



Water & Sewer Rate Study

October 20, 2017



BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

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October 20, 2017

Stefan T. Chatwin
City Manager
City of Imperial
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Re: Water & Sewer Rate Study

Bartle Wells Associates (BWA) is pleased to submit to the City of Imperial (City) the attached Water & Sewer Rate Study. The results of the of the study were presented to the Imperial City Council at the September 20th City Council meeting.

This study presents BWA's analysis of the operating and non-operating expenses of the City's water and sewer funds and provides five-year cash flow projections and rates. The primary purpose of this study was to analyze the City's water & sewer enterprise funds and make recommendations that would achieve their financial sustainability. Another important purpose of this study was to review rates considering the San Juan Capistrano court decision to ensure that rates adhere to the State's legal requirements.

The enclosed report recommends updating rates and charges to more accurately recover the costs of providing service to the City's water and sewer customers. Recommendations were developed with substantial input from City staff. BWA finds that the rates and charges proposed in our report are based on the cost of service for each customer, follow generally accepted rate design criteria, and adhere to the substantive requirements of Proposition 218. BWA believes that the proposed rates are fair and reasonable to the City's customers.

We have enjoyed working with the City on this rate study and appreciate the assistance of AJ Gaddis, Jackie Loper, Laura Gutierrez and Alexis Chalupnik as well that of other City staff throughout the project. Please contact us with any future questions about this study and the rate recommendations.

Yours truly,

Doug Dove, CIPFA
Principal

Erik Helgeson
Financial Analyst

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TABLE OF CONTENTS

1	Executive Summary.....	1
1.1	Background	1
1.2	Proposition 218.....	1
1.3	Use of Generally Accepted Rate-Making Principles	2
1.4	Water Overview	3
1.4.1	Water Customers	3
1.4.2	Water System.....	3
1.4.3	Current Water Rates	4
1.4.4	Proposed Water Rates	4
1.5	Wastewater System Overview.....	5
1.5.1	Wastewater System	5
1.5.2	Current Wastewater Rates	5
1.5.3	Proposed Wastewater Rates	6
2	Water Finances & Rates	7
2.1	Water Financial Overview.....	7
2.2	Current Monthly Water Rates	8
2.3	Current Water Accounts	8
2.4	Financial Challenges / Key Drivers of Rate Increases	9
2.4.1	Ongoing Operating Cost Inflation	9
2.4.2	Water Reserve Funds	9
2.4.3	Capital Projects	9
2.5	Water Enterprise Revenue Requirements.....	10
2.5.1	Water Revenue Requirements: Cash Flow Projection.....	10
2.6	Cost of Service.....	13
2.7	Water Rate Structure Recommendations	15
2.7.1	Fixed Service Charge Recommendations.....	15
2.7.2	Water Variable Charge Recommendations	16
2.8	Regional Water Rate Survey	17
	Single Family Residential Bill Impacts	18
3	Sewer Finances & Rates	19
3.1	Sewer Financial Overview	19
3.2	Current Monthly Sewer Rates	19
3.3	Current Sewer Accounts	20
3.4	Financial Challenges / Key Drivers of Rate Increases	20
3.4.1	Capital Improvements / Aging Infrastructure.....	20
3.4.2	Ongoing Operating Cost Inflation	21
3.4.3	Sewer Reserve Funds	21
3.4.4	Sewer Debt Coverage.....	21
3.5	Sewer Enterprise Financial Projections	21

3.6	Cost of Service.....	25
3.7	Commercial Customer Classification	26
3.8	Flow and Loadings.....	28
3.9	Sewer Rate Design Recommendations.....	28
3.9.1	Residential Recommendations	28
3.9.2	Commercial Recommendations.....	29
3.10	Sewer Rate Calculation	29
3.11	Current and Proposed Sewer Rates.....	30
3.12	Regional Sewer Rate Survey	31
4	CONCLUSIONS AND RECOMMENDATIONS	32
4.1	Conclusions	32
4.2	Recommendations	32

LIST OF TABLES

Table 1:	Current Monthly Water Rates.....	4
Table 2:	Proposed Water Rates, FY 2017-18 through FY 2021-22.....	4
Table 3:	Current and Future Adapted Monthly Wastewater Rates.....	5
Table 4:	Proposed Sewer Rates, FY 2017-18 through FY 2021-22.....	6
Table 5:	Current Water Accounts	8
Table 6:	Water Meter Flow Rates and Meter Ratios	8
Table 7:	Recommended Water Rate Revenue Increases.....	10
Table 8:	Water Capacity Cash Flow Projection	11
Table 9:	Water Cash Flow Projection.....	12
Table 10:	Allocation of Water System Expenses and Revenues to Fixed & Variable Costs.....	14
Table 11:	Allocation Units by Customer Class and Function.....	14
Table 12:	Proposed Fixed Meter Rates	15
Table 13:	Proposed Volumetric Water Rates.....	16
Table 14:	Current Sewer Accounts.....	20
Table 15:	Recommended Sewer Rate Revenue Increases.....	22
Table 16:	Sewer Capacity Cash Flow Projection	22
Table 17:	Sewer Cash Flow Projection	24
Table 18:	Allocation of Water System Expenses and Revenues to Fixed & Variable Costs.....	26
Table 19:	Proposed User Classifications	27
Table 20:	Sewer Allocation Units and Revenue Requirements by Class.....	28
Table 21:	Sewer Allocation Units and Unit Rate	28
Table 22:	Proposed Sewer Rate Calculation	29
Table 23:	Proposed Sewer Rate Increases.....	30

LIST OF FIGURES

Figure 1:	Projected Capital Spending.....	9
Figure 2:	Water Utility Projected Revenues & Expenses	11
Figure 3:	Single Family Residential Water Rate Survey	17
Figure 4:	Single Family Residential Monthly Bill Comparisons	18
Figure 5:	Projected Sewer Capital Spending.....	20
Figure 6:	Sewer Utility Projected Revenues & Expenses	23

Figure 7: Comprehensive Cost of Service Study Process	25
Figure 8: Monthly Residential Sewer Rate Survey of Regional Agencies.....	31

APPENDICES

APPENDIX A: Water Tables

APPENDIX B: Wastewater Tables

1 EXECUTIVE SUMMARY

1.1 Background

The City of Imperial lies in California's Imperial valley, twelve miles North of the border between the United States and Mexico. The City was incorporated in 1904. Water and sewer service is provided to over 5,400 accounts, serving a population of approximately 17,000 people who live both in and adjacent to the City.

The revenues from the City's water and sewer utilities are entirely derived from charges for services. The City must establish rates and charges adequate to fund the cost of providing water and wastewater services, including costs for operations and capital improvements needed to keep City's utility infrastructure in safe and reliable operating condition. Rates were last increased in 2013.

The City retained Bartle Wells Associates (BWA) to develop a comprehensive rate analysis and study for the City's water and sewer enterprises. Basic objectives of the rate study include:

- Identify rate setting principles.
- Develop long-term financial projections to determine future annual water and wastewater enterprise revenue requirements.
- Evaluate rate alternatives and recommend water and wastewater designed to equitably recover the costs of providing service.

Based on input from City staff, key guiding principles included developing rates that:

- Are fair and equitable to all customer classes.
- Recover the costs of providing service and generate adequate funding for capital needs.
- Are easy to understand and implement.
- Comply with the legal requirements of Proposition 218 and other California laws.

1.2 Proposition 218

Utility rates are subject to the procedural and substantive requirements as set forth in Proposition 218. Proposition 218 was adopted by California voters in 1996 and added Articles 13C and 13D to the California Constitution. Article 13D, Section 6 governs property-related charges, which the California Supreme Court subsequently ruled includes ongoing utility service charges such as water and wastewater. Article 13D, Section 6 establishes a) procedural requirements for imposing or increasing property-related charges, and b) substantive requirements for those charges. Article 13D also requires voter approval for new or increased property-related charges but exempts from this voting requirement rates for water and

wastewater service. The substantive requirements of Article 13D, Section 6 require the City's utility rates to meet the following conditions:

- Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.
- Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
- The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.
- No fee or charge may be imposed for a service unless that service is used by, or immediately available to, the owner of the property in question.
- No fee or charge may be imposed for general governmental services, such as police or fire services, where the service is available to the public at large in substantially the same manner as it is to property owners.

The procedural requirements of Proposition 218 for all utility rate increases are as follows:

- Noticing Requirement: The City must mail a notice of proposed rate increases to all affected property owners. The notice must specify the basis of the fee, the reason for the fee, and the date/time/location of a public rate hearing at which the proposed rates will be considered/adopted.
- Public Hearing: The City must hold a public hearing prior to adopting the proposed rate increases. The public hearing must be held not less than 45 days after the required notices are mailed.
- Rate Increases Subject to Majority Protest: At the public hearing, the proposed rate increases are subject to majority protest. If 50% plus one of affected property owners submit written protests the proposed rate increases, the increases cannot be adopted.

1.3 Use of Generally Accepted Rate-Making Principles

The rates developed in this study use a straightforward methodology to establish an equitable system of fixed and variable charges that recover the cost of providing service and fairly apportion costs to each rate component. The rates were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the American Water Works Association (AWWA) M1 Manual.

In developing water rates, it is important to know that there is no "one-size-fits-all" approach for establishing cost-based water rates. "The (M1 Manual) is aimed at outlining the basic elements involved in water rates and suggesting alternative rules of procedure for formulating

rates, thus permitting the exercise of judgment and preference to meet local conditions and requirements.”¹

BWA used the following criteria when developing our recommendations for the City’s water and wastewater rates and finances:

- 1) *Revenue Sufficiency*: Rates should recover the annual cost of service and provide revenue stability.
- 2) *Rate Impact*: While rates are calculated to generate sufficient revenue to cover operating and capital costs, they should be designed to minimize, as much as possible, the impacts on ratepayers.
- 3) *Equitable*: Rates should be fairly allocated among all customer classes based on their estimated demand characteristics. Each user class only pays its proportionate share.
- 4) *Practical*: Rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.

1.4 Water Overview

1.4.1 Water Customers

The City owns a potable water distribution system that serves 5,428 accounts, 2.5% of which are outside of the City limits. This study assumed 100 new connections per year.

1.4.2 Water System

The City has a single water supply. It receives raw water deliveries from the Imperial Irrigation District. The City’s treatment plant can produce seven million gallons per day. The City stores two million gallons of treated water at the treatment plant, has two, two-million-gallon storage tanks and two remote booster stations.

BWA recommends (1) updating rates to better reflect revenue requirements and the cost of service; (2) modify the volumetric rate structure by shifting from a three-tier structure to a single, uniform rate which reflects the City’s single source of water; (3) transition the monthly fixed charge structure from a single charge to charges based on a customer’s meter size, reflecting the capacity needed to serve the meter; (4) charge the City for water use; and (5) charge customers outside the City the same rates as those inside the City limits.

¹ AWWA Manual M1 Manual, Principles of Water Rates, Fees, and Charges, Sixth Edition, 2012, page 5.

1.4.3 Current Water Rates

Current monthly water rates are shown on Table 1. Rates were last increased in August 2013. Customers pay a monthly fixed rate and a volumetric rate. There are three volumetric tiers and all customers pay the same monthly fixed rate.

Table 1: Current Monthly Water Rates

Monthly Fixed Rate:	
<i>All Customers</i>	\$12.00

Quantity Rate per Hundred Cubic Feet (HCF):	
<i>All Customers</i>	
0 to 30 HCF	\$2.99
31 to 35 HCF	3.29
36 HCF and above	\$3.84

1.4.4 Proposed Water Rates

Table 2 shows the proposed monthly fixed meter charges (base rates) and volumetric rates for the next five years. The proposed rates will be effective January 1st in fiscal year (FY) 2017-18 and effective July 1st in each remaining year of the notice period. Every water connection will be charged a base rate according to meter size and a volumetric rate per unit of water consumption. The proposed rate structure condenses the current three-tier rate structure into a uniform rate. The uniform rate more accurately reflects the cost to serve customers from the single source of supply.

Table 2: Proposed Water Rates, FY 2017-18 through FY 2021-22

Monthly Fixed Rate

Meter Size	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1"	\$13.06	\$14.12	\$15.16	\$15.77	\$16.41
1 ½"	16.86	21.72	26.57	27.64	28.75
2"	21.42	30.84	40.24	41.85	43.53
3"	33.59	55.18	76.75	79.82	83.02
4"	47.27	82.54	117.81	122.53	127.44
6"	\$85.29	\$158.58	\$231.87	\$241.15	\$250.80

Quantity Rate per Hundred Cubic Feet (HCF):

Cubic Feet	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
All Usage	\$3.36	\$3.57	\$3.75	\$3.90	\$4.06

1.5 Wastewater System Overview

1.5.1 Wastewater System

The City also owns and operates a wastewater system which includes the wastewater treatment plant and the collection system.

The City's wastewater system has large infrastructure repair and replacement projects planned in the next five years. The largest project is replacing the wastewater treatment plant. The plant was built in the sixties and has served long past its useful life.

BWA recommends (1) updating rates to better reflect revenue requirements and the cost of service; (2) modify the residential rate structure by shifting to only a monthly flat rate; (3) bill commercial customers the greater of the residential fixed charge or a volumetric rate based on a customer's strength classification; (4) charge the City for water use; and (5) charge customers outside the City the same rates as those inside the City limits.

1.5.2 Current Wastewater Rates

The current monthly wastewater charges are shown on Table 3.

Table 3: Current and Future Adapted Monthly Wastewater Rates

<i>Monthly Base Sewer Rate per Equivalent Dwelling Unit (EDU)</i>	
All Customers	\$48.40 per EDU
<i>Quantity Rate per Hundred Cubic Feet of Water Consumed (HCF):</i>	
<i>Residential Customers</i>	
36 HCF and above	\$0.93
<i>Commercial Customers</i>	
21 HCF and above	\$2.42

1.5.3 Proposed Wastewater Rates

Table 4 shows the proposed wastewater rates for the next five years. The proposed rates will be effective January 1st in FY 2017-18 and effective July 1st in each remaining year of the notice period. Residential users will be charged a fixed rate per Equivalent Dwelling Unit, while all other users will be charged a rate per hundred cubic feet of water consumption depending on strength class. No user will be charged less than the minimum charge, equal to the residential flat rate per EDU.

Table 4: Proposed Sewer Rates, FY 2017-18 through FY 2021-22

Annual Rate Per Equivalent Domestic Unit, Single-Family Residential Users

User Class	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Single-Family	\$56.45	\$60.41	\$64.64	\$67.23	\$69.92

Annual Rate Per Equivalent Domestic Unit, Multi-Family Residential Users

User Class	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Multi-Family	\$48.39	\$51.78	\$55.41	\$57.63	\$59.94

Quantity Rate Per 100 Cubic Feet of Water Consumption, Commercial Users

User Class	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Low-Strength	\$1.57	\$1.68	\$1.80	\$1.88	\$1.96
Domestic-Strength	\$2.82	\$3.02	\$3.24	\$3.37	\$3.51
High-Strength	\$4.34	\$4.65	\$4.98	\$5.18	\$5.39

Minimum Annual Rate Per Connection, Commercial Users

User Class	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Commercial	\$56.45	\$60.41	\$64.64	\$67.23	\$69.92

2 WATER FINANCES & RATES

2.1 Water Financial Overview

Bartle Wells Associates conducted an independent evaluation of the City's water enterprise finances. Key observations include:

- Water rates have not been increased since FY 2013-14. Staff has strived to keep costs down but water expenses are still subject to inflation.
- The water enterprise has a substantial amount of outstanding debt service due to the construction of the water treatment plant and the subsequent state mandated upgrades.
- The convergence of capital repair and replacement projects in FY 2018-19 and FY 2019-20 will require additional funds to maintain prudent reserves.
- Additional debt financing may be needed to help fund capital improvement projects in upcoming years.
- The water enterprise has only a large amount of outstanding debt. Rates will need to be raised to maintain a debt coverage ratio above 1.25.
- The City has had to draw down fund reserves in recent years to support annual operating and capital funding needs.
- As mentioned in Section 1.3, water rates were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the AWWA M1 Manual.
- Water expenses were determined by developing projections based on audits, budgets, and up to date information provided by the City. Projected expenses and minimum reserve fund targets were used to develop annual revenue requirements.

2.2 Current Monthly Water Rates

The City bills water service monthly. The current water rates include two components:

- 1) **Fixed Base Charge:** All customers pay the same fixed amount per month.
- 2) **Variable Charges:** Residential customers are billed according to a 3-tier inclining rate structure. Water use is first billed in tier 1 and subsequently billed in higher, more expensive, tiers as water use increases in each billing period. Quantity Charges are billed per hundred cubic feet (HCF), with 1 HCF equal to approximately 748 gallons of water.

2.3 Current Water Accounts

Table 5 shows the current number of water accounts by meter size and the corresponding equivalent demand units. An equivalent demand unit (EDU) is the ratio of any meter's safe maximum flow to that of a 1" meter's. The safe maximum flow is based on the American Water Works Association's meter service equivalent standards. The proposed fixed rates by meter size are determined based on the number of EDU's. Table 6 shows water meter flow rates and meter ratios which represent capacity.

Table 5: Current Water Accounts

Meter Size	Customers	Capacity Factor**	Equivalent Demand Units
1" or below***	5,329.0	1.0	5,329.0
2"	41.0	3.2	131.2
4"	57.0	10.0	570.0
6"	1.0	20.0	20.0
Total	5,428.0		6,050.2

* Customer count data as of June 2017 provided by City staff

** Capacity factors based on AWWA operating capacity standards by meter size

*** Meters 1" or below reflect the varying meter sizes in single family homes

Table 6: Water Meter Flow Rates and Meter Ratios

Meter Size	Max Flow Rate (GPM)	EDU
1 inch	50	1.0
2 inch	160	3.2
4 inch	500	10.0
6 inch	1000	20.0

Safe maximum operating capacity by meter size per current AWWA standards (Table B-1 M1 Manual 6th Edition, pg. 326)

2.4 Financial Challenges / Key Drivers of Rate Increases

The City's water enterprise will need to have small consistent water rate increases. Key drivers of future rate increases are summarized as follows.

2.4.1 Ongoing Operating Cost Inflation

The City faces ongoing operating cost inflation due to annual increases in a range of expenses such as utilities, supplies, salaries, benefits, etc. Since 1996, the average annual CPI for all urban customers has been 2.3%, whereas the average for the Construction Cost Index Engineering News Record (CCI ENR) 20-Cities average is 3.1%. BWA uses a 3.0% operating cost inflation assumption. Appendix A includes a detailed description of water expense projections through FY 2021/22.

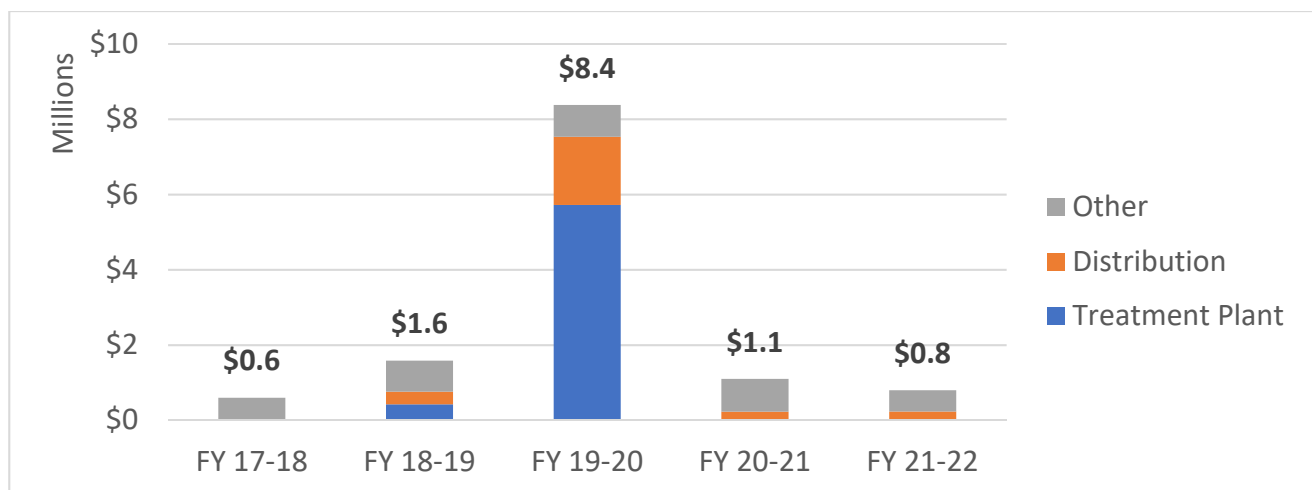
2.4.2 Water Reserve Funds

The City needs to maintain reserves. Maintaining a prudent level of fund reserves provides a financial cushion for dealing with unanticipated expenses, revenue shortfalls, and emergency capital repairs.

2.4.3 Capital Projects

The City's water system requires a steady stream of repair and improvement projects. Accounting for construction cost inflation, the City anticipates funding approximately \$12.5 million of capital improvement projects over the next 5 years, an average of \$2.5 million per year. The largest costs are the upgrades to the water treatment plant estimated to cost \$6.2 million. Figure 1 shows projected capital spending per year.

Figure 1: Projected Capital Spending



2.5 Water Enterprise Revenue Requirements

2.5.1 Water Revenue Requirements: Cash Flow Projection

The water cash flow projections incorporate the latest information available as well as reasonable, prudently conservative assumptions. Key assumptions include:

Growth & Water Demand Assumptions

- The City has had sustained growth and there are many developments in the works. Based on input from City staff BWA is assuming 100 new connections per year.
- Future water sales are projected to increase with growth.

Revenue Assumptions

- Investment income is estimated based projected reserve levels. Future projections are estimated based on conservative interest earning rates; actual amounts will vary based on reserves and future interest earning rates.
- Other revenues are projected to stay constant for the study period.

Expense Assumptions

- Operating and maintenance costs are based on the 2017-18 budget and escalate at the annual rate of 3.0% to account for future cost inflation.
- Based on the City's compensation information, salary costs are projected to grow at 5% and benefit costs are projected to grow at 7% annually.
- The City is projecting utility (gas and electric) costs to increase at 5.0% annually.
- Capital expenditures include \$12.5 million in projects through FY 2021-22. Capital cost inflation is projected to be 3.0% for the study period.

Revenue Increases

Based on the above assumptions BWA recommends the following rate revenue increases. The following table shows the debt service coverage ratio with the recommended increases will stay at 1.25x or greater.

Table 7: Recommended Water Rate Revenue Increases

Revenue Escalation	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Rate Revenue Increase	6.0%	6.0%	5.0%	4.0%	4.0%
Debt Coverage Ratio (Target 1.25)	1.39	1.59	1.25	1.35	1.61

The recommended annual rate increases begin in FY 2017-18 and are needed to fund annual operating and capital expenses, provide healthy debt service coverage and maintain prudent reserves.

With the large capital expenditures projected in the next five years, BWA recommends using capacity fee revenues to mitigate the impact of the capital projects. The water capacity fund cashflow is shown in Table 8.

Table 8: Water Capacity Cash Flow Projection

Capacity Fund	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Beginning Capacity Balance	<u>\$2,534,787</u>	\$2,611,889	\$1,288,991	\$66,093	\$143,195
Water Capacity Fees	177,102	177,102	177,102	177,102	177,102
Contract Service	100,000	100,000	100,000	100,000	100,000
Cash Funded Capital	<u>\$0</u>	<u>\$1,400,000</u>	<u>\$1,300,000</u>	<u>\$0</u>	<u>\$220,000</u>
Net Capacity Income	\$77,102	-\$1,322,898	-\$1,222,898	\$77,102	-\$142,898
Ending Capacity Balance	\$2,611,889	\$1,288,991	\$66,093	\$143,195	\$297

Figure 2 depicts the projected revenues with increases, expenses, and reserve levels. The cash flow is shown in detail in Table 9. The recommended annual rate increases begin in FY 2017-18 and are needed to fund annual operating and capital expenses, provide healthy debt service coverage and maintain prudent reserves.

Figure 2: Water Utility Projected Revenues & Expenses

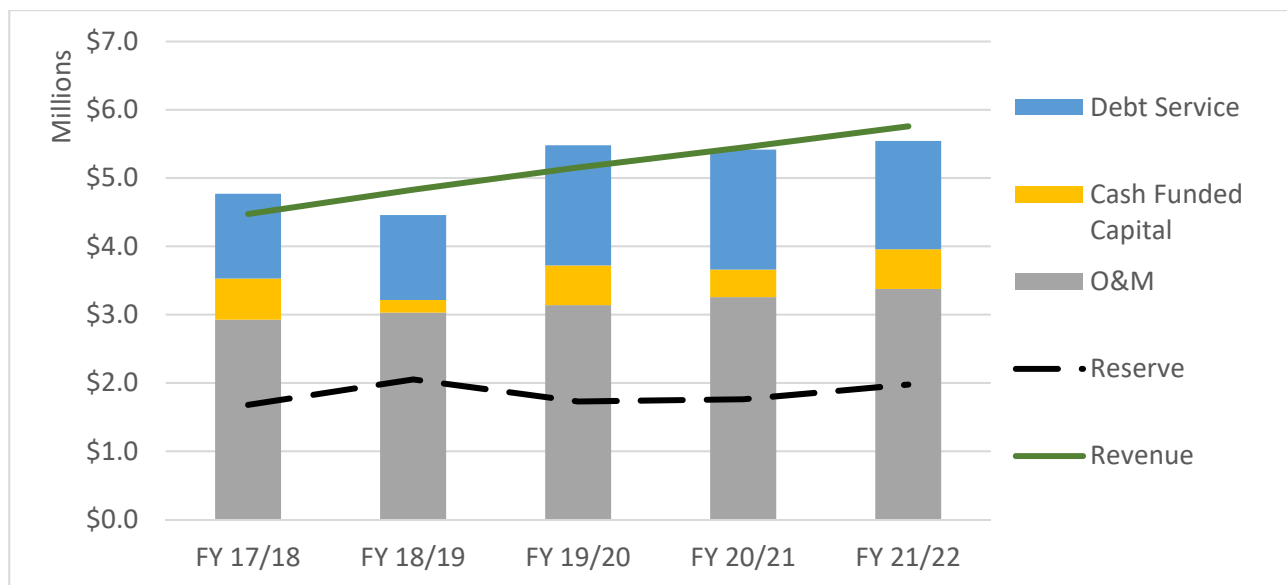


Table 9: Water Cash Flow Projection

Item	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Reserves					
Beginning Unrestricted Balance	\$1,973,501	\$1,678,279	\$2,051,591	\$1,728,846	\$1,761,498
Revenue Escalation					
Rate Revenue Increase	6.0%	6.0%	5.0%	4.0%	4.0%
Revenues					
Rate Revenue	\$4,129,000	\$4,455,914	\$4,807,193	\$5,135,674	\$5,432,746
Additional Rate Revenue	247,740	267,355	240,360	205,427	217,310
Timing Adjustment*	-123,870				
Other Revenue	216,500	102,500	102,500	102,500	102,500
Interest on Reserves	<u>\$4,934</u>	<u>\$4,196</u>	<u>\$5,129</u>	<u>\$4,322</u>	<u>\$4,404</u>
Total Revenue	\$4,474,304	\$4,829,965	\$5,155,182	\$5,447,923	\$5,756,960
Expenses					
Operating Expense	\$2,926,503	\$3,027,565	\$3,139,448	\$3,255,548	\$3,376,027
Existing Debt Service	1,243,023	1,242,888	1,242,369	1,241,069	1,072,599
New Debt Service	<u>\$0</u>	<u>\$0</u>	<u>\$515,000</u>	<u>\$515,000</u>	<u>\$515,000</u>
Total Expenses	\$4,169,526	\$4,270,453	\$4,896,817	\$5,011,617	\$4,963,626
Net Operating Revenues	\$304,778	\$559,511	\$258,365	\$436,306	\$793,334
Capital					
Debt Revenue ¹			\$6,500,000	\$700,000	
Capital Expense	<u>\$600,000</u>	<u>\$186,200</u>	<u>\$7,081,110</u>	<u>\$1,103,654</u>	<u>\$579,111</u>
Cash Funded Capital	-\$600,000	-\$186,200	-\$581,110	-\$403,654	-\$579,111
Net Revenues	-\$295,222	\$373,311	-\$322,745	\$32,652	\$214,223
Ending Unrestricted Balance	\$1,678,279	\$2,051,591	\$1,728,846	\$1,761,498	\$1,975,720
Target Balance**	<u>\$1,463,252</u>	<u>\$1,513,783</u>	<u>\$1,569,724</u>	<u>\$1,627,774</u>	<u>\$1,688,014</u>
Variance from Target	\$215,028	\$537,808	\$159,122	\$133,724	\$287,707

*Based on January 1 rate adoption

**BWA recommends the target balance be 50% of operating expenses

2.6 Cost of Service

Water utilities have used a wide range of approaches or perspectives for allocating and recovering their costs for providing service, and these costs are most commonly recovered from a combination of fixed and variable charges. The percentage of revenues derived from the fixed and variable charges varies for each agency. They should be proportional to each system's expenditures and must not exceed the cost of providing service. A higher level of fixed charges provides better revenue stability and less dependence on variable sales. On the other hand, higher dependence on volumetric revenues provides a greater conservation incentive.

Depending on perspective, the same costs can reasonably be allocated 100 percent to fixed revenue recovery, 100 percent to variable rate recovery, or to some combination of the two. For example, debt service used to fund water treatment facilities can legitimately be treated as a) a fixed annual cost that should be recovered from fixed charges, b) a cost related to providing water supply to meet customer demand and therefore a cost that should be recovered from variable rates, or c) a cost that can be recovered from both fixed and variable rates in recognition of the two alternative perspectives.

Many of the utility's costs are variable costs that vary by water consumption including personnel, supplies, and utilities. However, a portion of these variable costs can reasonably be apportioned to fixed rate recovery, and vice-versa with fixed costs. For example, a share of the fixed cost of salaries related to water production can reasonably be recovered from usage-based charges as these costs are incurred to provide water supply to meet customer demand. Likewise, debt service payments may be fixed annual costs, but it is reasonable to recover some of these costs from usage-based rates as the costs are incurred to fund infrastructure that will improve the water delivery system.

While there is no single correct approach, BWA believes that costs should be allocated within a reasonable range of fixed and variable allocation that reflects both a) underlying cost causation, to the extent such causation can reasonably be determined or estimated, and b) the policy preferences of the agency in cases where a range of reasonable approaches can be justified.

Meter capacity ratios provide a basis for charging customers proportional to the capacity that is reserved for them in the water system. Larger meters have the ability to place a greater demand on the water system and are therefore charged based on that potential demand. Meter ratios are widely used in California rate setting and are consistent with meter ratios adopted by the California Public Utility Commission for private water companies. The fixed charges for larger meters are determined by multiplying the base charge by the corresponding 1" EDU. This establishes a fixed cost per account.

Table 10 shows a breakdown of the water utility's expenses and how they are allocated. The proportional allocation is then applied to the rate revenue requirement so that the rates are proportional to the service provided.

Table 10: Allocation of Water System Expenses and Revenues to Fixed & Variable Costs

Allocation Category	Amount	Customer	Capacity	Volume	Total
Maintenance	\$572,886		30%	70%	100%
Administration	\$1,857,006	15%	15%	70%	100%
Volume Only	\$385,189			100%	100%
Utilities	\$168,000	10%	10%	80%	100%
Conservation	\$44,484			100%	100%
Capital	\$642,930		20%	80%	100%
Debt	\$1,757,369		20%	80%	100%
	Functional Allocation \$	\$295,351	\$947,277	\$4,185,236	\$5,427,864
	Functional Allocation %	5.00%	17.00%	78.00%	100%
Revenue Requirement		\$218,837	\$744,046	\$3,413,857	\$4,376,740

To recover the allocated costs proportionally to the service provided, a unit cost must be derived. Critical to this step is using the unit which relates to the function. Fixed costs are recovered either per customer or per unit of capacity (EDU). Fixed costs which are related to the number of customers were allocated to the customer category. Fixed costs which are related to the size of the system were allocated to the capacity category. Costs reasonably recovered volumetrically we allocated to the volume category. Volume costs are recovered per unit of volume (HCF). The following table shows the allocation units and total revenue requirement by function. The revenue requirement divided by the demand allocation units in a given category provides each category's unit rate.

Table 11: Allocation Units by Customer Class and Function

Allocation Units	Customer	Capacity	Volume
	<i>Customer</i>	<i>EDU</i>	<i>HCF</i>
Demand Allocation Units	5,428	6,050	1,017,620
Revenue Requirement	<u>\$218,837</u>	<u>\$744,046</u>	<u>\$3,413,857</u>
Charge	\$40.32	\$122.98	\$3.36

2.7 Water Rate Structure Recommendations

BWA evaluated the City's water rate structure for equity and compliance with the substantive provisions of Proposition 218. Rate structure recommendations listed below incorporate input received from staff.

2.7.1 Fixed Service Charge Recommendations

The current fixed charge is currently the same for all customers. BWA recommends that the capacity portion of a customer's fixed charge be based on their meter size. Meter size is used as a proxy to estimate the demand that each customer can place on the water system. A significant portion of a water system's design and, in turn, the utility's operating and capital costs are related to meeting capacity requirements. The fixed charge is levied regardless of water consumption and recognizes that even when a customer does not use any water the City incurs fixed costs by maintaining the readiness to serve each connection.

shows water meter flow rates and meter ratios which represent capacity. An equivalent demand unit (EDU) is the ratio of any meter's safe maximum flow to that of a 1" meter's. The safe maximum flow is based on the American Water Works Association's meter service equivalent standards.

The fixed meter rates through FY 2021-22 shown in Table 12 are projected to be sufficient to meet revenue requirements. To make the transition to fixed rates based on meter size less of a financial burden to the City's customers, BWA recommends phasing in the rates over a three-year period, ending in FY 19-20. Under Proposition 218, the rates shown below are the maximum rates that the City can enact each year. The City may choose to adopt rates that are lower than those shown based upon an annual review of the water utility's finances to ensure that revenues are in line with expenses.

Table 12: Proposed Fixed Meter Rates

Fixed Rates	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
<i>Meter Size</i>	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
1" or below		\$13.06	\$14.12	\$15.16	\$15.77	\$16.41
1 1/2"		16.86	21.72	26.57	27.64	28.75
2"		21.42	30.84	40.24	41.85	43.53
3"		33.59	55.18	76.75	79.82	83.02
4"		47.27	82.54	117.81	122.53	127.44
6"		\$85.29	\$158.58	\$231.88	\$241.16	\$250.81
All Meters	\$12.00					

2.7.2 Water Variable Charge Recommendations

Bartle Wells is recommending a change from the current three-tier rate structure to a uniform rate. A uniform rate will reflect the uniform cost of raw water from the Imperial Irrigation District (IID). IID is the only source of water for the City. The uniform rate will also make water revenues less variable by reducing the proportion of revenue recovered from irrigation use which tends to be less consistent.

Table 13 shows the proposed volumetric rates to be used for all customer classes over the next five years. Under Proposition 218, the rates shown below are the maximum rates that the City can enact each year. The City can adopt rates that are lower than those shown based upon an annual review of the water utility's finances to ensure that revenues are in line with expenses.

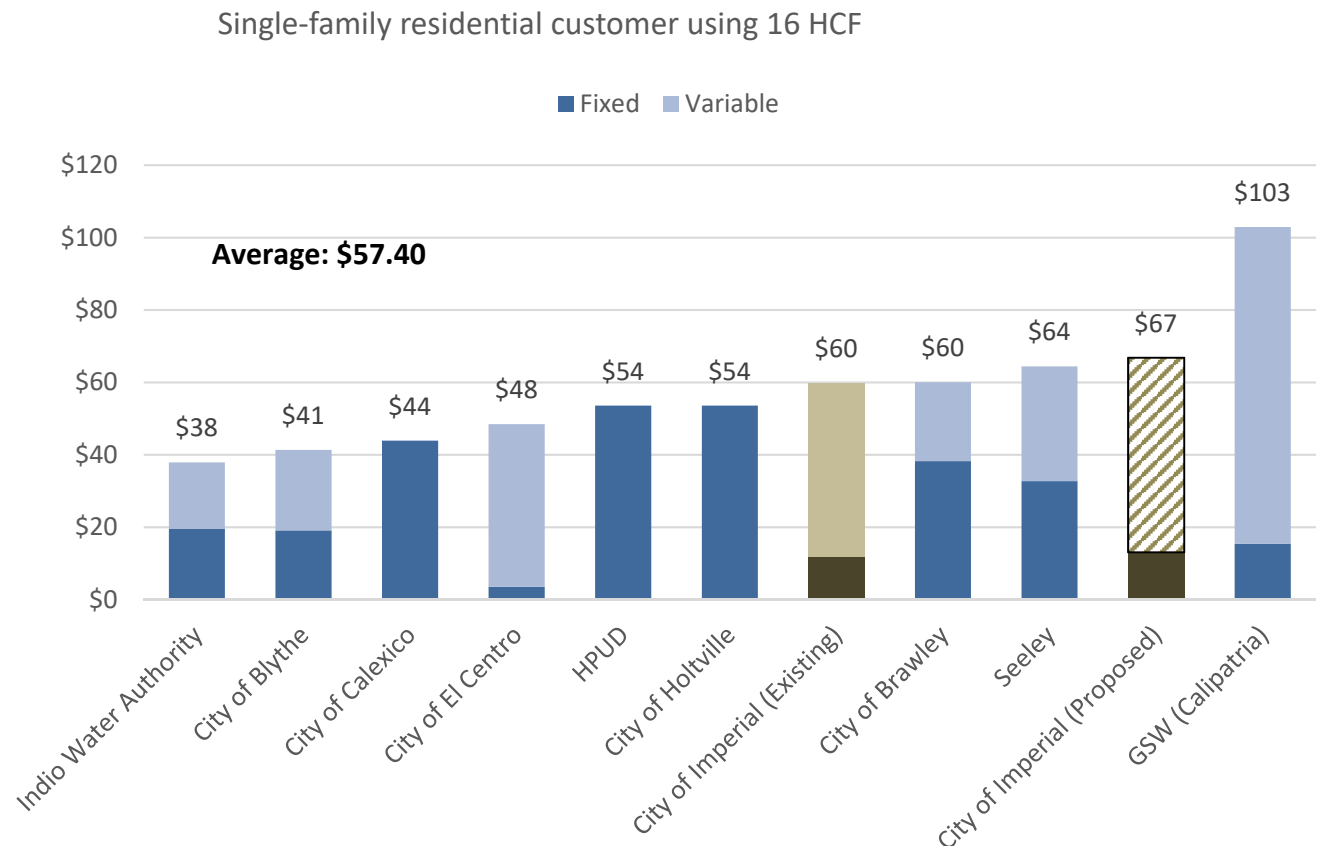
Table 13: Proposed Volumetric Water Rates

Volumetric Rates	Tiers FY 16-17		Tiers FY 17-18 FY 18-19 FY 19-20 FY 20-21 FY 21-22					
	<i>Current</i>	<i>Current</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
Residential								
Tier 1	0-30 HCF	\$2.99	All HCF	\$3.36	\$3.57	\$3.75	\$3.90	\$4.06
Tier 2	31-35 HCF	\$3.29						
Tier 3	>35 HCF	\$3.84						

2.8 Regional Water Rate Survey

The following chart compares the water bill for a typical single-family home to those of other regional agencies. While the City's proposed water rates are near the upper end of the chart, they are still close to the overall average. Rates can vary widely from agency to agency due to a multitude of factors. The survey shown is for comparative purposes only.

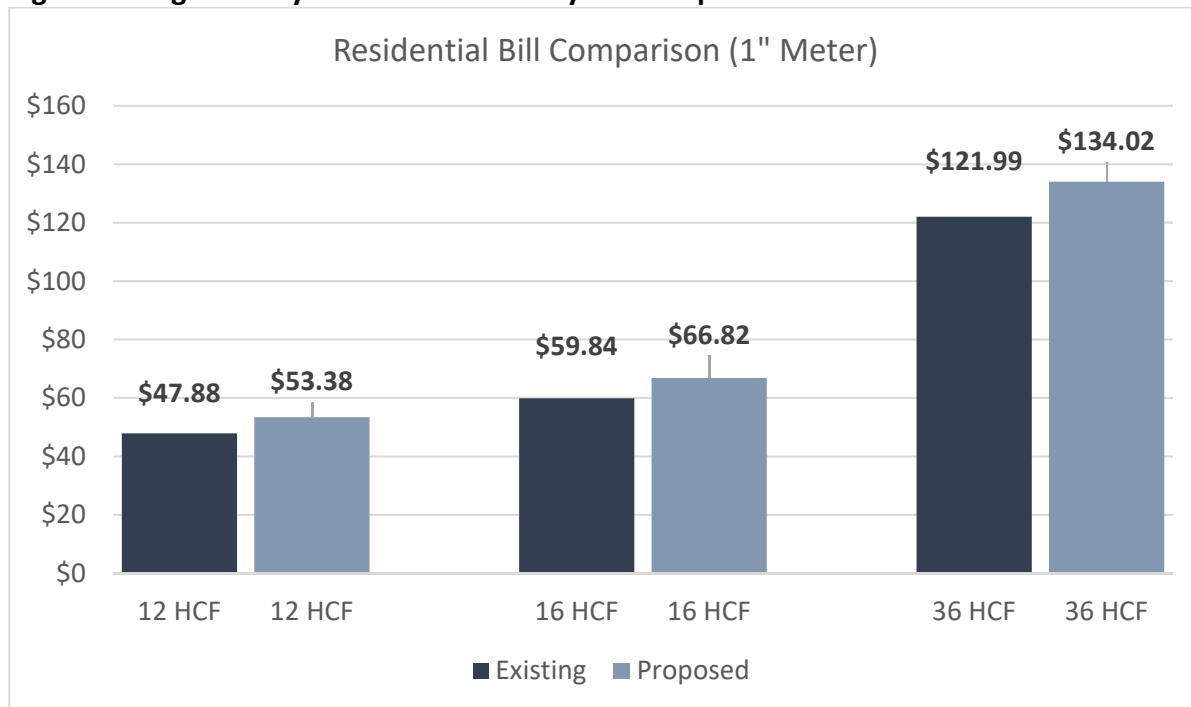
Figure 3: Single Family Residential Water Rate Survey



Single Family Residential Bill Impacts

While the overall recommended increase in FY 2017-18 is 6.0%, the individual impact to customers will vary due to the rate structure change. The figure below exhibits the monthly impacts to a median bill (12 HCF), an average bill (16 HCF), and a summer bill (36 HCF). In FY 2017-18, some bills will increase proportionally more than the overall revenue increase. This is due to the reduction in tiers and reducing outside City rates to be the same as those inside the City.

Figure 4: Single Family Residential Monthly Bill Comparisons



3 SEWER FINANCES & RATES

3.1 Sewer Financial Overview

Bartle Wells Associates conducted an independent evaluation of sewer enterprise finances. Key observations include:

- Expenses are projected to exceed revenues without revenue increases in the following year.
- Sewer rates have not been increased since FY 2013-14. City staff has strived to keep costs down but costs are still subject to inflation.
- The large amount of capital repair and replacement projects will require additional funds to maintain prudent reserves.
- Additional debt financing may be needed to help fund capital improvement projects in upcoming years.
- The water enterprise has only a moderate amount of outstanding debt. Rates will need to be raised to maintain a debt coverage ratio above 1.25.
- Sewer expenses were determined by developing projections based on audits, budgets, and up to date information provided by the City. Projected expenses and minimum reserve fund targets were used to develop annual revenue requirements.

3.2 Current Monthly Sewer Rates

The City has two classes of wastewater customers:

- **Residential single-family and multi-family** customers pay a fixed amount per dwelling unit and a volumetric rate for water use in excess of 36 HCF in a billing period. Currently, the monthly fixed cost for residential sewer service is \$48.40 per EDU and the volumetric rate is \$0.93 per HCF for all water use over 36 HCF in a billing period.
- **Commercial** customers pay a fixed amount per connection and a volumetric rate for water use in excess of 21 HCF in a billing period. Currently, the monthly fixed cost for residential sewer service is \$48.40 per connection and the volumetric rate is \$2.42 per HCF for all water use over 21 HCF in a billing period.

3.3 Current Sewer Accounts

Table 14 shows the current number of sewer accounts.

Table 14: Current Sewer Accounts

Class	Customers
Residential	5,008
Multi-Family*	267
Commercial	212
Total	5,487

*Multi-Family customer count is based in number of dwelling units

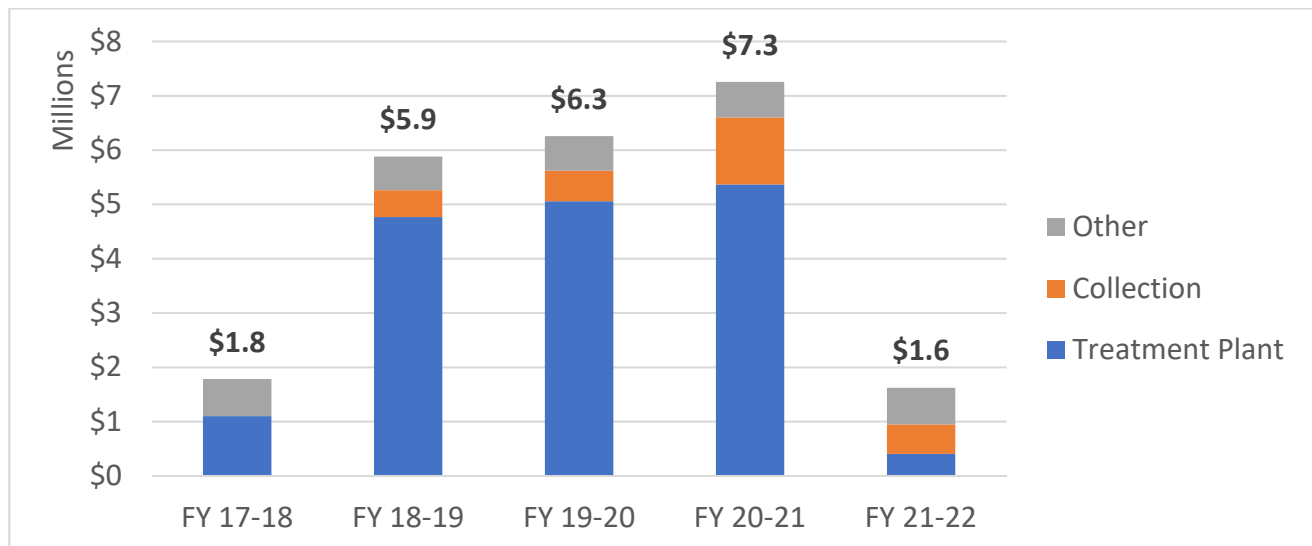
3.4 Financial Challenges / Key Drivers of Rate Increases

Going forward, the City's sewer enterprise is facing several financial challenges that will require sewer rate increases over the next 5 years. Key drivers of rate increases are summarized below.

3.4.1 Capital Improvements / Aging Infrastructure

The City's sewer system requires a significant amount of repair and improvement projects. The largest of these projects is a new sewer treatment plant projected to cost \$16.7 million. The new plant will replace the current one which has served long past its useful life. Accounting for construction cost inflation, the City anticipates funding approximately \$22.8 million of capital improvement projects over the next five years, an average of \$4.6 million per year.

Figure 5: Projected Sewer Capital Spending



3.4.2 Ongoing Operating Cost Inflation

The City faces ongoing operating cost inflation due to annual increases in a range of expenses such as utilities, supplies, salaries, benefits, etc. Since 1996, the average annual CPI for all urban customers has been 2.3%, whereas the average for the Construction Cost Index Engineering News Record (CCI ENR) 20-Cities average is 3.1%. BWA uses a 3.0% operating cost inflation assumption. Appendix B includes a detailed description of water expense projections through FY 2021-22.

3.4.3 Sewer Reserve Funds

Maintaining a prudent minimal level of fund reserves provides a financial cushion for dealing with unanticipated expenses, revenue shortfalls, and emergency capital repairs.

3.4.4 Sewer Debt Coverage

The City will need the combined increases in FY 17-18 and FY 18-19 to issue debt and maintain a debt coverage ratio above 1.25x. Bartle Wells recommends maintaining at minimum a 1.25x debt coverage ratio. This will help the City maintain a strong financial position and be better positioned to obtain additional financing.

3.5 Sewer Enterprise Financial Projections

The water cash flow projections incorporate the latest information available as well as reasonable, prudently conservative assumptions. Key assumptions include:

Growth Assumptions

- The City has had sustained growth and there are many developments in the works. Based on input from City staff BWA is assuming 100 new connections per year.
- Future rate revenue is projected to increase with growth.

Revenue Assumptions

- Based on the financial projections the City will need financing in FY 2019-20 to fully fund the sewer system's capital improvement needs.
- Investment income is estimated based projected reserve levels. Future projections are estimated based on conservative interest earning rates; actual amounts will vary based on reserves and future interest earning rates.
- Other revenues are projected to stay constant for the study period.

Expense Assumptions

- Operating and maintenance costs are based on the 2017-18 budget and escalate at the annual rate of 3.0% to account for future cost inflation.
- Based on the City's compensation information, salary costs are projected to grow at 5% and benefit costs are projected to grow at 7% annually.
- The City is projecting utility (gas and electric) costs to increase at 5.0% annually.
- Capital expenditures include \$22.8 million in projects through FY 2021-22. Capital cost inflation is projected to be 3.0% for the study period.

Revenue Increases

Based on the above assumptions BWA recommends the following rate revenue increases. The following table shows the debt service coverage ratio with the recommended increases.

Table 15: Recommended Sewer Rate Revenue Increases

Revenue Escalation	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Rate Revenue Increase	13.0%	13.0%	4.0%	4.0%	4.0%
Debt Coverage Ratio (Target 1.25)	2.02	1.29	1.39	1.50	1.61

The recommended annual rate increases begin in FY 2017-18 and are needed to fund annual operating and capital expenses, provide healthy debt service coverage and maintain prudent reserves.

With the large capital expenditures projected in the next five years BWA recommends using capacity fee revenues to mitigate the expense of the projects. The water capacity fund cashflow is shown in Table 16.

Table 16: Sewer Capacity Cash Flow Projection

Capacity Fund	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Beginning Capacity Balance	\$2,594,466	\$1,542,052	\$89,638	\$62,224	\$64,810
Water Capacity Fees	147,586	147,586	147,586	147,586	147,586
Contract Service	1,200,000				
Cash Funded Capital	\$0	\$1,600,000	\$175,000	\$145,000	\$145,000
Net Capacity Income	-\$1,052,414	-\$1,452,414	-\$27,414	\$2,586	\$2,586
Ending Capacity Balance	\$1,542,052	\$89,638	\$62,224	\$64,810	\$67,396

Figure 6 depicts the projected cash flow with increases. The cash flow is shown in detail in Table 17. The recommended annual rate increases begin in FY 2017-18 and are needed to fund annual operating and capital expenses, provide healthy debt service coverage and maintain prudent reserves.

Figure 6: Sewer Utility Projected Revenues & Expenses

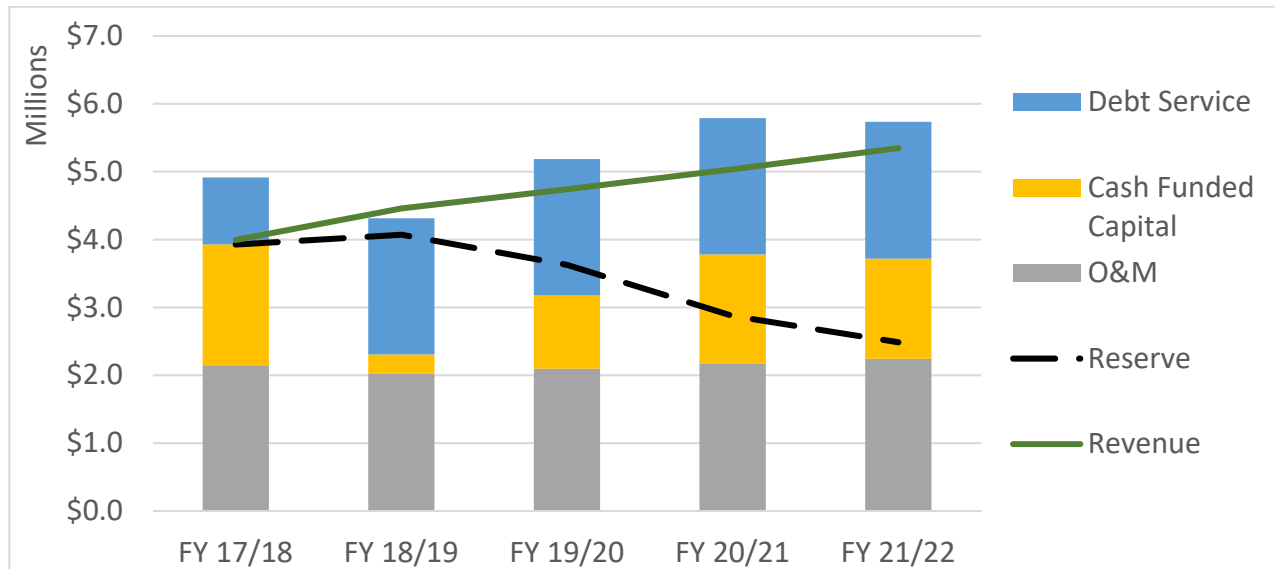


Table 17: Sewer Cash Flow Projection

Item	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
Reserves					
Beginning Unrestricted Balance	\$3,982,501	\$3,924,965	\$4,071,467	\$3,627,105	\$2,874,947
Revenue Escalation					
Rate Revenue Increase	13.0%	13.0%	4.0%	4.0%	4.0%
Revenues					
Rate Revenue	\$3,403,700	\$3,933,933	\$4,544,505	\$4,829,411	\$5,129,839
Additional Rate Revenue	442,481	511,411	181,780	193,176	205,194
Timing*	-221,241				
Other Revenue	359,500	4,500	4,500	4,500	4,500
Interest on Reserves	<u>\$9,956</u>	<u>\$9,812</u>	<u>\$10,179</u>	<u>\$9,068</u>	<u>\$7,187</u>
Total Revenue	\$3,994,397	\$4,459,657	\$4,740,963	\$5,036,155	\$5,346,720
Expenses					
Operating Expense	\$2,145,155	\$2,026,938	\$2,096,342	\$2,168,207	\$2,242,623
Existing Debt Service	986,510	984,150	985,210	985,670	993,520
New Debt Service	<u>\$0</u>	<u>\$1,023,000</u>	<u>\$1,023,000</u>	<u>\$1,023,000</u>	<u>\$1,023,000</u>
Total Expenses	\$3,131,665	\$4,034,088	\$4,104,552	\$4,176,877	\$4,259,143
Net Operating Revenues	\$862,732	\$425,569	\$636,411	\$859,278	\$1,087,577
Capital					
Debt Revenue**		\$4,000,000	\$5,000,000	\$5,500,000	
Capital Expense	<u>\$1,783,000</u>	<u>\$4,279,067</u>	<u>\$6,080,774</u>	<u>\$7,111,436</u>	<u>\$1,475,733</u>
Cash Funded Capital	-\$1,783,000	-\$279,067	-\$1,080,774	-\$1,611,436	-\$1,475,733
Net Revenues	-\$920,268	\$146,502	-\$444,362	-\$752,157	-\$388,156
Ending Unrestricted Balance	\$3,924,965	\$4,071,467	\$3,627,105	\$2,874,947	\$2,486,792
Target Balance	<u>\$1,072,578</u>	<u>\$1,013,469</u>	<u>\$1,048,171</u>	<u>\$1,084,104</u>	<u>\$1,121,312</u>
Variance from Target	\$2,852,387	\$3,057,998	\$2,578,934	\$1,790,844	\$1,365,480

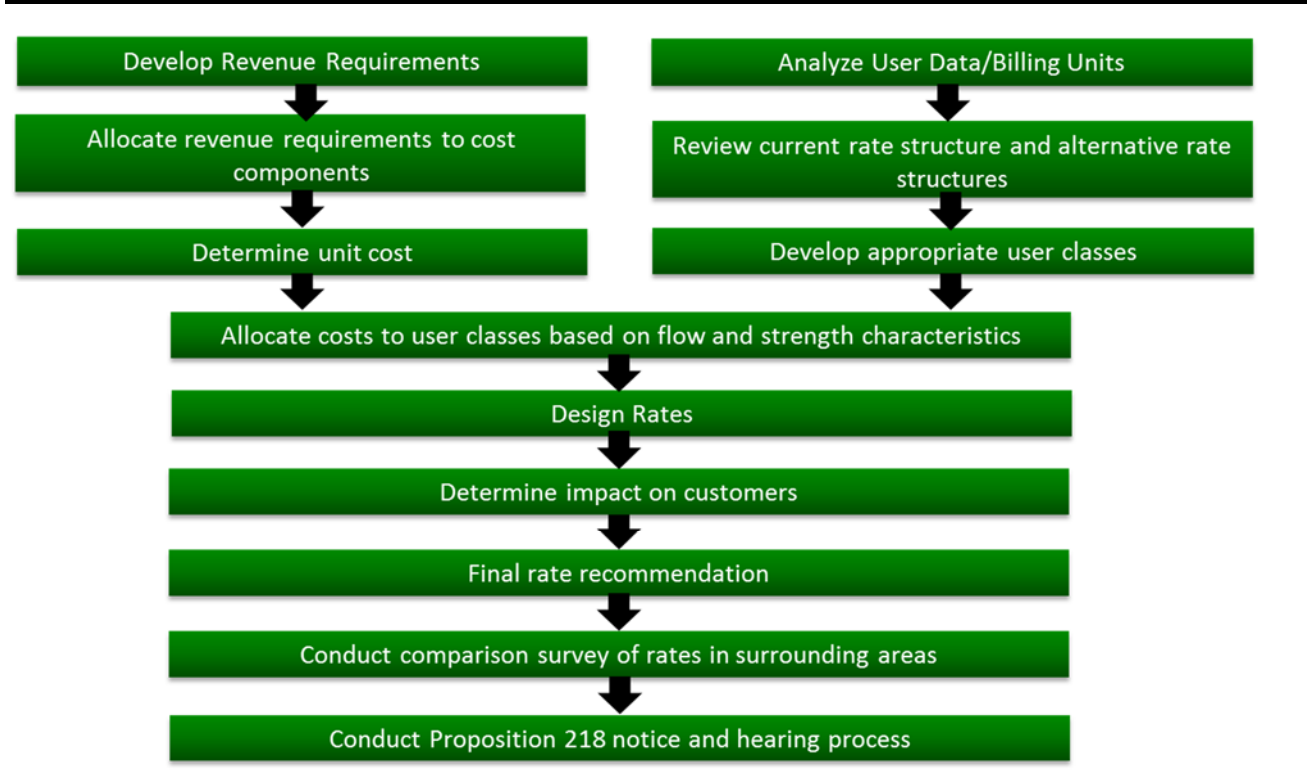
*Based on January 1 rate adoption

**Reflects timed use of funds from financing

3.6 Cost of Service

This section details the development of the City’s sewer rates and compliance with Proposition 218 through a comprehensive cost of service and rate design study process as shown in the following figure.

Figure 7: Comprehensive Cost of Service Study Process



While there is no single correct approach for cost allocation, BWA believes that costs should be allocated within a reasonable range that reflects both a) underlying cost causation, to the extent such causation can reasonably be determined or estimated, and b) the policy preferences of the agency in cases where a range of reasonable approaches can be justified.

The cost of service process builds on the financial plan analysis and assigns sewer system costs to functional cost components (accounts, flow, BOD (biochemical oxygen demand), and TSS (total suspended solids)). This process is intended to proportionately allocate costs to each customer based on how he or she takes sewer service.

Table 18 shows a breakdown of the water utility’s expenses and how they are allocated. The proportional allocation is then applied to the rate revenue requirement so that the rates are proportional to the service provided.

Table 18: Allocation of Water System Expenses and Revenues to Fixed & Variable Costs

Allocation Category	Amount	Flow	BOD	TSS	Total
Maintenance	\$348,777	60%	20%	20%	100%
Administration	\$1,429,584	60%	20%	20%	100%
Treatment	\$34,131		50%	50%	100%
Utilities	\$214,446	60%	20%	20%	100%
Capital	\$1,143,602	60%	20%	20%	100%
Debt	\$1,904,210	60%	20%	20%	100%
Functional Allocation \$	\$3,024,372	\$1,025,189	\$1,025,189	\$5,074,751	
Functional Allocation %	60%	20%	20%	100.00%	
Revenue Requirement	\$2,307,709	\$769,236	\$769,236	\$3,846,181	

3.7 Commercial Customer Classification

Table 19 shows the distinct types of businesses that will fall under each strength category. These classifications are based on the State Water Resource Control Board Guidelines for Wastewater Agencies. Low, Medium and High Strength Commercial users have been classified based on the amount of sewer flow Biochemical Oxygen Demand, and Total Suspended Solids that each type of business creates.

Low strength users have a lesser effect on the sewer system than a typical single-family home. This may be due to factors contributing to low sewer flow, BOD and TSS, such as reduced operating hours or fewer occupants.

Medium strength users are based on the same qualifications and rates for typical residential users because their impact on the sewer system resembles that of a typical single-family home in terms of sewer flow, BOD, and TSS.

High strength commercial has a higher impact on the sewer system than a single-family residence, demanding more sewer treatment due to higher sewer flow, BOD, and TSS.

Table 19: Proposed User Classifications

Proposed User Classifications into Low, Medium/Domestic, and High Strength Dischargers

Low Strength	Banks & Financial Institutions Barber Shops/Hair Salons (hair cutting only) Post Offices/Government Retail Stores Libraries Schools Churches, Halls & Lodges
Medium/Commercial/ Domestic Strength	Residential - All Appliance Repair Beauty Shops (hair cutting w/additional treatments) Dry Cleaners Nail Salons Pet Groomers Commercial Laundromats Bars & Taverns Tasting Rooms Breweries (with Pretreatment) Hospitals - General, Convalescent & Veterinarian Hotels, Motels, B&Bs, and Vacation Rentals Offices - Business and Professional Offices - Medical/Dental Pools with Restrooms (Clubhouse) Theaters Warehouses Car Washes High Tech Medical Manufacturing Light Manufacturing/Industrial Gym or Health Club Machine Shops Service Stations, Garages, Auto Repair Shops Mini Marts - W/O Dish Washer or Garbage Disposal Mini Mart with Gas Pumps - W/O Dish Washer or Garbage Disposal Spa with Various Beauty Treatments Parking Garages
High Strength	Restaurants Coffee Shops Ice Cream Parlors Catering Eatery Bakeries Butcher Shops Fish Market/Shop Markets - with Dish Washer or Garbage Disposal Markets - with Bakeries or Butcher Shops Mini Marts - with Dish Washer or Garbage Disposal Breweries (without Pretreatment) Wineries Market Dairies (milk producers, yogurt, ice cream maker) Specialty Foods Manufacturing (e.g., cheese or olive oil maker)

Source: Based on State Water Resources Control Board's Revenue Program Guidelines for Wastewater Agencies

3.8 Flow and Loadings

BWA estimated the flows and loadings of each customer class based on the projected indoor use of customers in each class. Single-family and multi-family customers' indoor use is based on average winter use while 80% of total commercial use is assumed to be indoor. The strength of each class is based on guidelines produced by the State Water Resource Control Board Guidelines for Wastewater Agencies. The total estimated strength of each class is based on the projected, total class, indoor flow, multiplied by the strength characteristics the class. Detailed flow and loading analysis is in Table 3 of Appendix B.

Table 20: Sewer Allocation Units and Revenue Requirements by Class

Class	Flow	BOD	TSS	Revenue Requirement
Residential	841,344	1,313,309	919,316	\$3,392,281
Multi-family	38,448	60,016	42,011	\$155,022
Nonresidential				
Low	5,721	4,644	4,644	\$19,666
Medium	66,125	103,218	72,253	\$266,613
High	2,327	7,264	4,359	\$12,599

Table 21: Sewer Allocation Units and Unit Rate

Allocation Units	Flow	BOD	TSS
Demand Units	953,965	1,488,451	1,042,583
Revenue Requirement	<u>2,307,709</u>	<u>769,236</u>	<u>769,236</u>
Unit Rate	\$2.42	\$0.52	\$0.74

3.9 Sewer Rate Design Recommendations

Rate design involves developing a rate structure that proportionately recovers costs from sewer system customers. Final rate recommendations are designed to (a) fund the utility's short- and long-term costs of providing service; (b) proportionately allocate costs to all customers and customer classes; and (c) comply with the substantive requirements of Proposition 218.

3.9.1 Residential Recommendations

BWA recommends that single-family and multi-family residential customers pay only a monthly fixed charge. The fixed charge reflects the amount of sewer discharge from a home (indoor use). Basing the rate on volumetric use will recover additional cost from customers who are likely irrigating and therefore not putting any additional load on the sewer system.

BWA also recommends having the multi-family charge be less than the single-family charge because multi-family units have less discharge than single family homes. BWA also recommends that multi-family customers with more than eight units be considered commercial customers.

3.9.2 Commercial Recommendations

BWA recommends nonresidential customers pay the greater of the single-family residential fixed charge or a strength based, volumetric rate. BWA believes the recommended structure will better reflect the cost of service and improve revenue stability. The minimum charge is based on the reasoning that the City has certain fixed charges for every connection to the system. The strength based, volumetric rate reflects specific load each commercial customer places on the system.

3.10 Sewer Rate Calculation

The residential rate calculations are simply the revenue requirements divided by the number bills. The commercial rates based on strength factors are calculated by dividing the class's revenue requirement by its projected indoor volume. The volumetric revenue requirements and the volume used in the rate calculations had to be adjusted to account for the customers who were going to pay the minimum charge.

Table 22: Proposed Sewer Rate Calculation

Residential	Revenue Requirement	Customers	Annual Fixed	Monthly Fixed		
	\$3,392,281	5008	\$677.37	\$56.45		
	\$155,022	267	\$580.60	\$48.39		
Nonresidential	Revenue Requirement	Customers	Volumetric Revenue Requirement	Volume Over Minimum	Volume Over Minimum	Rate (HCF)
Low Strength	\$19,666	23	\$4,086.22	37%	2,610	\$1.57
Domestic Strength	\$266,613	184	\$141,971.30	61%	50,420	\$2.82
High Strength	\$12,599	5	\$9,211.82	100%	2,909	\$4.34

3.11 Current and Proposed Sewer Rates

The current rates and recommended rate increases are shown on Table 23. Under Proposition 218, the sewer rates shown on Table 23 are the maximum rates that the City can enact each year. The City can adopt rates that are lower than those shown based upon an annual review of the sewer utility's finances to ensure that revenues are in line with expenses.

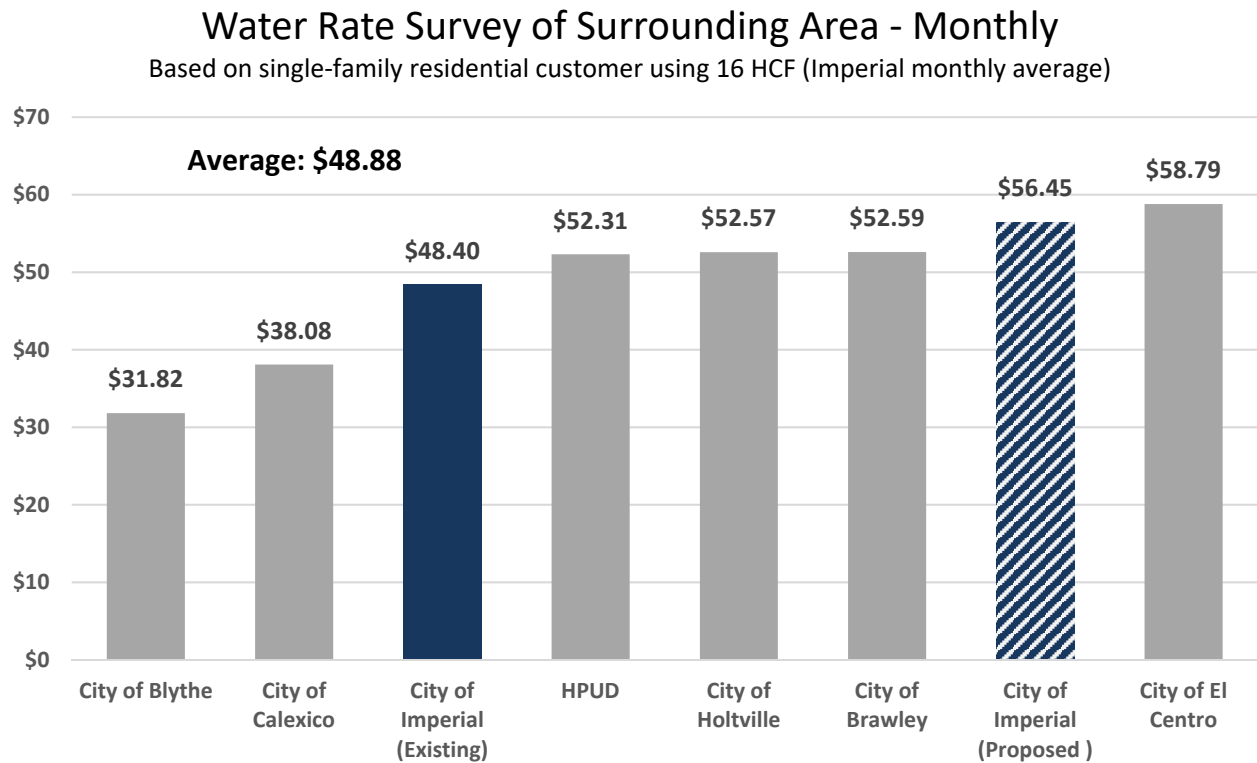
Table 23: Proposed Sewer Rate Increases

Volumetric Rates	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
<i>Single-Family Residential</i>						
Volumetric (>36 HCF)	\$0.93					
Fixed	\$48.40	\$56.45	\$60.41	\$64.64	\$67.23	\$69.92
<i>Multi-Family Residential</i>						
Volumetric (>36 HCF)	\$0.93					
Fixed (Per Unit)	\$48.40	\$48.39	\$51.78	\$55.41	\$57.63	\$59.94
<i>Commercial</i>						
Volumetric (>21 HCF)	\$2.42					
Fixed Charge	\$48.40					
Minimum Charge		\$56.45	\$60.41	\$64.64	\$67.23	\$69.92
Volumetric (All Use)						
Low Strength		\$1.57	\$1.68	\$1.80	\$1.88	\$1.96
Domestic Strength		\$2.82	\$3.02	\$3.24	\$3.37	\$3.51
High Strength		\$4.34	\$4.65	\$4.98	\$5.18	\$5.39

3.12 Regional Sewer Rate Survey

The following chart compares the sewer bills for a typical single-family home to those of other regional agencies. Rates can vary widely from agency to agency due to a variety of factors.

Figure 8: Monthly Residential Sewer Rate Survey of Regional Agencies



The City's sewer rates are projected stay near the average of the surveyed utilities after the recommended rate increases.

4 CONCLUSIONS AND RECOMMENDATIONS

This water and sewer rate study report presents a comprehensive review of the City of Imperial's water and sewer revenue requirements, cost allocations, and rate structures. The City last conducted a comprehensive cost of service review in 2009. Since then, the City has identified needed capital improvements and experienced substantial growth. These factors were considered in the rate study to fairly develop rates for customers.

4.1 Conclusions

The City practices sound financial planning that has provided for the financial health of the water and sewer enterprises. Historically, the City has gradually increased rates to keep up with inflationary cost increases and to accumulate reserves. This allows the City to avoid rate spikes when new costs are incurred. Unfortunately, the City is facing several years of unusually high capital spending due to the water and wastewater treatment plant needing major upgrades and more than inflationary increases are needed. However, the City's commitment to having financially sound utilities providing reliable, high quality water and sewer service will benefit the community many years into the future.

4.2 Recommendations

BWA recommends that the City adopt the rates shown in this report. Rates were developed as part of a collaborative process that included a workshop with the City Council and closely working with City staff. BWA also recommends the utilities charge the City for services and charge customers outside the City the same rates as those inside the City limits.

At minimum, BWA recommends that the City review and update its cost allocation every five years and/or concurrent with Master Plan Updates. Proposition 218 allows public agencies to adopt rates over a five-year planning horizon. Any further rate increases must be supported by a cost of service analysis.

APPENDIX A

Water Rate Study Tables

City of Imperial Water Rate Study 2017



September 20, 2017



BARTLE WELLS ASSOCIATES
Independent Public Finance Advisors

Table A
Imperial Water
Recommended Water Rates

Volumetric Rates	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
<i>Proposed Structure</i>						
All Demand		\$3.36	\$3.57	\$3.75	\$3.90	\$4.06
<i>Existing Structure</i>						
Tier 1 (0-30 HCF)	\$2.99					
Tier 2 (31-35 HCF)	\$3.29					
Tier 3 (36+ HCF)	\$3.84					
Fixed Rates	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
<i>Meter Size</i>	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
<i>Proposed Structure</i>						
1" or below		\$13.06	\$14.12	\$15.16	\$15.77	\$16.41
1 1/2"		16.86	21.72	26.57	27.64	28.75
2"		21.42	30.84	40.24	41.85	43.53
3"		33.59	55.18	76.75	79.82	83.02
4"		47.27	82.54	117.81	122.53	127.44
6"		\$85.29	\$158.58	\$231.88	\$241.16	\$250.81
<i>Existing Structure</i>						
All Meters	\$12.00					

Table 1
Imperial Water
Customers Data

Meter Size	Customers	Capacity Factor**	Equivalent Demand Units
1" or below***	5,329.0	1.0	5,329.0
2"	41.0	3.2	131.2
4"	57.0	10.0	570.0
6"	1.0	20.0	20.0
Total	5,428.0		6,050.2

* Customer data as of June 2017 provided by City staff

** Capacity factors based on AWWA operating capacity standards by meter size

*** Meters 1" or below reflect the varying meter sizes in single family homes

Table 2

Imperial Water

Growth Calculations

	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Metered Water Demand					
Demand (HCF)	1,017,620	1,036,028	1,054,437	1,072,845	1,091,253
Demand (AF)	2,336	2,378	2,421	2,463	2,505
Customers	5,428	5,528	5,628	5,728	5,828
Additional Customers ¹	100	100	100	100	100
Total Customers	5,528	5,628	5,728	5,828	5,928
Consumption per Customer	184	184	184	184	184
Growth²	1.84%	1.81%	1.78%	1.75%	1.72%
Raw Water Purchase Cost					
Purchase Amount (HCF)	2,177,995	2,217,394	2,256,794	2,296,193	2,335,592
Purchase Amount (AF)	5,000	5,090	5,181	5,271	5,362
\$/AF	\$20.00	\$20.60	\$21.22	\$21.85	\$22.51
Cost Escalation		3.0%	3.0%	3.0%	3.0%
Total Water Cost	\$100,000	\$104,863	\$109,928	\$115,203	\$120,695
Growth³	5.26%	4.86%	4.83%	4.80%	4.77%
Chemical Cost					
Treated AF	5,000	5,090	5,181	5,271	5,362
\$/AF	\$46.00	\$47.38	\$48.80	\$50.27	\$51.77
Cost Escalation		3.0%	3.0%	3.0%	3.0%
Total Chemical Cost	\$230,000	\$241,185	\$252,835	\$264,967	\$277,598
Growth³		4.86%	4.83%	4.80%	4.77%

¹Assumption used in City Budget

²Escalation factor used to escalate revenue (demand growth with no inflation)

³Escalation used in factor including inflation and demand growth

Table 3
Imperial Water
Projected Operating Expenses

Cost Escalation	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
General Inflation Factor	General			3.0%	3.0%	3.0%	3.0%
No Escalation	None			0.0%	0.0%	0.0%	0.0%
Linked to Calculation	Linked						
Utilities	Utilities			5.0%	5.0%	5.0%	5.0%
Benefits	Benefits			7.5%	5.0%	5.0%	5.0%
Salary	Salary			5.0%	3.5%	3.5%	3.5%

Expenses ¹	Category	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
			Estimated	Budgeted	Projected	Projected	Projected	Projected
<u>WATER OPERATIONS EXPENSES:</u>								
<u>TOTAL SALARIES & BENEFITS</u>								
SALARIES-REGULAR	Administration	Salary	\$575,000	\$781,128	\$820,184	\$848,891	\$878,602	\$909,353
OVERTIME	Administration	Salary	44,000	30,000	31,500	32,603	33,744	34,925
COURT TIME / STANDBY TIME	Administration	Salary	21,000	18,000	18,900	19,562	20,246	20,955
CERTIFICATE PAY	Administration	General	5,400	7,800	8,034	8,275	8,523	8,779
UNIFORM ALLOWANCE	Administration	General	16,000	15,000	15,450	15,914	16,391	16,883
RETIREMENT	Administration	Benefits	36,900	55,286	59,432	62,404	65,524	68,800
FICA/MC	Administration	Benefits	48,500	64,118	68,927	72,373	75,992	79,791
WORKER'S COMP	Administration	Benefits	65,000	65,000	69,875	73,369	77,037	80,889
UNEMPLOYMENT INSURANCE	Administration	Benefits	4,100	5,939	6,384	6,704	7,039	7,391
HEALTH INSURANCE	Administration	Benefits	81,000	129,570	139,288	146,252	153,565	161,243
VEHICLE ALLOWANCE	Administration	General	\$900	\$1,200	\$1,236	\$1,273	\$1,311	\$1,351
<u>TOTAL OPERATING & ADMINISTRATIVE</u>								
ADVERTISING (INCL LEGAL)	Administration	General	\$500	\$2,000	\$2,060	\$2,122	\$2,185	\$2,251
CONTRACT SERVICE	Administration	General	180,000	250,000	230,000	236,900	244,007	251,327
PROGRAMS - BACKFLOW	Administration	General	18,000	26,500	27,295	28,114	28,957	29,826
GENERAL LIABILITY	Administration	General	200,000	200,000	206,000	212,180	218,545	225,102
M & O IMPROVEMENTS	Maintenance	General	3,000	5,000	5,150	5,305	5,464	5,628
MAINTENANCE OF VEHICLES & EQUIPMENT	Maintenance	General	300,000	401,200	413,236	425,633	438,402	451,554
VEHICLE FUEL	Maintenance	General	20,000	30,000	30,900	31,827	32,782	33,765
PUBLICATION / DUES	Administration	General	75,000	67,000	69,010	71,080	73,213	75,409
RENT OF EQUIPMENT / PROPERTY	Administration	General	500	5,000	5,150	5,305	5,464	5,628
TELEPHONE	Administration	General	7,000	10,000	10,300	10,609	10,927	11,255
TESTING SERVICES	Volume Only	General	33,000	38,000	39,140	40,314	41,524	42,769
CHEMICALS	Volume Only	Linked	180,000	230,000	241,185	252,835	264,967	277,598
TRAINING / EDUCATION	Administration	General	200	9,000	9,270	9,548	9,835	10,130
TRAVEL & MEETINGS	Administration	General	4,200	5,000	5,150	5,305	5,464	5,628
UTILITIES - ELECTRIC	Utilities	Utilities	135,000	160,000	168,000	176,400	185,220	194,481
OFFICE SUPPLIES	Administration	General	8,000	10,000	10,300	10,609	10,927	11,255
CUSTODIAL SUPPLIES	Administration	General	100	2,500	2,575	2,652	2,732	2,814
BANK CHARGE	Administration	General	30,000	25,000	25,750	26,523	27,318	28,138
POSTAGE/FREIGHT	Administration	General	11,000	10,000	10,300	10,609	10,927	11,255
SAFETY/EQUIPMENT/CLOTHING	Administration	General	3,500	4,500	4,635	4,774	4,917	5,065
SMALL TOOLS	Maintenance	General	55,000	10,000	10,300	10,609	10,927	11,255
SPECIAL DEPT SUPPLIES	Maintenance	General	95,000	110,000	113,300	116,699	120,200	123,806
WATER PURCHASES	Volume Only	Growth	\$95,000	\$100,000	\$104,863	\$109,928	\$115,203	\$120,695
<u>WATER CONSERVATION EXPENSES:</u>								
<u>TOTAL SALARIES & BENEFITS</u>								
SALARIES-TEMPORARY	Conservation	Salary	\$0	\$18,000	\$18,900	\$19,562	\$20,246	\$20,955
OVERTIME	Conservation	Salary	1,500	0	0	0	0	0
FICA/MC	Conservation	Benefits	150	1,377	1,480	1,554	1,632	1,714
UNEMPLOYMENT INSURANCE	Conservation	Benefits	5	385	414	435	456	479
HEALTH INSURANCE	Conservation	Benefits	\$0	\$0	\$0	\$0	\$0	\$0

Table 3
Imperial Water
Projected Operating Expenses

Cost Escalation	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
General Inflation Factor	General			3.0%	3.0%	3.0%	3.0%
No Escalation	None			0.0%	0.0%	0.0%	0.0%
Linked to Calculation	Linked						
Utilities	Utilities			5.0%	5.0%	5.0%	5.0%
Benefits	Benefits			7.5%	5.0%	5.0%	5.0%
Salary	Salary			5.0%	3.5%	3.5%	3.5%

Expenses¹	Category	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
			<i>Estimated</i>	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
<u>Department 5033-Plant Operations</u>								
ADVERTISING (INCL LEGAL)	Conservation	General	\$0	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126
MAINTENANCE OF VEHICLES & EQUIPMENT	Conservation	General	0	750	773	796	820	844
VEHICLE FUEL	Conservation	General	0	3,500	3,605	3,713	3,825	3,939
PUBLICATION / DUES	Conservation	General	0	250	258	265	273	281
TELEPHONE	Conservation	General	0	500	515	530	546	563
TRAINING / EDUCATION	Conservation	General	0	500	515	530	546	563
TRAVEL & MEETINGS	Conservation	General	0	1,000	1,030	1,061	1,093	1,126
OFFICE SUPPLIES	Conservation	General	1,800	5,000	5,150	5,305	5,464	5,628
POSTAGE/FREIGHT	Conservation	General	400	2,000	2,060	2,122	2,185	2,251
SAFETY/EQUIPMENT/CLOTHING	Conservation	General	0	1,000	1,030	1,061	1,093	1,126
SPECIAL DEPARTMENTAL SUPPLIES	Conservation	General	\$0	\$7,500	\$7,725	\$7,957	\$8,195	\$8,441
Total Operating Expenses			\$2,355,655	\$2,926,503	\$3,027,565	\$3,139,448	\$3,255,548	\$3,376,027
<i>% Change from Previous Year</i>			<i>-6.6%</i>	<i>24.2%</i>	<i>3.5%</i>	<i>3.7%</i>	<i>3.7%</i>	<i>3.7%</i>

¹ Based on City of Imperial FY 17-18 budget

Table 4
Imperial Water
Projected Operating Revenues

Cost Escalation		Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
General Inflation Factor		General			3.0%	3.0%	3.0%	3.0%
No Escalation		None			0.0%	0.0%	0.0%	0.0%
Demand Growth		Demand			1.8%	1.8%	1.7%	1.7%

Revenue		FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
		<i>Estimated</i>	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Rate Revenue	Demand	\$4,048,625	\$4,129,000	\$4,455,914	\$4,807,193	\$5,135,674	\$5,432,746
Additional Rate Revenue^{1,2}			\$123,870	\$267,355	\$240,360	\$205,427	\$217,310
Other Revenue							
WATER CONNECTION FEES	None	\$110,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
WATER TURN ON FEE	None	95,000	75,000	75,000	75,000	75,000	75,000
WATER CONSERVATION FINE	None	3,000	1,000	1,000	1,000	1,000	1,000
INTEREST EARNED	None	6,000	4,000	4,000	4,000	4,000	4,000
INSURANCE CLAIMS	None	0	0	0	0	0	0
NOT OTHERWISE CLASSIFIED	None	2,500	2,500	2,500	2,500	2,500	2,500
OPERATING TRANSFERS IN	None	\$0	\$0	\$0	\$0	\$0	\$0
Total Other Revenue		\$216,500	\$102,500	\$102,500	\$102,500	\$102,500	\$102,500
Total Operating Revenue		\$4,265,125	\$4,355,370	\$4,825,769	\$5,150,053	\$5,443,601	\$5,752,556
<i>% Change from Previous Year</i>		<i>4.0%</i>	<i>2.1%</i>	<i>10.8%</i>	<i>6.7%</i>	<i>5.7%</i>	<i>5.7%</i>

¹Additional revenue based on recommended increase

²Additional adjusted if adopted mid fiscal year

Table 5
Imperial Water
Capital Improvement Costs

Project Description	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
CIP (Current Dollars)					
Maintenance Projects	\$600,000	\$500,000	\$500,000	\$500,000	\$500,000
Water pipeline replacements (8 & 12-inch)		210,000	210,000	210,000	210,000
Hwy 86 Crossing at Barioni Ave. (12-inch)		40,000	520,000		
Sandalwood Glen pipeline loop (12-inch)		75,000	975,000		
WTP filter expansion		180,000	2,340,000		
WTP finished water storage tank #2		150,000	1,950,000		
WTP filter to waste improvements		35,000	455,000		
WTP lining raw water storage pond #4		50,000	650,000		
Activated carbon for TTHM reduction		\$300,000	\$300,000	\$300,000	
Total CIP (Current Dollars)	\$600,000	\$1,540,000	\$7,900,000	\$1,010,000	\$710,000
CIP (Inflated Dollars)					
Total CIP (Inflated Dollars)	\$600,000	\$1,586,200	\$8,381,110	\$1,103,654	\$799,111
<i>Projected Annual Inflation Rate</i>		3.0%	3.0%	3.0%	3.0%

Table 6
Imperial Water
Existing and Proposed Debt

Description	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Existing Debt					
2005 COP	\$132,760	\$133,026	\$133,131	\$133,081	\$132,861
2012 COP	1,110,263	1,109,863	1,109,238	1,107,988	939,738
Total Current Debt Service	\$1,243,023	\$1,242,888	\$1,242,369	\$1,241,069	\$1,072,599
Proposed Borrowing					
Net Proceeds Needed			\$7,200,000		
Repayment Term (yrs)			30		
Coupon Rate			5.0%		
Month of Issue			1		
Issuance Cost			\$200,000		
Debt Service Reserve			\$515,000		
Total Debt Issue Size			\$7,915,000		
Prorated Debt Service Payment - Current Yr. Only			\$515,000		
Annual Debt Service Payment (rounded)			\$515,000		
Total Annual Water Debt Service	\$0	\$0	\$515,000	\$515,000	\$515,000

Table 7
Imperial Water
Cash Flow Projection

Item	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Reserves					
Beginning Unrestricted Balance	\$1,973,501	\$1,678,279	\$2,051,591	\$1,728,846	\$1,761,498
Revenue Escalation					
Rate Revenue Increase	6.0%	6.0%	5.0%	4.0%	4.0%
Revenues					
Rate Revenue	\$4,129,000	\$4,455,914	\$4,807,193	\$5,135,674	\$5,432,746
Additional Rate Revenue	247,740	267,355	240,360	205,427	217,310
Timing Adjustment*	-123,870				
Other Revenue	216,500	102,500	102,500	102,500	102,500
Interest on Reserves	\$4,934	\$4,196	\$5,129	\$4,322	\$4,404
Total Revenue	\$4,474,304	\$4,829,965	\$5,155,182	\$5,447,923	\$5,756,960
Expenses					
Operating Expense	\$2,926,503	\$3,027,565	\$3,139,448	\$3,255,548	\$3,376,027
Existing Debt Service	1,243,023	1,242,888	1,242,369	1,241,069	1,072,599
New Debt Service	\$0	\$0	\$515,000	\$515,000	\$515,000
Total Expenses	\$4,169,526	\$4,270,453	\$4,896,817	\$5,011,617	\$4,963,626
Net Operating Revenues	\$304,778	\$559,511	\$258,365	\$436,306	\$793,334
Capital					
Debt Revenue**			\$6,500,000	\$700,000	
Capital Expense	\$600,000	\$186,200	\$7,081,110	\$1,103,654	\$579,111
Cash Funded Capital	-\$600,000	-\$186,200	-\$581,110	-\$403,654	-\$579,111
Net Revenues	-\$295,222	\$373,311	-\$322,745	\$32,652	\$214,223
Ending Unrestricted Balance	\$1,678,279	\$2,051,591	\$1,728,846	\$1,761,498	\$1,975,720
Target Balance	\$1,463,252	\$1,513,783	\$1,569,724	\$1,627,774	\$1,688,014
Variance from Target	\$215,028	\$537,808	\$159,122	\$133,724	\$287,707
*Based on January 1 rate adoption					
**Reflects timed use of funds from financing					
Capacity Fund					
FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	
Beginning Capacity Balance	\$2,534,787	\$2,611,889	\$1,288,991	\$66,093	\$143,195
Water Capacity Fees	177,102	177,102	177,102	177,102	177,102
Contract Service	100,000	100,000	100,000	100,000	100,000
Cash Funded Capital	\$0	\$1,400,000	\$1,300,000	\$0	\$220,000
Net Capacity Income	\$77,102	-\$1,322,898	-\$1,222,898	\$77,102	-\$142,898
Ending Capacity Balance	\$2,611,889	\$1,288,991	\$66,093	\$143,195	\$297
Debt Coverage					
Ratio (Target 1.25)	1.39	1.59	1.25	1.35	1.61

Table 8
Imperial Water
Cost Allocation

Functional Allocation

Allocation Category	Amount	Customer	Capacity	Volume	Total
Maintenance	\$572,886		30%	70%	100%
Administration	\$1,857,006	15%	15%	70%	100%
Volume Only	\$385,189			100%	100%
Utilities	\$168,000	10%	10%	80%	100%
Conservation	\$44,484			100%	100%
Capital	\$642,930		20%	80%	100%
Debt	\$1,757,369		20%	80%	100%
Functional Allocation \$		\$295,351	\$947,277	\$4,185,236	\$5,427,864
Functional Allocation %		5.00%	17.00%	78.00%	100%
Revenue Requirement		\$218,837	\$744,046	\$3,413,857	\$4,376,740

Table 9
Imperial Water
2018 Water Rates

Allocation Units	Customer	Capacity	Volume
	<i>Customer</i>	<i>EDU</i>	<i>HCF</i>
Demand Allocation Units	5,428	6,050	1,017,620
Revenue Requirement	<u>\$218,837</u>	<u>\$744,046</u>	<u>\$3,413,857</u>
Charge	\$40.32	\$122.98	\$3.36

Fixed Charge Calculation	Customer Charge	Capacity Factor	Meter Charge	Annual Charge	Monthly Charge
Meter Size					
1"	\$40.32	1.0	\$122.98	\$163.30	\$13.61
1 1/2"	\$40.32	2.0	\$245.96	\$286.28	\$23.86
2"	\$40.32	3.2	\$393.54	\$433.86	\$36.15
3"	\$40.32	6.4	\$787.07	\$827.39	\$68.95
4"	\$40.32	10.0	\$1,229.80	\$1,270.12	\$105.84
6"	\$40.32	20.0	\$2,459.60	\$2,499.92	\$208.33

APPENDIX B

Sewer Rate Study Tables

City of Imperial

Wastewater Rate Study 2017



September 20, 2017



BARTLE WELLS ASSOCIATES
Independent Public Finance Advisors

Table A
Imperial Wastewater
Recommended Water Rates

Volumetric Rates	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
<i>Single-Family Residential</i>						
Volumetric (>36 HCF)	\$0.93					
Fixed	\$48.40	\$56.45	\$60.41	\$64.64	\$67.23	\$69.92
<i>Multi-Family Residential</i>						
Volumetric (>36 HCF)	\$0.93					
Fixed (Per Unit)	\$48.40	\$48.39	\$51.78	\$55.41	\$57.63	\$59.94
<i>Commercial</i>						
Volumetric (>21 HCF)	\$2.42					
Fixed Charge	\$48.40					
Minimum Charge		\$56.45	\$60.41	\$64.64	\$67.23	\$69.92
Volumetric (All Use)						
Low Strength		\$1.57	\$1.68	\$1.80	\$1.88	\$1.96
Domestic Strength		\$2.82	\$3.02	\$3.24	\$3.37	\$3.51
High Strength		\$4.34	\$4.65	\$4.98	\$5.18	\$5.39

Table 1
Imperial Wastewater
Customers Data

Residential

Rate Code	Customers	Dwelling Units
1	4,900.0	4,900.0
IS	106.0	106.0
R1	2.0	2.0
Total	5,008.0	5,008.0

Multi-Family

Rate Code	Customers	Dwelling Units
2	37	74.0
3	9	27.0
4	28	112.0
5	2	10.0
6	2	12.0
8	4.0	32.0
Total	82.0	267.0

Commercial

Rate Code	Customers	Demand (HCF)
9	1	234.8
12	2	2,216.0
14	1	1,164.9
16	3	2,750.9
18	2	2,682.0
20	7	9,325.3
40	3	9,414.5
41	1	1,382.2
C1	139.0	41,663.4
C2	29.0	11,046.1
C3	15.0	8,384.7
C9	8.0	2,389.9
G1	1.0	61.2
Total	212.0	92,715.8

* Customer data as of June 2017 provided by City staff

Table 2
Imperial Wastewater
Growth Calculations

Item	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Metered Water Demand							
Customers	4,283	4,283	4,283	4,383	4,483	4,583	4,683
Additional Customers ¹			100	100	100	100	100
Total Customers	4,283	4,283	4,383	4,483	4,583	4,683	4,783
Growth²			2.33%	2.28%	2.23%	2.18%	2.14%
Chemical Cost							
Total Customers	4,283	4,283	4,383	4,483	4,583	4,683	4,783
\$/AF	\$1.39	\$1.17	\$1.37	\$1.41	\$1.45	\$1.50	\$1.54
Cost Escalation				3.0%	3.0%	3.0%	3.0%
Total Chemical Cost	\$5,934	\$5,000	\$6,000	\$6,321	\$6,656	\$7,005	\$7,369
Growth³				5.35%	5.30%	5.25%	5.20%

¹Assumption used in City Budget

²Escelation factor used to escalate revenue (demand growth with no inflation)

³Escelation used in factor including inflation and demand growth

Table 3
Imperial Wastewater
Wastewater Flows and Loadings

Wastewater Flows and Loadings	# of Sewer EDUs ¹	Est. Mo Flow HCF Per EDU ²	Projected Water Use HCF ³	Flow Factor ⁴	Projected Wastewater Flow			Strength (mg/l) ⁹		Loadings (lbs)	
					HCF	MG ⁵	GPD ⁶	BOD ⁷	TSS ⁸	BOD	TSS
Residential											
Single Family	5,008	14.00	N/A		841,344	629.37	1,724,299	250	175	1,313,309	919,316
Multifamily	267	12.00	N/A		38,448	28.76	78,798	250	175	60,016	42,011
Total Residential	5,008				879,792	658	1,803,096			1,373,325	961,327
Nonresidential											
Low Strength		Varies	7,152	80%	5,721	4.28	11,725	130	130	4,644	4,644
Domestic Strength		Varies	82,656	80%	66,125	49.46	135,520	250	175	103,218	72,253
High Strength		Varies	2,909	80%	2,327	1.74	4,769	500	300	7,264	4,359
Total Nonresidential			92,716		74,173	55	152,014			115,126	81,255
Total					953,965	714	1,955,110			1,488,451	1,042,583

¹ "EDU" stands for equivalent dwelling unit

² Flow estimate based on average winter use

³ "HCF" stands for hundred cubic feet

⁴ Flow factor based on estimated flow returning to sewer

⁵ "MG" stands for 1,000 gallons

⁶ "GPD" stands for gallons per day

⁷ "BOD" stands for biochemical oxygen demand

⁸ "TSS" stands for total suspended solids

⁹ State Water Resource Control Board (SWRCB) Guidelines for Wastewater Agencies

Table 4
Imperial Wastewater
Projected Operating Revenues

Cost Escalation		Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
General Inflation Factor		General			2.5%	2.5%	2.5%	2.5%
No Escalation		None			0.0%	0.0%	0.0%	0.0%
Demand Growth		Demand			2.3%	2.2%	2.2%	2.1%
Interest on Reserves		Interest			1.0%	1.0%	1.0%	1.0%

Revenue		FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
		<i>Estimated</i>	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Rate Revenue	Demand	\$3,336,888	\$3,403,700	\$3,933,933	\$4,544,505	\$4,829,411	\$5,129,839
Additional Rate Revenue ^{1,2}			\$221,241	\$511,411	\$181,780	\$193,176	\$205,194
Other Revenue							
CALEMA/FEMA	None	350,000	-	0	0	0	0
INTEREST EARNED	None	9,000	4,000	4,000	4,000	4,000	4,000
NOT OTHERWISE CLASSIFIED	None	500	500	500	500	500	500
OPERATING TRANSFERS IN	None	-	-	0	0	0	0
Total Other Revenue		\$359,500	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500
Total Operating Revenue		\$3,696,388	\$3,629,441	\$4,449,845	\$4,730,785	\$5,027,088	\$5,339,533
% Change from Previous Year		2.7%	-1.8%	20.4%	6.3%	6.3%	6.2%

¹Additional revenue based on recommended increase

²Additional adjusted if adopted mid fiscal year

Table 5
Imperial Wastewater
Projected Operating Expenses

Cost Escalation	Category	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
General Inflation Factor	General				3.0%	3.0%	3.0%	3.0%	3.0%
No Escalation	None				0.0%	0.0%	0.0%	0.0%	0.0%
Linked to Calculation	Linked								
Growth	Growth				5.0%	5.0%	5.0%	5.0%	5.0%
Benefits	Benefits				7.5%	5.0%	5.0%	5.0%	5.0%
Salary	Salary				5.0%	3.5%	3.5%	3.5%	3.5%

Expenses ¹	Category	Inflation	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
			Estimated	Budgeted	Projected	Projected	Projected	Projected	Projected
<u>WATER OPERATIONS EXPENSES:</u>									
<u>TOTAL SALARIES & BENEFITS</u>									
SALARIES-REGULAR	Administration	Salary	410,000	565,255	\$593,518	\$614,291	\$635,791	\$658,044	\$681,075
OVERTIME	Administration	Salary	15,000	30,000	\$31,500	\$32,603	\$33,744	\$34,925	\$36,147
COURT TIME / STANDBY TIME	Administration	Salary	14,500	18,000	\$18,900	\$19,562	\$20,246	\$20,955	\$21,688
CERTIFICATE PAY	Administration	General	1,600	5,200	\$5,356	\$5,517	\$5,682	\$5,853	\$6,028
UNIFORM ALLOWANCE	Administration	General	11,000	13,000	\$13,390	\$13,792	\$14,205	\$14,632	\$15,071
RETIREMENT	Administration	Benefits	26,000	39,744	\$42,725	\$44,861	\$47,104	\$49,459	\$51,932
FICA/MC	Administration	Benefits	33,000	47,412	\$50,968	\$53,516	\$56,192	\$59,002	\$61,952
WORKER'S COMP	Administration	Benefits	65,000	65,000	\$69,875	\$73,369	\$77,037	\$80,889	\$84,933
UNEMPLOYMENT INSURANCE	Administration	Benefits	3,100	3,994	\$4,294	\$4,508	\$4,734	\$4,970	\$5,219
HEALTH INSURANCE	Administration	Benefits	40,000	87,150	\$93,686	\$98,371	\$103,289	\$108,454	\$113,876
VEHICLE ALLOWANCE	Administration	General	900	1,200	\$1,236	\$1,273	\$1,311	\$1,351	\$1,391
<u>TOTAL OPERATING & ADMINISTRATIVE</u>									
ADVERTISING (INCL LEGAL)	Administration	General	2,000	3,300	\$3,399	\$3,501	\$3,606	\$3,714	\$3,826
CONTRACT SERVICE	Administration	General	150,000	210,000	\$187,000	\$192,610	\$198,388	\$204,340	\$210,470
PROGRAMS - BACKFLOW	Administration	General	500	500	\$515	\$530	\$546	\$563	\$580
GENERAL LIABILITY	Administration	General	200,000	200,000	\$206,000	\$212,180	\$218,545	\$225,102	\$231,855
M & O IMPROVEMENTS	Maintenance	General	1,100	1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739
MAINTENANCE OF VEHICLES & EQUIPMENT	Maintenance	General	250,000	414,200	\$250,000	\$257,500	\$265,225	\$273,182	\$281,377
VEHICLE FUEL	Maintenance	General	15,000	30,000	\$30,900	\$31,827	\$32,782	\$33,765	\$34,778
PUBLICATION / DUES	Administration	General	20,000	40,000	\$41,200	\$42,436	\$43,709	\$45,020	\$46,371
RENT OF EQUIPMENT / PROPERTY	Administration	General	1,000	3,000	\$3,090	\$3,183	\$3,278	\$3,377	\$3,478
TELEPHONE	Administration	General	6,500	7,500	\$7,725	\$7,957	\$8,195	\$8,441	\$8,695
TESTING SERVICES	Volume Only	General	18,000	27,000	\$27,810	\$28,644	\$29,504	\$30,389	\$31,300
CHEMICALS	Volume Only	Linked	5,000	6,000	\$6,321	\$6,656	\$7,005	\$7,369	\$7,749
TRAINING / EDUCATION	Administration	General	200	5,000	\$5,150	\$5,305	\$5,464	\$5,628	\$5,796
TRAVEL & MEETINGS	Administration	General	2,000	5,000	\$5,150	\$5,305	\$5,464	\$5,628	\$5,796
UTILITIES - ELECTRIC	Utilities	General	200,000	207,000	\$213,210	\$219,606	\$226,194	\$232,980	\$239,970
UTILITIES - GAS	Administration	General	600	1,200	\$1,236	\$1,273	\$1,311	\$1,351	\$1,391
OFFICE SUPPLIES	Administration	General	8,500	8,100	\$8,343	\$8,593	\$8,851	\$9,117	\$9,390
CUSTODIAL SUPPLIES	Administration	General	100	2,500	\$2,575	\$2,652	\$2,732	\$2,814	\$2,898
BANK CHARGE	Administration	General	30,000	25,000	\$25,750	\$26,523	\$27,318	\$28,138	\$28,982
POSTAGE/FREIGHT	Administration	General	8,000	8,000	\$8,240	\$8,487	\$8,742	\$9,004	\$9,274
SAFETY/EQUIPMENT/CLOTHING	Maintenance	General	2,500	4,400	\$4,532	\$4,668	\$4,808	\$4,952	\$5,101
SMALL TOOLS	Maintenance	General	5,000	10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
SPECIAL DEPT SUPPLIES	Maintenance	General	15,000	50,000	\$51,500	\$53,045	\$54,636	\$56,275	\$57,964
Total Operating Expenses			\$1,561,100	\$2,145,155	\$2,026,938	\$2,096,342	\$2,168,207	\$2,242,623	\$2,319,686
<i>% Change from Previous Year</i>			-23.9%	37.4%	-5.5%	3.4%	3.4%	3.4%	3.4%

¹ Based on City of Imperial FY 17-18 budget

Table 6
Imperial Wastewater
Capital Improvement Costs

Project Description	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
CIP (Current Dollars)					
WWTP Upgrade	\$1,100,000	\$4,766,667	\$4,766,667	\$4,766,667	
WWTP outfall undergrounding				144,000	360,000
Gen-Ox system for Sandalwood Glen Lift Station			50,000	650,000	
Lift Station pump retrofit for de-ragging		60,000	60,000	60,000	60,000
Sewer collection system lining (CIP)		350,000	350,000	350,000	350,000
Sewer manhole rehabilitation		70,000	70,000	70,000	70,000
Maintenance Projects	\$683,000	\$600,000	\$600,000	\$600,000	\$600,000
Total CIP (Current Dollars)	\$1,783,000	\$5,846,667	\$5,896,667	\$6,640,667	\$1,440,000
CIP (Inflated Dollars)					
Total CIP (Inflated Dollars)	\$1,783,000	\$5,879,067	\$6,255,774	\$7,256,436	\$1,620,733
<i>Projected Annual Inflation Rate</i>		3.0%	3.0%	3.0%	3.0%

Table 7
Imperial Wastewater
Existing and Proposed Debt

Description	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
	<i>Budgeted</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Existing Debt					
2005 COP	\$178,160	\$174,800	\$176,360	\$177,620	\$178,570
2012 COP	808,350	809,350	808,850	808,050	814,950
Total Current Debt Service	\$986,510	\$984,150	\$985,210	\$985,670	\$993,520
Proposed Borrowing					
Net Proceeds Needed		\$14,500,000			
Repayment Term (yrs)		30			
Coupon Rate		5.0%			
Month of Issue		1			
Issuance Costs (% of Net Proceeds)					
Issuance Cost		\$200,000			
Debt Service Reserve		\$1,025,000			
Total Debt Issue Size		\$15,725,000			
Prorated Debt Service Payment - Current Yr. Only		\$1,023,000			
Annual Debt Service Payment (rounded)		\$1,023,000			
Total Annual Water Debt Service	\$0	\$1,023,000	\$1,023,000	\$1,023,000	\$1,023,000

Table 8
Imperial Wastewater
Cash Flow Projection

Item	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Reserves					
Beginning Unrestricted Balance	\$3,982,501	\$3,924,965	\$4,071,467	\$3,627,105	\$2,874,947
Revenue Escalation					
Rate Revenue Increase	13.0%	13.0%	4.0%	4.0%	4.0%
Revenues					
Rate Revenue	\$3,403,700	\$3,933,933	\$4,544,505	\$4,829,411	\$5,129,839
Additional Rate Revenue	442,481	511,411	181,780	193,176	205,194
Timing*	-221,241				
Other Revenue	359,500	4,500	4,500	4,500	4,500
Interest on Reserves	\$9,956	\$9,812	\$10,179	\$9,068	\$7,187
Total Revenue	\$3,994,397	\$4,459,657	\$4,740,963	\$5,036,155	\$5,346,720
Expenses					
Operating Expense	\$2,145,155	\$2,026,938	\$2,096,342	\$2,168,207	\$2,242,623
Existing Debt Service	986,510	984,150	985,210	985,670	993,520
New Debt Service	\$0	\$1,023,000	\$1,023,000	\$1,023,000	\$1,023,000
Total Expenses	\$3,131,665	\$4,034,088	\$4,104,552	\$4,176,877	\$4,259,143
Net Operating Revenues	\$862,732	\$425,569	\$636,411	\$859,278	\$1,087,577
Capital					
Debt Revenue**		\$4,000,000	\$5,000,000	\$5,500,000	
Capital Expense	\$1,783,000	\$4,279,067	\$6,080,774	\$7,111,436	\$1,475,733
Cash Funded Capital	-\$1,783,000	-\$279,067	-\$1,080,774	-\$1,611,436	-\$1,475,733
Net Revenues	-\$920,268	\$146,502	-\$444,362	-\$752,157	-\$388,156
Ending Unrestricted Balance	\$3,924,965	\$4,071,467	\$3,627,105	\$2,874,947	\$2,486,792
Target Balance	\$1,072,578	\$1,013,469	\$1,048,171	\$1,084,104	\$1,121,312
Variance from Target	\$2,852,387	\$3,057,998	\$2,578,934	\$1,790,844	\$1,365,480
*Based on January 1 rate adoption					
**Reflects timed use of funds from financing					
Capacity Fund					
Beginning Capacity Balance	\$2,594,466	\$1,542,052	\$89,638	\$62,224	\$64,810
Water Capacity Fees	147,586	147,586	147,586	147,586	147,586
Contract Service	1,200,000				
Improvements Other Than Buildings		1,600,000	175,000	145,000	145,000
Net Capacity Income	-\$1,052,414	-\$1,452,414	-\$27,414	\$2,586	\$2,586
Ending Capacity Balance	\$1,542,052	\$89,638	\$62,224	\$64,810	\$67,396
Debt Coverage Ratio (Target 1.25)	2.02	1.29	1.39	1.50	1.61

Table 9
Imperial Wastewater
Cost Allocation

Functional Allocation

Allocation Category	Amount	Flow	BOD	TSS	Total
Maintenance	\$348,777	60%	20%	20%	100%
Administration	\$1,429,584	60%	20%	20%	100%
Treatment	\$34,131		50%	50%	100%
Utilities	\$214,446	60%	20%	20%	100%
Capital	\$1,143,602	60%	20%	20%	100%
Debt	\$1,904,210	60%	20%	20%	100%
Functional Allocation \$		\$3,024,372	\$1,025,189	\$1,025,189	\$5,074,751
Functional Allocation %		60%	20%	20%	100.00%
Revenue Requirement		\$2,307,709	\$769,236	\$769,236	\$3,846,181

Allocation Units	Flow	BOD	TSS
Demand Units	953,965	1,488,451	1,042,583
Revenue Requirement	<u>2,307,709</u>	<u>769,236</u>	<u>769,236</u>
Unit Rate	\$2.42	\$0.52	\$0.74

Class	Flow	BOD	TSS	Requirement
Residential	841,344	1,313,309	919,316	\$3,392,281
Multi-family	38,448	60,016	42,011	\$155,022
Nonresidential				
Low	5,721	4,644	4,644	\$19,666
Medium	66,125	103,218	72,253	\$266,613
High	2,327	7,264	4,359	\$12,599

Table 10
Imperial Wastewater
Rate Calculation

Residential	Revenue Requirement	Customers	Annual Fixed	Monthly Fixed		
	\$3,392,281	5008	\$677.37	\$56.45		
	\$155,022	267	\$580.60	\$48.39		
Nonresidential	Revenue Requirement	Customers	Volumetric Revenue Requirement	Volume Over Minimum	Volume Over Minimum	Rate (HCF)
Low Strength	\$19,666	23	\$4,086.22	37%	2,610	\$1.57
Domestic Strengt	\$266,613	184	\$141,971.30	61%	50,420	\$2.82
High Strength	\$12,599	5	\$9,211.82	100%	2,909	\$4.34