1	*All Use*	*0 - 13 HCF*	*0 - 13 HCF*	*0 - 12 HCF*	*0 - 12 HCF*	*0 - 12 HCF*
Zone I	$2.42	$2.53	$2.74	$3.17	$3.45	$3.78
Zone II	$2.51	$2.62	$2.83	$3.27	$3.56	$3.89
Zone III	$2.64	$2.69	$2.91	$3.36	$3.65	$3.99
Zone IV	$2.92	$2.86	$3.09	$3.54	$3.85	$4.20
Tier 2	*All Use*	*> 13 HCF*	*> 13 HCF*	*> 12 HCF*	*> 12 HCF*	*> 12 HCF*
Zone I	$2.42	$4.19	$4.53	$5.24	$5.68	$6.22
Zone II	$2.51	$4.28	$4.62	$5.34	$5.79	$6.33
Zone III	$2.64	$4.35	$4.70	$5.43	$5.88	$6.43
Zone IV	$2.92	$4.52	$4.88	$5.61	$6.08	$6.64
Meter Service, $/meter-month						
⅝ x ¾-inch	$15.60	$17.50	$18.80	$21.20	$22.90	$24.40
1-inch	$25.27	$39.30	$42.50	$47.70	$52.00	$55.00
1½-inch	$47.74	$74.00	$81.00	$90.00	$98.00	$105.00
2-inch	$75.62	$117.00	$127.00	$142.00	$155.00	$165.00
3-inch	$156.77	$217.00	$235.00	$264.00	$287.00	$305.00
4-inch	$246.73	$359.00	$389.00	$437.00	$475.00	$506.00
6-inch	$488.45	$715.00	$775.00	$870.00	$946.00	$1,008.00
8-inch	$725.62	$1,142.00	$1,237.00	$1,390.00	$1,512.00	$1,610.00
10-inch	$1,554.76	$1,640.00	$1,777.00	$1,997.00	$2,171.00	$2,312.00
12-inch	$2,808.34	$2,352.00	$2,548.00	$2,864.00	$3,113.00	$3,315.00

Recommended Sewer Service Charges

Recommended sewer service rates and charges for FY16 – FY20 are listed in the table below. The recommended rates and charges replace the current Sewer Lateral Maintenance charge ($0.31 per month) and Sewer Service charge ($10.75 per month). Recommended uniform charges for Residential users are based on unit costs applicable to all users. The unit costs are used to calculate monthly bills for Nonresidential users.

Table ES-2. Recommended Sewer Service Rates and Charges

	effective dates >	*7/1/2015*	*7/1/2016*	*7/1/2017*	*7/1/2018*	*7/1/2019*
Service Category	Current	2015-16	2016-17	2017-18	2018-19	2019-20
Unit Costs Applicable to All Users						
Account/Dwelling Unit Charge, $/month	na	$3.53	$3.79	$4.01	$4.22	$4.44
Volume Rate, $/HCF		$0.95	$1.01	$1.07	$1.13	$1.20
Uniform Charges						
Residential						
Single Family Dwelling Unit, $/month	$11.06	$11.60	$12.20	$12.80	$13.40	$14.00
Multi Family Dwelling Unit, $/month	$11.06	$10.10	$10.80	$11.40	$12.00	$12.70
Apartment/Mobile Home Dwelling Unit, $/month	$11.06	$8.90	$9.50	$10.00	$10.60	$11.10
Nonresidential						
Account Charge, $/month	$11.06	$3.53	$3.79	$4.01	$4.22	$4.44
Volume Rate, $/HCF		$0.95	$1.01	$1.07	$1.13	$1.20

Uniform charges for Residential users are based on assigned levels of wastewater discharge volume. There are three subcategories of Residential users - Single Family dwelling units, Multiple Family dwelling units (accounts with two, three or four dwelling units), and dwelling units in apartments and mobile homes in mobile home parks.

"Dwelling unit" means a structure or the part of a structure that is used as a home, residence or sleeping place by one person who maintains a household or by two or more persons who maintain a common household.

For FY15, monthly wastewater discharge volume for single family accounts is 210 gallons per day (gpd). For multiple family dwelling units monthly wastewater discharge volume is 168 gpd and for dwelling units in apartments and mobile homes in mobile home parks the monthly wastewater discharge volume is 137 gpd. For each year during FY16 – FY20, the monthly wastewater discharge volume for single family accounts is reduced by 2 gallons per day.

Monthly bills for nonresidential users are based on the sum of an account charge plus a charge for the volume of wastewater discharge. The volume of wastewater discharge would be based on metered water use (in units of HCF).

Recommended Water and Sewer Capacity Charges

The capacity charges developed in this study are based on the buy-in cost method for valuation of the system. The system buy-in method recovers the replacement cost of capacity in those portions of the existing system in which there is capacity available (for example, the transmission, distribution, storage and pumping components of the water system). The buy-in method excludes service laterals and meters as these assets do not benefit new users connecting to the water or sewer systems. The value of the water and sewer systems is adjusted to account for contributed capital and assets, near term capital improvements that add capacity and working capital.

Recommended capacity charges for FY16 are listed in the table below. Charges for FY17 and later may be escalated using an appropriate index such as the *Engineering News Record* 20-City Construction Cost Index.

Table ES-3. Recommended Water Capacity Charges

	Unit Cost, $/gpd	*Peak Use, gpd*	*Capacity Charge*
Single Family Residential Connection	$6.16	825	$5,080
Meter Connection Size	*Meter Peak Capacity, gpm*	*Equivalency Factor*	*Capacity Charge*
⅝ x ¾-inch	15 gpm	1.0	$5,080
1.00-inch	38 gpm	2.5	$12,700
1.50-inch	75 gpm	5.0	$25,400
2.00-inch	120 gpm	8.0	$40,700
3.00-inch	225 gpm	15.0	$76,300
4.00-inch	375 gpm	25.0	$127,100
6.00-inch	750 gpm	50.0	$254,200
8.00-inch	1,200 gpm	80.0	$406,700
10.00-inch	1,725 gpm	115.0	$584,700
12.00-inch	2,475 gpm	165.0	$838,900

Table ES-4. Recommended Unit Cost of Capacity and Sewer Capacity Charges

Unit Cost of Capacity, $/gallons per day	$11.91	
Capacity Charges		
Residential	*gallons per day*	*Capacity Charge*
Singe Family	210	$2,500
Multiple Family	168	$2,000
Apartments/Mobile Homes	137	$1,630
Nonresidential	*gallons per day*	*Capacity Charge*
Example 1	210	$2,500
Example 2	630	$7,500
Example 3	2,100	$25,010
Example 4	4,200	$50,020
Example 5	5,250	$62,530

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Section 1
Introduction

This section describes the organization of the report, rate-making objectives, the rate-setting process, and a general description of the water and wastewater systems.

1.1 Organization of the Report

This report is divided into seven sections. This introduction provides an overview of the study objectives and evaluation of the efficiency of the City's water and sewer systems compared to those of other similar municipalities.

Section 2 discusses characteristics of customers and their use of the water and sewer systems. The number and type of connections to each system, water use, and wastewater discharge projected for FY15 – FY20 is developed in this section.

Section 3 describes the development of water rates.

Section 4 describes the development of sewer service charges.

Section 5 describes the development of water capacity charges.

Section 6 describes the development of sewer capacity charges.

Section 7 describes the limitations of the study document.

1.2 Rate-Making Objectives

There are numerous rate-making objectives that must be considered when developing rates and rate structures.

Revenue sufficiency. Generate sufficient revenue to fund operating costs, capital costs and bonded debt, and maintain adequate reserves.

Revenue stability. Recover revenue from fixed and variable charges that will cover fixed and variable costs (barring water shortages when rationing may be required).

Conservation signal. Reward customer for efficient water use and discourage its waste.

Administrative efficiency. Enable efficient implementation and ongoing administration, including monitoring and updating.

Affordability. Be as affordable as possible while maintaining the utilities sound financial position and credit rating.

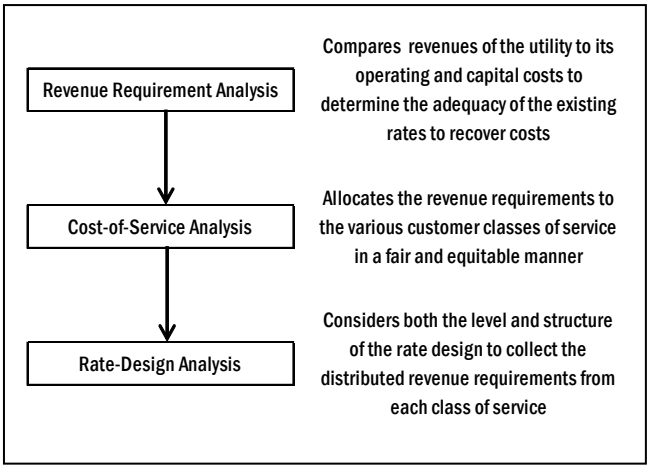
Customer acceptance. Be as simple as possible to facilitate customer understanding and acceptance.

Fairness. Provide for each customer class to pay its proportionate share of the required revenue in compliance with legal rate-making requirements.

Economic development. Rates must be competitive with local jurisdictions to retain and attract economic development.

1.3 Overview of Utility Rate Setting Process

Rate studies classically have three categories of technical analysis – the development of revenue required from rates, the allocation of costs among functional cost categories (cost-of-service analysis) and the design of a rate structure. An overview of the rate-setting analytical steps is shown in Figure 1-1.



The revenue required from rates is net of non-rate revenues (for example interest earned on fund balances, loan disbursements and revenue from new connections to the water system) and other revenues not required from rates (such as revenue from meter turn on/off services). The allocation of costs are structured so that the revenue required from charges is distributed proportionally for every level of service in a manner that allows the development of unit costs. The rate structure uses the unit costs as a basis for aggregating costs into rates that are applicable to the various customer classes.

Figure 1-1. Overview of Rate Setting Analytical Steps

Information and data for the development of water rates and preparation of this report comes from a number of documents provided by the City. The list of documents, and the key information and data from each used in this study, are summarized below.

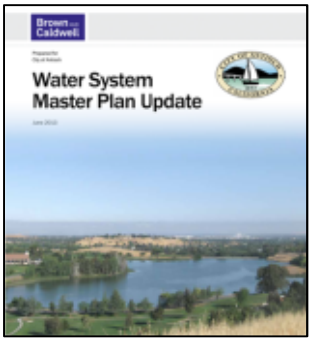
City of Antioch Fiscal Year 2014-15 Adopted Budget. This document shows the recommended FY 2014-15 Annual Budget and Five-Year Capital Improvement Program for the water and wastewater enterprise funds. The City provided a mid-year update of the budget with actual values for FY 2013-14, a revised budget for FY 2014-15, and projected values for FY2015-16 and FY2016-17. Enterprise funds are funded primarily from fees and other user charges.

City of Antioch Municipal Code. Ordinances relating to the water and sewer enterprises are codified in various portions of the Antioch Municipal Code listed below.

- Title 3: Finance, Chapter 11: Sewer Capacity Acquisition Fee
- Title 6: Sanitation And Health, Chapter 4: Sewer System
- Title 6: Sanitation And Health, Chapter 5: Water System
- Title 6: Sanitation And Health, Chapter 6-10: Drought Management Regulations and Water Conservation

***City of Antioch 2010 Urban Water Management Plan* (UWMP).** Dated June 27, 2011, the purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. The UWMP evaluates total projected water use be compared to water supply sources in 5-year increments over a 20-year planning period. Water demand projections from the UWMP were used as a reference for projections shown in this study.

***City of Antioch 2013 Water System Master Plan Update* (2013 Water Master Plan).** Dated June 2013, the 2013 Water Master Plan reviews changes in water supply, water use characteristics, drinking water regulations, and study area demographics and presents significant Brown and Caldwell (BC) findings, conclusions and recommendations for existing and future facilities through the year 2035.



***City of Antioch 2014 Wastewater Collection System Master Plan* (2014 Collection System Master Plan).** Dated August 2014, the purpose of the 2014 Collection System Master Plan is to update the trunk system capacity assessment and recommended capacity improvement program presented in the City's 2003 Wastewater Collection System Master Plan to reflect updated land use and flow estimates and sewer projects completed since the 2003 report was developed.

Utility Billing System data. Monthly water use data for each of the City's metered accounts, for the time period January 2012 through December 2013, were provided in an Excel file. Each account record had descriptive information of the account's customer class, meter size and elevation pressure zone. The City also generated special reports, such as the *Multiple Unit Report,* which listed accounts with multiple sewer lateral connections to the collection system.

Department of Water Resources Form 38 Reports. The City submits Form 38 annually to the State of California Department of Water Resources (DWR). This form, titled "Public Water System Statistics", is used to summarize Active Service Connections, Total Water into the System (production), and Metered Water Deliveries for the City's Water System.

1.4 Antioch Water Utility

The City of Antioch, incorporated in 1872, is located in the western part of the state and is the second largest city in Contra Costa County. The City of Antioch currently occupies a land area of approximately 29 square miles and serves a population of about 105,117 residents. Antioch's population grew about 5.9 percent between 2003 and 2013 while the overall Contra Costa County growth rate during this corresponding time period was just shy of 8 percent.

The water system delivers treated water to residential, commercial and irrigation customers. Personnel maintain approximately 339 miles of water main, 31,400 service connections and meters, 2,390 backflow prevention devices, maintain, repair and flush approximately 3,443 fire hydrants, exercise system valves and administers a water conservation program. Personnel staff an alternative work shift and 24-hour Stand-by system that responds to emergency after hour calls for service.

The principal sources of raw water supply are the Sacramento/San Joaquin Rivers Delta and the Contra Costa Water District (CCWD) Canal, which can be stored in the Antioch Municipal Reservoir. Canal water, purchased from CCWD is pumped from Victoria Canal, Rock Slough, and Old River in the western Delta and the Los Vaqueros Reservoir. Even under the most favorable conditions, the city obtains the largest percentage of its raw water from CCWD.

The pipelines from the CCWD Canal to the water treatment plant (WTP) have a capacity over 60 million gallons per day (mgd), well above the maximum predicted future water demand. Water from the Canal can be pumped into the municipal reservoir or directly to the WTP. The WTP has a maximum capacity of about 38 mgd. Treated water flows into two 1.0 million gallon (MG) clearwells before entering the distribution system. In addition to expansion, the City improved water source reliability by purchasing treated water from CCWD produced at the Randall-Bold Plant (RBP), using a connection to the CCWD multipurpose pipeline at Hillcrest Avenue, and the Diablo Water District (DWD) conveyance system.

The service area extends from steep hilly terrain in the south and west portions of the service area to flat with a gentle slope in the northeast portion of the service area. Elevations in the service area range from sea level to over 700 feet. Generally, the service area is limited to elevations less than 560 feet. Four

pressure zones are currently required to distribute water, and eventually six to seven may be necessary depending on future land development.

The Antioch distribution system consists of four primary pressure zones. Water pressure typically is maintained between 40 and 100 pounds per square inch gage (psig).[1]

Pressure Zone I. Pressure Zone I distribution system serves the older residential sections of the City, the original central business district and some major industrial users. Ground elevations range from sea level to 50 feet. Zone I is served by gravity principally through a 24 inch-diameter main from the WTP. Pressure reducing valve installations between Zones I and II allows water to flow down to Zone I from Zone II.

Pressure Zone II. Pressure Zone II serves primarily residential and commercial users and has ground elevations ranging from sea level to 170 feet. One area above 170 feet in elevation is supplied by the small Sunset Booster Pump Station. The principal water mains in Zone II are 10, 12, 16, 20, 24 and 30 inches in diameter. The system is supplied by two Zone II Booster Pump Stations – one built in 1967 and one built in 1988, which take suction from the WTP clearwells. There is emergency WTP generator capacity available to operate 58% of the Zone II booster pumps should there be a power outage. Four water storage reservoirs are located in Zone II.

Pressure Zone III East. Pressure Zone III East encompasses much of the newer residential and commercial growth in the City. Zone III East generally extends south from the Canal, with some development north of the canal in the eastern portion of the City. It is bounded on the west by Contra Loma Regional Park and on the east by a Southern Pacific Railroad right-of-way. The zone border extends south to the city limits but excludes most of the area south of Lone Tree Way and west of Deer Valley Road. Three Booster Pump Stations, Hillcrest and Lone Tree 1 and 2, and two reservoirs, Hillcrest and Lone Tree, serve Zone III East. Zone III East is served with 12, 16, 20 and 24 inches in diameter water mains.

Pressure Zone III West. Zone III West is a developed residential area on the west side of the City. Most existing development is residential but some commercial development will occur in the western portion of this zone. After the completion of the planned developments at Meadowlands and Black Diamond Ranch, this zone will encompass about 1.25 square miles. It is bound by the Canal, Black Diamond Mines, Contra Loma Regional Park, and the City limits. Zone III West is served by the Donlon Booster Pump Station which fills the Cambridge Reservoir. Water mains of 8, 10, 12 and 16 inches in diameters serve the Zone III West development.

Pressure Zone IV West. The Zone IV West facilities serve to the higher elevations of the Mira Vista Hills Subdivision and the higher elevations in Black Diamond Ranch. The Cambridge Booster Pump Station has emergency power facilities to convey water into Zone IV West and the Mira Vista Hills Reservoir. New 8, 10 and 12 inches in diameter mains serve the Zone IV West development.

Pressure Zone IV East. Zone IV East includes all of the Higgins Ranch and parts of the Dallas Ranch, Black Diamond Knolls, and Diablo West developments. Zone IV East is bound by Contra Loma Regional Park on the west, Zone III East on the north and east, and the proposed new Urban Limit Line on the south. The Dallas Ranch Booster Pump Station serves Zone IV East. The Booster Pump Station conveys water to Zone IV East and to the Empire Mine Reservoir. The reservoir has a capacity of 3.5 MG and an overflow elevation of 510 feet.

[1] Text for this section is excerpted from the City of Antioch *2010 Urban Water Management Plan* dated June 27, 2011.

Recent data from the City's Utility Billing System summarizing the number of meters and water demand, by customer class, are shown in the figures below. The units of water demand shown in the figure (7,930,000 HCF) are equivalent to approximately 16.3 million gallons per day or 5.9 billion gallons per year.

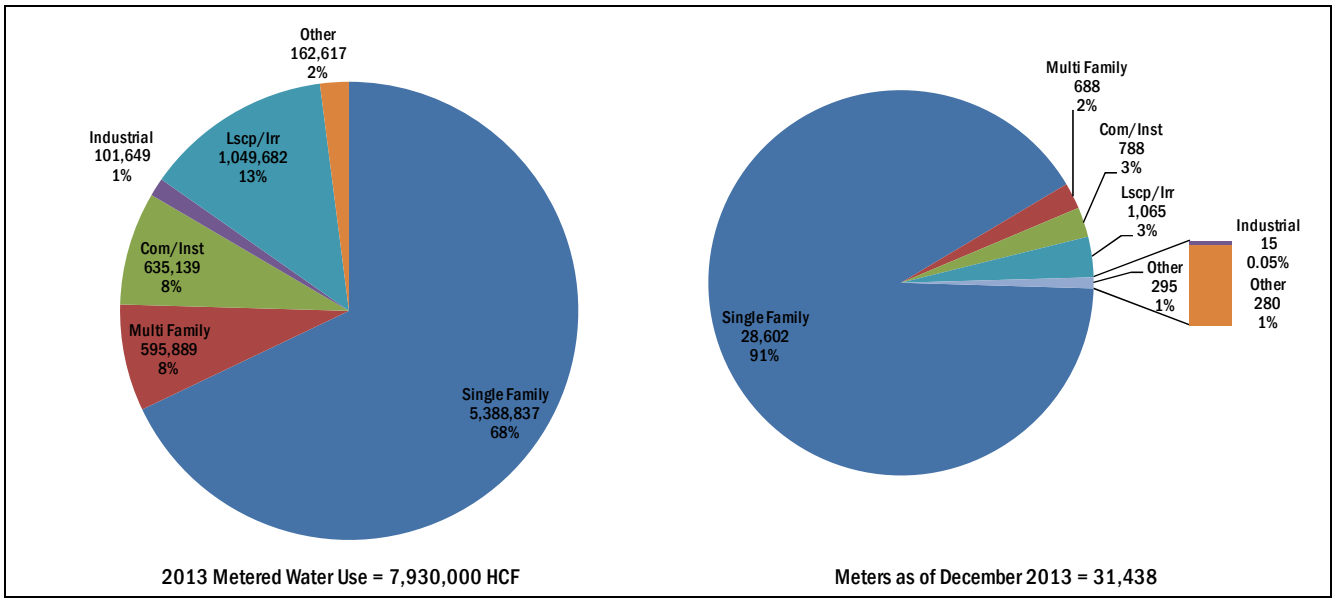


Figure 1-2. Water Demand (CY13) and Number of Meters by Customer Class (December 2013)
Abbreviations – Single (Single Family); Com (Commercial); Inst (Institutional); Irr (Irrigation); Lscp (Landscape)

Recent data from the City's Utility Billing System summarizing the number of meters by size, is shown in the figure below.

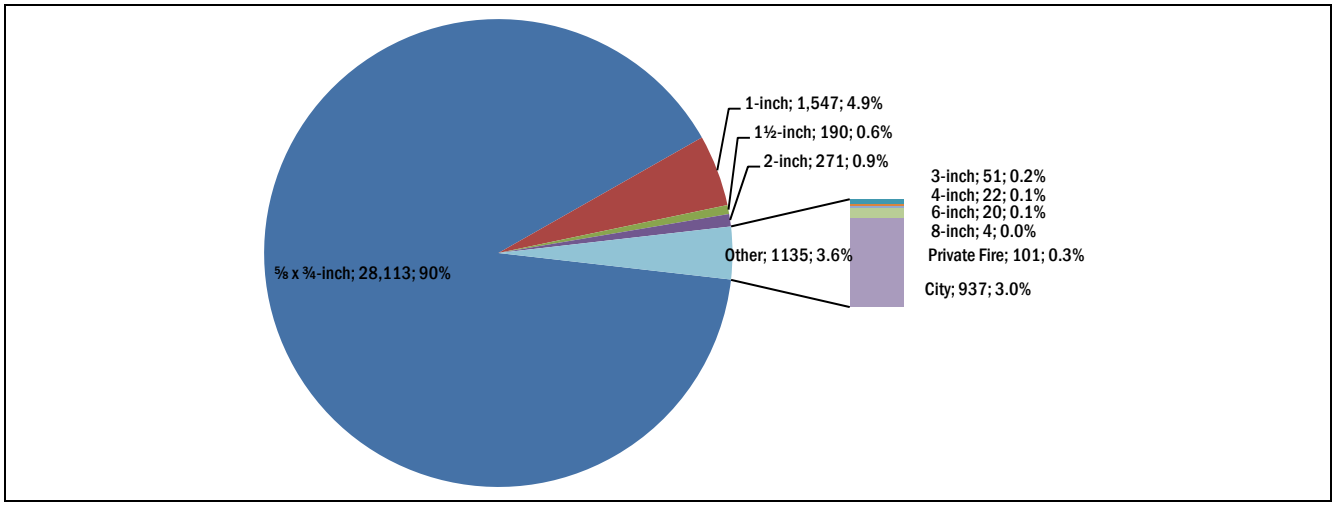


Figure 1-3. Number of Meters by Size (December 2013)

1.5 Current Water Rates

Water rates are established as allowed in Title 6 (Sanitation and Health), Chapter 5 (Water System) of the Antioch Municipal Code (AMC). Water rates were last increased on July 1, 2014. The City's current water meter service rates and water use (quantity) rates, are shown in the sidebar below.

Service Type	Rate
Quantity	*$/HCF*
Zone I	$2.42
Zone II	$2.51
Zone III	$2.64
Zone IV	$2.92
Meter Service	*$/meter*
⅝ x ¾-inch	$15.60
1-inch	$25.27
1½-inch	$47.74
2-inch	$75.62
3-inch	$156.77
4-inch	$246.73
6-inch	$488.45
8-inch	$725.62
10-inch	$1,554.76
12-inch	$2,808.44

Each water account has one or more meters and each meter is billed for metered water use at the rates shown (except fire service accounts which are not billed for water use).

The City has six main categories of user accounts.

- Single Family
- Multiple Family
- Commercial/Institutional
- Industrial
- Landscape
- Irrigation

1.6 Antioch Sewer Utility

The sewer collection activity is primarily responsible for maintaining an estimated 300 miles of sanitary sewer system lines and approximately 28,250 residential and commercial sewer lateral connections. This program also performs root foaming, manhole rehabilitation, infiltration control, spot repairs and cleaning of larger trunk lines. Employees in this activity provide a comprehensive program of televising, archiving and benchmarking the overall condition of the sewer system infrastructure. Data from these activities are used to establish maintenance requirements, the need for repairs and development of Capital Improvement Projects. Personnel also assist in staffing an alternative work shift and 24-hour Stand-by system that responds to emergency after hour calls for service.

Pursuant to State Water Resources Control Board Order 2006-0003, Statewide General Discharge Requirements of Sanitary Sewer Systems the City of Antioch has developed and implemented a Sewer System Management Plan (SSMP). The goal of the SSMP is to minimize the frequency and severity of sanitary sewer overflows. The SSMP covers the management, planning, design, and operation and maintenance of the agency's sanitary sewer system. The development process began in January 2007 and was completed April 2009 and adopted by Council on April 28, 2009.

Wastewater from the City is collected through the City's sewer system and is discharged into Delta Diablo's conveyance system. There are three main connection points between the City system and the Delta Diablo system:

- Bridgehead Pump Station, in the northwest section of the City: Wastewater from the southern part of the City, including Roddy Ranch and Ginocchio future development focus areas, is transported through the Lone Tree Interceptor to the Bridgehead Pump Station.
- Fulton Shipyard (Antioch) Pump Station, in the north section of the City: Sewage from the central and northern parts of the City is collected at the Fulton Shipyard Pump Station. Sewage from the Bridgehead Pump Station is conveyed to the Fulton Shipyard Pump Station through a Delta Diablo -owned and operated force main and gravity conveyance system. Sewage from the Fulton Shipyard Pump Station is pumped into the Antioch Interceptor and conveyed to the Delta Diablo Wastewater Treatment Plant.
- Pittsburg-Antioch Interceptor, in the northeast section of the City: In addition to sewage from Pittsburg, sewage from the eastern part of Antioch is conveyed to the Delta Diablo Wastewater Treatment Plant through the Pittsburg-Antioch Interceptor.

All of the City of Antioch's collected wastewater is conveyed to the Delta Diablo wastewater treatment plant for processing. Delta Diablo was originally formed in 1976 to protect the health of the public and the environment by collecting and effectively treating wastewater in the communities of Antioch, Bay Point and Pittsburg. Treated effluent is discharged into New York Slough, a section of the San Joaquin River. For Fiscal Year 2014-15, Delta Diablo charges Antioch residents $290.96 annually on their property taxes.

Recent data from the City's Utility Billing System was used to project customer wastewater discharge characteristics for FY15. The number of accounts and dwelling units are shown in the figure below on the right. Wastewater discharge is shown in the figure below on the left. Wastewater discharge for Single Family, Multi Family and Commercial/ Apartments customer classes is based on water use during January and February (annualized to a 12 month value). Wastewater discharge for Institutional and Other customer classes is based on 12 months of metered water use (not including irrigation or fire service meters).

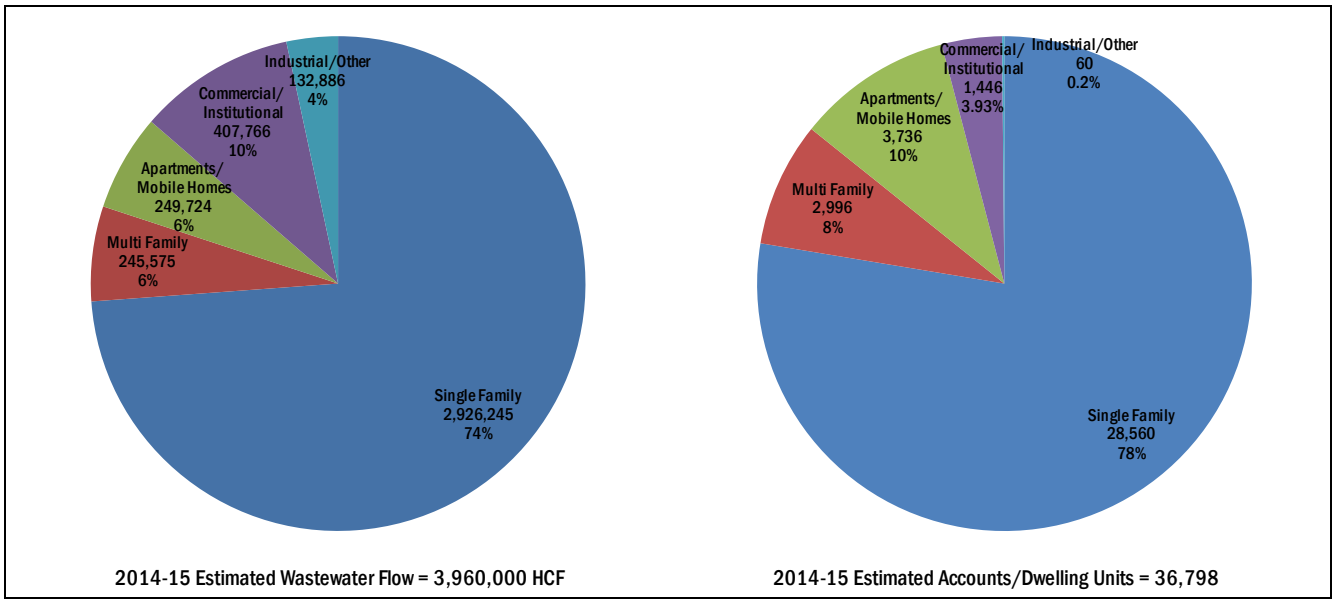


Figure 1-4. Wastewater Discharge and Number of Accounts/Dwelling Units

1.7 Current Sewer Service Charges

Sewer Service Charges are established as allowed in Title 6 (Sanitation and Health), Chapter 4 (Sewer System) of the Antioch Municipal Code. Sewer Service Charges were last increased on July 1, 2014. The City's Sewer Service Charges, as described in the City's *Master Fee Sche*dule, are listed below:

- Sewer Service - $10.75 per month
- Sewer Later Maintenance - $0.31 per month per unit

1.8 Water System Comparison with Comparable Cities

The City's water system costs and service characteristics were compared with those of three other nearby municipalities with similar populations and water systems.

1.8.1 Comparison of Comprehensive Annual Financial Reports

In this exercise similar municipalities were chosen based on location, population served and primary water source. Water fund financial information for FY13 (ending June 30, 2013) was obtained from each jurisdiction's Comprehensive Annual Financial Report (CAFR) and from the State of California Department of Finance.

The Department of Finance estimated that the City of Antioch had a population of 105,117 as of January 1, 2013. Based on these statistics and geographic location, the following cities were selected as similar municipalities: City of Brentwood, City of Martinez, and the City of Pittsburg.

Revenues and expenditures for each jurisdiction are shown in the table below.

Table 1-1. Water System Financial Metrics

	Antioch	Brentwood	Martinez	Pittsburg
Statistics				
Population as of January 1, 2013	*105,117*	*53,278*	*30,488*	*65,339*
Surface Water as % of Total Supply (approximate)	*100%*	*75%*	*100%*	*100%*
Operating Revenues				
Charges for Services	$25,128,575	$18,441,440	$10,668,120	$18,325,684
Other Revenues	$112,890	$216,183	$576,227	$1,342,649
Total Operating Revenues	**$25,241,465**	**$18,657,623**	**$11,244,347**	**$19,668,333**
Operating Revenue per 2013 Capita	*$240*	*$350*	*$369*	*$301*
Operating Expenses				
Water System Operations	$18,353,992	$13,153,649	$8,670,144	$12,271,853
Depreciation	$4,553,292	$2,970,644	$1,888,290	$1,665,896
Total Operating Expenses	**$22,907,284**	**$16,124,293**	**$10,558,434**	**$13,937,749**
Operating Expenses per 2013 Capita	*$218*	*$303*	*$346*	*$213*
Operating Income (Loss)	**$2,334,181**	**$2,533,330**	**$685,913**	**$5,730,584**
Nonoperating Revenues (Expenses)				
Interest and Investment Earnings	$127,775	$120,150	$42,455	$114,747
Interest Expense	($47,995)	($2,839,762)	($305,069)	($1,580,278)
Other	blank	($23,375)	blank	($63,134)
Total Nonoperating Revenues	**$79,780**	**($2,742,987)**	**($262,614)**	**($1,528,665)**
Income (Loss) Before Transfers / Contributions	$2,413,961	($209,657)	$423,299	$4,201,919
Contributions	$1,220,351	$3,349,412	blank	$350,014
Net Transfers	($476,760)	$107,701	blank	($705,232)
Net Income (Loss)	**$3,157,552**	**$3,247,456**	**$423,299**	**$3,846,701**
Net Assets				
Beginning of year	$100,969,273	$115,944,002	$39,154,511	$57,376,239
Ending of year	**$104,126,825**	**$119,191,458**	**$39,577,810**	**$61,222,940**

Source: Population data is from the State of California, Department of Finance, E-4 Population Estimates for Cities, Counties, and the State, 2011-2013, with 2010 Census Benchmark; revised May 10, 2013.
Surface water as a percent of total water supply was based on data from each City's website or correspondence with selected City staff.
Financial data is from the Fiscal Year ending June 30, 2013 Comprehensive Annual Financial Report (CAFR) for each City.

Each of the four cities exhibits very good water system financial metrics in terms of generating positive Operating Income and Net Income.

1.8.2 Comparison of Water System Efficiency Metrics

Four efficiency metrics were developed to provide an indicator of how cost-effective water operations are in Antioch compared to other community systems. They are:

- Operating expenses per full time equivalent employee (FTEE)
- Operating expenses per water service connection
- Operating expenses per gallon of water delivered
- Operating expenses per mile of water mains

The efficiency metrics are based on total operating expenditures, as shown in the previous table, and service statistics for FY13 for each City.

Table 1-2. Water System Efficiency Metrics

	Antioch	Brentwood	Martinez	Pittsburg
Statistics				
Population as of January 1, 2013	*105,117*	*53,278*	*30,488*	*65,339*
Occupied Housing Units as of January 1, 2013	*32,649*	*16,827*	*14,376*	*19,881*
Surface Water as % of Total Supply (approximate)	*100%*	*75%*	*100%*	*100%*
Water System Operating Expenses, FY 2013	$22,907,284	$16,124,293	$10,558,434	$13,937,749
Efficiency Metric #1				
Number of FTEEs (Full Time Equivalent Employees)	47.00	22.52	19.00	27.26
Operating Expenses per FTEE (rounded)	*$487,400*	*$716,000*	*$555,700*	*$511,300*
Efficiency Metric #2				
Number of Water Service Connections	31,583	17,122	9,768	17,664
Operating Expenses per Service Connection (rounded)	*$725*	*$940*	*$1,080*	*$790*
Efficiency Metric #3				
Amount of Water Delivered - Gallons	6,966,000,000	3,348,000,000	1,376,050,000	3,317,850,000
Operating Expenses per Million Gallons	*$3,288*	*$4,816*	*$7,673*	*$4,201*
Gallons per Capita (rounded)	*66,300*	*62,800*	*45,100*	*50,800*
Efficiency Metric #4				
Miles of Water Mains	333	256	100	225
Operating Expenses per Mile of Water Mains (rounded)	*$68,800*	*$63,000*	*$105,600*	*$61,900*
Lineal Feet of Water Mains per Housing Unit	*54*	*80*	*37*	*60*

Source: 2011 Population and Housing Units data are from the State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011 - 2013, with 2010 Census Benchmark.
Surface water as a percent of total water supply was based on data from each City's website or correspondence with selected City staff.
FTEE, service connection, number of active wells, miles of water mains and water delivery data was provided by Staff from each City or from City reports.

The City of Antioch demonstrates the highest efficiency in three of the four metrics. Because the City of Antioch has a lower value for Lineal Feet of Water Mains per Housing Unit, its water system is less concentrated in terms of customer base per mile of water mains and its metric for Operating Expenses per Mile of Water Mains is slightly higher than those of cities with a more concentrated customer base.

Section 2

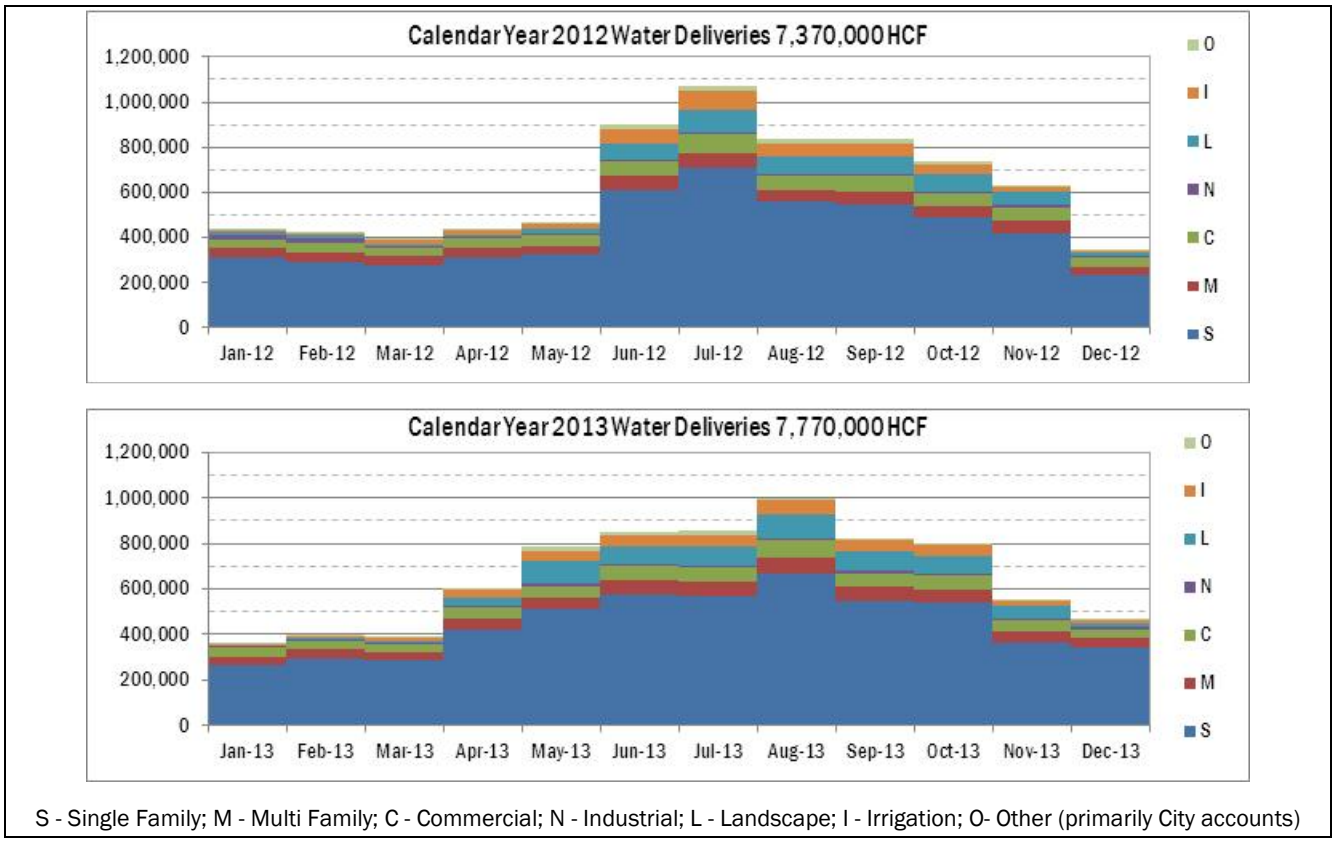
User Characteristics

The purpose of this section is to summarize the identification of residential and nonresidential users and their corresponding water use characteristics. The data used in this section comes from the City's water use reports, the UWMP and the City's billing system.

2.1 Historic Water Deliveries

Historical water delivery and service connection data for 2003 through 2013 was provided by the City as shown in its annual report using the Department of Water Resources Form 38 (Public Water System Statistics). Detailed water delivery data for 2012 and 2013 was also provided from the City's billing system. There are differences in the way the two sets of data are reported and summarized by the City which lead to small differences between the two sets of data. The differences are not material to the development of projected water use. Detailed water delivery and service connection data from Form 38 reports is summarized in Table A-1 of Appendix A.

Metered water deliveries by customer class and month for calendar years 2012 and 2013 based on data from the City's billing system are shown in Figure 2-1 in units of hundred cubic feet (HCF). Water deliveries for fire service connections and recycled water are not included in the totals.



S - Single Family; M - Multi Family; C - Commercial; N - Industrial; L - Landscape; I - Irrigation; O- Other (primarily City accounts)

Figure 2-1. Metered Water Use by Customer Class and Month for 2012 and 2013

Water deliveries in 2013 were 400,000 HCF greater (approximately 5.4 percent) than in 2012. Most of the increase in water deliveries was due to increased water use during March, April and May by Residential, Landscape and Irrigation customers.

Water delivery projections for FY15 – FY20 are based upon the net impact of two variables: 1) increase in water use due to the growth in the number of metered accounts; and 2) decrease in water use due to conservation. Growth in the number of metered accounts includes approximately 240 single family connections per year. Water use is projected to decline by approximately 16 percent from calendar year 2013 to FY15. Projected water use for FY16 – FY20 is based on a percent reduction from the previous years' value. Reductions in metered water use for FY16 – FY20 are projected to be 3 percent per year for single family accounts. Reductions in metered water use are projected to be 1 percent per year for all other customer classes. Projected metered water deliveries, by customer class, are shown in the figure below.

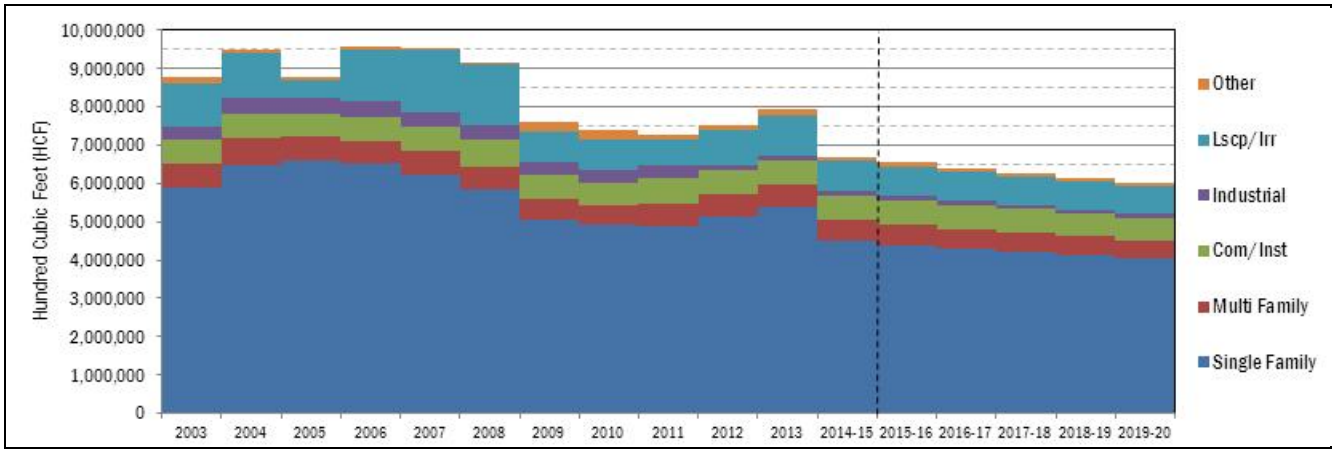


Figure 2-2. Projected Metered Water Use by Customer Class

2.2 Evaluation of Water Use by Pressure Zone

Water use by pressure zone (in units of HCF) is shown below in Figure 2-3 for 2012 (left) and 2013 (right). Detailed water use by pressure zone is summarized in Table A-2 of Appendix A.

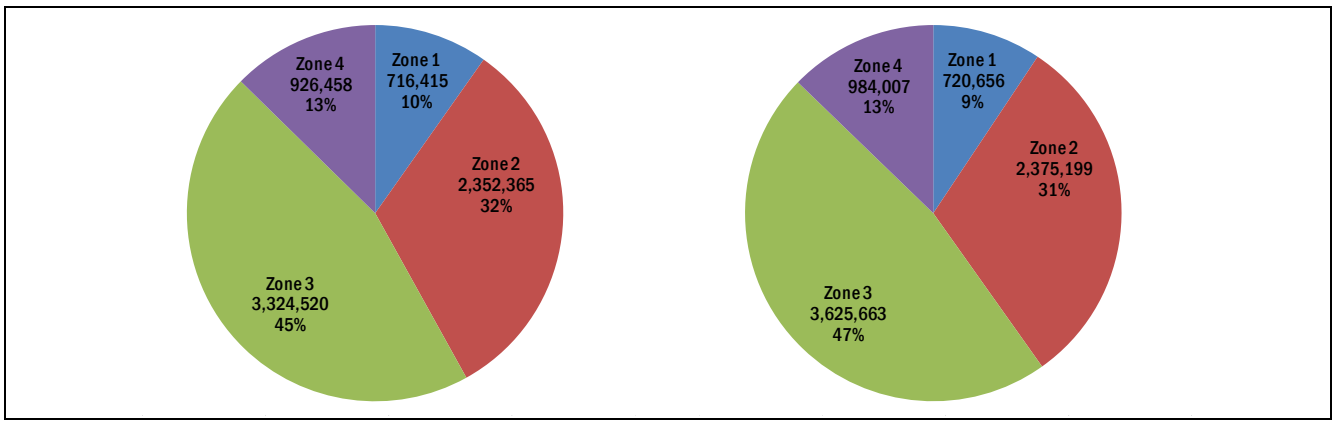


Figure 2-3. Water Use by Pressure Zone

2.3 Evaluation of Water Use by Block for Single Family Residential

Annual average water use is a commonly used as a break point for inclining block rate structures for single family residential accounts. An inclining block rate structure is a schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding block is charged a higher unit rate than in the previous blocks. In this study, a two-block structure, with the first block including water use equal to or below annual average water use, will be evaluated. Note that the terms "block" and "tier" will be used interchangeably.

Average monthly water use for single family residential accounts for the 24-month period ending December 2013 is shown below in Figure 2-4. The annual average for 2012 was 15.0 HCF per month. The annual average for 2013 was 15.8 HCF per month.

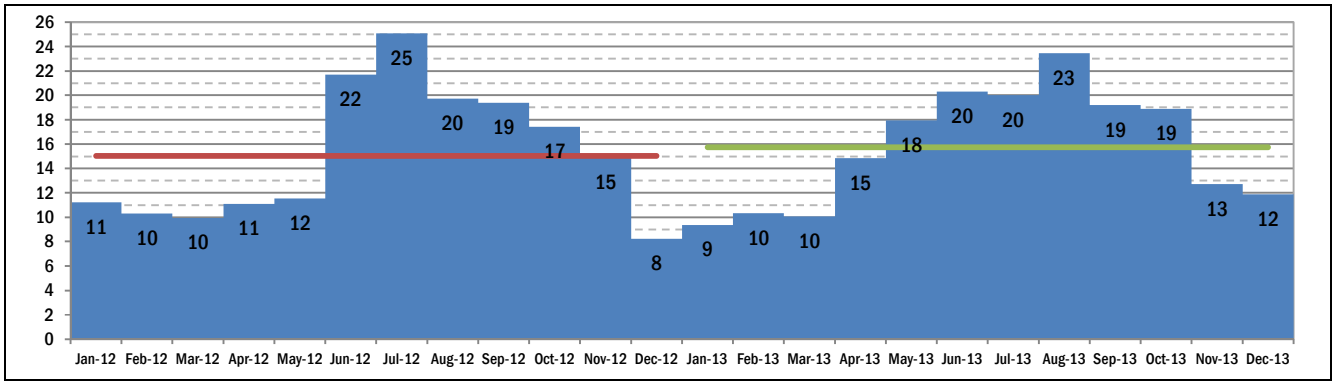


Figure 2-4. Single Family Residential Average Monthly Water Use, HCF

Using a first block defined as water use less than or equal to 15 HCF, total water use in each block was calculated for the 24-month period ending December 2013 is shown below in Figure 2-5. On an annual basis, the first block, Tier 1, contains approximately 69 percent of all water use. The next block Tier 2, contains approximately 31 percent of all water use.

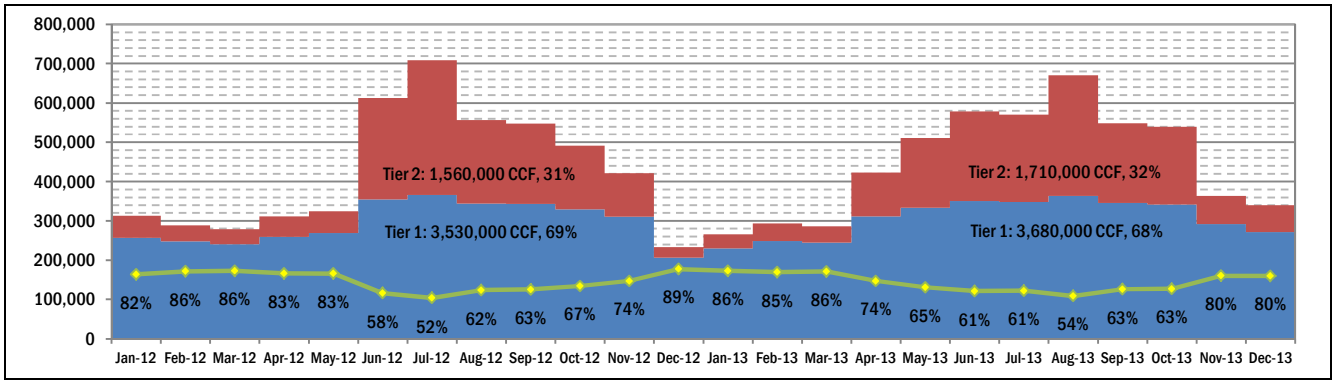


Figure 2-5. Single Family Residential Total Water Use, HCF

Tier breaks for FY16 – FY20 are adjusted to account for water conservation. The price break for the two tiers for FY16 and FY17 is water consumption less than or equal to 13 HCF per month (Tier 1) and greater than 13 HCF per month (Tier 2). The price break drops to 12 HCF for FY18, FY19 and FY20 to reflect projected conservation.

2.4 Water Meter Equivalency Factors

Meter charges for meter sizes greater than ⅝ x ¾-inch are based, in part, on an "equivalency factor" that relates the design maximum flow capacity of a meter (in gallons per minute, gpm) to that of a standard ⅝ x ¾-inch meter. The water meter service charge ratios (equivalency factors) and maximum flow capacity used in this study are shown in the table below and are based on values published by the California Public Utilities Commission Water Division.

The equivalency factors used in the development of current service charges are not known but may be approximated by calculating the ratio of the monthly charges for each meter size in relation to the monthly charge for a ⅝ x ¾-inch meter. The implied equivalency factors based on the current service charges are shown in the table below for comparison to those used in this study.

Table 2-1. Water Meter Equivalency Factors

	Recommended Equivalency Factors		Current Implied Equivalency Factors	
Meter Size	Maximum Flow Capacity	Meter Service Charge Ratios *	Monthly Service Charge	⅝ x ¾-inch Equiv. Factor
⅝ x ¾-inch	15 gpm	1.0	$15.60	1.0
1.00-inch	38 gpm	2.5	$25.27	1.6
1.50-inch	75 gpm	5.0	$47.74	3.1
2.00-inch	120 gpm	8.0	$75.62	4.8
3.00-inch	225 gpm	15.0	$156.77	10.0
4.00-inch	375 gpm	25.0	$246.73	15.8
6.00-inch	750 gpm	50.0	$488.45	31.3
8.00-inch	1,200 gpm	80.0	$725.62	46.5
10.00-inch	1,725 gpm	115.0	$1,554.76	99.7
12.00-inch	2,475 gpm	165.0	$2,808.44	180.0

Source: California Public Utilities Commission Water Division, Standard Practice U-7-W, "Rate Design For Water And Sewer System Utilities Including Master Metered Facilities", July 2006.

2.5 Water Meters

The projected number of water meters, by size, was based on data from the City's utility billing system as of December 2013. Values from the utility billing system and projections for FY15 through FY20 are shown in the table below.

Table 2-2. Water Meters

Category	December 2013	Projected Fiscal Year 2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Metered Service							
⅝ x ¾-inch	28,113	28,338	28,563	28,788	29,038	29,288	29,563
1-inch	1,547	1,547	1,547	1,547	1,547	1,547	1,547
1½-inch	190	190	190	190	190	190	190
2-inch	271	271	271	271	271	271	271
3-inch	51	51	51	51	51	51	51
4-inch	22	22	22	22	22	22	22
6-inch	20	20	20	20	20	20	20
8-inch	4	4	4	4	4	4	4
10-inch	0	0	0	0	0	0	0
12-inch	0	0	0	0	0	0	0
Total	30,218	30,443	30,668	30,893	31,143	31,393	31,668

Notes:

1 The number of meters and connections as of December 2013 are from the City's water billing data.
The meter sizes for all "City" customer class accounts (937) are not listed in the City data base and are assumed to be ⅝, ¾-inch.

2 The estimated number of additional meter connections for 2014-15 onward are projected as shown below.

	2014-15	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*
⅝ x ¾-inch	225	225	225	250	250	275

The equivalent number of water meters for FY15 through FY20 are shown in the table below.

Table 2-3. Equivalent Water Meters

Category	Equivalent Meter Factors Flow Rate	Factors	Projected Fiscal Year 2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Metered Service								
⅝ x ¾-inch	15 gpm	1.00	28,338	28,563	28,788	29,038	29,288	29,563
1-inch	38 gpm	2.53	3,919	3,919	3,919	3,919	3,919	3,919
1½-inch	75 gpm	5.00	950	950	950	950	950	950
2-inch	120 gpm	8.00	2,168	2,168	2,168	2,168	2,168	2,168
3-inch	225 gpm	15.00	765	765	765	765	765	765
4-inch	375 gpm	25.00	550	550	550	550	550	550
6-inch	750 gpm	50.00	1,000	1,000	1,000	1,000	1,000	1,000
8-inch	1,200 gpm	80.00	320	320	320	320	320	320
10-inch	1,725 gpm	115.00	0	0	0	0	0	0
12-inch	2,475 gpm	165.00	0	0	0	0	0	0
Total			38,010	38,235	38,460	38,710	38,960	39,235

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Section 3

Development of Water Rates

Revenue from water rates must adequately fund water utility operations, capital costs, reserves, and bonded debt related to the provision of water service (if any). The City established Water Fund 611 as a Public Works Enterprise Fund that accounts for the revenues and expenditures related to providing water service through approximately 31,000 service connections throughout Antioch to more than 100,000 consumers. The cost of treating the water, transporting it and maintaining the distribution infrastructure, including 333 miles of mainlines, is also accounted for in this fund. The Water Fund includes the following programs: Water Supervision, Water Production, Water Distribution, Meter Reading, Warehouse & Central Stores, and Capital Projects for the City of Antioch.

A separate fund, the Water Line Expansion Fund 612, is set up to track the development fees collected from developers to fund offsite or oversize facilities in three areas: water storage, plant expansion and other facilities including oversized mains.

3.1 Current Water Rates and Revenue from Rates

Resolution No. 2010/44, which was passed in June 2010, adopted Water Quantity and Water Service Charges (Water Rates) effective July 1, 2010.[2] Subsequent increases of eight percent per year (based on the combined average for all water rates) were to be effective every July 1 for the next four years, beginning with FY12.

Resolution No. 2011/58, which was passed in September 2011, corrected zone surcharge rates for Zones II, III and IV.

Increases of eight percent, scheduled for July 1, 2012, were not implemented.

Estimated revenue from Water Rates for FY15, based on rates that went into effect July 1, 2014, is shown in the adjacent table.

Service Type	Units	Water Rate	Revenue	%
Quantity	*CCF*	*$/CCF*		
Zone I	642,000	$2.42	$1,553,640	
Zone II	2,112,000	$2.51	$5,301,120	
Zone III	3,086,000	$2.64	$8,147,040	
Zone IV	850,000	$2.92	$2,482,000	
Subtotal	6,690,000		$17,483,800	*73%*
Meter Service	*meters*	*$/meter*		
⅝ x ¾-inch	28,338	$15.60	$5,304,874	
1-inch	1,547	$25.27	$469,112	
1½-inch	190	$47.74	$108,847	
2-inch	271	$75.62	$245,916	
3-inch	51	$156.77	$95,943	
4-inch	22	$246.73	$65,137	
6-inch	20	$488.45	$117,228	
8-inch	4	$725.62	$34,830	
Subtotal	30,443		$6,441,887	*27%*
Total			$23,925,687	*100%*

[2] The July 1, 2010 increase in Water Rates was based on a study by Black & Veatch consultants.

3.2 Projected Expenditures and Funding Sources

Budgeted and projected expenditures and the sources of funds (water rates, other operating and nonoperating revenues and use of fund balance) are described in this section.

3.2.1 Projected Expenditures

Budgeted and projected expenditures are shown in the table below. All actual and budgeted expenditure values were provided by the City. Projected operating expenditures are based on annual escalation rates provided by the City.

Table 3-1. Water Fund 611 Budgeted and Projected Expenditures

Expense Category	Notes	Actual 2013-14	Budget Revised 2014-15	Budget Proposed 2015-16	*Proj. Cost Esc.*	Projected 2016-17	2017-18	2018-19	2019-20
Operating Expenses	[1]								
Supervision		2,594,183	3,225,907	3,243,751	*4%*	3,374,000	3,509,000	3,649,000	3,795,000
Production, Serv & Supl		13,577,773	16,498,063	17,119,740	*4%*	17,805,000	18,517,000	19,258,000	20,028,000
Production, Personnel		1,361,298	1,593,540	1,749,820	*4%*	1,820,000	1,893,000	1,969,000	2,048,000
Distribution		4,757,074	5,967,086	6,336,539	*4%*	6,590,000	6,854,000	7,128,000	7,413,000
Meter Reading		312,205	535,952	801,467	*5%*	684,000	718,000	754,000	792,000
Warehouse/Stores		400,032	488,713	511,164	*5%*	537,000	564,000	592,000	622,000
Total Operating		**23,002,565**	**28,309,260**	**29,762,481**		**30,810,000**	**32,055,000**	**33,350,000**	**34,698,000**
Capital Expenses	[1]								
Personnel		37,488	122,790	124,060	*4%*	129,000	134,000	139,000	145,000
Projects		1,633,243	2,612,450	1,160,000	*varies*	2,790,000	3,090,000	3,240,000	3,320,000
Total Capital		**1,670,731**	**2,735,240**	**1,284,060**		**2,919,000**	**3,224,000**	**3,379,000**	**3,465,000**
Capital Reserve	[2]	**0**	**0**	**0**	*varies*	**0**	**0**	**0**	**1,000,000**
Total Expenditures		**24,673,296**	**31,044,500**	**31,046,541**		**33,729,000**	**35,279,000**	**36,729,000**	**39,163,000**

1 All data was provided by the City.
The 2015-16 budget for Meter Reading includes $150,000 for a one-time equipment purchase. Projected values for 2016-17 and beyond exclude that amount.
2 The Capital Reserve fund is for the accumulation of funds for future Capital Projects.

3.2.2 Projected Source of Funds

The City plans to fund its projected operating and capital expenditures through a mix of revenues from water rates, and other operating and nonoperating revenues and use of fund balance.

The table below shows how the City plans to fund projected capital expenditures.

Table 3-2. Source of Funds for Capital Expenditures

Item	Projected					Five-Year Total
	2015-16	2016-17	2017-18	2018-19	2019-20	
Capital Projects						
FY16 - FY20 CIP Specific	3,810,000	5,390,000	3,890,000	4,040,000	4,120,000	21,250,000
Total Capital Projects	**3,810,000**	**5,390,000**	**3,890,000**	**4,040,000**	**4,120,000**	**21,250,000**
Fund Source						
Fund 611 Rates	1,160,000	2,790,000	3,090,000	3,240,000	3,320,000	13,600,000
Fund 612 Capacity Charges	2,650,000	2,600,000	800,000	800,000	800,000	7,650,000
Total Fund Sources	**3,810,000**	**5,390,000**	**3,890,000**	**4,040,000**	**4,120,000**	**21,250,000**

The table below summarizes how the City plans to fund all water Fund 611 expenditures. Note the use of fund balance as a source of revenues.

Table 3-3. Source of Funds for All Projected Water Fund 611 Expenditures

Expense Category	Projected					Five-Year Total
	2015-16	2016-17	2017-18	2018-19	2019-20	
Expenditures						
Supervision	3,244,000	3,374,000	3,509,000	3,649,000	3,795,000	17,571,000
Production, Serv & Supl	17,120,000	17,805,000	18,517,000	19,258,000	20,028,000	92,728,000
Production, Personnel	1,750,000	1,820,000	1,893,000	1,969,000	2,048,000	9,480,000
Distribution	6,337,000	6,590,000	6,854,000	7,128,000	7,413,000	34,322,000
Meter Reading	801,000	684,000	718,000	754,000	792,000	3,749,000
Warehouse/Stores	511,000	537,000	564,000	592,000	622,000	2,826,000
Capital Expenses (Cash)	1,284,000	2,919,000	3,224,000	3,379,000	3,465,000	14,271,000
Capital Reserve	0	0	0	0	1,000,000	1,000,000
Debt Service	0	0	0	0	0	0
Total Expenditures	31,047,000	33,729,000	35,279,000	36,729,000	39,163,000	175,947,000
Add / (Use) Fund Balance	**(3,000,000)**	**(3,800,000)**	**(1,430,000)**	**(450,000)**	**(260,000)**	**(8,940,000)**
Revenue Required from Water Rates	**28,047,000**	**29,929,000**	**33,849,000**	**36,279,000**	**38,903,000**	**167,007,000**

3.3 Base – Extra Capacity Cost Allocation

Allocation of functional costs to cost components is performed using the "base-extra capacity" method. Using this method, costs are separated into six cost components. Each component is described below.[3]

1. Base costs – costs that tend to vary with the total quantity of water used plus those O&M expenses and capital costs associated with service to customer under average demand conditions;
2. Extra-capacity costs – costs associated with meeting peak demand rate of use requirements in excess of average (base) use and include O&M expenses and capital costs for system capacity beyond that required average rate of use; these costs are subdivided into costs necessary to meet maximum-day extra demand and maximum-hour demand in excess of maximum-day demand;
3. Customer costs – costs associated with serving customers, irrespective of the amount or rate of water use; these costs are subdivided into costs for meter reading and billing, customer accounting and collection, and financial reporting; and maintenance and capital costs related to customer meters and services;
4. Fire protection – costs that apply solely to the fire protection function; these costs include those directly related to public fire hydrants and related branches and mains; and private fire protection costs.

3.4 Allocation of Costs to Functional Categories

The total amount of revenue required from water rates and charges (costs) is allocated between amounts to be recovered from meter service and quantity charges. Allocation is accomplished by the development of factors that allocate costs among six functional cost categories.

The functional cost categories and the allocations are based on principles and methodology found in the American Water Works Association Manual of Water Supply Practices, *M1 Principles of Water Rates, Fees, and Charges*. The use of these industry standard principles and methods ensures that revenue requirements are equitably recovered from classes of customers in proportion to the cost of serving those customers.

The general cost of service process includes the following steps:

1. Identification of annual revenue requirements by function;
2. Allocation of functional costs to cost components (which may include annual water usage, peak water demand, customer meters and bills, and fire protection);
3. Development of units of service by customer class for each cost component;
4. Development of unit costs of service for each cost component; and
5. Distribution of costs to customer classes.

[3] A more complete discussion of functional cost categories as they apply to the base-extra capacity method may be found in the American Water Works Association, *Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges*, 2012 Sixth Edition, page 62.

The development of cost allocation percentages for the base year are shown in detail in Appendix B, Tables B-1 ("Plant in Service" cost allocation factors and B-2 (cost allocation percentages for the base year). Allocation of revenue required from rates to functional cost categories are summarized in the table below.

Table 3-4. Allocation of Costs to Functional Categories

Item		Projected 2015-16	2016-17	2017-18	2018-19	2019-20
Revenue Required from Water Rates		$28,047,000	$29,929,000	$33,849,000	$36,279,000	$38,903,000
Allocations [1]						
Percent	*base year*					
Base	*41.4%*	*41.4%*	*41.1%*	*41.1%*	*40.9%*	*40.9%*
Extra Capacity	*26.4%*	*26.4%*	*26.2%*	*26.2%*	*25.9%*	*25.9%*
Electricity (Zones II, III & IV)	*4.7%*	*4.7%*	*4.7%*	*4.7%*	*4.7%*	*4.7%*
Fire Protection	*11.9%*	*11.9%*	*12.2%*	*12.2%*	*12.4%*	*12.4%*
Service Laterals/Meters	*11.4%*	*11.4%*	*11.6%*	*11.6%*	*11.9%*	*11.9%*
Customer/Billing	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*	*4.2%*
Dollars						
Base		$11,610,000	$12,314,000	$13,927,000	$14,836,000	$15,909,000
Extra Capacity		$7,415,000	$7,837,000	$8,864,000	$9,410,000	$10,090,000
Electricity (Zones I, II, III & IV)		$1,306,000	$1,394,000	$1,577,000	$1,690,000	$1,812,000
Fire Protection		$3,338,000	$3,636,000	$4,113,000	$4,499,000	$4,824,000
Service Laterals/Meters		$3,193,000	$3,482,000	$3,938,000	$4,311,000	$4,623,000
Customer/Billing		$1,186,000	$1,265,000	$1,431,000	$1,534,000	$1,645,000

Notes:

1 Allocations for 2015-16 onward are adjusted to incorporate reduction in water use due to conservation.

	2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
Commodity	0.00%	-0.25%	0.00%	-0.25%	0.00%
Capacity	0.00%	-0.25%	0.00%	-0.25%	0.00%
Electricity (Zones II, III & IV)	no change	no change	no change	no change	no change
Fire Protection	0.00%	0.25%	0.00%	0.25%	0.00%
Service Laterals/Meters	0.00%	0.25%	0.00%	0.25%	0.00%
Customer/Billing	no change	no change	no change	no change	no change

3.5 Water Rate and Charges Unit Costs

Allocation of revenue required from rates to functional cost categories shown in the previous table is merged with units of service shown in Section 2 to develop unit costs of service.

Table 3-5. Water Rates and Charges Unit Costs

			Projected		
Allocation Category	2015-16	2016-17	2017-18	2018-19	2019-20
Revenue Requirement	$28,047,000	$29,929,000	$33,849,000	$36,279,000	$38,903,000
Base					
Revenue Allocation	$11,610,000	$12,314,000	$13,927,000	$14,836,000	$15,909,000
Units of Use (HCF)	6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Avg Base Rate ($/HCF)	$1.77	$1.92	$2.22	$2.42	$2.65
Extra Capacity					
Revenue Allocation	$7,415,000	$7,837,000	$8,864,000	$9,410,000	$10,090,000
Units of Use (HCF)	6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Avg Extra Capacity Rate ($/HCF)	$1.13	$1.22	$1.41	$1.53	$1.68
Electricity (Zones I, II, III & IV)					
Revenue Allocation	$1,306,000	$1,394,000	$1,577,000	$1,690,000	$1,812,000
Units of Use (HCF)	6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Avg Zones I/ II/III/IV Rate ($/HCF)	$0.20	$0.22	$0.25	$0.28	$0.30
Public Fire Protection					
Revenue Allocation	$3,338,000	$3,636,000	$4,113,000	$4,499,000	$4,824,000
Units of Use (equivalent meters)	38,235	38,460	38,710	38,960	39,235
Publc Fire Protection Rate ($/eq. mtr-month)	$7.28	$7.88	$8.85	$9.62	$10.25
Meters/Service Laterals					
Revenue Allocation	$3,193,000	$3,482,000	$3,938,000	$4,311,000	$4,623,000
Units of Use (equivalent meters)	38,235	38,460	38,710	38,960	39,235
Meter/Lateral Rate ($/eq. mtr-month)	$6.96	$7.54	$8.48	$9.22	$9.82
Customer					
Revenue Allocation	$1,186,000	$1,265,000	$1,431,000	$1,534,000	$1,645,000
Units of Use (accounts)	30,668	30,893	31,143	31,393	31,668
Account Rate ($/acct-month)	$3.22	$3.41	$3.83	$4.07	$4.33

3.6 Recommended Water Rates and Charges

The unit costs shown in the previous table are used to develop recommended water rates and charges. Tables showing detailed rate and charges calculation are included in Appendix C: Elevation Zone rates (Table C-1), Uniform Quantity rates (Table C-2), Single Family Inclining Block rates (Table C-3), Meter Service charges (Table C-4) and Private Fire Protection charges (Table C-5 and Table C-6). Recommended water rates and charges are listed in the table below.

Table 3-6. Recommended Water Rates and Charges

	effective dates >	*7/1/2015*	*7/1/2016*	*7/1/2017*	*7/1/2018*	*7/1/2019*					
Service Category	Current	2015-16	2016-17	2017-18	2018-19	2019-20	2015-16	2016-17	2017-18	2018-19	2019-20
Quantity Rates, $/HCF				*HCF = hundred cubic feet (748 gallons)*							
Non-Single Family											
Zone I	$2.42	$2.99	$3.24	$3.73	$4.05	$4.44	24%	8%	15%	9%	10%
Zone II	$2.51	$3.08	$3.33	$3.83	$4.16	$4.55	23%	8%	15%	9%	9%
Zone III	$2.64	$3.15	$3.41	$3.92	$4.25	$4.65	19%	8%	15%	8%	9%
Zone IV	$2.92	$3.32	$3.59	$4.10	$4.45	$4.86	14%	8%	14%	9%	9%
Single Family											
Tier 1	*All Use*	*0 - 13 HCF*	*0 - 13 HCF*	*0 - 12 HCF*	*0 - 12 HCF*	*0 - 12 HCF*					
Zone I	$2.42	$2.53	$2.74	$3.17	$3.45	$3.78	na	8%	16%	9%	10%
Zone II	$2.51	$2.62	$2.83	$3.27	$3.56	$3.89	na	8%	16%	9%	9%
Zone III	$2.64	$2.69	$2.91	$3.36	$3.65	$3.99	na	8%	15%	9%	9%
Zone IV	$2.92	$2.86	$3.09	$3.54	$3.85	$4.20	na	8%	15%	9%	9%
Tier 2	*All Use*	*> 13 HCF*	*> 13 HCF*	*> 12 HCF*	*> 12 HCF*	*> 12 HCF*					
Zone I	$2.42	$4.19	$4.53	$5.24	$5.68	$6.22	na	8%	16%	8%	10%
Zone II	$2.51	$4.28	$4.62	$5.34	$5.79	$6.33	na	8%	16%	8%	9%
Zone III	$2.64	$4.35	$4.70	$5.43	$5.88	$6.43	na	8%	16%	8%	9%
Zone IV	$2.92	$4.52	$4.88	$5.61	$6.08	$6.64	na	8%	15%	8%	9%
Meter Service, $/meter-month											
⅝ x ¾-inch	$15.60	$17.50	$18.80	$21.20	$22.90	$24.40	12%	7%	13%	8%	7%
1-inch	$25.27	$39.30	$42.50	$47.70	$52.00	$55.00	56%	8%	12%	9%	6%
1½-inch	$47.74	$74.00	$81.00	$90.00	$98.00	$105.00	55%	9%	11%	9%	7%
2-inch	$75.62	$117.00	$127.00	$142.00	$155.00	$165.00	55%	9%	12%	9%	6%
3-inch	$156.77	$217.00	$235.00	$264.00	$287.00	$305.00	38%	8%	12%	9%	6%
4-inch	$246.73	$359.00	$389.00	$437.00	$475.00	$506.00	46%	8%	12%	9%	7%
6-inch	$488.45	$715.00	$775.00	$870.00	$946.00	$1,008.00	46%	8%	12%	9%	7%
8-inch	$725.62	$1,142.00	$1,237.00	$1,390.00	$1,512.00	$1,610.00	57%	8%	12%	9%	6%
10-inch	$1,554.76	$1,640.00	$1,777.00	$1,997.00	$2,171.00	$2,312.00	5%	8%	12%	9%	6%
12-inch	$2,808.34	$2,352.00	$2,548.00	$2,864.00	$3,113.00	$3,315.00	-16%	8%	12%	9%	6%

3.7 Revenue from Water Rates and Charges

The impact of cost of service allocations upon the amount of revenue from each category of rates and charges is summarized in the table below.

Table 3-7. Revenue by Rate/Charge Category

Service Type	2014-15 Current	Projected 2015-16	2016-17	2017-18	2018-19	2019-20	Five-Year Total
Quantity							
Zone I	$1,554,812	$1,880,828	$1,994,525	$2,246,016	$2,388,141	$2,562,677	$11,072,187
Zone II	$5,303,329	$6,371,486	$6,741,414	$7,584,292	$8,066,970	$8,636,437	$37,400,598
Zone III	$8,143,571	$9,513,421	$10,078,532	$11,332,833	$12,032,120	$12,885,827	$55,842,733
Zone IV	$2,481,852	$2,762,780	$2,923,610	$3,266,016	$3,471,325	$3,710,886	$16,134,617
Total	$17,483,565	$20,528,515	$21,738,081	$24,429,157	$25,958,556	$27,795,827	$120,450,136
Meter Service							
⅝ x ¾-inch	$5,304,874	$5,998,230	$6,494,573	$7,387,267	$8,048,342	$8,656,046	$36,584,459
1-inch	$469,112	$729,565	$788,970	$885,503	$965,328	$1,021,020	$4,390,386
1½-inch	$108,847	$168,720	$184,680	$205,200	$223,440	$239,400	$1,021,440
2-inch	$245,916	$380,484	$413,004	$461,784	$504,060	$536,580	$2,295,912
3-inch	$95,943	$132,804	$143,820	$161,568	$175,644	$186,660	$800,496
4-inch	$65,137	$94,776	$102,696	$115,368	$125,400	$133,584	$571,824
6-inch	$117,228	$171,600	$186,000	$208,800	$227,040	$241,920	$1,035,360
8-inch	$34,830	$54,816	$59,376	$66,720	$72,576	$77,280	$330,768
10-inch	$0	$0	$0	$0	$0	$0	$0
10-inch	$0	$0	$0	$0	$0	$0	$0
Total	$6,441,887	$7,730,995	$8,373,119	$9,492,210	$10,341,830	$11,092,490	$47,030,645
Totals							
Dollars							
Quantity Charges	$17,483,565	$20,528,515	$21,738,081	$24,429,157	$25,958,556	$27,795,827	$120,450,136
Meter Charges	$6,441,887	$7,730,995	$8,373,119	$9,492,210	$10,341,830	$11,092,490	$47,030,645
Total	$23,925,452	$28,259,510	$30,111,200	$33,921,367	$36,300,386	$38,888,318	$167,480,781
Percent							
Quantity Charges	73%	73%	72%	72%	72%	71%	
Meter Charges	27%	27%	28%	28%	28%	29%	

3.8 Water Fund 611 Projected Cash Flow

The projected cash flow for FY15 – FY20 is shown in the table below. Note the use of fund balance to mitigate the level of rate increases.

Table 3-8. Water Fund 611 Projected Cash Flow

Items	Notes	Budget 2014-15	Projected 2015-16	2016-17	2017-18	2018-19	2019-20	Five-Year Total
Beginning Balance, July 1	[1]	22,504,000	15,729,000	13,252,000	9,985,000	8,962,000	8,863,000	
Revenues								
Charges for Services		23,925,000	28,260,000	30,111,000	33,921,000	36,300,000	38,888,000	167,480,000
Warehouse/Stores		265,000	280,000	280,000	280,000	280,000	280,000	1,400,000
Investment Income	[2]	75,000	25,000	66,000	50,000	45,000	44,000	230,000
Other		5,000	5,000	5,000	5,000	5,000	5,000	25,000
Loan Disbursement		0	0	0	0	0	0	0
Total Revenues		24,270,000	28,570,000	30,462,000	34,256,000	36,630,000	39,217,000	169,135,000
Expenditures								
Supervision		3,226,000	3,244,000	3,374,000	3,509,000	3,649,000	3,795,000	17,571,000
Production, Serv & Supl		16,498,000	17,120,000	17,805,000	18,517,000	19,258,000	20,028,000	92,728,000
Production, Personnel		1,594,000	1,750,000	1,820,000	1,893,000	1,969,000	2,048,000	9,480,000
Distribution		5,967,000	6,337,000	6,590,000	6,854,000	7,128,000	7,413,000	34,322,000
Meter Reading		536,000	801,000	684,000	718,000	754,000	792,000	3,749,000
Warehouse/Stores		489,000	511,000	537,000	564,000	592,000	622,000	2,826,000
Additional Staffing		0	0	0	0	0	0	0
Capital Expenses		2,735,000	1,284,000	2,919,000	3,224,000	3,379,000	3,465,000	14,271,000
Capital Reserve		0	0	0	0	0	1,000,000	1,000,000
Debt Service		0	0	0	0	0	0	0
Total Expenditures		31,045,000	31,047,000	33,729,000	35,279,000	36,729,000	39,163,000	175,947,000
Net Revenue		(6,775,000)	(2,477,000)	(3,267,000)	(1,023,000)	(99,000)	54,000	(6,812,000)
Ending Balance, June 30		15,729,000	13,252,000	9,985,000	8,962,000	8,863,000	8,917,000	

1 The beginning balance for FY 2014-15 was provided by the City.

2 Interest income for FY 2015-16 onward is based on the interest rates listed below times the beginning fund balance.

2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
0.5%	*0.5%*	*0.5%*	*0.5%*	*0.5%*

3.9 Water Fund 611 Target Balances

Projected target cash levels for Water Fund 611 are shown in the table below. Operating targets are based on a minimum of 90 days to a maximum of 180 days of annual operation expenses.

Table 3-9. Water Fund 611 Projected Target Balances

Item	Notes	Budgeted 2014-15	Projected 2015-16	2016-17	2017-18	2018-19	2019-20
Operating Expenses		28,310,000	29,763,000	30,810,000	32,055,000	33,350,000	34,698,000
Lower Target Ending Balance	[1]	6,981,000	7,339,000	7,597,000	7,904,000	8,223,000	8,556,000
Higher Target Ending Balance	[1]	13,961,000	14,678,000	15,194,000	15,808,000	16,447,000	17,111,000
Ending Balances		*15,729,000*	*13,252,000*	*9,985,000*	*8,962,000*	*8,863,000*	*8,917,000*
Amount Over (Under) Lower Target		8,748,000	5,913,000	2,388,000	1,058,000	640,000	361,000
Amount Over (Under) Higher Target		1,768,000	(1,426,000)	(5,209,000)	(6,846,000)	(7,584,000)	(8,194,000)

1 Targets are based on 90 days to 180 days of annual operation expenses.

Projected target cash levels for Water Fund 611 and Water Fund 612 are shown in the figure below along with the minimum and maximum target ending balance levels for Water Fund 611.

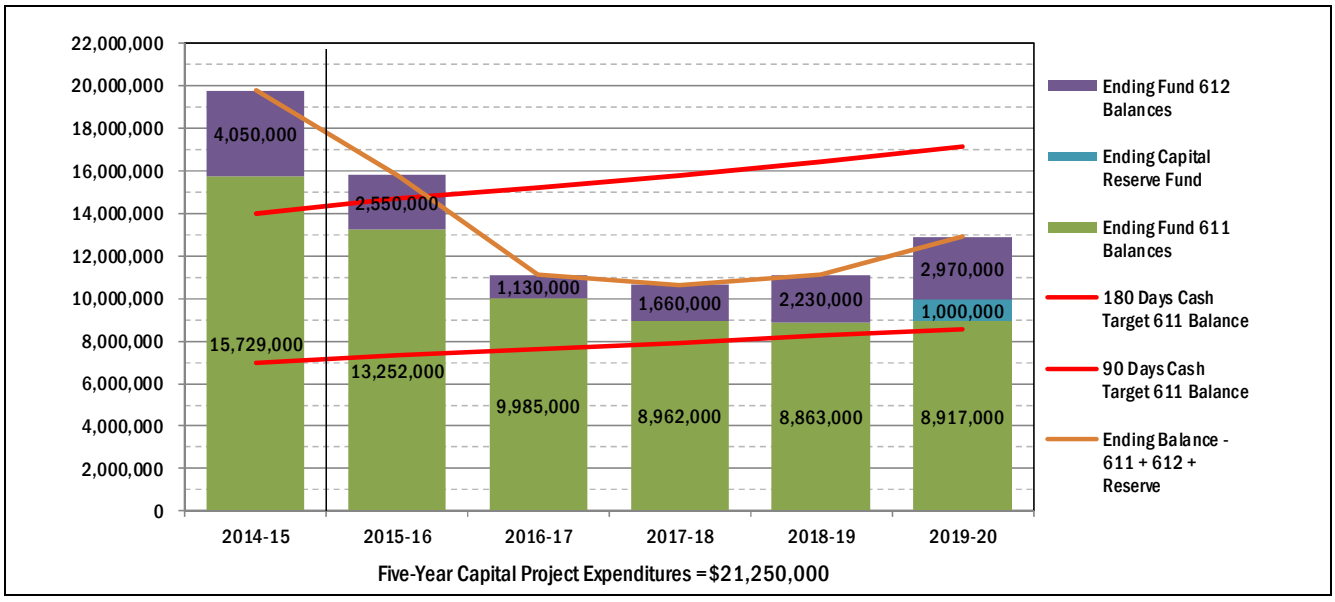

Figure 3-1. Projected Cash for Water Fund 611 and Water Fund 612

3.10 Single Family Residential Monthly Water Bills

Historical and projected (for FY16 – FY20) monthly water bills for Single Family Residential accounts are shown in the figure below. Detailed water bills at levels of monthly water use from 0 HCF to 50 HCF are shown in Tables D-1 (current rates versus recommended FY16 rates with uniform quantity charges), D-2 (current rates versus recommended FY16 rates with inclining block quantity charges), D-3 (summary of Table D-1) and D-4 (summary of Table D-2) in Appendix D.

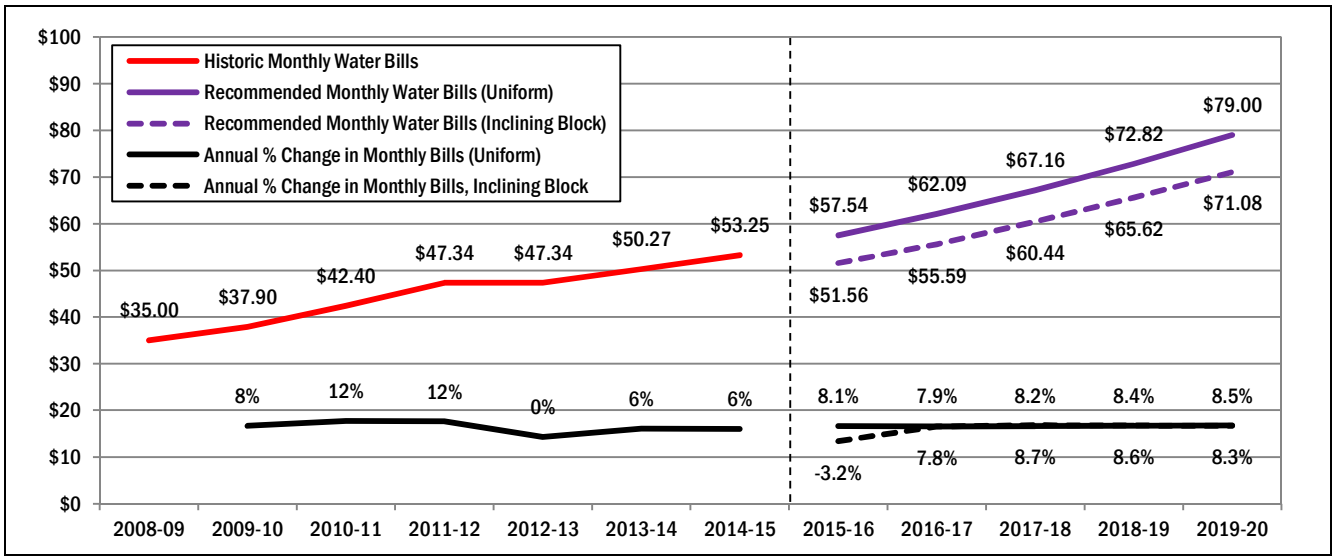

Figure 3-2. Historic and Projected Monthly Single Family Water Bills, FY9 – FY20

Monthly bills are for a ⅝ x ¾-inch meter connection in Zone II with water consumption of 15 HCF per month during FY9 – FY15, 13 HCF per month during FY16 and FY17 and 12 HCF per month during FY18, FY19 and FY20

3.11 Residential Monthly Water Bills Surveys

Monthly water bills for Single Family users were compared to those for other agencies. The comparison was for a user with the smallest meter size using 13 HCF of water per month in Zone II. Results of the survey are shown in the figure below.

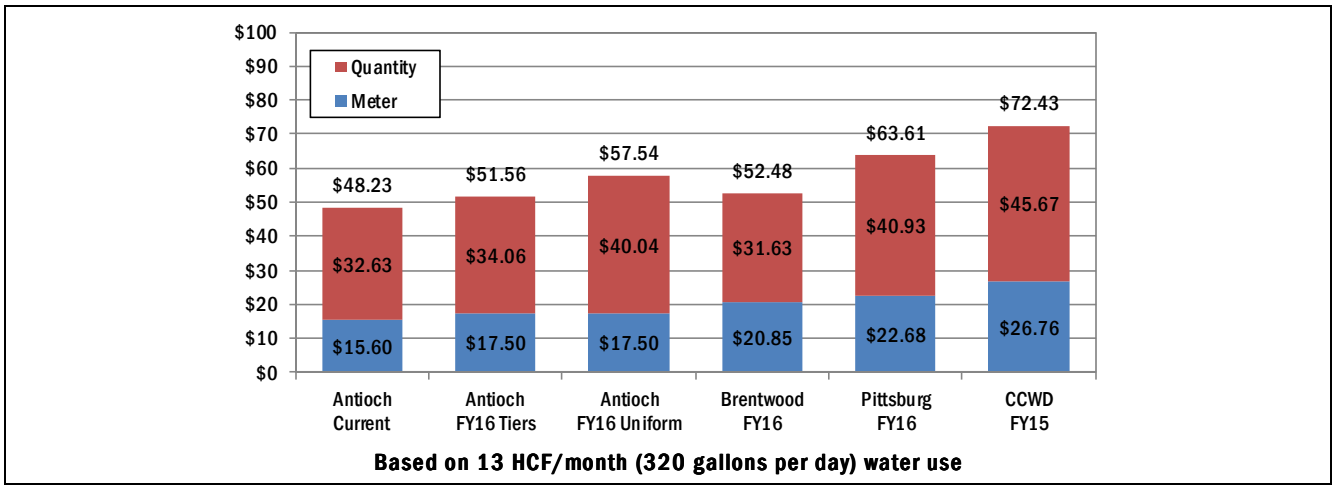

Figure 3-3. Single Family Monthly Water Bills Survey

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Section 4

Development of Sewer Service Charges

Sewer Service Charges must adequately fund sewer utility operations, capital costs, and reserves. The City established Sewer Fund 621 as an Enterprise Fund that accounts for the revenues and expenditures related to providing wastewater collection, storm drain and channel maintenance services for the City of Antioch. A separate fund, Sewer Facility Expansion Fund 622, is set up to track the development fees collected from developers to fund offsite or to oversize sewer facilities and replace inadequate sewers.

4.1 Current Sewer Service Charges and Revenue from Charges

Resolution No. 2010/45, which was passed in June 2010, adopted Sewer Service Charges effective July 1, 2010.[4] At that time, charges increased four percent, from $9.46 per month to $9.84 per month. Subsequent increases were effective on July 1, 2011 (four percent) and July 1, 2013 (four percent).

The current Sewer Service Charge for all units is a fixed sum of $11.06 per month. Estimated revenue from Sewer Service Charges for FY15 is shown in the adjacent table.

			Sewer Service Charge [1]		
Customer Class	Accounts	Units	$/month-unit	Revenue	
Single Family	28,560	28,560	$11.06	$3,790,483	*78%*
Multi Family	613	2,996	$11.06	$397,629	*8%*
Apartments/Mobile Homes	74	3,736	$11.06	$495,842	*10%*
Commercial	700	1,396	$11.06	$185,277	*4%*
Churches/Housing Authority	7	50	$11.06	$6,636	*0.14%*
Industrial	11	13	$11.06	$1,725	*0.04%*
Other	47	47	$11.06	$6,238	*0.13%*
Total	**30,012**	**36,798**		**$4,883,831**	***100%***

1 Sum of the Sewer Service ($10.75) and the Sewer Lateral Maintenance ($0.31) charges.

[4] The July 1, 2010 increase in Sewer Service Charges was based on a study by Black & Veatch consultants.

4.2 Methodology for Determination of Updated Sewer Service Charges

Calculation of a Sewer Service Charge is a series of simple mathematical operations. Defining the wastewater characteristics and revenue requirements required for those operations are more complex and represent a major emphasis in this report. Basic steps for the development of Sewer Service Charges are summarized below. The methodology of computing Sewer Service Charges conforms with the State Water Resources Control Board (SWRCB) *Revenue Program Guidelines for Wastewater Agencies*, 1998 edition.

Define revenue required from Sewer Service Charges. The City's operating budget, projected capital expenditures and target levels of reserve funds are used to project total annual expenditures and revenues required from Sewer Service Charges.

Define user wastewater system characteristics. User characteristics for each customer are characterized in terms annual wastewater discharge and number of residential dwelling units or number of nonresidential accounts.[5]

Develop unit costs. The annual amount of revenue required from Sewer Service Charges is allocated between revenue to be recovered from a charge that is the same for all dwelling units and accounts and a charge that is the same for each HCF of wastewater discharge. Revenue recovered from dwelling units and accounts is divided by the total number of dwelling units and accounts to yield a unit cost ($/dwelling unit-account). Revenue recovered from HCF is divided by HCF of wastewater discharge to yield a unit cost ($/HCF).

Develop revenue required from each customer class. The amount of revenue required from each customer class is the unit cost for dwelling units and accounts ($/dwelling unit-account) times the number of dwelling units or accounts *plus* the unit cost for per HCF ($/HCF) times the wastewater discharge for each customer class.

Develop Sewer Service Charges for each customer class. The amount of revenue required from each customer class is recovered by a uniform charge for each residential customer class and by a combination of a uniform charge and a flow-based charge for nonresidential customers.

[5] "Dwelling unit" means a structure or the part of a structure that is used as a home, residence, or sleeping place by one person who maintains a household or by two or more persons who maintain a common household. See California Civil Code Section 1940-1954.1.

4.3 Sewer Fund 621 Projected Expenditures

Budgeted and projected expenditures are shown in the table below. Budgeted expenditures for FY15 were provided by the City. Projected operating expenditures are based on annual escalation rates provided by the City. Projected capital expenditures were provided by the City.

Revenues from the current level of Sewer Service Charges are sufficient to fund only projected operating expenditures (the operating fund balance would remain at approximately the current level). Increases in the Sewer Service Charges and use of fund balance are required to generate approximately $7.0 million for capital expenditures.

The list of expenditures includes a line item for Capital Reserves. Capital Reserves are for expenditures for capital projects related to an emergency or unplanned repair and replacement project.

Table 4-1. Sewer Fund 621 Budgeted and Projected Expenditures

Expense Category	Notes	Budget Revised 2014-15	Budget Proposed 2015-16	*Proj. Cost Esc.*	Projected Fiscal Year 2016-17	2017-18	2018-19	2019-20	Five-Year Total
Operating Expenses	[1]								
Supervision		1,533,778	1,515,000	*3%*	1,560,000	1,607,000	1,655,000	1,705,000	8,042,000
Collection		4,355,196	4,279,000	*2%*	4,365,000	4,452,000	4,541,000	4,632,000	22,269,000
Total Operating		**5,888,974**	**5,794,000**		**5,925,000**	**6,059,000**	**6,196,000**	**6,337,000**	**30,311,000**
Capital Expenses	[1]								
Personnel		130,456	135,950	*3%*	140,000	144,000	148,000	152,000	719,950
Projects		1,575,000	1,250,000	*varies*	1,250,000	1,250,000	1,250,000	1,250,000	6,250,000
Total Capital		**1,705,456**	**1,385,950**		**1,390,000**	**1,394,000**	**1,398,000**	**1,402,000**	**6,969,950**
Capital Reserves	[2]		**100,000**	*varies*	**100,000**	**100,000**	**100,000**	**100,000**	**500,000**
Total Expenditures		**7,594,430**	**7,279,950**		**7,415,000**	**7,553,000**	**7,694,000**	**7,839,000**	**37,780,950**

1 All data was provided by the City.
2 The Capital Reserve fund is for the accumulation of funds for future Capital Projects.

4.4 Residential Dwelling Units and Wastewater Discharge

The current Sewer Service Charge is assessed on the number of units associated with an account. As part of the process of developing Sewer Service Charges, the concept of a dwelling unit is defined and the method of assigning units to each account is described.

"Dwelling unit" means a structure or the part of a structure that is used as a home, residence or sleeping place by one person who maintains a household or by two or more persons who maintain a common household.

Water meter read data for single family accounts revealed that average wastewater discharge was approximately 210 gpd during February and March of 2011 (8.5 hundred cubic feet per month – one hundred cubic foot equals approximately 748 gallons).

Water meter read data for multiple family accounts (accounts with two, three or four dwelling units) and for apartments and mobile homes in mobile home parks was also evaluated. Based on the available data, it is estimated that average wastewater discharge for multiple family dwelling units is 168 gpd and average wastewater discharge for dwelling units in apartments and mobile homes in mobile home parks is 137 gpd.

Wastewater Discharge for residential dwelling units is summarized in the table below.

Table 4-2. Wastewater Discharge for Residential Dwelling Units

Unit of Measure	Single Family	Multiple Family	Apartments/ Mobile Homes
Average Annual gallons per day	210	168	137
Average Annual hundred cubic feet per month	8.5	6.8	5.6

4.5 Total Wastewater Discharge

Current and projected annual wastewater discharge for each customer class is shown in the table below. The additional number of accounts and dwelling units for FY16 onward is projected to average approximately 240 per year.

Table 4-3. Current and Projected Wastewater Discharge

Customer Class	Estimated 2014-15	Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20
Wastewater Discharge, HCF [1]						
Single Family	2,926,245	2,914,757	2,902,728	2,892,631	2,881,934	2,873,048
Multi Family	245,575	245,575	245,575	245,575	245,575	245,575
Apartments/Mobile Homes	249,724	249,724	249,724	249,724	249,724	249,724
Commercial/Institutional	407,766	399,611	395,615	391,658	387,742	383,864
Industrial	121,781	101,649	100,633	99,626	98,630	97,644
Other	11,105	11,105	10,994	10,884	10,775	10,667
Total, HCF	3,962,196	3,922,420	3,905,268	3,890,099	3,874,380	3,860,523
Total, million gallons	2,964	2,934	2,922	2,910	2,898	2,888
Total, gallons per day (round to 1,000)	8,121,000	8,017,000	8,004,000	7,973,000	7,941,000	7,891,000
Accounts/Dwelling Units [1]						
Single Family Dwelling Units	28,560	28,785	29,010	29,260	29,510	29,785
Multi Family Dwelling Units	2,996	2,996	2,996	2,996	2,996	2,996
Apartment/Mobile Home Dwelling Units	3,736	3,736	3,736	3,736	3,736	3,736
Commercial/Institutional	1,446	1,446	1,446	1,446	1,446	1,446
Industrial	13	13	13	13	13	13
Other	47	47	47	47	47	47
Total	36,798	37,023	37,248	37,498	37,748	38,023

Notes:

1 Wastewater discharge and accounts/dwelling units data is from Table E-1.

4.6 Revenue Required from Sewer Service Charges

The annual amount of revenue required Sewer Service Charges is shown in the table below. Fund balance is used in each year to meet a portion of capital expenses or increase the capital reserve.

Table 4-4. Source of Funds for All Projected Sewer Fund 621 Expenditures

Expense Category	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Operating Expenses						
Supervision	$1,515,000	$1,560,000	$1,607,000	$1,655,000	$1,705,000	$8,042,000
Collection	$4,279,000	$4,365,000	$4,452,000	$4,541,000	$4,632,000	$22,269,000
Capital Expenses	$1,385,950	$1,390,000	$1,394,000	$1,398,000	$1,402,000	$6,969,950
Capital Reserve	$100,000	$100,000	$100,000	$100,000	$100,000	$500,000
Add / (Use) Fund Balance	($1,980,000)	($1,760,000)	($1,580,000)	($1,400,000)	($1,200,000)	($7,920,000)
Total Expenditures	**$5,299,950**	**$5,655,000**	**$5,973,000**	**$6,294,000**	**$6,639,000**	**$29,860,950**

4.7 Allocation of Costs to Functional Categories

Allocation of revenue required from Sewer Service Charges to functional cost categories are summarized in the table below.

Table 4-5. Allocation of Revenue Required to Functional Categories

Expense Category	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Allocation, %						
Allocation % - Accounts/Units						
Supervision	100%	100%	100%	100%	100%	
Collection	5%	5%	5%	5%	5%	
Capital Expenses	33%	31%	31%	30%	29%	
Capital Reserves	33%	31%	31%	30%	29%	
Add / (Use) Fund Balance	33%	31%	31%	30%	29%	
Allocation % - Flow						
Supervision	0%	0%	0%	0%	0%	
Collection	95%	95%	95%	95%	95%	
Capital Expenses	67%	69%	69%	70%	71%	
Capital Reserves	67%	69%	69%	70%	71%	
Add / (Use) Fund Balance	67%	69%	69%	70%	71%	
Allocation Summary, $						
Accounts-Units	$1,567,781	$1,693,347	$1,803,257	$1,911,354	$2,024,694	$9,000,433
Flow	$3,732,169	$3,961,653	$4,169,743	$4,382,646	$4,614,306	$20,860,517
Total	**$5,299,950**	**$5,655,000**	**$5,973,000**	**$6,294,000**	**$6,639,000**	**$29,860,950**
Allocation Summary, %						
Accounts	30%	30%	30%	30%	30%	
Flow	70%	70%	70%	70%	70%	

4.8 Calculation of Unit Costs

Sewer Service Charges will have two unit cost components – an account charge that is the same for every account or unit and a flow charge for every hundred cubic feet of wastewater discharge. Calculation of the unit costs is shown in the table below.

Table 4-6. Calculation of Unit Costs

Expense Category	2015-16	2016-17	2017-18	2018-19	2019-20
Allocation, $					
Accounts/Dwelling Units	$1,567,781	$1,693,347	$1,803,257	$1,911,354	$2,024,694
Flow	$3,732,169	$3,961,653	$4,169,743	$4,382,646	$4,614,306
Total	**$5,299,950**	**$5,655,000**	**$5,973,000**	**$6,294,000**	**$6,639,000**
Account/Unit Cost					
Cost Allocation, $	$1,567,781	$1,693,347	$1,803,257	$1,911,354	$2,024,694
Accounts/Dwelling Units	37,023	37,248	37,498	37,748	38,023
Unit Cost, $/Account-Unit/month	**$3.53**	**$3.79**	**$4.01**	**$4.22**	**$4.44**
Flow Unit Cost					
Cost Allocation, $	$3,732,169	$3,961,653	$4,169,743	$4,382,646	$4,614,306
Flow, HCF	3,922,420	3,905,268	3,890,099	3,874,380	3,860,523
Unit Cost, $/HCF	**$0.95**	**$1.01**	**$1.07**	**$1.13**	**$1.20**

4.9 Revenue Required from Each Customer Class

Each unit cost is multiplied by the number of accounts or units and wastewater discharge for each customer class to determine the amount of revenue required from each customer class. Calculation of the amount of revenue required from each customer class is shown in the table below.

Table 4-7. Calculation of Revenue Required from Customer Classes

Expense Category	2015-16	2016-17	2017-18	2018-19	2019-20
Unit Costs					
Account/Dwelling Unit, $/account-dwelling unit/month	$3.53	$3.79	$4.01	$4.22	$4.44
Flow, $/HCF	$0.95	$1.01	$1.07	$1.13	$1.20
Revenue Required from Charges					
Account/Dwelling Unit Costs					
Number of Accounts/Dwelling Units					
Single Family	28,785	29,010	29,260	29,510	29,785
Multi Family	2,996	2,996	2,996	2,996	2,996
Apartments/Mobile Homes	3,736	3,736	3,736	3,736	3,736
Commercial/Institutional	1,446	1,446	1,446	1,446	1,446
Industrial	13	13	13	13	13
Other	47	47	47	47	47
Total	37,023	37,248	37,498	37,748	38,023
Revenue Required					
Single Family	$1,218,934	$1,318,836	$1,407,097	$1,494,227	$1,586,027
Multi Family	$126,869	$136,202	$144,076	$151,701	$159,535
Apartments/Mobile Homes	$158,205	$169,844	$179,662	$189,171	$198,939
Commercial/Institutional	$61,233	$65,737	$69,537	$73,218	$76,998
Industrial	$550	$591	$625	$658	$692
Other	$1,990	$2,137	$2,260	$2,380	$2,503
Total	$1,567,781	$1,693,347	$1,803,257	$1,911,354	$2,024,694
Flow Costs					
Wastewater Discharge					
Single Family	2,914,757	2,902,728	2,892,631	2,881,934	2,873,048
Multi Family	245,575	245,575	245,575	245,575	245,575
Apartments/Mobile Homes	249,724	249,724	249,724	249,724	249,724
Commercial/Institutional	399,611	395,615	391,658	387,742	383,864
Industrial	101,649	100,633	99,626	98,630	97,644
Other	11,105	10,994	10,884	10,775	10,667
Total	3,922,420	3,905,268	3,890,099	3,874,380	3,860,523
Revenue Required					
Single Family	$2,773,380	$2,944,638	$3,100,571	$3,260,004	$3,434,023
Multi Family	$233,664	$249,121	$263,229	$277,791	$293,525
Apartments/Mobile Homes	$237,612	$253,330	$267,676	$282,485	$298,484
Commercial/Institutional	$380,228	$401,327	$419,813	$438,608	$458,816
Industrial	$96,719	$102,085	$106,788	$111,569	$116,709
Other	$10,566	$11,153	$11,666	$12,189	$12,750
Total	$3,732,169	$3,961,653	$4,169,743	$4,382,646	$4,614,306
Revenue Requirement Summary					
Single Family	$3,992,314	$4,263,474	$4,507,667	$4,754,231	$5,020,050
Multi Family	$360,533	$385,323	$407,304	$429,492	$453,059
Apartments/Mobile Homes	$395,817	$423,174	$447,338	$471,655	$497,423
Commercial/Institutional	$441,461	$467,064	$489,351	$511,826	$535,814
Industrial	$97,269	$102,676	$107,413	$112,227	$117,401
Other	$12,557	$13,289	$13,927	$14,568	$15,253
Total	$5,299,950	$5,655,000	$5,973,000	$6,294,000	$6,639,000

4.10 Development of Sewer Service Charges

Calculation of sewer service charges for each customer class is shown in the table below.

Table 4-8. Development of Sewer Service Charges

Customer Category	2015-16	2016-17	2017-18	2018-19	2019-20
Revenue Required					
Single Family	$3,992,314	$4,263,474	$4,507,667	$4,754,231	$5,020,050
Multi Family	$360,533	$385,323	$407,304	$429,492	$453,059
Apartments/Mobile Homes	$395,817	$423,174	$447,338	$471,655	$497,423
Commercial/Institutional	$441,461	$467,064	$489,351	$511,826	$535,814
Industrial	$97,269	$102,676	$107,413	$112,227	$117,401
Other	$12,557	$13,289	$13,927	$14,568	$15,253
Total	$5,299,950	$5,655,000	$5,973,000	$6,294,000	$6,639,000
Sewer Service Charges					
Single Family					
Cost Allocation	$3,992,314	$4,263,474	$4,507,667	$4,754,231	$5,020,050
Number of Dwelling Units	28,785	29,010	29,260	29,510	29,785
Rate, $/dwelling unit/month	$11.60	$12.20	$12.80	$13.40	$14.00
Multiple Family					
Cost Allocation	$360,533	$385,323	$407,304	$429,492	$453,059
Number of Dwelling Units	2,996	2,996	2,996	2,996	2,996
Rate, $/dwelling unit/month	$10.10	$10.80	$11.40	$12.00	$12.70
Apartments/Mobile Homes					
Cost Allocation	$395,817	$423,174	$447,338	$471,655	$497,423
Number of Dwelling Units	3,736	3,736	3,736	3,736	3,736
Rate, $/dwelling unit/month	$8.90	$9.50	$10.00	$10.60	$11.10
Nonresidential					
Account Rate					
Account Cost Allocation	$63,773	$68,465	$72,423	$76,256	$80,193
Number of Accounts	1,506	1,506	1,506	1,506	1,506
Rate, $/account/month	$3.53	$3.79	$4.01	$4.22	$4.44
Flow Rate					
Cost Allocation	$487,513	$514,565	$538,267	$562,366	$588,275
Wastewater Discharge, HCF	512,365	507,241	502,169	497,147	492,175
Rate, $/HCF	$0.95	$1.01	$1.07	$1.13	$1.20

4.11 Recommended Sewer Service Charges

Recommended sewer service rates and charges for FY16 – FY20 are listed in the table below. The recommended rates and charges replace the current Sewer Lateral Maintenance charge ($0.31 per month) and Sewer Service charge ($10.75 per month). Recommended uniform charges for Residential users are based on unit costs applicable to all users. The unit costs are used to calculate monthly bills for Nonresidential users.

Table 4-9. Recommended Sewer Service Rates and Charges

Service Category	*effective dates >* Current	*7/1/2015* 2015-16	*7/1/2016* 2016-17	*7/1/2017* 2017-18	*7/1/2018* 2018-19	*7/1/2019* 2019-20
Unit Costs Applicable to All Users						
Account/Dwelling Unit Charge, $/month	na	$3.53	$3.79	$4.01	$4.22	$4.44
Volume Rate, $/HCF		$0.95	$1.01	$1.07	$1.13	$1.20
Uniform Charges						
Residential						
Single Family Dwelling Unit, $/month	$11.06	$11.60	$12.20	$12.80	$13.40	$14.00
Multi Family Dwelling Unit, $/month	$11.06	$10.10	$10.80	$11.40	$12.00	$12.70
Apartment/Mobile Home Dwelling Unit, $/month	$11.06	$8.90	$9.50	$10.00	$10.60	$11.10
Nonresidential						
Account Charge, $/month	$11.06	$3.53	$3.79	$4.01	$4.22	$4.44
Volume Rate, $/HCF		$0.95	$1.01	$1.07	$1.13	$1.20

Uniform charges for Residential users are based on assigned levels of wastewater discharge volume. There are three subcategories of Residential users - Single Family dwelling units, Multiple Family dwelling units (accounts with two, three or four dwelling units), and dwelling units in apartments and mobile homes in mobile home parks.

"Dwelling unit" means a structure or the part of a structure that is used as a home, residence or sleeping place by one person who maintains a household or by two or more persons who maintain a common household.

For FY15, monthly wastewater discharge volume for single family accounts is 210 gallons per day (gpd). For multiple family dwelling units monthly wastewater discharge volume is 168 gpd and for dwelling units in apartments and mobile homes in mobile home parks the monthly wastewater discharge volume is 137 gpd. For each year during FY16 – FY20, the monthly wastewater discharge volume for single family accounts is reduced by 2 gallons per day.

Monthly bills for nonresidential users are based on the sum of an account charge plus a charge for the volume of wastewater discharge. The volume of wastewater discharge would be based on metered water use.

4.12 Sewer Fund 621 Projected Cash Flow

The projected cash flow for FY15 – FY20 is shown in the table below.

Table 4-10. Sewer Fund 621 Projected Cash Flow

Items	Notes	Revised Budget 2014-15	Proposed Budget 2015-16	Projected Fiscal Year 2016-17	2017-18	2018-19	2019-20	Five-Year Total
Beginning Balance, July 1	[1]	13,065,000	10,373,000	8,446,000	6,729,000	5,184,000	3,811,000	
Revenues								
Charges for Services		4,859,000	5,300,000	5,655,000	5,973,000	6,294,000	6,639,000	29,861,000
Investment Income	[2]	42,000	52,000	42,000	34,000	26,000	19,000	173,000
Other		1,000	1,000	1,000	1,000	1,000	1,000	5,000
Total Revenues		**4,902,000**	**5,353,000**	**5,698,000**	**6,008,000**	**6,321,000**	**6,659,000**	**30,039,000**
Expenditures								
Supervision		1,534,000	1,515,000	1,560,000	1,607,000	1,655,000	1,705,000	8,042,000
Collection		4,355,000	4,279,000	4,365,000	4,452,000	4,541,000	4,632,000	22,269,000
Capital Expenses		1,705,000	1,386,000	1,390,000	1,394,000	1,398,000	1,402,000	6,970,000
Capital Reserve		0	100,000	100,000	100,000	100,000	100,000	500,000
Total Expenditures		**7,594,000**	**7,280,000**	**7,415,000**	**7,553,000**	**7,694,000**	**7,839,000**	**37,781,000**
Net Revenue		**(2,692,000)**	**(1,927,000)**	**(1,717,000)**	**(1,545,000)**	**(1,373,000)**	**(1,180,000)**	**(7,742,000)**
Ending Balance, June 30		10,373,000	8,446,000	6,729,000	5,184,000	3,811,000	2,631,000	

1 The beginning balance for FY2014-15 is from p. 253 of the 2014-15 Operating Budget.

2 Interest income for FY2015-16 onward is based on the interest rates listed below times the beginning fund balance.

2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
0.5%	*0.5%*	*0.5%*	*0.5%*	*0.5%*

4.13 Sewer Fund 621 Target Balances

Projected target cash levels for Sewer Fund 621 are shown in the table below. Operating targets are based on a minimum of 90 days to a maximum of 180 days of annual operation expenses.

Table 4-11. Sewer Fund 621 Projected Target Balances

Item	Notes	Projected 2014-15	Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20
Operating Expenses		5,889,000	5,794,000	5,925,000	6,059,000	6,196,000	6,337,000
Lower Target Ending Balance	[1]	1,452,000	1,429,000	1,461,000	1,494,000	1,528,000	1,563,000
Higher Target Ending Balance	[1]	2,904,000	2,857,000	2,922,000	2,988,000	3,056,000	3,125,000
Ending Balances		10,373,000	8,446,000	6,729,000	5,184,000	3,811,000	2,631,000
Amount Over (Under) Lower Target		8,921,000	7,017,000	5,268,000	3,690,000	2,283,000	1,068,000
Amount Over (Under) Higher Target		7,469,000	5,589,000	3,807,000	2,196,000	755,000	(494,000)

1 Targets are based on 90 days to 180 days of annual operation expenses.

Projected target cash levels for Sewer Fund 621 and Sewer Fund 622 are shown in the figure below along with the minimum and maximum target ending balance levels for Sewer Fund 621.

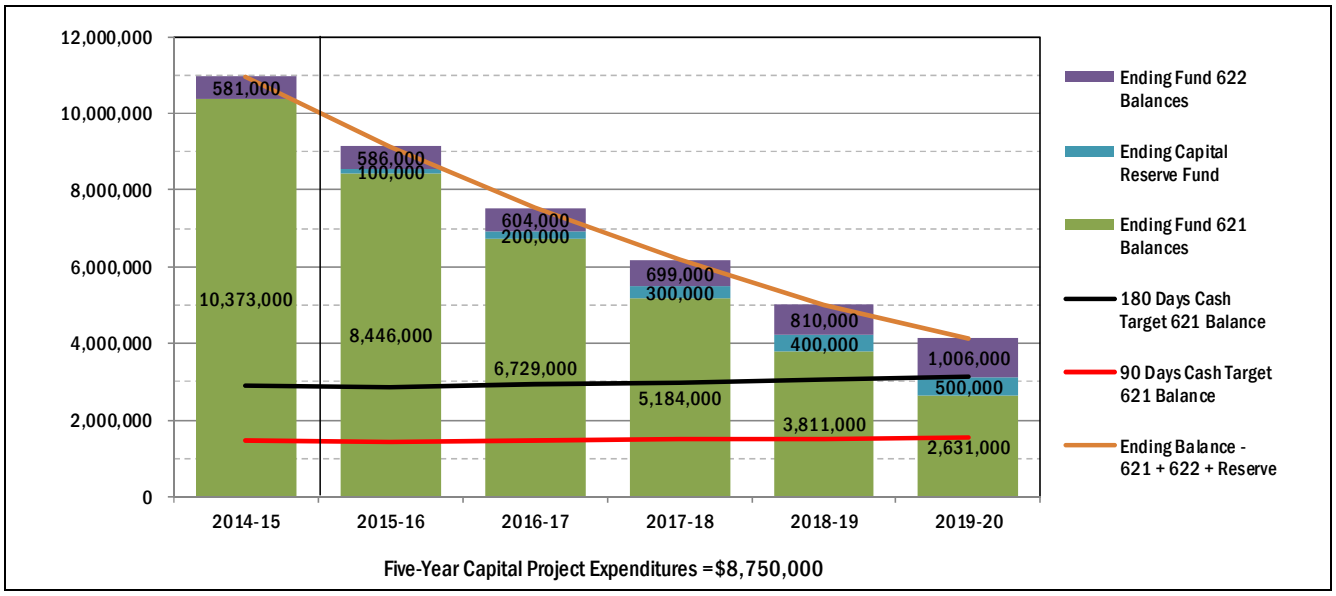

Figure 4-1. Projected Cash for Sewer Fund 621 and Sewer Fund 622

4.14 Recommended Sewer Service Charges, FY16 – FY20

Historical and recommended (for FY16 – FY20) Sewer Service Charges are shown in the figure below.

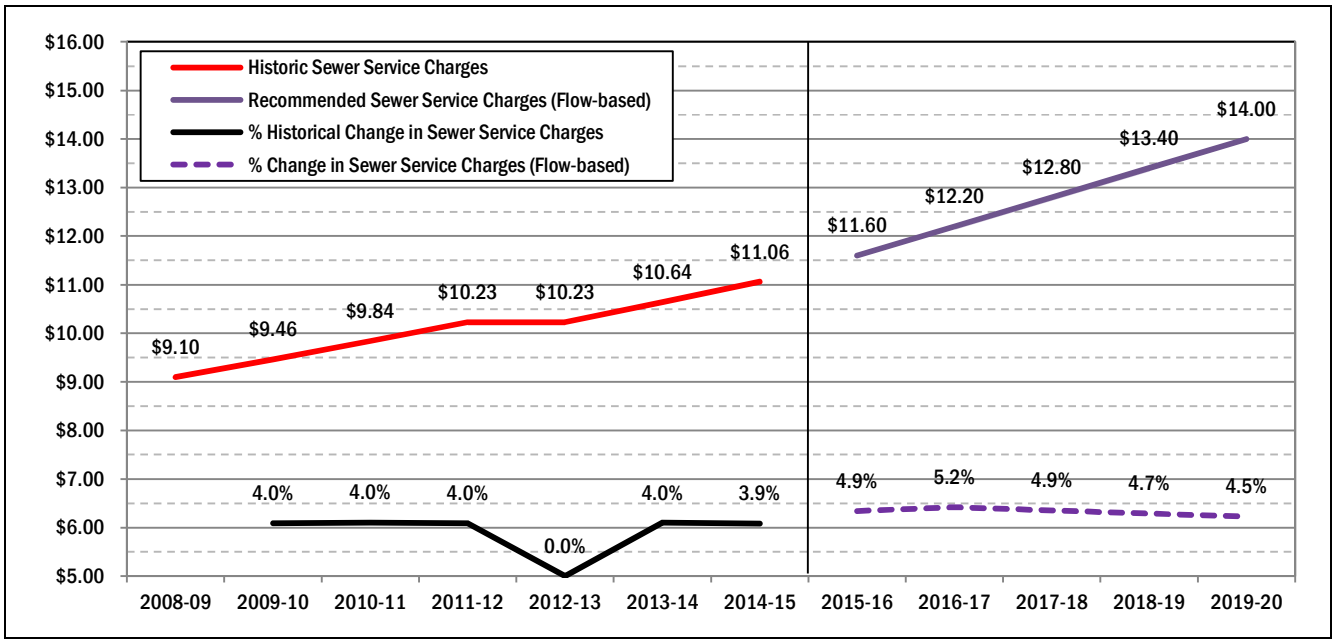

Figure 4-2. Historic and Recommended Sewer Service Charges, FY9 – FY20

4.15 Residential Sewer Service Charges Surveys

The City's current and recommended Sewer Service Charges for FY16 were compared to the Sewer Service Charges for other agencies that provide only sewer collection service. Results of the survey are shown in the table below.

Table 4-12. Residential Sewer Service Charges Survey

	Single Family	Multiple Family	Apartments Mobile Homes	*MF/SF Ratio*	*Apt-MH/SF Ratio*
Bay Point (Delta Diablo)	$10.49	$10.49	$10.49	*1.00*	*1.00*
Antioch, Current	**$11.06**	**$11.06**	**$11.06**	***1.00***	***1.00***
Antioch, Proposed FY16	**$11.60**	**$10.10**	**$8.90**	***0.87***	***0.77***
Pittsburg	$15.79	$13.50	$13.50	*0.85*	*0.85*
Sacramento Area Sewer District	$19.85	$14.89	$14.89	*0.75*	*0.75*

The City's current and recommended Sewer Service Charges and the applicable wastewater treatment charges from Delta Diablo for FY16 were compared to the Sewer Service Charges and wastewater treatment charges for other agencies. Results of the survey are shown in the table below.

Table 4-13. Single Family Sewer Service and Wastewater Treatment Charges Survey

	Bay Point, Current	Antioch, Current	Antioch, Proposed FY16	Pittsburg, Current	Brentwood, Adopted FY16
Collection	$10.49	$11.06	$11.60	$15.79	$16.92
Treatment	$24.25	$24.25	$24.25	$24.25	$33.60
Total	**$34.74**	**$35.31**	**$35.85**	**$40.04**	**$50.52**

For Bay Point, Antioch and Pittsburg, the Treatment category value is the FY 2014-15 Delta Diablo charge.
For Brentwood, the Collection category represents the City's Fixed Base charge and the Treatment category represents the City's Variable Rate charges.
For Brentwood, the Variable Rate charges are based on 6,400 gallons of water use per month.

Section 5

Development of Water Capacity Charges

Capacity charges are intended to recover both a portion of the proposed Capital Improvement Program (CIP) cost, and utility rate payers' prior investment in capital facilities that support land development by providing capacity for new connections. The capacity charges that are developed in this report meet the regulatory requirements found in Government Code Section 66000 *et sequentia* regarding the establishment of capacity charges.[6]

5.1 Regulatory Requirements

Government Code Section 66013 defines a capacity charges as "a charge for public facilities in existence at the time a charge is imposed or charges for new public facilities to be acquired or constructed in the future that are of proportional benefit to the person or property being charged, including supply or capacity contracts for rights or entitlements, real property interests, and entitlements and other rights of the local agency involving capital expense relating to its use of existing or new public facilities. A 'capacity charge' does not include a commodity charge."

Section 66013 also describes requirements related to use of revenue from capacity charges and providing information to the public. This study does not examine the City's practices regarding those requirements.

5.2 Conceptual Approach

In developing capacity charges, we have endeavored to satisfy the rational nexus criteria generally applied to these types of charges. A rational nexus-based capacity charge must:

- Be rationally based on public policy that demonstrates a nexus between new development (connections) and the need to expand or build facilities to accommodate it.
- Not exceed the new development's proportional share of the cost of facilities needed to serve that development, after crediting it for other contributions that it has already made or will make toward that cost.
- Not be arbitrary or discriminatory in its application to individuals or customer classes.

A capacity charge is a charge to pay for public agencies' facilities in existence at the time the charge is imposed or to pay for new facilities that will be constructed in the future that are of benefit to the person or property being charged (new development or increases to existing service capacity). Capacity charges help ensure that the "growth pays for growth" by allocating the cost of new facilities and the cost of unused capacity in existing facilities to new development while allocating the cost of repairing and refurbishing facilities used by current customers to rates.

[6] The terms "water facility reserve fee", as used by the City, and "capacity charge", as defined in the Government Code and used in this study, are synonymous.

5.3 Current Water Capacity Charges

The basis for current Water Capacity Charges (Facility Reserve Fees) are described in Title 6 (Sanitation and Health), Chapter 5 (Water System) of the Antioch Municipal Code (AMC).

Water Meter Size or Customer Class	Contra Costa Water District Treatment	Antioch System Treatment/ Transmission/ Distribution	Total
Nonresidential			
⅝ x ¾-inch	$1,121.38	$5,059.69	$6,181.07
1-inch	$2,803.45	$7,498.33	$10,301.78
1½-inch	$5,606.90	$14,996.66	$20,603.56
2-inch	$8,971.04	$23,994.66	$32,965.70
3-inch	$17,942.08	$43,868.60	$61,810.68
4-inch	$28,034.50	$74,983.30	$103,017.80
6-inch	$56,069.00	$149,966.60	$206,035.60
8-inch	$100,924.20	$364,282.49	$465,206.69
10-inch	$162,600.10	$311,281.78	$473,881.88
12-inch	$241,096.70	$644,856.37	$885,953.07
Residential			
Singe dwelling unit	$1,121.38	$5,059.69	$6,181.07
Duplex (2 dwelling units)	$2,242.76	$7,408.38	$9,651.14
Additional dwelling units	$1,121.38	$3,657.84	$4,779.22

Total Water Facility Reserve Fees from the City's *Master Fee Schedule*, updated effective July 1, 2014, are shown in the adjacent table.

This table shows the two, separate charges that are collected by the City, one for Contra Costa Water District (CCWD) for its water treatment capacity and another for the City's separate treatment capacity and transmission and distribution facilities.

Not shown in the table is another facilities reserve charge imposed by the CCWD upon the City for the CCWD wholesale municipal supply.[7]

The City collects both charges for CCWD (water treatment capacity and wholesale municipal supply) and remits the revenue to CCWD. Note that CCWD charges for its water treatment and charges for its wholesale municipal supply are distinct, separate charges.

The City's current *Master Fee Schedule* does not show the breakdown between the Contra Costa Water District (CCWD) water treatment component and the City's charge for its water treatment, transmission and distribution facilities. The two components are shown in this table to emphasize the fact that only the capacity charge for the City of Antioch is developed as part of this study.

[7] § 6-5.18.1 of the AMC reads "The Contra Costa Water District has adopted Resolution 93-24, creating a facilities reserve charge and imposing upon wholesale municipal customers amounts to be paid by the city to the District amounts for new or larger water meter issued by the city. It is the intention of the City Council that the amount owed to the Contra Costa Water District for each new or enlarged water meter shall be passed through to the water customer requesting the new or enlarged water meter." As of this writing, the CCWD facilities reserve charge for wholesale municipal customers is $6,047.00 for a ⅝-inch meter in Antioch (see CCWD Code of Regulations, Title 5, Water Supply and Rates, Chapter 5.20, Charges and Rates – Untreated (Raw) Water Service.

5.4 Water System Valuation and Capacity

The system buy-in method of the capacity charge recovers the cost of capacity in those portions of the existing system in which there is capacity available. The value of the existing system was developed using data for the following elements:

- Existing Fixed Assets
- Contributed Assets
- Contributed Capital
- City System Capital Improvement Program
- Working Capital

Existing Fixed Assets. The replacement value of assets was calculated by assets into type and size categories and multiplying the numbers in each asset category by a unit replacement cost. Calculation of the replacement value of the water system is shown in Appendix F, Table F-1 (treatment plant, reservoirs, pump stations, booster pumps, hydrants, meters, and laterals) and in Appendix F, Table F-2 (transmission and distribution pipe).

Contributed Assets. The City requires owners to construct and contribute assets needed to serve their development. The value of contributed assets is subtracted from the value of the asset base for development of capacity charges. Contributed assets include assets funded by Assessment District revenues.

Contributed Capital. The amount of revenue collected from developers is excluded from the valuation of the system. The amount of revenue collected from developers during 2004 –2013 was obtained from City accounting records. The amount of revenue collected from developers during 1970 – 2003 was estimated using historic fees for 1989 - 2003, estimates of historic fees for 1970 – 1988, and the estimated number of connections per year during 1970 - 2003. Calculation of the estimated amount of revenue collected from developers is summarized in Appendix F, Table F-3.

Capital Improvement Program. Projected expenditures for modifications and upgrades to the City's water system were provided by the City's Engineer. The modifications and upgrades are valued at approximately $7,000,000 for FY16 – FY20 and are added to the valuation of the system.

Working Capital. The City records a cash balance in the Water Facility Expansion Fund (Fund 612). The budgeted fund balance for July 2015 is approximately $4,700,000.

The valuation of the Water System, net of adjustments, is shown in Table 5-1.

Table 5-1. Valuation of Water System

Fixed Asset Category	Valuation	Adjustments	Adjusted Valuation
Water Treatment Plant	$86,210,000		$86,210,000
Raw Water Pipelines	$21,688,000		$21,688,000
Municipal Reservoir	$18,000,000		$18,000,000
E. & W. Canal Pump Stations	$4,470,000		$4,470,000
Clearwells	$0		$0
Reservoirs	$35,100,000		$35,100,000
Booster Pump Stations	$18,797,000		$18,797,000
Pressure Reducing Valves	$1,650,000		$1,650,000
Hydrants	$23,075,000		$23,075,000
Service Laterals	$76,000,000	($76,000,000)	$0
Meters	$24,320,000	($24,320,000)	$0
Subsurface Distribution and Transmission Pipes	$522,541,000		$522,541,000
Total Fixed Asset Valuation	**$831,851,000**	**($100,320,000)**	**$731,531,000**
Adjustments			
1. Contributed/Assessment District Assets			
Less: Value of Assets			
Reservoirs and Booster Pump Stations			($19,342,000)
Subsurface Collection Pipes			($385,263,000)
2. Contributed Capital			
Less: Revenue from Capacity Charges			($110,603,000)
3. Debt Principal Outstanding			
Less: no Debt Service			$0
4. Water System Expansion CIP (Fund 612)			
Plus: CIP funded by rates, FY16-FY20			$7,000,000
5. Working Capital (Fund 611)			
Plus: Unrestricted Reserves, Average FY16-FY20			$4,700,000
Net Valuation			**$228,023,000**

5.5 Water System Unit Cost of Capacity

The Water System unit cost of capacity is calculated by dividing the net valuation of the water system (shown in Table 5-1) by the water system capacity.

The capacity of the water system is expressed in terms of capacity of the City's water treatment plant (WTP). The 2013 Water Master Plan reports that the WTP has a maximum production capacity of about 37 million gallons per day.

Calculation of the Water System unit cost of capacity is shown in Table 5-2.

Table 5-2. Water System Unit Cost of Capacity

Net Water System Valuation		System Capacity, gpd		Unit Cost $/gpd
$228,023,000	÷	37,000,000	=	$6.16

5.6 Single Family Residential Peak Month Water Use

The water capacity charge for a Single Family residential ⅝ x ¾-inch water meter connection is correlated with average water use for the peak day in the peak month for all Single Family residential connections. Single Family Residential Peak Month Water Use is estimated as shown in Table 5-3.

Table 5-3. Single Family Residential Peak Month Water Use

Average Annual Day, gpd	320
Peak Factor	2.58
Peak Day in Peak Month, gpd (rounded)	825

5.7 Schedule of Water Capacity Charges

The Water Capacity Charges for non-residential connections are a multiple of those for a single family connection. The multiple is based on the size of the water meter for non-residential connections versus that for a single family connection. The multiple is based on the "equivalency factor" between the meter sizes. An "equivalency factor" is a value that expresses the capacity of a water meter in terms of the rated maximum capacity (in gallons per minute) of a standard meter. The standard meter for a single family connection is ⅝ x ¾-inch.

Table 5-4. Recommended Water Capacity Charges

	Unit Cost, $/gpd	*Peak Use, gpd*	*Capacity Charge*
Single Family Residential Connection	$6.16	825	$5,080
Meter Connection Size	*Meter Peak Capacity, gpm*	*Equivalency Factor*	*Capacity Charge*
⅝ x ¾-inch	15 gpm	1.0	$5,080
1.00-inch	38 gpm	2.5	$12,700
1.50-inch	75 gpm	5.0	$25,400
2.00-inch	120 gpm	8.0	$40,700
3.00-inch	225 gpm	15.0	$76,300
4.00-inch	375 gpm	25.0	$127,100
6.00-inch	750 gpm	50.0	$254,200
8.00-inch	1,200 gpm	80.0	$406,700
10.00-inch	1,725 gpm	115.0	$584,700
12.00-inch	2,475 gpm	165.0	$838,900

5.8 Comparison of Current vs. Recommended Capacity Charges

The current and recommended schedule of Water Capacity Charges is shown in Table 5-5. The recommended capacity charges are for FY16.

Table 5-5. Current and Recommended Water Capacity Charges

Connection Type	Recommended	Current	Difference Dollar	Difference Percent
Single Family Residential Connection	$5,080	$5,060	$20	0.4%
Meter Connection Size				
⅝ x ¾-inch	$5,080	$5,060	$20	0.4%
1.00-inch	$12,700	$7,498	$5,202	69%
1.50-inch	$25,400	$14,997	$10,403	69%
2.00-inch	$40,700	$23,995	$16,705	70%
3.00-inch	$76,300	$43,869	$32,431	74%
4.00-inch	$127,100	$74,983	$52,117	70%
6.00-inch	$254,200	$149,967	$104,233	70%
8.00-inch	$406,700	$364,282	$42,418	12%
10.00-inch	$584,700	$311,282	$273,418	88%
12.00-inch	$838,900	$644,856	$194,044	30%

Charges for FY17 onward may be escalated using an appropriate index such as the *Engineering News Record* 20-City Construction Cost Index, as published by Engineering News-Record, McGraw-Hill Publishing Company. Charges would be escalated by the ratio of the index values from March of the preceding year to March of the current year, with escalated charges to be effective on July 1 of each year.

5.9 Survey of Single Family Water Capacity Charges

The City's current and recommended Water Capacity Charges were compared to the capacity charges for other agencies. The comparison is made using the charge that is typical for a single family connection at each agency. Capacity charges paid to CCWD for raw and treated water in the service areas for the Cities of Antioch and Pittsburg are shown to allow a better comparison with capacity charges in the CCWD retail service area.

Table 5-6. Survey of Single Family Water Capacity Charges

Component	Antioch Current	Antioch Recommended FY16	Pittsburg Current	Brentwood Adopted FY16	Contra Costa Water District
Individual Cities Component	$5,060	$5,080	$5,060	$7,486	
Contra Costa Water District Treated Water	$1,121	$1,121			
Contra Costa Water District Supply Component	$6,047	$6,047	$6,047		
Contra Costa Water District					$18,966
Total Charges	**$12,228**	**$12,248**	**$11,107**	**$7,486**	**$18,966**

The City of Pittsburg has fees for 10 separate areas that range from $2,430 to $9,200. The median value is used in the survey.

The City of Antioch fee for CCWD treated water is per the Treated Water Service Agreement dated December 5, 2001

5.10 Water Fund 612 Projected Cash Flow

The City maintains a separate enterprise fund – Water Line Expansion, Fund 612, – for operations and expenditures related to water line expansions. The projected cash flow for FY15 – FY20 is shown in the table below. Note that the primary source of revenues are fees collected from developers (water capacity charges).

Table 5-7. Water Fund 612 Projected Cash Flow

Items	Notes	Budget 2014-15	Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20	Five-Year Total
Beginning Balance, July 1	[1]	3,682,000	4,046,430	2,550,430	1,126,430	1,658,430	2,225,430	
Revenues								
Capacity Charges	[2]	1,138,430	1,143,000	1,172,000	1,335,000	1,368,000	1,543,000	6,561,000
Investment Income	[3]	35,000	20,000	13,000	6,000	8,000	11,000	58,000
Total Revenues		**1,173,430**	**1,163,000**	**1,185,000**	**1,341,000**	**1,376,000**	**1,554,000**	**6,619,000**
Expenditures								
Services & Supplies		7,000	7,000	7,000	7,000	7,000	7,000	35,000
Water Main Replacement		800,000	2,650,000	2,600,000	800,000	800,000	800,000	7,650,000
Transfer Out		0	0	0	0	0	0	0
Internal Services		2,000	2,000	2,000	2,000	2,000	2,000	10,000
Total Expenditures		**809,000**	**2,659,000**	**2,609,000**	**809,000**	**809,000**	**809,000**	**7,695,000**
Net Revenue		364,430	(1,496,000)	(1,424,000)	532,000	567,000	745,000	(1,076,000)
Ending Balance, June 30		**4,046,430**	**2,550,430**	**1,126,430**	**1,658,430**	**2,225,430**	**2,970,430**	

1 The beginning balance for FY 2014-15 is from p. 252 of the 2014-15 Operating Budget.

2 Revenue from capacity charges for 2015-16 onward is estimated as shown below.

	2014-15	*2015-16*	*2016-17*	*2017-18*	*2018-19*	*2019-20*	*Total*
current capacity charge, $/¾-meter >	5,060						
projected annual escalation percent >			*2.5%*	*2.5%*	*2.5%*	*2.5%*	
projected capacity charge, $/¾-meter >		5,080	5,210	5,340	5,470	5,610	
projected ¾-meter connections >	225	225	225	250	250	275	
projected capacity charge revenue, $ >	1,138,430	1,143,000	1,172,250	1,335,000	1,367,500	1,542,750	6,560,500

3 Interest income for FY 2015-16 onward is based on the interest rates listed below times the beginning fund balance.

2015-16	*2016-17*	*2017-18*	*2018-19*	*2019-20*
0.5%	*0.5%*	*0.5%*	*0.5%*	*0.5%*

Section 6

Development of Sewer Capacity Charges

Capacity charges are intended to recover both a portion of the proposed Capital Improvement Program (CIP) cost, and utility rate payers' prior investment in capital facilities that support land development by providing capacity for new connections. The capacity charges that are developed in this report meet the regulatory requirements found in Government Code Section 66000 *et sequentia* regarding the establishment of capacity charges.[8]

6.1 Regulatory Requirements

Government Code Section 66013 defines a capacity charges as "a charge for public facilities in existence at the time a charge is imposed or charges for new public facilities to be acquired or constructed in the future that are of proportional benefit to the person or property being charged, including supply or capacity contracts for rights or entitlements, real property interests, and entitlements and other rights of the local agency involving capital expense relating to its use of existing or new public facilities. A 'capacity charge' does not include a commodity charge."

Section 66013 also describes requirements related to use of revenue from capacity charges and providing information to the public. This study does not examine the City's practices regarding those requirements.

6.2 Conceptual Approach

In developing capacity charges, we have endeavored to satisfy the rational nexus criteria generally applied to these types of charges. A rational nexus-based capacity charge must:

- Be rationally based on public policy that demonstrates a nexus between new development (connections) and the need to expand or build facilities to accommodate it.
- Not exceed the new development's proportional share of the cost of facilities needed to serve that development, after crediting it for other contributions that it has already made or will make toward that cost.
- Not be arbitrary or discriminatory in its application to individuals or customer classes.

A capacity charge is a charge to pay for public agencies' facilities in existence at the time the charge is imposed or to pay for new facilities that will be constructed in the future that are of benefit to the person or property being charged (new development or increases to existing service capacity). Capacity charges help ensure that the "growth pays for growth" by allocating the cost of new facilities and the cost of unused capacity in existing facilities to new development while allocating the cost of repairing and refurbishing facilities used by current customers to rates.

[8] The term "sewer facility reserve fee", as used by the City, and "capacity charge", as defined in the Government Code and used in this study, are synonymous.

6.3 Current Sewer Capacity Charges

Water Meter Size or Customer Class	Sewer Facility Reserve Fees
Nonresidential	
⅝ x ¾-inch	$2,335.52
1-inch	$5,056.01
1½-inch	$9,068.28
2-inch	$14,509.24
3-inch	$29,018.49
4-inch	$45,341.38
6-inch	$90,682.77
8-inch	$145,092.44
10-inch	$262,980.04
12-inch	$389,935.92
Residential	
Singe dwelling unit	$2,335.52
Duplex (2 dwelling units)	$4,671.04
Additional dwelling units	$404.95

The basis for current Sewer Capacity Charges (Facility Reserve Fees) are described in Title 6 (Sanitation and Health), Chapter 4 (Sewer System) of the Antioch Municipal Code (AMC).

Current Sewer Facility Reserve Fees from the City's *Master Fee Schedule*, updated effective July 1, 2014, are shown in the adjacent table. The *Master Fee Schedule* states that "… Sewer Connection Fees shall automatically adjust in each succeeding year in accordance with the '*Engineering News Record [italics added]* Cost of Construction Index.'"[9].

6.4 Sewer System Valuation and Capacity

The system buy-in method of the capacity charge recovers the cost of capacity in those portions of the existing system in which there is capacity available. The value of the existing system was developed using data for the following elements:

- Existing Fixed Assets
- Contributed Assets
- Contributed Capital
- City System Capital Improvement Program
- Working Capital

Existing Fixed Assets. The replacement value of subsurface collection pipes was calculated by segregating the pipes into size categories and multiplying the amount of pipe in each size category (in miles) by a unit replacement cost. Calculation of the replacement value of subsurface collection pipes is shown in Appendix G, Table G-1.

Contributed Assets. The City requires owners to construct and contribute assets needed to serve their development. The value of contributed assets is subtracted from the value of the asset base for development of capacity charges. The value of subsurface collection pipe less than 8" in diameter is considered a contributed asset and is excluded from the valuation of the subsurface collection pipe. Contributions of subsurface collection pipe greater than or equal to 8" in diameter vary for each size category. Contributed assets include assets funded by Assessment District revenues.

[9] The *Engineering News Record* publishes a Construction Cost Index for 20 different cities in the United States and a 20-City composite index. The index used by the City of Antioch is the 20-City Construction Cost Index.

Contributed Capital. The amount of revenue collected from developers is excluded from the valuation of the sewer system. The amount of revenue collected from developers during 2004 –2013 was obtained from City accounting records. The amount of revenue collected from developers during 1970 – 2003 was estimated using historic fees for 1989 - 2003, estimates of historic fees for 1970 – 1988, and the estimated number of connection per year during 1970 - 2003. Calculation of the estimated amount of revenue collected from developers is summarized in Appendix G, Table G-2.

Capital Improvement Program. Projected expenditures for modifications and upgrades to the City's sewer system were provided by the City's Engineer. The modifications and upgrades are valued at approximately $2,500,000 for FY16 – FY20 and are added to the valuation of the sewer system.

Working Capital. The City records a small cash balance in the Sewer Facility Expansion Fund (Fund 622). The budgeted fund balance for July 2015 is approximately $600,000.

The valuation of the Sewer System, net of adjustments, is shown in Table 6-1.

Table 6-1. Valuation of Sewer System

Fixed Asset Category	Valuation	Adjusted Valuation
Subsurface Collection Pipes	$493,333,000	
Adjustments		
1. Contributed Assets		
Less: Value of Contributed Assets		
Subsurface Collection Pipes		($363,069,000)
2. Contributed Capital		
Less: Revenue from Capacity Charges		($36,643,000)
3. Debt Principal Outstanding		
Less: no Debt Service		$0
4. Sewer System Expansion CIP (Fund 622)		
Plus: CIP funded by capacity charges, FY16-FY20		$2,500,000
5. Working Capital (Fund 622)		
Plus: Unrestricted Reserves, FY16		$600,000
Net Valuation		$96,721,000

The capacity of the sewer system is estimated to be equivalent to the current average annual wastewater discharge volume for all customers and is shown in the table below.

Table 6-2. Sewer System Capacity

Customer Class	CCF
Single Family	2,926,245
Multi Family	245,575
Apartments/Mobile Homes	249,724
Com/Inst	407,766
Industrial	121,781
Other	11,105
Total CCF	3,962,196
Total, million gallons	2,964
Total, gallons per day (round to 1,000)	8,121,000

6.5 Sewer Unit Cost of Capacity

The Sewer Unit Cost of Capacity is calculated by dividing the net valuation of the sewer system (shown in Table 6-1) by the sewer system capacity (shown in Table 6-2). Calculation of the Sewer Unit Cost of Capacity is shown in Table 6-3.

Table 6-3. Sewer Unit Cost of Capacity

Net Sewer System Valuation		Wastewater Discharge Volume, gallons per day		Unit Cost of Capacity $/gallons per day
$96,721,000	÷	8,121,000	=	$11.91

6.6 Schedule of Sewer Capacity Charges

Sewer Capacity Charges for all connections are based on the Sewer Unit Cost of Capacity. Sewer Capacity Charges are determined by multiplying the wastewater volume for a connection times the Sewer Unit Cost of Capacity. Recommended capacity charges for Residential connections and examples of capacity charges for Nonresidential connections are shown in Table 6-4.

Table 6-4. Recommended Sewer Capacity Charges

Unit Cost of Capacity, $/gallons per day	$11.91	
Capacity Charges		
Residential	*gallons per day*	*Capacity Charge*
Singe Family	210	$2,500
Multiple Family	168	$2,000
Apartments/Mobile Homes	137	$1,630
Nonresidential	*gallons per day*	*Capacity Charge*
Example 1	210	$2,500
Example 2	630	$7,500
Example 3	2,100	$25,010
Example 4	4,200	$50,020
Example 5	5,250	$62,530

6.7 Comparison of Current vs. Recommended Capacity Charges

The current and recommended schedule of Sewer Capacity Charges for Residential connections is shown in Table 6-5. The recommended Sewer Capacity Charges are for FY16. Current and recommended Sewer Capacity Charges for Nonresidential connections are not comparable as the current charges are based on water meter size and recommended charges are based on wastewater discharge volume.

Table 6-5. Current and Recommended Residential Sewer Capacity Charges

Customer Class	Current Charges	Recommended Charges	Increase (Decrease) Dollars	Increase (Decrease) Percent
Unit Cost of Capacity, $/gallons per day		$11.91		
Single Family	$2,336	$2,500	$164	7%
Multiple Family	$2,336	$2,000	($336)	-14%
Apartments/Mobile Homes	$2,336	$1,630	($706)	-30%

Charges for FY17 onward may be escalated using an appropriate index such as the *Engineering News Record* 20-City Construction Cost Index, as published by Engineering News-Record, McGraw-Hill Publishing Company. Charges would be escalated by the ratio of the index values from March of the preceding year to March of the current year, with escalated charges to be effective on July 1 of each year.

6.8 Survey of Single Family Capacity Charges

The City's current and recommended Sewer Capacity Charges were compared to the capacity charges for other agencies. The comparison is made using the charge that is typical for a single family connection at each agency. All agencies included in the survey provide only sewer collection services – not wastewater treatment or disposal. Table 6-6 shows the results of the survey.

Table 6-6. Survey of Single Family Sewer Capacity Charges

Agency	County	Charge
City of Antioch, Current	Contra Costa	$2,336
City of Antioch, Proposed FY16	Contra Costa	**$2,500**
City of Pittsburg	Contra Costa	$4,214
Sacramento Area Sewer District	Sacramento	$2,550

The City's current and recommended Sewer Capacity Charges were added to capacity charges levied by Delta Diablo for wastewater treatment and disposal and compared to the total wastewater collection, treatment and disposal capacity charges for other agencies. The comparison is made using the charge that is typical for a single family connection at each agency. Table 6-7 shows the results of the survey.

Table 6-7. Survey of Single Family Wastewater Collection, Treatment and Disposal Capacity Charges

	Antioch, Current	Antioch, Proposed FY16	Pittsburg, Current	Bay Point, Current	Brentwood, Adopted FY16
Collection	*$2,336*	*$2,500*	*$4,214*		
Treatment	$5,033	$5,033	$4,358		
Total	**$7,369**	**$7,533**	**$8,572**	**$3,940**	**$4,470**

For Antioch and Pittsburg, the Treatment category value is the FY 2014-15 Delta Diablo charge.
For Bay Point, the total charge is the FY 2014-15 Delta Diablo charge.
For Brentwood, the total charge has one component with no breakdown shown by the City.

6.9 Sewer Facility Expansion Fund 622 Projected Cash Flow

The City maintains a separate enterprise fund – Sewer Facility Expansion, Fund 622 – for operations and expenditures related to construction of oversize sewer facilities or replacement of inadequate sewers.

The projected cash flow for FY15 – FY20 is shown in the table below. Note that the primary source of revenues are fees collected from developers (Sewer Capacity Charges).

Table 6-8. Sewer Fund 612 Projected Cash Flow

Item	Notes	Budget 2014-15	Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20	Total
Beginning Balance, July 1	[1]	3,223,647	580,697	586,497	603,997	698,797	809,697	
Revenues								
Capacity Charges	[2]	300,000	562,500	576,000	655,000	672,500	759,000	3,225,000
Transfer from Fund 621								
Investment Income	[3]	15,000	2,900	2,900	3,000	3,500	4,000	16,300
Total Revenues		**315,000**	**565,400**	**578,900**	**658,000**	**676,000**	**763,000**	**3,241,300**
Expenditures	[1]							
Services & Supplies		56,791	58,500	60,300	62,100	64,000	65,900	310,800
Interfund Charges		1,159	1,100	1,100	1,100	1,100	1,100	5,500
Sewer Main Replacement		2,900,000	500,000	500,000	500,000	500,000	500,000	2,500,000
Total Expenditures		**2,957,950**	**559,600**	**561,400**	**563,200**	**565,100**	**567,000**	**2,816,300**
Net Revenue		(2,642,950)	5,800	17,500	94,800	110,900	196,000	
Ending Balance, June 30		**580,697**	**586,497**	**603,997**	**698,797**	**809,697**	**1,005,697**	

1 All values for FY 2014-15 and FY 2015-16 are from p. 258 of the 2014-15 Operating Budget.
Expenditures for FY 2016-17 onward are based a 3% escalation of the previous years' value.

2 Revenue from capacity charges for 2015-16 onward is estimated as shown below.

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
current capacity charge, $/EDU >	2,336					
projected annual escalation percent >			*2.5%*	*2.5%*	*2.5%*	*2.5%*
projected capacity charge, $/EDU >		2,500	2,560	2,620	2,690	2,760
projected EDU connections >		225	225	250	250	275
projected capacity charge revenue, $ >		562,500	576,000	655,000	672,500	759,000

3 Interest income for FY 2015-16 onward is based on the interest rates listed below times the beginning fund balance.

2015-16	2016-17	2017-18	2018-19	2019-20
0.5%	*0.5%*	*0.5%*	*0.5%*	*0.5%*

Section 7

Limitations

This document was prepared solely for the City of Antioch in accordance with professional standards at the time the services were performed and in accordance with the contract between the City of Antioch and Municipal Financial Services. This document is governed by the specific scope of work authorized by the City of Antioch in an Agreement dated January 29, 2014; it is not intended to be relied upon by any other party. We have relied on information or instructions provided by the City of Antioch and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Appendix A: Water Use Data

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Table A-1
Historic and Projected Water Deliveries

Item	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Production, HCF	8,550,158	9,055,443	8,902,724	8,539,693	9,311,375	8,839,480	7,898,743	7,515,038	7,565,201	7,824,967	8,242,214	7,245,021					
Deliveries, HCF [1]																	
Single Family	5,886,697	6,478,175	6,592,815	6,509,339	6,227,384	5,844,011	5,049,668	4,905,405	4,875,488	5,138,397	5,388,837	4,497,012	4,396,149	4,297,290	4,203,965	4,112,373	4,025,841
Multi Family	644,884	698,313	635,683	611,033	611,838	589,218	563,518	543,083	576,288	580,836	595,889	544,896	533,998	523,318	512,852	502,595	492,543
Com/Inst	634,733	643,599	605,177	606,880	640,588	717,616	608,402	563,587	702,722	642,078	635,139	649,496	636,506	623,776	611,301	599,075	587,093
Industrial	332,996	424,609	419,220	418,510	365,370	367,813	338,676	320,623	328,698	121,781	101,649	107,454	105,305	103,199	101,135	99,112	97,130
Lscp/Irr	1,117,404	1,175,638	445,171	1,349,048	1,660,566	1,584,738	785,833	814,881	656,015	923,208	1,049,682	792,360	776,513	760,983	745,763	730,848	716,231
Other	160,862	83,926	62,187	70,497	44,060	37,910	277,276	249,410	114,819	111,049	162,617	103,301	101,235	99,211	97,226	95,282	93,376
Total	8,777,577	9,504,260	8,760,253	9,565,307	9,549,806	9,141,306	7,623,373	7,396,989	7,254,030	7,517,349	7,933,813	6,694,519	6,549,706	6,407,776	6,272,242	6,139,284	6,012,214
Total, rounded	8,780,000	9,500,000	8,760,000	9,570,000	9,550,000	9,140,000	7,620,000	7,400,000	7,250,000	7,520,000	7,930,000	6,690,000	6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Total, million gallons	6,567	7,110	6,554	7,156	7,144	6,839	5,703	5,534	5,427	5,624	5,935	5,008	4,900	4,794	4,692	4,593	4,498
Total, gallons per da	17,990,000	19,480,000	17,950,000	19,600,000	19,570,000	18,740,000	15,620,000	15,160,000	14,870,000	15,410,000	16,260,000	13,720,000	13,420,000	13,130,000	12,860,000	12,580,000	12,320,000
Accounts [2]																	
Single Family	27,234	27,432	27,644	27,550	27,143	27,486	27,812	28,003	28,287	28,466	28,602	28,827	29,052	29,277	29,527	29,777	30,052
Multi Family	693	693	695	695	680	688	688	690	690	688	688	688	688	688	688	688	688
Com/Inst	720	742	719	760	763	769	775	778	789	779	788	788	788	788	788	788	788
Industrial	15	15	19	19	19	18	18	17	17	17	15	15	15	15	15	15	15
Lscp/Irr	1,068	1,073	1,143	1,092	1,103	1,105	1,079	1,081	877	1,076	1,065	1,065	1,065	1,065	1,065	1,065	1,065
Other	191	169	216	243	246	261	295	294	301	301	280	280	280	280	280	280	280
Total	29,921	30,124	30,436	30,359	29,954	30,327	30,667	30,863	30,961	31,327	31,438	31,663	31,888	32,113	32,363	32,613	32,888
Average Use, HCF/mo [3]																	
Single Family	18.0	19.7	19.9	19.7	19.1	17.7	15.1	14.6	14.4	15.0	15.7	13.0	12.6	12.2	11.9	11.5	11.2
Multi Family	78	84	76	73	75	71	68	66	70	70	72	66	65	63	62	61	60
Com/Inst	73	72	70	67	70	78	65	60	74	69	67	69	67	66	65	63	62
Industrial	1,850	2,359	1,839	1,836	1,603	1,703	1,568	1,572	1,611	597	565	597	585	573	562	551	540
Lscp/Irr	87	91	32	103	125	120	61	63	62	72	82	62	61	60	58	57	56
Other	70	41	24	24	15	12	78	71	32	31	48	31	30	30	29	28	28

Notes:

1 Deliveries for 2003 - 2013 are from Department of Water Resources (DWR) Form 38 reports. Deliveries for 2014 onward are projected.

2 The number of accounts for 2003 - 2013 are from DWR Form 38 reports. The number of additional accounts for 2014 onward are projected as shown below.

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Single Family	225	225	225	250	250	275
All Other Customer Classes	0	0	0	0	0	0

3 Average use for 2003 - 2013 is based on City data. Average use for 2014 onward was developed by the Consultant.

	2015-16	2016-17	2017-18	2018-19	2019-20
Single Family	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%
All Other Customer Classes	-2.0%	-2.0%	-2.0%	-2.0%	-2.0%

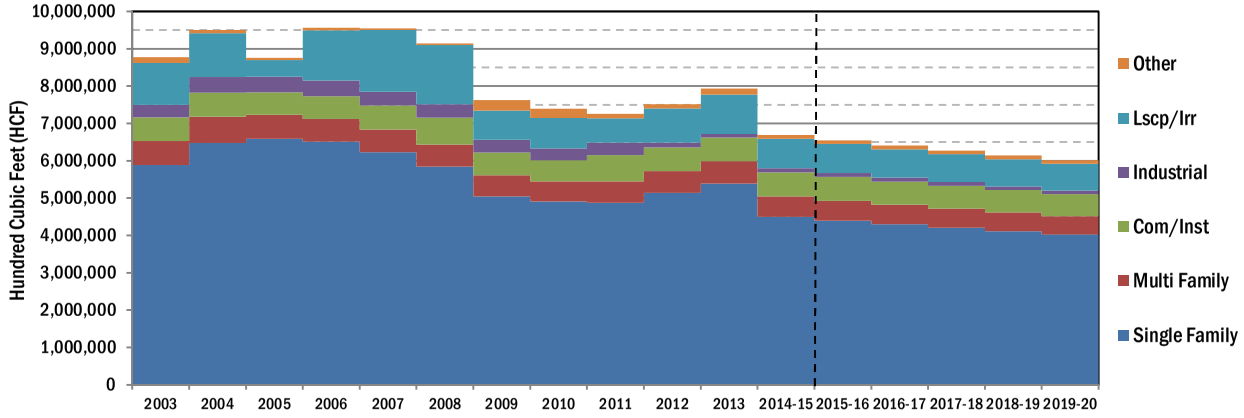

Table A-2
Evaluation of Electricity Use and Water Use by Zone

List of Pump Stations Serving Each Zone

Zone	Pump Stations
Zone I	Canal East, Canal West and River
Zone II	Sunset and Water Treatment Plant
Zone III	Bear Ridge, Donlon, Hillcrest, Lone Tree #1 and Lone Tree #2
Zone IV	Cambridge and Dallas Ranch

Electricity Use by Month at Each Pump Station

Meter	Name	Zone	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13
8147598554	Lone Tree #2	III	$14,063	$11,135	$8,903	$8,178	$5,659	$4,829	$3,709	$2,306	$3,419	$4,299	$6,760	$11,444
8147598893	Hillcrest	III	$8,362	$8,582	$7,602	$7,894	$5,009	$2,736	$4,291	$4,188	$4,508	$4,330	$7,232	$10,244
8147598467	Dallas Ranch	IV	$15,312	$16,497	$15,832	$15,852	$13,749	$9,034	$5,438	$4,777	$4,919	$6,818	$7,216	$12,449
8147598821	Canal W	RawCW	$14,115	$28,162	$21,565	$12,461	$7,862	$1,545	$327	$343	$928	$1,591	$13,382	$17,454
8147598267	Sunset	II	$769	$699	$718	$728	$594	$458	$490	$471	$509	$465	$615	$783
8147598393	Donlon	III	$6,219	$6,199	$5,700	$5,888	$4,074	$2,613	$2,053	$2,155	$2,417	$2,943	$4,632	$6,278
8147598956	Cambridge	IV	$2,525	$2,302	$2,334	$2,248	$1,578	$1,162	$1,009	$1,081	$1,293	$1,240	$1,928	$2,570
3314263702	River	RawR	$36,993	$4,397	$4,339	$4,497	$4,310	$2,044	$43,276	$54,007	$62,995	$58,987	$54,951	$54,501
3314263704	WTP	WTP	$66,293	$67,502	$59,104	$55,420	$40,179	$26,321	$14,047	$26,068	$29,737	$32,478	$49,427	$64,077
8147598424	Lone Tree #1	III	$11,160	$10,926	$11,406	$10,521	$8,798	$4,980	$3,849	$4,917	$5,258	$5,248	$8,182	$10,976
8147598737	Canal E	RawCE	$6,281	$5,037	$7,108	$7,546	$6,384	$4,880	$214	$840	$562	$2,806	$5,548	$6,061
8147598507	Bear Ridge	III	$402	$438	$443	$432	$307	$200	$193	$182	$215	$204	$308	$447
Total			$182,494	$161,877	$145,054	$131,664	$98,502	$60,801	$78,896	$101,336	$116,761	$121,408	$160,182	$197,285
	Summary by Month													
	Dollars													
	Zone I		$57,389	$37,596	$33,012	$24,504	$18,557	$8,469	$43,816	$55,190	$64,484	$63,384	$73,881	$78,016
	Zone II		$67,063	$68,202	$59,822	$56,148	$40,773	$26,779	$14,537	$26,539	$30,246	$32,943	$50,042	$64,860
	Zone III		$40,205	$37,280	$34,054	$32,912	$23,846	$15,357	$14,095	$13,749	$15,818	$17,024	$27,115	$39,390
	Zone IV		$17,837	$18,799	$18,166	$18,100	$15,327	$10,196	$6,447	$5,858	$6,212	$8,057	$9,144	$15,019
	Total		$182,494	$161,877	$145,054	$131,664	$98,502	$60,801	$78,896	$101,336	$116,761	$121,408	$160,182	$197,285
	Percent													
	Zone I		31%	23%	23%	19%	19%	14%	56%	54%	55%	52%	46%	40%
	Zone II		37%	42%	41%	43%	41%	44%	18%	26%	26%	27%	31%	33%
	Zone III		22%	23%	23%	25%	24%	25%	18%	14%	14%	14%	17%	20%
	Zone IV		10%	12%	13%	14%	16%	17%	8%	6%	5%	7%	6%	8%
	Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Summary for FY 2012-13													
	Zone I		$558,298	36%										
	Zone II		$537,953	35%										
	Zone III		$310,845	20%										
	Zone IV		$149,163	10%										
	Total		$1,556,260	100%										

Water Use in Each Zone *

	Calendar Year 2012		Calendar Year 2013		Composite of CY 2012 and CY 2013 Data			
Zone	HCF by Zone	Percent by Zone	HCF by Zone	Percent by Zone	59% of Total 2012 Use Jul-Dec	41% of Total 2013 Use Jan-Jun	7/1/2012 - 6/30/2013	Percent by Zone
Zone I	716,415	10.3%	720,656	9.7%	422,685	295,469	718,154	9.6%
Zone II	2,352,365	32.1%	2,375,199	30.9%	1,387,895	973,832	2,361,727	31.6%
Zone III	3,324,520	45.1%	3,625,663	46.8%	1,961,467	1,486,522	3,447,989	46.1%
Zone IV	926,458	12.5%	984,007	12.6%	546,610	403,443	950,053	12.7%
Total	7,319,758		7,705,525		4,318,657	3,159,265	7,477,922	100.0%

* HCF data for 2012 and 2013 is from the City's billing data and is based on sums using only the Zone codes.
Total HCF values based on Zone codes is slightly different from HCF data based on other billing codes and the DWR Form 38 water use data.
The percent by zone used in the development of rates is a composite of CY 2012 and CY 2013 data. Use in each zone for 2012 is estimated to be 59 percent of total 2012 use.
Use in each zone for FY 2012-13 is estimated to be 59 percent of total 2012 use plus 41 percent of total 2013 use.

Appendix B: Water "Plant in Service Factors" and Allocation of Costs

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Table B-1
Water Fund 611 "Plant in Service" Factors

All Values in $million Plant in Service	Valuation [1] Dollars	Useful Life, Years	Capital Recovery Expense [2] Dollars	Base (BAS)	Extra Capacity Maximum Day (XMD)	Fire Protection (FP)	Meters and Service Laterals (MTR)	Billing and Collection (CUS)	Basis of Allocation [3,4,5] (BAS)	(XMD)	(FP)	(MTR)	(CUS)
Water Treatment Plant	37.000	50	2.027	1.212	0.774	0.041			60%	38%	2%		
Municipal Reservoir	24.000	50	1.315	0.786	0.502	0.026			60%	38%	2%		
E. & W. Canal Pump Stations	0.600	30	0.039	0.023	0.015	0.001			60%	38%	2%		
Clearwells	5.480	50	0.300	0.180	0.115	0.006			60%	38%	2%		
Reservoirs	10.000	50	0.548	0.328	0.209	0.011			60%	38%	2%		
Booster Pump Stations	41.630	30	2.708	1.087	0.694	0.926			40%	26%	34%		
Pressure Reducing Valves	4.100	30	0.267	0.107	0.068	0.091			40%	26%	34%		
Transmission Pipes	73.338	50	4.017	1.613	1.030	1.374			40%	26%	34%		
Distribution Pipes >= 8"	217.671	40	12.685	5.094	3.253	4.338			40%	26%	34%		
Distribution Pipes <6"	160.000	40	9.325	5.690	3.634				61%	39%			
Hydrants	23.075	50	1.264			1.264					100%		
Service Laterals	76.000	50	4.163				4.163					100%	
Meters	24.320	30	1.582				1.582					100%	
Totals	**697.214**		**40.239**	**16.121**	**10.295**	**8.078**	**5.745**	**0.000**					
% of Total				40%	26%	20%	14%	0%					

Notes:

1 The list of Plant Assets, valuations and useful lives were provided by the City.

2 The capital recovery expense is the capital recovery factor times the present value of the asset.
The capital recovery factor is the ratio of a constant annuity to the present value of receiving that annuity for the useful life of the asset using the estimated real interest rate. The capital recovery expense is calculated using an interest rate of > 5.0%

3 The Fire Protection allocation for the Treatment Plant and Reservoir is based on the volume of water used for public and private fire protection.

4 Fire Protection allocation for Booster Pump Station, PRVs, Transmission Lines and Distribution Lines is based on concepts presented in the American Water Works Association, *Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges* , 2012 Sixth Edition, page 143.
The allocation is calculated using a formula developed by the Insurance Services Office that relates the percentage of total revenue allocated as fire protection costs based on the population served.

Fire Demand = $1{,}020\ x^{1/2}\ (1 - 0.01x^{1/2})$ in gallons per minute (gpm) where x = population in thousands; x = 106 for the Antioch Service Area
Fire Demand = 9,420 gpm
Maximum Day Demand = 26.1 mgd from the Water Master Plan, Table 3.1
Maximum Day Demand = 18,125 gpm
Fire Protection Allocation = 9,420 / (9,420 + 18,125)
Fire Protection Allocation = 34%

5 Base (BAS) and Maximum Day (XMD) allocations for Water Treatment facilities are calculated as shown below:
Average Day Demand = 15.9 mgd from the Water Master Plan, Table 3.1
Maximum Day Demand = 26.1 mgd

$$\text{Base Allocation} = \frac{15.9}{26.1} = 61.0\%$$

$$\text{Maximum Day Allocation} = \frac{26.1 - 15.9}{26.1} = 39.0\%$$

Table B-2
Water Fund 611 FY 2015-16 Cost Allocations, $

Expense Category	Budget Projected 2015-16	Base (BAS)	Extra Capacity (CAP)	Zones II/III/IV Electricity Costs (ELE)	Fire Protection (FP)	Meters and Service Lat. (MTR)	Customer Billing (CUS)	Basis of Allocation [1,2,3]
Operating Expenses								
Supervision	3,243,751	1,821,166	1,163,085	0	0	259,500	0	"System Operation"
Production, Serv & Supl	17,119,740	5,975,982	3,816,553	1,446,162	3,436,814	2,444,229	0	"Plant in Service"
Production, Personnel	1,749,820	982,416	627,419	0	0	139,986	0	"System Operation"
Distribution	6,336,539	3,557,575	2,272,041	0	0	506,923	0	"System Operation"
Meter Reading	801,467						801,467	100% CUS
Warehouse/Stores	511,164						511,164	100% CUS
Additional Staffing	0	0	0		0	0	0	"Plant in Service"
Total Operating	**29,762,481**	**12,337,138**	**7,879,097**	**1,446,162**	**3,436,814**	**3,350,638**	**1,312,631**	
Capital Expenses								
Personnel	124,060	49,701	31,741		24,905	17,712	0	"Plant in Service"
Projects	1,160,000	464,720	296,793		232,872	165,616	0	"Plant in Service"
Total Capital	**1,284,060**	**514,420**	**328,534**	**0**	**257,777**	**183,329**	**0**	
Capital Reserve	**0**	0	0		0	0	0	"Plant in Service"
Total Expenditures	**31,046,541**	**12,851,559**	**8,207,631**	**1,446,162**	**3,694,592**	**3,533,967**	**1,312,631**	
REVENUE REQUIREMENT ALLOCATION		**41.4%**	**26.4%**	**4.7%**	**11.9%**	**11.4%**	**4.2%**	

1 The "Plant in Service" factor is from Table B-1 and allocates costs as shown below.

(BAS)	(CAP)	(ELE)	(FP)	(MTR)	(CUS)
40%	26%	na	20%	14%	0%

2 The "System Operations" factor is based on labor allocation for system operation.

(BAS)	(CAP)	(ELE)	(FP)	(MTR)	(CUS)
56%	36%	0%	0%	8%	0%

3 Allocations to BAS and CAP for Production are net of $1,446,162 for booster station and pump electric utility costs as shown below.

A) Calculate electricity costs for Zones I, II, III and IV

	% by Zone *2012-13*	2015-16 Electricity Costs All Zones
Zone I	36%	$518,801
Zone II	35%	$499,896
Zone III	20%	$288,854
Zone IV	10%	$138,610
Total		$1,446,162

B) Adjust Production BAS and CAP allocations to exclude electricity costs for Zones I, II, III and IV

	(BAS)	(CAP)	Total BAS + CAP
	40%	26%	66%
Production BAS and CAP only >	$6,858,515	$4,380,181	$11,238,696
% Allocation between Production BAS and CAP >	61%	39%	
Electricity costs for Zones I, II, III and IV >	$882,533	$563,629	$1,446,162
Production BAS and CAP net of electricity costs >	$5,975,982	$3,816,553	$9,792,535

Appendix C: Water Quantity, Meter and Private Fire Service Charges Development Tables

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Table C-1
Development of Elevation Charges for Zones II, III and IV

Allocation Category	Notes		Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20
Units of Use (HCF)	[1]		6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Use by Zone		*allocation %*					
Zone I		*10%*	629,000	616,000	602,000	590,000	577,000
Zone II		*32%*	2,069,000	2,024,000	1,980,000	1,939,000	1,898,000
Zone III		*46%*	3,020,000	2,956,000	2,891,000	2,831,000	2,771,000
Zone IV		*13%*	832,000	814,000	797,000	780,000	764,000
Electricity Costs	[2,3]		$1,446,000	$1,504,000	$1,564,000	$1,627,000	$1,692,000
Costs by Zone		*allocation %*					
Zone I		*36%*	$519,000	$540,000	$561,000	$584,000	$607,000
Zone II		*35%*	$500,000	$520,000	$541,000	$562,000	$585,000
Zone III		*20%*	$289,000	$300,000	$312,000	$325,000	$338,000
Zone IV		*10%*	$139,000	$144,000	$150,000	$156,000	$162,000
Development of Elevation Zone Charges for Zone I, Zone II, Zone III and Zone IV							
Water Thru Zone I							
Electricity Costs, dollars			$519,000	$540,000	$561,000	$584,000	$607,000
Water Use, HCF							
Zone I			6,550,000	6,410,000	6,270,000	6,140,000	6,010,000
Zone I Charge, $/HCF		*not rounded >*	**$0.079**	**$0.084**	**$0.089**	**$0.095**	**$0.101**
Water Thru Zone II							
Electricity Costs, dollars			$500,000	$520,000	$541,000	$562,000	$585,000
Water Use, HCF							
Zone II			2,069,000	2,024,000	1,980,000	1,939,000	1,898,000
Zone III			3,020,000	2,956,000	2,891,000	2,831,000	2,771,000
Zone IV			832,000	814,000	797,000	780,000	764,000
Total Water Use			5,921,000	5,794,000	5,668,000	5,550,000	5,433,000
Zone II Charge, $/HCF		*not rounded >*	**$0.084**	**$0.090**	**$0.095**	**$0.101**	**$0.108**
Water Thru Zone III							
Electricity Costs, dollars			$289,000	$300,000	$312,000	$325,000	$338,000
Water Use, HCF							
Zone III			3,020,000	2,956,000	2,891,000	2,831,000	2,771,000
Zone IV			832,000	814,000	797,000	780,000	764,000
Total Water Use			3,852,000	3,770,000	3,688,000	3,611,000	3,535,000
Zone III Charge, $/HCF		*not rounded >*	**$0.075**	**$0.080**	**$0.085**	**$0.090**	**$0.096**
Water Thru Zone IV							
Electricity Costs, dollars			$139,000	$144,000	$150,000	$156,000	$162,000
Water Use, HCF							
Zone IV			832,000	814,000	797,000	780,000	764,000
Zone IV Charge, $/HCF		*not rounded >*	**$0.167**	**$0.177**	**$0.188**	**$0.200**	**$0.212**
Elevation Zone Charges, $/HCF							
Zone							
Zone I		*roundup to $0.01 >*	**$0.08**	**$0.09**	**$0.09**	**$0.10**	**$0.11**
Zone II		*roundup to $0.01 >*	**$0.09**	**$0.09**	**$0.10**	**$0.11**	**$0.11**
Zone III		*roundup to $0.01 >*	**$0.16**	**$0.17**	**$0.19**	**$0.20**	**$0.21**
Zone IV		*roundup to $0.01 >*	**$0.33**	**$0.35**	**$0.37**	**$0.40**	**$0.42**

Notes:

1 Allocation of water use among zones is based on data shown in Table A-2.

2 Electricity costs for 2015-16 are estimated as described below.

A) Estimate change in water use from 2012-13 to 2015-16

	Actual *2012-13*	Estimated *2015-16*	*% Change*
Water Use in All Zones >	7,477,922	6,550,000	-12.4%

B) Apply percent change in water use from 2012-13 to 2015-16 to calculate 2015-16 electricity costs in 2013 dollars

	Actual *2012-13*	*% Change*	Estimated (2013$) *2015-16*
Estimated Electricity Costs in 2013 dollars, All Zones >	$1,556,260	-12.4%	$1,363,146

C) Adjust 2015-16 electricity costs in 2013 dollars by 3 percent for two years to current dollars

	Estimated (2013$) *2015-16*	*% Change*	Estimated (2015$) *2015-16*
Estimated Electricity Costs in 2015 dollars, All Zones >	$1,363,146	6.1%	$1,446,162
		round to $000 >	$1,446,000

3 Electricity costs for 2016-17 onward are the previous years' value escalated by 4%.

Table C-2
Quantity Charges

Cost Category	Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20
Unit Costs					
Avg Base Rate ($/HCF)	*$1.77*	*$1.92*	*$2.22*	*$2.42*	*$2.65*
Avg Extra Capacity Rate ($/HCF)	*$1.13*	*$1.22*	*$1.41*	*$1.53*	*$1.68*
Zone I Electricity ($/HCF)	*$0.08*	*$0.09*	*$0.09*	*$0.10*	*$0.11*
Zone I (=Total)	$2.99	$3.24	$3.73	$4.05	$4.44
Zone II	$0.09	$0.09	$0.10	$0.11	$0.11
Zone III	$0.16	$0.17	$0.19	$0.20	$0.21
Zone IV	$0.33	$0.35	$0.37	$0.40	$0.42
Zone Costs					
Zone I	$2.99	$3.24	$3.73	$4.05	$4.44
Zone II	$3.08	$3.33	$3.83	$4.16	$4.55
Zone III	$3.15	$3.41	$3.92	$4.25	$4.65
Zone IV	$3.32	$3.59	$4.10	$4.45	$4.86

Table C-3
Single Family Inclining Block Quantity Charges

Item	2015-16	2016-17	2017-18	2018-19	2019-20
Single Family Water Use Characteristics					
Average Annual Water Use					
Annual Water Use, Percent					
Percent Less Than or Equal to Average (Tier 1)	70%	70%	70%	70%	70%
Percent Greater Average (Tier 2)	30%	30%	30%	30%	30%
Tier Breaks					
Tier 1	0 - 13 HCF	0 - 13 HCF	0 - 12 HCF	0 - 12 HCF	0 - 12 HCF
Tier 2	> 13 HCF	> 13 HCF	> 12 HCF	> 12 HCF	> 12 HCF
Annual Water Use, HCF					
Total	*4,396,149*	*4,297,290*	*4,203,965*	*4,112,373*	*4,025,841*
Tier 1	3,077,304	3,008,103	2,942,776	2,878,661	2,818,089
Tier 2	1,318,845	1,289,187	1,261,190	1,233,712	1,207,752
Single Family Revenue Requirements					
Base Cost Allocation					
Total All Users, Dollars	$11,610,000	$12,314,000	$13,927,000	$14,836,000	$15,909,000
Single Family Allocation based on Water Use					
Percent	67.1%	67.0%	67.0%	67.0%	67.0%
Dollars	$7,792,257	$8,255,355	$9,337,899	$9,936,671	$10,656,757
Extra Capacity Cost Allocation					
Total All Users, Dollars	$7,415,000	$7,837,000	$8,864,000	$9,410,000	$10,090,000
Single Family Allocation based on Water Use					
Percent	67.1%	67.0%	67.0%	67.0%	67.0%
Dollars	$4,976,709	$5,253,956	$5,943,213	$6,302,513	$6,758,858
Single Family Inclining Block Quantity Charges, $/HCF					
Uniform Quantity Charge					
Base Component					
Dollar Allocation	$7,792,257	$8,255,355	$9,337,899	$9,936,671	$10,656,757
Single Family Water Use	4,396,149	4,297,290	4,203,965	4,112,373	4,025,841
Base Unit Cost	$1.77	$1.92	$2.22	$2.42	$2.65
Extra Capacity Component					
Dollar Allocation	$4,976,709	$5,253,956	$5,943,213	$6,302,513	$6,758,858
Single Family Water Use	4,396,149	4,297,290	4,203,965	4,112,373	4,025,841
Extra Capacity Unit Cost	$1.13	$1.22	$1.41	$1.53	$1.68
Uniform Quantity Charge (Base + Extra Capacity Components)	**$2.91**	**$3.15**	**$3.64**	**$3.95**	**$4.33**
Inclining Block Quantity Charges					
Tier 1 (Base Component Dollars)					
Dollar Allocation	$7,792,257	$8,255,355	$9,337,899	$9,936,671	$10,656,757
Single Family Water Use in Tier 1	3,077,304	3,008,103	2,942,776	2,878,661	2,818,089
Tier 1 Quantity Charge	**$2.53**	**$2.74**	**$3.17**	**$3.45**	**$3.78**
Tier 2 (Extra Capacity Component Dollars)					
Dollar Allocation	$4,976,709	$5,253,956	$5,943,213	$6,302,513	$6,758,858
Single Family Water Use w/Uniform Rate	1,318,845	1,289,187	1,261,190	1,233,712	1,207,752
% Reduction in Use	10%	10%	10%	10%	10%
Single Family Water Use in Tier 2 w/Inclining Block	1,186,960	1,160,268	1,135,071	1,110,341	1,086,977
Tier 2 Quantity Charge	**$4.19**	**$4.53**	**$5.24**	**$5.68**	**$6.22**

Table C-4
Meter Service Charges

Cost Category		Projected Fiscal Year 2015-16	2016-17	2017-18	2018-19	2019-20
Unit Costs						
Fire Protection Rate ($/eq. mtr-month)		$7.28	$7.88	$8.85	$9.62	$10.25
Meter/Lateral Rate ($/eq. mtr-month)		$6.96	$7.54	$8.48	$9.22	$9.82
Account Rate ($/acct-month)		$3.22	$3.41	$3.83	$4.07	$4.33
Metered Service	*Meter Ratio*					
⅝ x ¾-inch	1.00	$17.50	$18.80	$21.20	$22.90	$24.40
1-inch	2.53	$39.30	$42.50	$47.70	$52.00	$55.00
1½-inch	5.00	$74.00	$81.00	$90.00	$98.00	$105.00
2-inch	8.00	$117.00	$127.00	$142.00	$155.00	$165.00
3-inch	15.00	$217.00	$235.00	$264.00	$287.00	$305.00
4-inch	25.00	$359.00	$389.00	$437.00	$475.00	$506.00
6-inch	50.00	$715.00	$775.00	$870.00	$946.00	$1,008.00
8-inch	80.00	$1,142.00	$1,237.00	$1,390.00	$1,512.00	$1,610.00
10-inch	115.00	$1,640.00	$1,777.00	$1,997.00	$2,171.00	$2,312.00
12-inch	165.00	$2,352.00	$2,548.00	$2,864.00	$3,113.00	$3,315.00

Appendix D: Single Family Monthly Water Bills Tables

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Table D-1
Single Family Uniform Quantity Charges

		CURRENT RATES									RECOMMENDED RATES FY 2015-16											
Monthly Water Use		⅝ x ¾-inch Meter Service	Quantity Charge				Total Monthly Bill				⅝ x ¾-inch Meter Service		Quantity Charge				Total Monthly Bill				Zone II Change In Monthly Bill	
			Zone I	Zone II	Zone III	Zone IV							Zone I	Zone II	Zone III	Zone IV						
				$0.09	*$0.22*	*$0.50*								*$0.09*	*$0.16*	*$0.33*						
HCF	gpd	$15.60	$2.42	$2.51	$2.64	$2.92	Zone I	Zone II	Zone III	Zone IV	$17.50	Uniform >	$2.99	$3.08	$3.15	$3.32	Zone I	Zone II	Zone III	Zone IV	Dollar	%
0	0	$15.60	$0.00	$0.00	$0.00	$0.00	$15.60	$15.60	$15.60	$15.60	$17.50		$0.00	$0.00	$0.00	$0.00	$17.50	$17.50	$17.50	$17.50	$1.90	12%
1	25	$15.60	$2.42	$2.51	$2.64	$2.92	$18.02	$18.11	$18.24	$18.52	$17.50		$2.99	$3.08	$3.15	$3.32	$20.49	$20.58	$20.65	$20.82	$2.47	14%
2	49	$15.60	$4.84	$5.02	$5.28	$5.84	$20.44	$20.62	$20.88	$21.44	$17.50		$5.98	$6.16	$6.30	$6.64	$23.48	$23.66	$23.80	$24.14	$3.04	15%
3	74	$15.60	$7.26	$7.53	$7.92	$8.76	$22.86	$23.13	$23.52	$24.36	$17.50		$8.97	$9.24	$9.45	$9.96	$26.47	$26.74	$26.95	$27.46	$3.61	16%
4	98	$15.60	$9.68	$10.04	$10.56	$11.68	$25.28	$25.64	$26.16	$27.28	$17.50		$11.96	$12.32	$12.60	$13.28	$29.46	$29.82	$30.10	$30.78	$4.18	16%
5	123	$15.60	$12.10	$12.55	$13.20	$14.60	$27.70	$28.15	$28.80	$30.20	$17.50		$14.95	$15.40	$15.75	$16.60	$32.45	$32.90	$33.25	$34.10	$4.75	17%
6	148	$15.60	$14.52	$15.06	$15.84	$17.52	$30.12	$30.66	$31.44	$33.12	$17.50		$17.94	$18.48	$18.90	$19.92	$35.44	$35.98	$36.40	$37.42	$5.32	17%
7	172	$15.60	$16.94	$17.57	$18.48	$20.44	$32.54	$33.17	$34.08	$36.04	$17.50		$20.93	$21.56	$22.05	$23.24	$38.43	$39.06	$39.55	$40.74	$5.89	18%
8	197	$15.60	$19.36	$20.08	$21.12	$23.36	$34.96	$35.68	$36.72	$38.96	$17.50		$23.92	$24.64	$25.20	$26.56	$41.42	$42.14	$42.70	$44.06	$6.46	18%
9	221	$15.60	$21.78	$22.59	$23.76	$26.28	$37.38	$38.19	$39.36	$41.88	$17.50		$26.91	$27.72	$28.35	$29.88	$44.41	$45.22	$45.85	$47.38	$7.03	18%
10	246	$15.60	$24.20	$25.10	$26.40	$29.20	$39.80	$40.70	$42.00	$44.80	$17.50		$29.90	$30.80	$31.50	$33.20	$47.40	$48.30	$49.00	$50.70	$7.60	19%
11	271	$15.60	$26.62	$27.61	$29.04	$32.12	$42.22	$43.21	$44.64	$47.72	$17.50		$32.89	$33.88	$34.65	$36.52	$50.39	$51.38	$52.15	$54.02	$8.17	19%
12	295	$15.60	$29.04	$30.12	$31.68	$35.04	$44.64	$45.72	$47.28	$50.64	$17.50		$35.88	$36.96	$37.80	$39.84	$53.38	$54.46	$55.30	$57.34	$8.74	19%
13	320	$15.60	$31.46	$32.63	$34.32	$37.96	$47.06	$48.23	$49.92	$53.56	$17.50		$38.87	$40.04	$40.95	$43.16	$56.37	$57.54	$58.45	$60.66	$9.31	19%
14	344	$15.60	$33.88	$35.14	$36.96	$40.88	$49.48	$50.74	$52.56	$56.48	$17.50		$41.86	$43.12	$44.10	$46.48	$59.36	$60.62	$61.60	$63.98	$9.88	19%
15	369	$15.60	$36.30	$37.65	$39.60	$43.80	$51.90	$53.25	$55.20	$59.40	$17.50		$44.85	$46.20	$47.25	$49.80	$62.35	$63.70	$64.75	$67.30	$10.45	20%
16	394	$15.60	$38.72	$40.16	$42.24	$46.72	$54.32	$55.76	$57.84	$62.32	$17.50		$47.84	$49.28	$50.40	$53.12	$65.34	$66.78	$67.90	$70.62	$11.02	20%
17	418	$15.60	$41.14	$42.67	$44.88	$49.64	$56.74	$58.27	$60.48	$65.24	$17.50		$50.83	$52.36	$53.55	$56.44	$68.33	$69.86	$71.05	$73.94	$11.59	20%
18	443	$15.60	$43.56	$45.18	$47.52	$52.56	$59.16	$60.78	$63.12	$68.16	$17.50		$53.82	$55.44	$56.70	$59.76	$71.32	$72.94	$74.20	$77.26	$12.16	20%
19	467	$15.60	$45.98	$47.69	$50.16	$55.48	$61.58	$63.29	$65.76	$71.08	$17.50		$56.81	$58.52	$59.85	$63.08	$74.31	$76.02	$77.35	$80.58	$12.73	20%
20	492	$15.60	$48.40	$50.20	$52.80	$58.40	$64.00	$65.80	$68.40	$74.00	$17.50		$59.80	$61.60	$63.00	$66.40	$77.30	$79.10	$80.50	$83.90	$13.30	20%
21	516	$15.60	$50.82	$52.71	$55.44	$61.32	$66.42	$68.31	$71.04	$76.92	$17.50		$62.79	$64.68	$66.15	$69.72	$80.29	$82.18	$83.65	$87.22	$13.87	20%
22	541	$15.60	$53.24	$55.22	$58.08	$64.24	$68.84	$70.82	$73.68	$79.84	$17.50		$65.78	$67.76	$69.30	$73.04	$83.28	$85.26	$86.80	$90.54	$14.44	20%
23	566	$15.60	$55.66	$57.73	$60.72	$67.16	$71.26	$73.33	$76.32	$82.76	$17.50		$68.77	$70.84	$72.45	$76.36	$86.27	$88.34	$89.95	$93.86	$15.01	20%
24	590	$15.60	$58.08	$60.24	$63.36	$70.08	$73.68	$75.84	$78.96	$85.68	$17.50		$71.76	$73.92	$75.60	$79.68	$89.26	$91.42	$93.10	$97.18	$15.58	21%
25	615	$15.60	$60.50	$62.75	$66.00	$73.00	$76.10	$78.35	$81.60	$88.60	$17.50		$74.75	$77.00	$78.75	$83.00	$92.25	$94.50	$96.25	$100.50	$16.15	21%
26	639	$15.60	$62.92	$65.26	$68.64	$75.92	$78.52	$80.86	$84.24	$91.52	$17.50		$77.74	$80.08	$81.90	$86.32	$95.24	$97.58	$99.40	$103.82	$16.72	21%
27	664	$15.60	$65.34	$67.77	$71.28	$78.84	$80.94	$83.37	$86.88	$94.44	$17.50		$80.73	$83.16	$85.05	$89.64	$98.23	$100.66	$102.55	$107.14	$17.29	21%
28	689	$15.60	$67.76	$70.28	$73.92	$81.76	$83.36	$85.88	$89.52	$97.36	$17.50		$83.72	$86.24	$88.20	$92.96	$101.22	$103.74	$105.70	$110.46	$17.86	21%
29	713	$15.60	$70.18	$72.79	$76.56	$84.68	$85.78	$88.39	$92.16	$100.28	$17.50		$86.71	$89.32	$91.35	$96.28	$104.21	$106.82	$108.85	$113.78	$18.43	21%
30	738	$15.60	$72.60	$75.30	$79.20	$87.60	$88.20	$90.90	$94.80	$103.20	$17.50		$89.70	$92.40	$94.50	$99.60	$107.20	$109.90	$112.00	$117.10	$19.00	21%
31	762	$15.60	$75.02	$77.81	$81.84	$90.52	$90.62	$93.41	$97.44	$106.12	$17.50		$92.69	$95.48	$97.65	$102.92	$110.19	$112.98	$115.15	$120.42	$19.57	21%
32	787	$15.60	$77.44	$80.32	$84.48	$93.44	$93.04	$95.92	$100.08	$109.04	$17.50		$95.68	$98.56	$100.80	$106.24	$113.18	$116.06	$118.30	$123.74	$20.14	21%
33	812	$15.60	$79.86	$82.83	$87.12	$96.36	$95.46	$98.43	$102.72	$111.96	$17.50		$98.67	$101.64	$103.95	$109.56	$116.17	$119.14	$121.45	$127.06	$20.71	21%
34	836	$15.60	$82.28	$85.34	$89.76	$99.28	$97.88	$100.94	$105.36	$114.88	$17.50		$101.66	$104.72	$107.10	$112.88	$119.16	$122.22	$124.60	$130.38	$21.28	21%
35	861	$15.60	$84.70	$87.85	$92.40	$102.20	$100.30	$103.45	$108.00	$117.80	$17.50		$104.65	$107.80	$110.25	$116.20	$122.15	$125.30	$127.75	$133.70	$21.85	21%
36	885	$15.60	$87.12	$90.36	$95.04	$105.12	$102.72	$105.96	$110.64	$120.72	$17.50		$107.64	$110.88	$113.40	$119.52	$125.14	$128.38	$130.90	$137.02	$22.42	21%
37	910	$15.60	$89.54	$92.87	$97.68	$108.04	$105.14	$108.47	$113.28	$123.64	$17.50		$110.63	$113.96	$116.55	$122.84	$128.13	$131.46	$134.05	$140.34	$22.99	21%
38	935	$15.60	$91.96	$95.38	$100.32	$110.96	$107.56	$110.98	$115.92	$126.56	$17.50		$113.62	$117.04	$119.70	$126.16	$131.12	$134.54	$137.20	$143.66	$23.56	21%
39	959	$15.60	$94.38	$97.89	$102.96	$113.88	$109.98	$113.49	$118.56	$129.48	$17.50		$116.61	$120.12	$122.85	$129.48	$134.11	$137.62	$140.35	$146.98	$24.13	21%
40	984	$15.60	$96.80	$100.40	$105.60	$116.80	$112.40	$116.00	$121.20	$132.40	$17.50		$119.60	$123.20	$126.00	$132.80	$137.10	$140.70	$143.50	$150.30	$24.70	21%
41	1,008	$15.60	$99.22	$102.91	$108.24	$119.72	$114.82	$118.51	$123.84	$135.32	$17.50		$122.59	$126.28	$129.15	$136.12	$140.09	$143.78	$146.65	$153.62	$25.27	21%
42	1,033	$15.60	$101.64	$105.42	$110.88	$122.64	$117.24	$121.02	$126.48	$138.24	$17.50		$125.58	$129.36	$132.30	$139.44	$143.08	$146.86	$149.80	$156.94	$25.84	21%
43	1,058	$15.60	$104.06	$107.93	$113.52	$125.56	$119.66	$123.53	$129.12	$141.16	$17.50		$128.57	$132.44	$135.45	$142.76	$146.07	$149.94	$152.95	$160.26	$26.41	21%
44	1,082	$15.60	$106.48	$110.44	$116.16	$128.48	$122.08	$126.04	$131.76	$144.08	$17.50		$131.56	$135.52	$138.60	$146.08	$149.06	$153.02	$156.10	$163.58	$26.98	21%
45	1,107	$15.60	$108.90	$112.95	$118.80	$131.40	$124.50	$128.55	$134.40	$147.00	$17.50		$134.55	$138.60	$141.75	$149.40	$152.05	$156.10	$159.25	$166.90	$27.55	21%
46	1,131	$15.60	$111.32	$115.46	$121.44	$134.32	$126.92	$131.06	$137.04	$149.92	$17.50		$137.54	$141.68	$144.90	$152.72	$155.04	$159.18	$162.40	$170.22	$28.12	21%
47	1,156	$15.60	$113.74	$117.97	$124.08	$137.24	$129.34	$133.57	$139.68	$152.84	$17.50		$140.53	$144.76	$148.05	$156.04	$158.03	$162.26	$165.55	$173.54	$28.69	21%
48	1,181	$15.60	$116.16	$120.48	$126.72	$140.16	$131.76	$136.08	$142.32	$155.76	$17.50		$143.52	$147.84	$151.20	$159.36	$161.02	$165.34	$168.70	$176.86	$29.26	22%
49	1,205	$15.60	$118.58	$122.99	$129.36	$143.08	$134.18	$138.59	$144.96	$158.68	$17.50		$146.51	$150.92	$154.35	$162.68	$164.01	$168.42	$171.85	$180.18	$29.83	22%
50	1,230	$15.60	$121.00	$125.50	$132.00	$146.00	$136.60	$141.10	$147.60	$161.60	$17.50		$149.50	$154.00	$157.50	$166.00	$167.00	$171.50	$175.00	$183.50	$30.40	22%

Table D-2
Single Family Inclining Block Quantity Charges

		CURRENT RATES									RECOMMENDED RATES FY 2015-16											
				Quantity Charge									Quantity Charge									
Monthly Water Use		⅝ x ¾-inch Meter Service	Zone I	Zone II	Zone III	Zone IV	Total Monthly Bill				⅝ x ¾-inch Meter Service		Zone I	Zone II	Zone III	Zone IV	Total Monthly Bill				Zone II Change In Monthly Bill	
				$0.09	$0.22	$0.50								$0.09	$0.16	$0.33						
HCF	gpd	$15.60	$2.42	$2.51	$2.64	$2.92	Zone I	Zone II	Zone III	Zone IV	$17.50		$2.53	$2.62	$2.69	$2.86	Zone I	Zone II	Zone III	Zone IV	Dollar	%
												Tier 1 >	$4.19	$4.28	$4.35	$4.52						
0	0	$15.60	$0.00	$0.00	$0.00	$0.00	$15.60	$15.60	$15.60	$15.60	$17.50		$0.00	$0.00	$0.00	$0.00	$17.50	$17.50	$17.50	$17.50	$1.90	12%
1	25	$15.60	$2.42	$2.51	$2.64	$2.92	$18.02	$18.11	$18.24	$18.52	$17.50		$2.53	$2.62	$2.69	$2.86	$20.03	$20.12	$20.19	$20.36	$2.01	11%
2	49	$15.60	$4.84	$5.02	$5.28	$5.84	$20.44	$20.62	$20.88	$21.44	$17.50		$5.06	$5.24	$5.38	$5.72	$22.56	$22.74	$22.88	$23.22	$2.12	10%
3	74	$15.60	$7.26	$7.53	$7.92	$8.76	$22.86	$23.13	$23.52	$24.36	$17.50		$7.59	$7.86	$8.07	$8.58	$25.09	$25.36	$25.57	$26.08	$2.23	10%
4	98	$15.60	$9.68	$10.04	$10.56	$11.68	$25.28	$25.64	$26.16	$27.28	$17.50		$10.12	$10.48	$10.76	$11.44	$27.62	$27.98	$28.26	$28.94	$2.34	9%
5	123	$15.60	$12.10	$12.55	$13.20	$14.60	$27.70	$28.15	$28.80	$30.20	$17.50		$12.65	$13.10	$13.45	$14.30	$30.15	$30.60	$30.95	$31.80	$2.45	9%
6	148	$15.60	$14.52	$15.06	$15.84	$17.52	$30.12	$30.66	$31.44	$33.12	$17.50		$15.18	$15.72	$16.14	$17.16	$32.68	$33.22	$33.64	$34.66	$2.56	8%
7	172	$15.60	$16.94	$17.57	$18.48	$20.44	$32.54	$33.17	$34.08	$36.04	$17.50		$17.71	$18.34	$18.83	$20.02	$35.21	$35.84	$36.33	$37.52	$2.67	8%
8	197	$15.60	$19.36	$20.08	$21.12	$23.36	$34.96	$35.68	$36.72	$38.96	$17.50		$20.24	$20.96	$21.52	$22.88	$37.74	$38.46	$39.02	$40.38	$2.78	8%
9	221	$15.60	$21.78	$22.59	$23.76	$26.28	$37.38	$38.19	$39.36	$41.88	$17.50		$22.77	$23.58	$24.21	$25.74	$40.27	$41.08	$41.71	$43.24	$2.89	8%
10	246	$15.60	$24.20	$25.10	$26.40	$29.20	$39.80	$40.70	$42.00	$44.80	$17.50		$25.30	$26.20	$26.90	$28.60	$42.80	$43.70	$44.40	$46.10	$3.00	7%
11	271	$15.60	$26.62	$27.61	$29.04	$32.12	$42.22	$43.21	$44.64	$47.72	$17.50		$27.83	$28.82	$29.59	$31.46	$45.33	$46.32	$47.09	$48.96	$3.11	7%
12	295	$15.60	$29.04	$30.12	$31.68	$35.04	$44.64	$45.72	$47.28	$50.64	$17.50		$30.36	$31.44	$32.28	$34.32	$47.86	$48.94	$49.78	$51.82	$3.22	7%
13	320	$15.60	$31.46	$32.63	$34.32	$37.96	$47.06	$48.23	$49.92	$53.56	$17.50		$32.89	$34.06	$34.97	$37.18	$50.39	$51.56	$52.47	$54.68	$3.33	7%
14	344	$15.60	$33.88	$35.14	$36.96	$40.88	$49.48	$50.74	$52.56	$56.48	$17.50		$37.08	$38.34	$39.32	$41.70	$54.58	$55.84	$56.82	$59.20	$5.10	10%
15	369	$15.60	$36.30	$37.65	$39.60	$43.80	$51.90	$53.25	$55.20	$59.40	$17.50		$41.27	$42.62	$43.67	$46.22	$58.77	$60.12	$61.17	$63.72	$6.87	13%
16	394	$15.60	$38.72	$40.16	$42.24	$46.72	$54.32	$55.76	$57.84	$62.32	$17.50		$45.46	$46.90	$48.02	$50.74	$62.96	$64.40	$65.52	$68.24	$8.64	15%
17	418	$15.60	$41.14	$42.67	$44.88	$49.64	$56.74	$58.27	$60.48	$65.24	$17.50		$49.65	$51.18	$52.37	$55.26	$67.15	$68.68	$69.87	$72.76	$10.41	18%
18	443	$15.60	$43.56	$45.18	$47.52	$52.56	$59.16	$60.78	$63.12	$68.16	$17.50		$53.84	$55.46	$56.72	$59.78	$71.34	$72.96	$74.22	$77.28	$12.18	20%
19	467	$15.60	$45.98	$47.69	$50.16	$55.48	$61.58	$63.29	$65.76	$71.08	$17.50		$58.03	$59.74	$61.07	$64.30	$75.53	$77.24	$78.57	$81.80	$13.95	22%
20	492	$15.60	$48.40	$50.20	$52.80	$58.40	$64.00	$65.80	$68.40	$74.00	$17.50		$62.22	$64.02	$65.42	$68.82	$79.72	$81.52	$82.92	$86.32	$15.72	24%
21	516	$15.60	$50.82	$52.71	$55.44	$61.32	$66.42	$68.31	$71.04	$76.92	$17.50		$66.41	$68.30	$69.77	$73.34	$83.91	$85.80	$87.27	$90.84	$17.49	26%
22	541	$15.60	$53.24	$55.22	$58.08	$64.24	$68.84	$70.82	$73.68	$79.84	$17.50		$70.60	$72.58	$74.12	$77.86	$88.10	$90.08	$91.62	$95.36	$19.26	27%
23	566	$15.60	$55.66	$57.73	$60.72	$67.16	$71.26	$73.33	$76.32	$82.76	$17.50		$74.79	$76.86	$78.47	$82.38	$92.29	$94.36	$95.97	$99.88	$21.03	29%
24	590	$15.60	$58.08	$60.24	$63.36	$70.08	$73.68	$75.84	$78.96	$85.68	$17.50		$78.98	$81.14	$82.82	$86.90	$96.48	$98.64	$100.32	$104.40	$22.80	30%
25	615	$15.60	$60.50	$62.75	$66.00	$73.00	$76.10	$78.35	$81.60	$88.60	$17.50		$83.17	$85.42	$87.17	$91.42	$100.67	$102.92	$104.67	$108.92	$24.57	31%
26	639	$15.60	$62.92	$65.26	$68.64	$75.92	$78.52	$80.86	$84.24	$91.52	$17.50		$87.36	$89.70	$91.52	$95.94	$104.86	$107.20	$109.02	$113.44	$26.34	33%
27	664	$15.60	$65.34	$67.77	$71.28	$78.84	$80.94	$83.37	$86.88	$94.44	$17.50		$91.55	$93.98	$95.87	$100.46	$109.05	$111.48	$113.37	$117.96	$28.11	34%
28	689	$15.60	$67.76	$70.28	$73.92	$81.76	$83.36	$85.88	$89.52	$97.36	$17.50		$95.74	$98.26	$100.22	$104.98	$113.24	$115.76	$117.72	$122.48	$29.88	35%
29	713	$15.60	$70.18	$72.79	$76.56	$84.68	$85.78	$88.39	$92.16	$100.28	$17.50		$99.93	$102.54	$104.57	$109.50	$117.43	$120.04	$122.07	$127.00	$31.65	36%
30	738	$15.60	$72.60	$75.30	$79.20	$87.60	$88.20	$90.90	$94.80	$103.20	$17.50		$104.12	$106.82	$108.92	$114.02	$121.62	$124.32	$126.42	$131.52	$33.42	37%
31	762	$15.60	$75.02	$77.81	$81.84	$90.52	$90.62	$93.41	$97.44	$106.12	$17.50		$108.31	$111.10	$113.27	$118.54	$125.81	$128.60	$130.77	$136.04	$35.19	38%
32	787	$15.60	$77.44	$80.32	$84.48	$93.44	$93.04	$95.92	$100.08	$109.04	$17.50		$112.50	$115.38	$117.62	$123.06	$130.00	$132.88	$135.12	$140.56	$36.96	39%
33	812	$15.60	$79.86	$82.83	$87.12	$96.36	$95.46	$98.43	$102.72	$111.96	$17.50		$116.69	$119.66	$121.97	$127.58	$134.19	$137.16	$139.47	$145.08	$38.73	39%
34	836	$15.60	$82.28	$85.34	$89.76	$99.28	$97.88	$100.94	$105.36	$114.88	$17.50		$120.88	$123.94	$126.32	$132.10	$138.38	$141.44	$143.82	$149.60	$40.50	40%
35	861	$15.60	$84.70	$87.85	$92.40	$102.20	$100.30	$103.45	$108.00	$117.80	$17.50		$125.07	$128.22	$130.67	$136.62	$142.57	$145.72	$148.17	$154.12	$42.27	41%
36	885	$15.60	$87.12	$90.36	$95.04	$105.12	$102.72	$105.96	$110.64	$120.72	$17.50		$129.26	$132.50	$135.02	$141.14	$146.76	$150.00	$152.52	$158.64	$44.04	42%
37	910	$15.60	$89.54	$92.87	$97.68	$108.04	$105.14	$108.47	$113.28	$123.64	$17.50		$133.45	$136.78	$139.37	$145.66	$150.95	$154.28	$156.87	$163.16	$45.81	42%
38	935	$15.60	$91.96	$95.38	$100.32	$110.96	$107.56	$110.98	$115.92	$126.56	$17.50		$137.64	$141.06	$143.72	$150.18	$155.14	$158.56	$161.22	$167.68	$47.58	43%
39	959	$15.60	$94.38	$97.89	$102.96	$113.88	$109.98	$113.49	$118.56	$129.48	$17.50		$141.83	$145.34	$148.07	$154.70	$159.33	$162.84	$165.57	$172.20	$49.35	43%
40	984	$15.60	$96.80	$100.40	$105.60	$116.80	$112.40	$116.00	$121.20	$132.40	$17.50		$146.02	$149.62	$152.42	$159.22	$163.52	$167.12	$169.92	$176.72	$51.12	44%
41	1,008	$15.60	$99.22	$102.91	$108.24	$119.72	$114.82	$118.51	$123.84	$135.32	$17.50		$150.21	$153.90	$156.77	$163.74	$167.71	$171.40	$174.27	$181.24	$52.89	45%
42	1,033	$15.60	$101.64	$105.42	$110.88	$122.64	$117.24	$121.02	$126.48	$138.24	$17.50		$154.40	$158.18	$161.12	$168.26	$171.90	$175.68	$178.62	$185.76	$54.66	45%
43	1,058	$15.60	$104.06	$107.93	$113.52	$125.56	$119.66	$123.53	$129.12	$141.16	$17.50		$158.59	$162.46	$165.47	$172.78	$176.09	$179.96	$182.97	$190.28	$56.43	46%
44	1,082	$15.60	$106.48	$110.44	$116.16	$128.48	$122.08	$126.04	$131.76	$144.08	$17.50		$162.78	$166.74	$169.82	$177.30	$180.28	$184.24	$187.32	$194.80	$58.20	46%
45	1,107	$15.60	$108.90	$112.95	$118.80	$131.40	$124.50	$128.55	$134.40	$147.00	$17.50		$166.97	$171.02	$174.17	$181.82	$184.47	$188.52	$191.67	$199.32	$59.97	47%
46	1,131	$15.60	$111.32	$115.46	$121.44	$134.32	$126.92	$131.06	$137.04	$149.92	$17.50		$171.16	$175.30	$178.52	$186.34	$188.66	$192.80	$196.02	$203.84	$61.74	47%
47	1,156	$15.60	$113.74	$117.97	$124.08	$137.24	$129.34	$133.57	$139.68	$152.84	$17.50		$175.35	$179.58	$182.87	$190.86	$192.85	$197.08	$200.37	$208.36	$63.51	48%
48	1,181	$15.60	$116.16	$120.48	$126.72	$140.16	$131.76	$136.08	$142.32	$155.76	$17.50		$179.54	$183.86	$187.22	$195.38	$197.04	$201.36	$204.72	$212.88	$65.28	48%
49	1,205	$15.60	$118.58	$122.99	$129.36	$143.08	$134.18	$138.59	$144.96	$158.68	$17.50		$183.73	$188.14	$191.57	$199.90	$201.23	$205.64	$209.07	$217.40	$67.05	48%
50	1,230	$15.60	$121.00	$125.50	$132.00	$146.00	$136.60	$141.10	$147.60	$161.60	$17.50		$187.92	$192.42	$195.92	$204.42	$205.42	$209.92	$213.42	$221.92	$68.82	49%

Table D-3
Single Family Monthly Bills Comparison
Current Uniform v Recommended Uniform Quantity Charges

Monthly Water Use		CURRENT RATES				UNIFORM RECOMMENDED RATES FY 2015-16											
		Total Monthly Bill				Total Monthly Bill				Dollar Change				Percent Change			
HCF	gpd	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV
0	0	$15.60	$15.60	$15.60	$15.60	$17.50	$17.50	$17.50	$17.50	$1.90	$1.90	$1.90	$1.90	12%	12%	12%	12%
1	25	$18.02	$18.11	$18.24	$18.52	$20.49	$20.58	$20.65	$20.82	$2.47	$2.47	$2.41	$2.30	14%	14%	13%	12%
2	49	$20.44	$20.62	$20.88	$21.44	$23.48	$23.66	$23.80	$24.14	$3.04	$3.04	$2.92	$2.70	15%	15%	14%	13%
3	74	$22.86	$23.13	$23.52	$24.36	$26.47	$26.74	$26.95	$27.46	$3.61	$3.61	$3.43	$3.10	16%	16%	15%	13%
4	98	$25.28	$25.64	$26.16	$27.28	$29.46	$29.82	$30.10	$30.78	$4.18	$4.18	$3.94	$3.50	17%	16%	15%	13%
5	123	$27.70	$28.15	$28.80	$30.20	$32.45	$32.90	$33.25	$34.10	$4.75	$4.75	$4.45	$3.90	17%	17%	15%	13%
6	148	$30.12	$30.66	$31.44	$33.12	$35.44	$35.98	$36.40	$37.42	$5.32	$5.32	$4.96	$4.30	18%	17%	16%	13%
7	172	$32.54	$33.17	$34.08	$36.04	$38.43	$39.06	$39.55	$40.74	$5.89	$5.89	$5.47	$4.70	18%	18%	16%	13%
8	197	$34.96	$35.68	$36.72	$38.96	$41.42	$42.14	$42.70	$44.06	$6.46	$6.46	$5.98	$5.10	18%	18%	16%	13%
9	221	$37.38	$38.19	$39.36	$41.88	$44.41	$45.22	$45.85	$47.38	$7.03	$7.03	$6.49	$5.50	19%	18%	16%	13%
10	246	$39.80	$40.70	$42.00	$44.80	$47.40	$48.30	$49.00	$50.70	$7.60	$7.60	$7.00	$5.90	19%	19%	17%	13%
11	271	$42.22	$43.21	$44.64	$47.72	$50.39	$51.38	$52.15	$54.02	$8.17	$8.17	$7.51	$6.30	19%	19%	17%	13%
12	295	$44.64	$45.72	$47.28	$50.64	$53.38	$54.46	$55.30	$57.34	$8.74	$8.74	$8.02	$6.70	20%	19%	17%	13%
13	320	$47.06	$48.23	$49.92	$53.56	$56.37	$57.54	$58.45	$60.66	$9.31	$9.31	$8.53	$7.10	20%	19%	17%	13%
14	344	$49.48	$50.74	$52.56	$56.48	$59.36	$60.62	$61.60	$63.98	$9.88	$9.88	$9.04	$7.50	20%	19%	17%	13%
15	369	$51.90	$53.25	$55.20	$59.40	$62.35	$63.70	$64.75	$67.30	$10.45	$10.45	$9.55	$7.90	20%	20%	17%	13%
16	394	$54.32	$55.76	$57.84	$62.32	$65.34	$66.78	$67.90	$70.62	$11.02	$11.02	$10.06	$8.30	20%	20%	17%	13%
17	418	$56.74	$58.27	$60.48	$65.24	$68.33	$69.86	$71.05	$73.94	$11.59	$11.59	$10.57	$8.70	20%	20%	17%	13%
18	443	$59.16	$60.78	$63.12	$68.16	$71.32	$72.94	$74.20	$77.26	$12.16	$12.16	$11.08	$9.10	21%	20%	18%	13%
19	467	$61.58	$63.29	$65.76	$71.08	$74.31	$76.02	$77.35	$80.58	$12.73	$12.73	$11.59	$9.50	21%	20%	18%	13%
20	492	$64.00	$65.80	$68.40	$74.00	$77.30	$79.10	$80.50	$83.90	$13.30	$13.30	$12.10	$9.90	21%	20%	18%	13%
21	516	$66.42	$68.31	$71.04	$76.92	$80.29	$82.18	$83.65	$87.22	$13.87	$13.87	$12.61	$10.30	21%	20%	18%	13%
22	541	$68.84	$70.82	$73.68	$79.84	$83.28	$85.26	$86.80	$90.54	$14.44	$14.44	$13.12	$10.70	21%	20%	18%	13%
23	566	$71.26	$73.33	$76.32	$82.76	$86.27	$88.34	$89.95	$93.86	$15.01	$15.01	$13.63	$11.10	21%	20%	18%	13%
24	590	$73.68	$75.84	$78.96	$85.68	$89.26	$91.42	$93.10	$97.18	$15.58	$15.58	$14.14	$11.50	21%	21%	18%	13%
25	615	$76.10	$78.35	$81.60	$88.60	$92.25	$94.50	$96.25	$100.50	$16.15	$16.15	$14.65	$11.90	21%	21%	18%	13%
26	639	$78.52	$80.86	$84.24	$91.52	$95.24	$97.58	$99.40	$103.82	$16.72	$16.72	$15.16	$12.30	21%	21%	18%	13%
27	664	$80.94	$83.37	$86.88	$94.44	$98.23	$100.66	$102.55	$107.14	$17.29	$17.29	$15.67	$12.70	21%	21%	18%	13%
28	689	$83.36	$85.88	$89.52	$97.36	$101.22	$103.74	$105.70	$110.46	$17.86	$17.86	$16.18	$13.10	21%	21%	18%	13%
29	713	$85.78	$88.39	$92.16	$100.28	$104.21	$106.82	$108.85	$113.78	$18.43	$18.43	$16.69	$13.50	21%	21%	18%	13%
30	738	$88.20	$90.90	$94.80	$103.20	$107.20	$109.90	$112.00	$117.10	$19.00	$19.00	$17.20	$13.90	22%	21%	18%	13%
31	762	$90.62	$93.41	$97.44	$106.12	$110.19	$112.98	$115.15	$120.42	$19.57	$19.57	$17.71	$14.30	22%	21%	18%	13%
32	787	$93.04	$95.92	$100.08	$109.04	$113.18	$116.06	$118.30	$123.74	$20.14	$20.14	$18.22	$14.70	22%	21%	18%	13%
33	812	$95.46	$98.43	$102.72	$111.96	$116.17	$119.14	$121.45	$127.06	$20.71	$20.71	$18.73	$15.10	22%	21%	18%	13%
34	836	$97.88	$100.94	$105.36	$114.88	$119.16	$122.22	$124.60	$130.38	$21.28	$21.28	$19.24	$15.50	22%	21%	18%	13%
35	861	$100.30	$103.45	$108.00	$117.80	$122.15	$125.30	$127.75	$133.70	$21.85	$21.85	$19.75	$15.90	22%	21%	18%	13%
36	885	$102.72	$105.96	$110.64	$120.72	$125.14	$128.38	$130.90	$137.02	$22.42	$22.42	$20.26	$16.30	22%	21%	18%	14%
37	910	$105.14	$108.47	$113.28	$123.64	$128.13	$131.46	$134.05	$140.34	$22.99	$22.99	$20.77	$16.70	22%	21%	18%	14%
38	935	$107.56	$110.98	$115.92	$126.56	$131.12	$134.54	$137.20	$143.66	$23.56	$23.56	$21.28	$17.10	22%	21%	18%	14%
39	959	$109.98	$113.49	$118.56	$129.48	$134.11	$137.62	$140.35	$146.98	$24.13	$24.13	$21.79	$17.50	22%	21%	18%	14%
40	984	$112.40	$116.00	$121.20	$132.40	$137.10	$140.70	$143.50	$150.30	$24.70	$24.70	$22.30	$17.90	22%	21%	18%	14%
41	1,008	$114.82	$118.51	$123.84	$135.32	$140.09	$143.78	$146.65	$153.62	$25.27	$25.27	$22.81	$18.30	22%	21%	18%	14%
42	1,033	$117.24	$121.02	$126.48	$138.24	$143.08	$146.86	$149.80	$156.94	$25.84	$25.84	$23.32	$18.70	22%	21%	18%	14%
43	1,058	$119.66	$123.53	$129.12	$141.16	$146.07	$149.94	$152.95	$160.26	$26.41	$26.41	$23.83	$19.10	22%	21%	18%	14%
44	1,082	$122.08	$126.04	$131.76	$144.08	$149.06	$153.02	$156.10	$163.58	$26.98	$26.98	$24.34	$19.50	22%	21%	18%	14%
45	1,107	$124.50	$128.55	$134.40	$147.00	$152.05	$156.10	$159.25	$166.90	$27.55	$27.55	$24.85	$19.90	22%	21%	18%	14%
46	1,131	$126.92	$131.06	$137.04	$149.92	$155.04	$159.18	$162.40	$170.22	$28.12	$28.12	$25.36	$20.30	22%	21%	19%	14%
47	1,156	$129.34	$133.57	$139.68	$152.84	$158.03	$162.26	$165.55	$173.54	$28.69	$28.69	$25.87	$20.70	22%	21%	19%	14%
48	1,181	$131.76	$136.08	$142.32	$155.76	$161.02	$165.34	$168.70	$176.86	$29.26	$29.26	$26.38	$21.10	22%	22%	19%	14%
49	1,205	$134.18	$138.59	$144.96	$158.68	$164.01	$168.42	$171.85	$180.18	$29.83	$29.83	$26.89	$21.50	22%	22%	19%	14%
50	1,230	$136.60	$141.10	$147.60	$161.60	$167.00	$171.50	$175.00	$183.50	$30.40	$30.40	$27.40	$21.90	22%	22%	19%	14%

Table D-4
Single Family Monthly Bills Comparison
Current Uniform v Recommended Inclining Block Quantity Charges

		CURRENT RATES				INCLINING BLOCK RECOMMENDED RATES FY 2015-16											
Monthly Water Use		Total Monthly Bill				Total Monthly Bill				Dollar Change				Percent Change			
HCF	gpd	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV	Zone I	Zone II	Zone III	Zone IV
0	0	$15.60	$15.60	$15.60	$15.60	$17.50	$17.50	$17.50	$17.50	$1.90	$1.90	$1.90	$1.90	12%	12%	12%	12%
1	25	$18.02	$18.11	$18.24	$18.52	$20.03	$20.12	$20.19	$20.36	$2.01	$2.01	$1.95	$1.84	11%	11%	11%	10%
2	49	$20.44	$20.62	$20.88	$21.44	$22.56	$22.74	$22.88	$23.22	$2.12	$2.12	$2.00	$1.78	10%	10%	10%	8%
3	74	$22.86	$23.13	$23.52	$24.36	$25.09	$25.36	$25.57	$26.08	$2.23	$2.23	$2.05	$1.72	10%	10%	9%	7%
4	98	$25.28	$25.64	$26.16	$27.28	$27.62	$27.98	$28.26	$28.94	$2.34	$2.34	$2.10	$1.66	9%	9%	8%	6%
5	123	$27.70	$28.15	$28.80	$30.20	$30.15	$30.60	$30.95	$31.80	$2.45	$2.45	$2.15	$1.60	9%	9%	7%	5%
6	148	$30.12	$30.66	$31.44	$33.12	$32.68	$33.22	$33.64	$34.66	$2.56	$2.56	$2.20	$1.54	8%	8%	7%	5%
7	172	$32.54	$33.17	$34.08	$36.04	$35.21	$35.84	$36.33	$37.52	$2.67	$2.67	$2.25	$1.48	8%	8%	7%	4%
8	197	$34.96	$35.68	$36.72	$38.96	$37.74	$38.46	$39.02	$40.38	$2.78	$2.78	$2.30	$1.42	8%	8%	6%	4%
9	221	$37.38	$38.19	$39.36	$41.88	$40.27	$41.08	$41.71	$43.24	$2.89	$2.89	$2.35	$1.36	8%	8%	6%	3%
10	246	$39.80	$40.70	$42.00	$44.80	$42.80	$43.70	$44.40	$46.10	$3.00	$3.00	$2.40	$1.30	8%	7%	6%	3%
11	271	$42.22	$43.21	$44.64	$47.72	$45.33	$46.32	$47.09	$48.96	$3.11	$3.11	$2.45	$1.24	7%	7%	5%	3%
12	295	$44.64	$45.72	$47.28	$50.64	$47.86	$48.94	$49.78	$51.82	$3.22	$3.22	$2.50	$1.18	7%	7%	5%	2%
13	320	$47.06	$48.23	$49.92	$53.56	$50.39	$51.56	$52.47	$54.68	$3.33	$3.33	$2.55	$1.12	7%	7%	5%	2%
14	344	$49.48	$50.74	$52.56	$56.48	$54.58	$55.84	$56.82	$59.20	$5.10	$5.10	$4.26	$2.72	10%	10%	8%	5%
15	369	$51.90	$53.25	$55.20	$59.40	$58.77	$60.12	$61.17	$63.72	$6.87	$6.87	$5.97	$4.32	13%	13%	11%	7%
16	394	$54.32	$55.76	$57.84	$62.32	$62.96	$64.40	$65.52	$68.24	$8.64	$8.64	$7.68	$5.92	16%	15%	13%	9%
17	418	$56.74	$58.27	$60.48	$65.24	$67.15	$68.68	$69.87	$72.76	$10.41	$10.41	$9.39	$7.52	18%	18%	16%	12%
18	443	$59.16	$60.78	$63.12	$68.16	$71.34	$72.96	$74.22	$77.28	$12.18	$12.18	$11.10	$9.12	21%	20%	18%	13%
19	467	$61.58	$63.29	$65.76	$71.08	$75.53	$77.24	$78.57	$81.80	$13.95	$13.95	$12.81	$10.72	23%	22%	19%	15%
20	492	$64.00	$65.80	$68.40	$74.00	$79.72	$81.52	$82.92	$86.32	$15.72	$15.72	$14.52	$12.32	25%	24%	21%	17%
21	516	$66.42	$68.31	$71.04	$76.92	$83.91	$85.80	$87.27	$90.84	$17.49	$17.49	$16.23	$13.92	26%	26%	23%	18%
22	541	$68.84	$70.82	$73.68	$79.84	$88.10	$90.08	$91.62	$95.36	$19.26	$19.26	$17.94	$15.52	28%	27%	24%	19%
23	566	$71.26	$73.33	$76.32	$82.76	$92.29	$94.36	$95.97	$99.88	$21.03	$21.03	$19.65	$17.12	30%	29%	26%	21%
24	590	$73.68	$75.84	$78.96	$85.68	$96.48	$98.64	$100.32	$104.40	$22.80	$22.80	$21.36	$18.72	31%	30%	27%	22%
25	615	$76.10	$78.35	$81.60	$88.60	$100.67	$102.92	$104.67	$108.92	$24.57	$24.57	$23.07	$20.32	32%	31%	28%	23%
26	639	$78.52	$80.86	$84.24	$91.52	$104.86	$107.20	$109.02	$113.44	$26.34	$26.34	$24.78	$21.92	34%	33%	29%	24%
27	664	$80.94	$83.37	$86.88	$94.44	$109.05	$111.48	$113.37	$117.96	$28.11	$28.11	$26.49	$23.52	35%	34%	30%	25%
28	689	$83.36	$85.88	$89.52	$97.36	$113.24	$115.76	$117.72	$122.48	$29.88	$29.88	$28.20	$25.12	36%	35%	32%	26%
29	713	$85.78	$88.39	$92.16	$100.28	$117.43	$120.04	$122.07	$127.00	$31.65	$31.65	$29.91	$26.72	37%	36%	32%	27%
30	738	$88.20	$90.90	$94.80	$103.20	$121.62	$124.32	$126.42	$131.52	$33.42	$33.42	$31.62	$28.32	38%	37%	33%	27%
31	762	$90.62	$93.41	$97.44	$106.12	$125.81	$128.60	$130.77	$136.04	$35.19	$35.19	$33.33	$29.92	39%	38%	34%	28%
32	787	$93.04	$95.92	$100.08	$109.04	$130.00	$132.88	$135.12	$140.56	$36.96	$36.96	$35.04	$31.52	40%	39%	35%	29%
33	812	$95.46	$98.43	$102.72	$111.96	$134.19	$137.16	$139.47	$145.08	$38.73	$38.73	$36.75	$33.12	41%	39%	36%	30%
34	836	$97.88	$100.94	$105.36	$114.88	$138.38	$141.44	$143.82	$149.60	$40.50	$40.50	$38.46	$34.72	41%	40%	37%	30%
35	861	$100.30	$103.45	$108.00	$117.80	$142.57	$145.72	$148.17	$154.12	$42.27	$42.27	$40.17	$36.32	42%	41%	37%	31%
36	885	$102.72	$105.96	$110.64	$120.72	$146.76	$150.00	$152.52	$158.64	$44.04	$44.04	$41.88	$37.92	43%	42%	38%	31%
37	910	$105.14	$108.47	$113.28	$123.64	$150.95	$154.28	$156.87	$163.16	$45.81	$45.81	$43.59	$39.52	44%	42%	38%	32%
38	935	$107.56	$110.98	$115.92	$126.56	$155.14	$158.56	$161.22	$167.68	$47.58	$47.58	$45.30	$41.12	44%	43%	39%	32%
39	959	$109.98	$113.49	$118.56	$129.48	$159.33	$162.84	$165.57	$172.20	$49.35	$49.35	$47.01	$42.72	45%	43%	40%	33%
40	984	$112.40	$116.00	$121.20	$132.40	$163.52	$167.12	$169.92	$176.72	$51.12	$51.12	$48.72	$44.32	45%	44%	40%	33%
41	1,008	$114.82	$118.51	$123.84	$135.32	$167.71	$171.40	$174.27	$181.24	$52.89	$52.89	$50.43	$45.92	46%	45%	41%	34%
42	1,033	$117.24	$121.02	$126.48	$138.24	$171.90	$175.68	$178.62	$185.76	$54.66	$54.66	$52.14	$47.52	47%	45%	41%	34%
43	1,058	$119.66	$123.53	$129.12	$141.16	$176.09	$179.96	$182.97	$190.28	$56.43	$56.43	$53.85	$49.12	47%	46%	42%	35%
44	1,082	$122.08	$126.04	$131.76	$144.08	$180.28	$184.24	$187.32	$194.80	$58.20	$58.20	$55.56	$50.72	48%	46%	42%	35%
45	1,107	$124.50	$128.55	$134.40	$147.00	$184.47	$188.52	$191.67	$199.32	$59.97	$59.97	$57.27	$52.32	48%	47%	43%	36%
46	1,131	$126.92	$131.06	$137.04	$149.92	$188.66	$192.80	$196.02	$203.84	$61.74	$61.74	$58.98	$53.92	49%	47%	43%	36%
47	1,156	$129.34	$133.57	$139.68	$152.84	$192.85	$197.08	$200.37	$208.36	$63.51	$63.51	$60.69	$55.52	49%	48%	43%	36%
48	1,181	$131.76	$136.08	$142.32	$155.76	$197.04	$201.36	$204.72	$212.88	$65.28	$65.28	$62.40	$57.12	50%	48%	44%	37%
49	1,205	$134.18	$138.59	$144.96	$158.68	$201.23	$205.64	$209.07	$217.40	$67.05	$67.05	$64.11	$58.72	50%	48%	44%	37%
50	1,230	$136.60	$141.10	$147.60	$161.60	$205.42	$209.92	$213.42	$221.92	$68.82	$68.82	$65.82	$60.32	50%	49%	45%	37%

Appendix E: Historic and Projected Wastewater Flow

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Table E-1
Historic and Projected Wastewater Discharge

Item	2011	2012	2013	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Wastewater Discharge, HCF [1]									
Single Family	2,884,026	3,311,424	3,354,264	2,926,245	2,914,757	2,902,728	2,892,631	2,881,934	2,873,048
Multi Family	445,296	471,300	453,378	245,575	245,575	245,575	245,575	245,575	245,575
Apartments/ Mobile Homes				249,724	249,724	249,724	249,724	249,724	249,724
Commercial/ Institutional	407,766	451,032	439,746	407,766	399,611	395,615	391,658	387,742	383,864
Industrial	328,698	121,781	101,649	121,781	101,649	100,633	99,626	98,630	97,644
Other	11,482	11,105	16,262	11,105	11,105	10,994	10,884	10,775	10,667
Total	4,077,268	4,366,642	4,365,299	3,962,196	3,922,420	3,905,268	3,890,099	3,874,380	3,860,523
Total, rounded	4,080,000	4,370,000	4,370,000	3,960,000	3,920,000	3,910,000	3,890,000	3,870,000	3,860,000
Total, million gallons	3,050	3,267	3,266	2,964	2,934	2,922	2,910	2,898	2,888
Total, gallons per day	8,360,000	8,950,000	8,950,000	8,120,000	8,040,000	8,000,000	7,970,000	7,940,000	7,910,000
Accounts/Units [2]									
Single Family	28,287	28,466	28,488	28,560	28,785	29,010	29,260	29,510	29,785
Multi Family	690	690	688	2,996	2,996	2,996	2,996	2,996	2,996
Apartments/Mobile Homes				3,736	3,736	3,736	3,736	3,736	3,736
Commercial/Institutional	1,446	1,446	1,446	1,446	1,446	1,446	1,446	1,446	1,446
Industrial	13	13	13	13	13	13	13	13	13
Other	47	47	47	47	47	47	47	47	47
Total	30,483	30,662	30,682	36,798	37,023	37,248	37,498	37,748	38,023
Average Wastewater Discharge HCF/mo [3,4]									
Single Family	8.5	9.7	9.8	8.5	8.4	8.3	8.2	8.1	8.0
Multi Family	54	57	55	6.8	6.8	6.8	6.8	6.8	6.8
Apartments/Mobile Homes				5.6	5.6	5.6	5.6	5.6	5.6
Commercial/Institutional	23	26	25	23	23	23	23	22	22
Industrial	2,107	781	652	781	652	645	639	632	626
Other	20	20	29	20	20	19	19	19	19

Notes:

1 Wastewater discharge for 2011 - 2013 is based on annualized winter water use data from City data. Values for FY 2014-15 onward are projected.

2 The number of accounts for 2011 - 2013 are from City data. Accounts and Dwelling Units for 2014-15 are based on City billing system data.
The number of additional accounts for FY 2015-16 onward are projected as shown below.

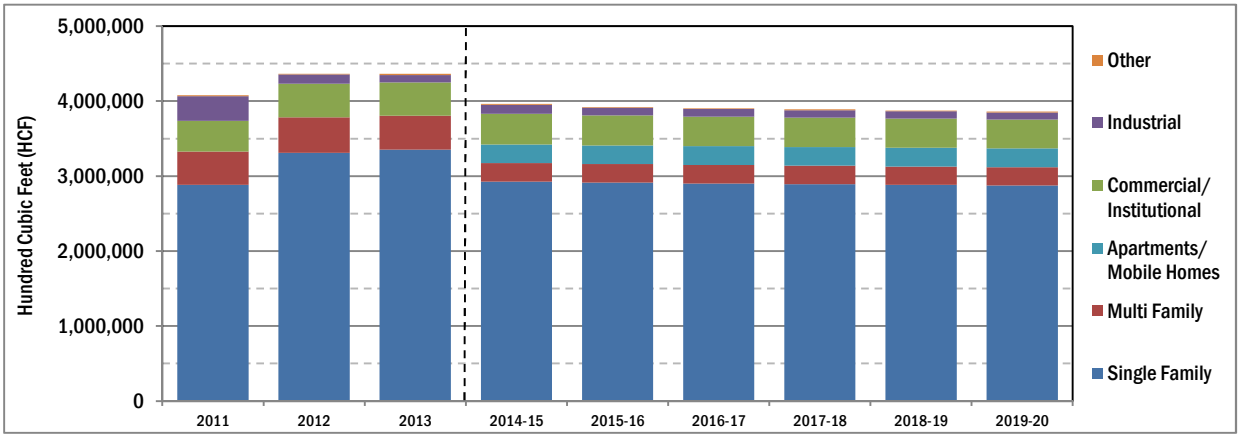
	2015-16	2016-17	2017-18	2018-19	2019-20
Single Family	225	225	250	250	275
All Other Customer Classes	0	0	0	0	0

3 Average wastewater discharge for residential accounts for FY 2014-15 is based on the average flows listed below for each customer class.

	Single Family	Multi Family	Apts/MH
average annual gallons per day >	210	168	137
average annual HCF/month >	8.5	6.8	5.6

4 Average use for FY 2015-16 onward was developed by the Consultant.

	2015-16	2016-17	2017-18	2018-19	2019-20
Single Family	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%
Multiple Family	0.0%	0.0%	0.0%	0.0%	0.0%
Apartments / Mobile Homes	0.0%	0.0%	0.0%	0.0%	0.0%
All Other Customer Classes	-2.0%	-1.0%	-1.0%	-1.0%	-1.0%



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Appendix F: Water Capacity Charge Tables

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Table F-1
Water System Assets Valuation

Item	Description	Code	Capacity		Unit Cost	Valuation	Assessment District %	Assessment District $
1	Municipal Reservoir	mres	240	mg	$75,000	$18,000,000		
2	24" Raw Water Pipe Segment 1-RP	rw	200	lf	$567	$113,000		
3	30" Raw Water Pipe Segment 2-RP	rw	12,400	lf	$743	$9,218,000		
4	18" Raw Water Pipe Segment 3-RP	rw	4,230	lf	$567	$2,398,000		
5	20" Raw Water Pipe Segment 4-RP	rw	2,400	lf	$567	$1,361,000		
6	24" Raw Water Pipe Segment 5-TP	rw	250	lf	$567	$142,000		
7	24" Raw Water Pipe Segment 6-ETP	rw	2,890	lf	$567	$1,639,000		
8	24" Raw Water Pipe Segment 7-ETP	rw	340	lf	$567	$193,000		
9	24" Raw Water Pipe Segment 8-ETP	rw	2,340	lf	$567	$1,327,000		
10	39" Raw Water Pipe Segment 9-WTP	rw	1,970	lf	$929	$1,831,000		
11	39" Raw Water Pipe Segment 10-WTP	rw	3,730	lf	$929	$3,466,000		
12	W. Canal Pump Station	ps	20.2	mgd	$150,000	$3,030,000		
13	E. Canal Pump Station	ps	7.2	mgd	$200,000	$1,440,000		
14	Water Treatment Plant	tmt	37.0	mgd	$2,330,000	$86,210,000		
15	Clearwell A	clr	1.0	mg	included in WTP	$0		
16	Clearwell B	clr	2.0	mg	included in WTP	$0		
17	"D" Street Reservoir	res	1.0	mg	$2,300,000	$2,300,000		
18	0.5 MG Reservoir	res	0.5	mg	$2,800,000	$1,400,000		
19	3.0 MG Reservoir	res	3.0	mg	$1,500,000	$4,500,000		
20	Donlon Reservoir	res	2.0	mg	$1,900,000	$3,800,000		
21	Larkspur Reservoir	res	2.0	mg	$1,900,000	$3,800,000		
22	Hillcrest Reservoir	res	2.5	mg	$1,600,000	$4,000,000		
23	Lone Tree Reservoir	res	2.5	mg	$1,700,000	$4,250,000	100%	$4,250,000
24	Cambridge Reservoir	res	2.5	mg	$1,600,000	$4,000,000		
25	Empire Mine Reservoir	res	3.5	mg	$1,400,000	$4,900,000	100%	$4,900,000
26	Mira Vista Hills Reservoir	res	0.5	mg	$4,300,000	$2,150,000		
27	Zone I BPS	bps	8.5	mg	decommissioned	$0		
28	Zone II BPS A	bps	39.7	mg	included in WTP	$0		
29	Zone II BPS B	bps		mg	included in WTP	$0		
30	Wilber Avenue BPS	bps	5.8	mg	$520,000	$3,016,000		
31	Hillcrest BPS	bps	4.3	mg	$580,000	$2,494,000		
32	Lone Tree BPS No. 1	bps	5.2	mg	$580,000	$3,016,000	100%	$3,016,000
33	Lone Tree BPS No. 2	bps	10.4	mg	$390,000	$4,056,000	100%	$4,056,000
34	Donlon BPS	bps	2.6	mg	$580,000	$1,508,000		
35	Dallas Ranch BPS	bps	6.0	mg	$520,000	$3,120,000	100%	$3,120,000
36	Cambridge BPS	bps	0.36	mg	$520,000	$187,000		
37	Bear Ridge BPS	bps	0.2	mg	$3,500,000	$700,000		
38	Sunset Lane BPS	bps	0.2	mg	$3,500,000	$700,000		
39	6-inch Pressure Reducing Valves	prv	6	lot	$100,000	$600,000		
40	8-inch Pressure Reducing Valves	prv	5	lot	$120,000	$600,000		
41	12-inch Pressure Reducing Valves	prv	3	lot	$150,000	$450,000		
42	Hydrants	hyd	3,550	lot	$6,500	$23,075,000		
43	Service Laterals	lat	30,400	lot	$2,500	$76,000,000		
44	Meters	mtr	30,400	lot	$800	$24,320,000		
Total						$309,310,000		
Summary								
	Water Treatment Plant					$86,210,000		$0
	Raw Water Pipelines					$21,688,000		$0
	Municipal Reservoir					$18,000,000		$0
	E. & W. Canal Pump Stations					$4,470,000		$0
	Clearwells					$0		$0
	Reservoirs					$35,100,000		$9,150,000
	Booster Pump Stations					$18,797,000		$10,192,000
	Pressure Reducing Valves					$1,650,000		$0
	Hydrants					$23,075,000		$0
	Service Laterals					$76,000,000		$0
	Meters					$24,320,000		$0
	Total					$309,310,000		$19,342,000

Source: The capacity of assets is from the Water System Master Plan Update August 2014 prepared for the City of Antioch by Brown and Caldwell.
The valuation of assets and assessment district contributions was provided by Brown and Caldwell separate from the Master Plan.

Table F-2
Water System Pipeline Lengths and Value by Diameter by Pressure Zone

Pressure Zone	4-inch Diameter or Smaller	6-inch Diameter	8-inch Diameter	10-inch Diameter	12-inch Diameter	14- to 16-inch Diameter	20- to 24-inch Diameter	30- to 36-inch Diameter	Total Lineal Feet	Miles
I	9,140	68,449	92,786	23,983	28,108	18	9,394	-	231,878	43.9
II	10,115	159,785	216,597	59,047	69,205	51,340	18,843	1,786	586,718	111.1
IIA	-	6,262	8,489	2,078	2,435	-	-	-	19,264	3.6
IIB	-	2,661	3,607	2,269	2,660	-	-	-	11,197	2.1
IIC	1,050	3,689	5,001	1,289	1,511	-	-	-	12,540	2.4
III East	1,894	146,791	198,981	70,177	82,250	68,458	23,736	-	592,287	112.2
III West	45	25,800	34,972	7,600	8,907	7,416	-	-	84,740	16.0
IV East	-	39,449	53,475	26,924	31,555	19,030	5,135	-	175,568	33.3
IV West	-	8,480	11,494	5,593	6,556	4,045	-	-	36,168	6.9
Sunset	-	776	1,052	943	1,106	-	-	-	3,877	0.7
Bear Ridge	30	764	1,036	1,013	1,187	-	-	-	4,030	0.8
Total	22,274	462,906	627,490	200,917	235,479	150,307	57,108	1,786	1,758,267	333.0
Capital Cost, $/lf	$264	$264	$277	$307	$343	$360	$405	$531		
Valuation	$5,880,336	$122,207,135	$173,814,782	$61,681,433	$80,769,394	$54,110,520	$23,128,740	$948,366	$522,540,705	
Contributions/Assessment District										
% Asst. District	0%	0%	0%	0%	50%	60%	50%	100%	$85,363,745	
% Contribution	100%	100%	90%	7%	7%	7%	7%	0%	$299,899,080	
Total	$5,880,336	$122,207,135	$156,433,303	$4,317,700	$46,038,554	$36,254,048	$13,183,382	$948,366	$385,262,825	

Source: Pipe lengths are from Table 2-4 of the *Water System Master Plan Update August 2014* (Master Plan) prepared for the City of Antioch by Brown and Caldwell.
Categories for 6- and 8-inch pipe and 10- and 12-inch pipe shown in the Master Plan were subdivided by Brown and Caldwell in a separate evaluation.

	< 4-inch	6-inch	8-inch	10-inch	12-inch	14- to 16-inch	20- to 24-inch	30- to 36-inch
Pipe cost, $/ft >	$161	$161	$170	$190	$214	$225	$255	$339
Contingency >	25%	25%	25%	25%	25%	25%	25%	25%
Engineering >	20%	20%	20%	20%	20%	20%	20%	20%
Traffic ctrl, $/ft >	$22	$22	$22	$22	$22	$22	$22	$22
Capital cost, $/ft >	$264	$264	$277	$307	$343	$360	$405	$531

Cost per LF values shown above are based on values listed in Table 7-2 of the Master Plan.

Note: The percent contributions by developers were provided by the City. The percent assessment district contributions were provided by Brown and Caldwell.

Table F-3
Contribution of Water Facility Reserve Fees

	Estimated Facility Reserve Fees and Revenues [1,2]			ENR 20 City Construction Cost Index (CCI)		
		Number of		ENR Index	Factor Based on	Escalated Contribution
Year	Fees	New Connections	Revenues	at Year End	9806 CCI	Values
2014	6,181	225	$1,390,700	9,806	1.000	$1,390,700
2013	6,036	289	$1,744,500	9,543	1.028	$1,792,606
2012	5,734	169	$969,000	9,338	1.050	$1,017,598
2011	4,560	139	$633,800	9,070	1.081	$685,278
2010	4,560	207	$943,900	8,804	1.114	$1,051,363
2009	4,560	170	$775,200	8,570	1.144	$887,035
2008	4,560	236	$1,076,200	8,310	1.180	$1,270,008
2007	4,560	209	$953,000	7,967	1.231	$1,173,050
2006	4,560	351	$1,600,600	7,751	1.265	$2,024,997
2005	4,560	392	$1,787,500	7,446	1.317	$2,354,139
2004	4,560	112	$510,700	7,115	1.378	$703,882
2003	3,003	630	$1,891,600	6,694	1.465	$2,771,134
2002	3,003	630	$1,891,600	6,538	1.500	$2,837,254
2001	2,965	630	$1,868,000	6,342	1.546	$2,888,448
2000	2,965	630	$1,868,000	6,221	1.576	$2,944,629
1999	2,913	630	$1,834,900	6,060	1.618	$2,969,297
1998	2,875	630	$1,811,300	5,920	1.657	$3,000,424
1997	2,838	630	$1,787,600	5,825	1.684	$3,009,458
1996	2,838	630	$1,787,600	5,620	1.745	$3,119,234
1995	2,838	630	$1,787,600	5,471	1.792	$3,204,185
1994	2,703	630	$1,702,600	5,408	1.813	$3,087,378
1993	2,605	630	$1,641,200	5,210	1.882	$3,089,141
1992	2,185	630	$1,376,600	4,985	1.967	$2,708,049
1991	2,065	630	$1,301,000	4,835	2.028	$2,638,728
1990	2,065	630	$1,301,000	4,732	2.072	$2,696,165
1989	2,065	630	$1,301,000	4,615	2.125	$2,764,518
1988	2,022	630	$1,273,900	4,519	2.170	$2,764,438
1987	1,971	630	$1,242,000	4,406	2.226	$2,764,337
1986	1,922	630	$1,210,700	4,295	2.283	$2,764,313
1985	1,877	630	$1,182,600	4,195	2.338	$2,764,520
1984	1,855	630	$1,168,700	4,146	2.365	$2,764,316
1983	1,819	630	$1,146,200	4,066	2.412	$2,764,438
1982	1,712	630	$1,078,300	3,825	2.564	$2,764,535
1981	1,582	630	$996,500	3,535	2.774	$2,764,406
1980	1,448	630	$912,500	3,237	3.030	$2,764,420
1979	1,344	630	$846,500	3,003	3.266	$2,764,302
1978	1,242	630	$782,500	2,776	3.533	$2,764,259
1977	1,153	630	$726,200	2,576	3.807	$2,764,549
1976	1,074	630	$676,800	2,401	4.084	$2,764,280
1975	990	630	$623,600	2,212	4.433	$2,764,616
1974	904	630	$569,400	2,020	4.855	$2,764,267
1973	848	630	$534,200	1,895	5.175	$2,764,449
1972	784	630	$494,200	1,753	5.594	$2,764,615
1971	707	630	$445,700	1,581	6.203	$2,764,551
1970	618	630	$389,300	1,381	7.101	$2,764,424
Total		23,919				$110,602,734

Notes:

1 The number of new connections for 2004 - 2013 is from the Comprehensive Annual Financial Report for the Fiscal Year ended June 30, 2013, page 169. Fees for 2013 and 2014 are from the Master Fee Schedules for those years.

2 Fees for 2012 and earlier are adjusted downward from the 2013 value by the ENR 20-City CCI. The number of new connections for 2003 and earlier are estimated by the City.

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Appendix G: Sewer Capacity Charge Tables

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Table G-1
Valuation of Subsurface Wastewater Collection Pipe

Subsurface Collection Pipe Inventory [1]											
Diameter	Length	Length	Percent of	Replacement Cost [2]		Contributions [3]		Assessment District [4]		Adjusted Replacement Values	
(inches)	(feet)	(miles)	System	$/LF	$	%	miles	%	miles	miles	$
4	4,940	0.936	0.3%	$310	$1,531,400	100%	0.936	0%	0.000	0.000	$0
6	738,948	139.952	47.7%	$310	$229,073,880	100%	139.952	0%	0.000	0.000	$0
8	567,612	107.502	36.6%	$310	$175,959,720	65%	69.876	0%	0.000	37.626	$61,585,902
10	64,982	12.307	4.2%	$325	$21,119,150	5%	0.615	0%	0.000	11.692	$20,063,193
12	51,779	9.807	3.3%	$345	$17,863,755	5%	0.490	0%	0.000	9.316	$16,970,567
14	1,009	0.191	0.1%	$240	$242,160	0%	0.000	0%	0.000	0.191	$242,160
15	22,015	4.170	1.4%	$250	$5,503,750	0%	0.000	0%	0.000	4.170	$5,503,750
16	1,768	0.335	0.1%	$340	$601,120	0%	0.000	0%	0.000	0.335	$601,120
18	36,667	6.945	2.4%	$360	$13,200,120	0%	0.000	50%	3.472	3.472	$6,600,060
20	1,273	0.241	0.1%	$385	$490,105	0%	0.000	0%	0.000	0.241	$490,105
21	12,974	2.457	0.8%	$390	$5,059,860	0%	0.000	0%	0.000	2.457	$5,059,860
24	8,623	1.633	0.6%	$410	$3,535,430	0%	0.000	0%	0.000	1.633	$3,535,430
33	31,524	5.970	2.0%	$510	$16,077,240	0%	0.000	50%	2.985	2.985	$8,038,620
36	2,887	0.547	0.2%	$545	$1,573,415	0%	0.000	0%	0.000	0.547	$1,573,415
42	700	0.133	0.0%	$680	$476,000	0%	0.000	100%	0.133	0.000	$0
48	1,186	0.225	0.1%	$865	$1,025,890	0%	0.000	100%	0.225	0.000	$0
	1,548,887	293.350	100.0%		$493,332,995		211.870		6.815	74.665	$130,264,182
							72%		2%		

Notes:

1 The pipe inventory is from Table 4-2 of the *July 2014 Wastewater Collection System Draft Final Report (*page 4-3) prepared by RMC.

2 Replacement costs are from Table 4-5 of the *July 2014 Wastewater Collection System Draft Final Report (*page 4-5) prepared by RMC.
For pipes 12-inch diameter and smaller, replacement costs include lower lateral replacement (in the right-of-way) and installation of property line cleanouts. Replacement costs include manholes and rodding inlets.

3 The percent contributions were estimated by the City.

4 The percent of pipe funded by Assessment District revenues was provided by Brown and Caldwell.

Table G-2
Contribution of Sewer Facility Reserve Fees

	Estimated Facility Reserve Fees and Revenues [1,2]			ENR 20 City CCI for 2014 = 9806		
Year	Fees	Number of New Connections	Revenues	ENR Index at Year End	Escalation Factor Based on 9806 CCI	Escalated Contribution Values
2014	2,336	225	$525,500	9,806	1.000	$525,500
2013	2,281	259	$590,700	9,543	1.028	$606,989
2012	2,167	144	$312,000	9,338	1.050	$327,648
2011	1,723	106	$182,600	9,070	1.081	$197,431
2010	1,723	181	$311,900	8,804	1.114	$347,410
2009	1,723	140	$241,200	8,570	1.144	$275,997
2008	1,723	184	$317,000	8,310	1.180	$374,087
2007	1,723	166	$286,000	7,967	1.231	$352,038
2006	1,723	310	$534,100	7,751	1.265	$675,716
2005	1,723	176	$303,200	7,446	1.317	$399,315
2004	501	112	$56,100	7,115	1.378	$77,321
2003	1,003	630	$631,600	6,694	1.465	$925,274
2002	1,003	630	$631,600	6,538	1.500	$947,351
2001	990	630	$623,700	6,342	1.546	$964,414
2000	990	630	$623,700	6,221	1.576	$983,172
1999	973	630	$612,700	6,060	1.618	$991,492
1998	960	630	$604,800	5,920	1.657	$1,001,853
1997	948	630	$596,900	5,825	1.684	$1,004,892
1996	948	630	$596,900	5,620	1.745	$1,041,548
1995	948	630	$596,900	5,471	1.792	$1,069,914
1994	903	630	$568,600	5,408	1.813	$1,031,060
1993	870	630	$548,100	5,210	1.882	$1,031,659
1992	855	630	$538,700	4,985	1.967	$1,059,731
1991	805	630	$507,200	4,835	2.028	$1,028,719
1990	805	630	$507,200	4,732	2.072	$1,051,111
1989	805	630	$507,200	4,615	2.125	$1,077,758
1988	788	630	$496,600	4,519	2.170	$1,077,651
1987	769	630	$484,200	4,406	2.226	$1,077,691
1986	749	630	$472,000	4,295	2.283	$1,077,687
1985	732	630	$461,000	4,195	2.338	$1,077,663
1984	723	630	$455,600	4,146	2.365	$1,077,627
1983	709	630	$446,800	4,066	2.412	$1,077,605
1982	667	630	$420,300	3,825	2.564	$1,077,561
1981	617	630	$388,500	3,535	2.774	$1,077,744
1980	565	630	$355,700	3,237	3.030	$1,077,594
1979	524	630	$330,000	3,003	3.266	$1,077,637
1978	484	630	$305,100	2,776	3.533	$1,077,796
1977	449	630	$283,100	2,576	3.807	$1,077,725
1976	419	630	$263,800	2,401	4.084	$1,077,448
1975	386	630	$243,100	2,212	4.433	$1,077,739
1974	120	630	$75,600	2,020	4.855	$367,015
1973	120	630	$75,600	1,895	5.175	$391,225
1972	120	630	$75,600	1,753	5.594	$422,916
1971	120	630	$75,600	1,581	6.203	$468,925
1970	120	630	$75,600	1,381	7.101	$536,836
Totals		23,423				$36,643,484

Notes:

1 The number of new connections for 2004 - 2013 is from the *Comprehensive Annual Financial Report for the Fiscal Year ended June 30, 2013* , page 169. Fees for 2013 and 2014 are from the Master Fee Schedules for those years. Fees for 1989 - 2012 were provided by the City.

2 Fees for 2012 and earlier are adjusted downward from the 2013 value by the ENR 20-City CCI. The number of new connections for 2003 and earlier are estimated by the City.