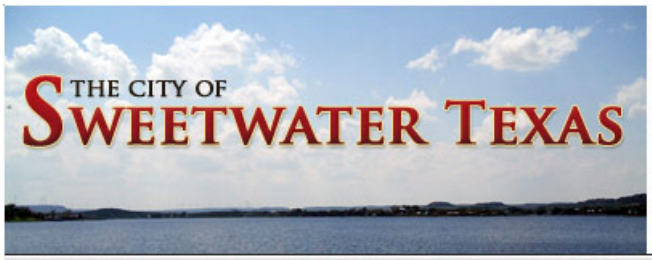
Final Report

Water and Wastewater Cost of Service and Rate Design Study

August 7, 2009



Water Resources Management, L.P.

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Section 1.0: Introduction

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Goals and Objectives

Water Resources Management, LP (WRM) is pleased to present to the City of Sweetwater (City) with the results of a cost of service and rate design study for the City's Water and Wastewater Utility. The project team had three critical goals in the performance of this task:

1) Perform a Policy Review of the City's Water and Wastewater Utility
2) Perform a Cost of Service and Rate Design Study to determine cost of service rates; and
3) Develop an implementation plan for transitioning from the City's current rate structure to recommended new rates.

WATER

Currently the City charges inside-City residential customers a monthly minimum bill for water service of $14.06 per month, which includes 2,000 gallons of consumption. In addition to the monthly base fee, residential customers are charged a volumetric rate of $6.08 per thousand gallons used.

WASTEWATER

For wastewater service, the City currently charges all residential customers a minimum bill of $19.68 per month (which includes 3,000 gallons of consumption), plus a volumetric charge of $1.89 per thousand gallons for usage above 3,000 gallons.

Background on Water Rates

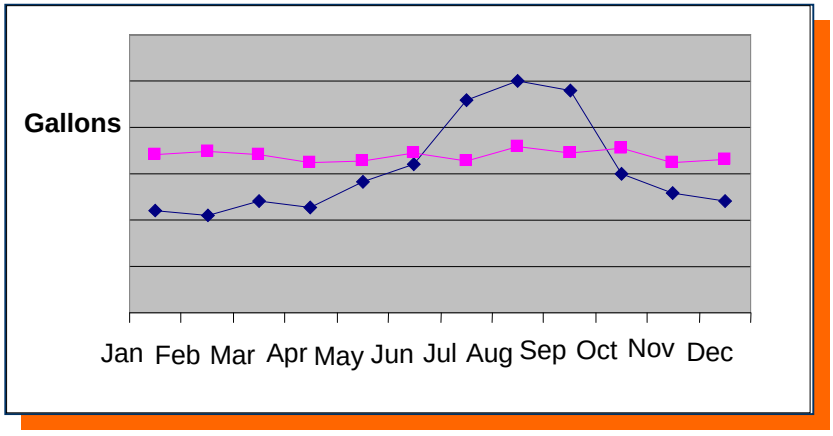
Rate Setting Theory:

The American Water Works Association (AWWA) sets forth a methodology for rate setting based on cost-of-service principles. The premise of this methodology is to require users to pay the cost incurred by the utility to provide that user with water service.

Water utility infrastructure is constructed to meet times of peak demand. Although on an annual basis, the average usage of water is at a lower level, the system must be constructed to meet times of peak usage, such as irrigation in summer months or early mornings when residents are showering, doing laundry and washing dishes. Chapter 290 of the Texas Administrative Code outlines strict guidelines that the water utility must abide by while providing retail water services. These guidelines outline specific requirements for items such as minimal system capacities, to meet these times of peak usage. Thus, the water utility must maintain the infrastructure to meet these requirements. Infrastructure capacity requirements are determined by the number of connections that the system serves, and the size of each connection as well as the usage patterns of those customers. As a result, water utilities are designed to handle times of peak usage. Therefore, even though the utility may have average usage at a certain level, it must have the capacity to serve customers at a level that is much greater, in order to meet peaking demands.

Different customer classes utilize water in different manners, and thus put different strains on the utility. Utilizing a cost-of-service methodology recommended by the AWWA, the particular utility's customer classes are examined to determine their usage pattern. Figure 1 demonstrates different usage patterns for two different types of customers.

Figure 1: Usage Patterns

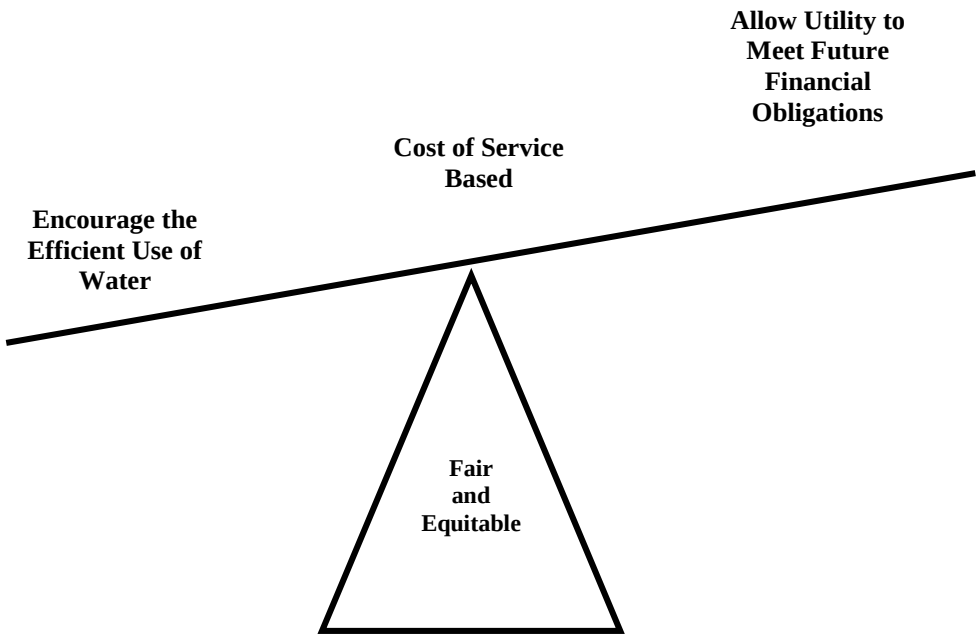


The customers represented by a blue line in Figure 1 show a dramatic peaking pattern in summer months. This peak pattern commonly occurs with customers who, for example irrigate during the summer. The customers represented by a pink line show very little deviation in their month-to-month usage. An example of a customer using water in this manner may be a commercial customer who uses water in a consistent pattern year round.

According to the AWWA, "a water utility is required to supply water in total amounts and at such rates of use desired by the customer. *A utility incurs costs in relationship to the various expenditure requirements caused by meeting those customer demands.* Since the needs for total volume of supply and peak rates of use vary among customers, the costs to the utility of providing service also vary among customers or classes of customers."[1] In other words, there are significant cost implications to the ability a utility system must have to meet peaking patterns.

The blue-line customer in Figure 1 has a higher peak to average ratio of water usage. Whereas the pink-line customer has, a lower peak to average ratio, even though the total volume used is greater for this customer class. In this example, the utility has to maintain a total system capacity to serve the maximum (or peak) usage of all customers, even though the blue-line customer uses a peak amount of water for 3-months out of the year. There is a significant cost implication to this irregular usage pattern. The rates charged to customers should reflect this cost differential.

Rate Design General Considerations:



During rate analysis, the primary consideration is to determine rates that are fair and equitable among all customers. Rates should recover the cost associated with providing service to each customer from that particular customer. Determining rates that fully achieve this goal, would involve a detailed analysis of each individual customer's consumption pattern. Since this is an impractical feat for most utility systems, rates are typically designed to fit average conditions for groups of customers having similar service requirements. Customers are grouped into customer classes that utilize water in a similar pattern (such as residential, commercial, apartments and irrigation). Historical usage patterns are then analyzed for each customer grouping and costs assigned accordingly.

The AWWA emphasizes, "departure from rates based on cost of service is generally a decision made for political, legal, or other reasons. Consideration of rates deviating from cost of service, therefore, is made by politicians, not the rate designer."[2] In addition, the AWWA states that "when a deviation from cost-related rates is made, the reason for such modification should be explicitly understood so that the responsibility for such deviation is placed

[1] American Water Works Association M1 Manual, Water Rates, Fourth Edition, 1991.
[2] AWWA M1 page 33.

on legal and policy-making factors, and the public is not misled into believing that the resulting rates are fully cost-related when they are not."[3]

It is important to understand that while the goal is to get as close as possible to cost of service based rates; every City has its own political environment that must be considered when designing and implementing a new rate structure.

[3] AWWA M1 page 32.

Rate Components:

Typically, water services are billed in a structure that consists of a minimum bill and a volumetric component. The minimum bill is intended to recover the basic costs associated with providing service to the customer, regardless of the volume of the water utilized. The bill usually recovers a high percentage of the utility's fixed costs, and is structured to ensure the utility some degree of revenue stability. Minimum bills are a fixed monthly fee. The second component of the rates is a volumetric charge. This charge is based on the amount of water utilized by the customer, and may fluctuate based on actual usage.

Minimum Bill

The AWWA provides guidelines for the determination of the minimum bill on a cost basis. Many utilities set their minimum bill based on policy initiatives. The utility may want to use the minimum charge to guarantee a certain percentage of revenue. Another strategy in setting a minimum bill involves providing lifeline rates for customers, where the customer receives a certain amount of water included in the base charge fee. This allows the customer a higher degree of control over their water bill.

There are two primary options available regarding the structure of the minimum bill:

Meter Size – As previously described, the utility is obligated under State Law to maintain system capacity based on the number and size of connections the utility serves. The reasoning is that the larger the meter a customer has, the greater the ability to place a larger demand on the system. Thus, regardless of the amount of water that a customer actually uses, the utility is still required to maintain the capacity to serve that customer based on their meter size.

Accordingly, a minimum bill based on meter size, in which the larger the meter, the higher the bill, recovers the cost the utility incurs due to the potential increased demand placed on the system by that particular customer. The AWWA provides "meter size equivalency factors," a scale of factors to be applied to the base charge for a ⅝ inch connection to determine the minimum that should be charged to larger connections.

Table 1: Meter Equivalency Ratios

Meter Size (Inches)	Equivalent Meter-&-Service Ratio
⅝	1.0
¾	1.1
1	1.4
1 ½	1.8
2	2.9
3	11.0

This is the most commonly used minimum bill structure. It is considered the most equitable means of cost recovery. In addition, it encourages customers to ensure a properly sized meter. The drawback for this methodology is that it is more complex, and sometimes difficult for customers to understand. In addition, some billing systems may be unable to bill by this method.

WRM RECOMMENDS THE CITY CONTINUE CHARGING COMMERCIAL CUSTOMERS A METER CHARGE BASED ON METER SIZE.

Equalized Minimum Bill – The alternative minimum bill structure would be an equalized minimum bill in which all customers pay the same fee, regardless of meter size. This very simple fee structure is easy to understand by the utility's customers. In addition, most billing systems are able to accommodate this fee structure. However, it may not be equitable among the utility's customers, depending on that particular utility's customer base.

Volumetric Rate

The second component of the fee structure is the volumetric rate. This fee is charged based on the actual volume of water each customer uses each month. The volumetric rates usually recover the variable costs associated with providing water to the utility's customers as well as a portion of fixed costs. Utilities also use volumetric rates as a pricing signal to encourage the efficient usage of water. Below are some volumetric rate design options to be considered.

Customer Class – As previously described, different classes of customers utilize water in different ways. Some customers use large amounts of water seasonally for irrigation, while other customers' monthly water use varies only slightly. There is a significant cost implication to different water usage patterns. Those customers who use water irregularly throughout the year, such as those who irrigate, cause the utility's water system to have a higher peaking than those customers who use a consistent amount of water monthly. Thus, it can be argued that utilities should classify customers into like groupings (such as residential, commercial, apartments and irrigation) and charge those customers different rates based on their relative usage patterns. The AWWA has outlined a methodology for determining these rates called the Base-Extra Capacity methodology. The basic premise of this methodology is to isolate usage patterns based on customer classifications and allocate costs to those customers based on peaking patterns. While this is a complex task, *it is arguably the most equitable means of charging customers for water usage.*

The drawbacks to this methodology are that it is a slightly more complex fee structure which some customers may have difficulty understanding, also, prior to implementation, the utility's billing system should be examined to ensure that it is capable of charging customers based on this structure.

Equalized Rate – An alternative to varying volumetric rates based on customer class is to charge all customers the same volumetric rate. This is appropriate for utilities that have a relatively homogenous customer base in which most customers use water in a similar pattern. This rate structure is easy for customers to understand, and usually most billing systems can accommodate equalized rates. It is recommended that the utility examine its customer base to determine if it is a homogenous group of customers, or if there are customers who use water in different patterns. If the latter is the case, then equalized rates may not be equitable to some customer classifications.

WRM RECOMMENDS THE CITY CONTINUE TO CHARGE CUSTOMERS VOLUMETRIC RATES BASED ON CUSTOMER CLASS

Water Utility Background

Water Production

The City of Sweetwater utilizes groundwater to meet the majority of its demands. However, the City is currently in the process of switching production such that the City's water demands will be met with both surface and ground water.

Total production for 2007 and 2008 is listed in the table below.

Table 2: Historical Water Production (Million Gallons)

	2006	2007	2008
Total	918.22	826.29	859.00
Average Day	2.52	2.26	2.35
Max Day	2.94	3.58	3.38

As emphasized in the previous section, there is a direct correlation between a system's production and peaking patterns and the system's costs. The City's peak to average ratio, as determined by dividing maximum daily production by the average daily production, was 1.44 for 2008.

Water Consumption

As of April 2009, the City of Sweetwater provides water services to 4,565 retail, potable water customers, plus seven wholesale connections. The City of Sweetwater meters all active potable water connections. Annual metered water consumption was approximately 722 million gallons in 2008 (Table 3).

Table 3: Total Customer Count and Consumption

	April 2009 Customer Count	2008 Total Annual Consumption (1,000 Gallons)
COM	495	102,121
CTY	82	6,965
INS	29	22,461
MUL	16	161,409
RES	3,888	256,280
RO	5	6
SPR	50	34,659
WHR	-	-
WHT	7	138,315
Total	4,572	722,216

Key:
COM – Commercial
CTY – City
INS – Institutional (schools, Hospitals, etc.)
MUL – Industrial (USG, TXU, Georgia Pacific)
RES – Residential Inside City
RO – Residential Outside City
SPR – Multi-Residential
WHR – Wholesale Raw Water
WHT – Wholesale Treated Water (Bittercreek, Roby, Trent)

Current Rates

The City of Sweetwater's current rates are outlined below.

Table 4: Current Minimum Bill

Customer Type	Min Bill
Residential Customers (Inside City)	$ 14.06
Residential Customers (Outside City)	$ 24.60
Commercial Up to 1"	$ 20.04
Commercial greater than 1" up to 2"	$ 27.75
Commercial greater than 2" up to 3"	$ 52.07
Commercial greater than 3" up to 4"	$ 80.89
Commercial greater than 4" up to 6"	$ 172.34
Commercial greater than 6" up to 8"	$ 274.33
Commercial greater than 8" up to 10"	$ 453.72

Table 5: Current Volumetric Rate

Customer	Amount
Residential Customers 2,000 Gallons to 25,000 Gallons	$ 6.08
Residential Customers Greater Than 25,000 Gallons	$ 6.58
Commercial	$ 5.74

Residential customers receive 2,000 gallons of consumption with their minimum bill. Multi-family customers are billed based on 80% of the number of total units in the complex times the residential minimum bill, plus the minimum bill based on the meter size. These customers also receive 2,000 gallons of consumption times 80% of the number of total units in the complex.

Wastewater Collection and Treatment

The City operates and maintains its wastewater collection and treatment system.

Wastewater Customers and Billing Units

As of April 2009, the City of Sweetwater had 4,129 wastewater connections. As wastewater is typically not metered, a methodology for reasonably estimating wastewater consumption based on water consumption should be utilized. WRM used a winter averaging methodology for estimating residential wastewater consumption. The assumption is that during winter months, most residential customers are not irrigating or using water for outdoor purposes, thus, their water consumption is reflective of what is sent back to the system as wastewater. Average usage for commercial classes is typically assumed equal to their water consumption; it is assumed that a commercial customer who uses water for outdoor purposes such as irrigation has a separate irrigation meter. Table 6 indicates historical wastewater consumption, by customer class for 2008.

Table 6. Historical Wastewater Consumption

	April 2009 Customer Count	2008 Total Annual Consumption (1,000 Gallons)
COM	414	90,339
CTY	11	409
INS	23	19,644
MUL	15	151,498
RES	3,616	235,879
RO	2	23
SPR	48	34,461
Total	4,129	532,253

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RES – Residential Inside City
RO – Residential Outside City
SPR – Multi-Residential

Current Wastewater Rates

The City of Sweetwater's current wastewater rates are summarized in the table below.

Table 7: Current Wastewater Rates

Type	Rate
Minimum Bill (Includes 3,000 Gallons)	$ 19.68
Residential Volumetric Rate (3,001 to 10,000 Gallons)	$ 1.89
Residential Volumetric Rate (Above 10,000 Gallons)	no charge
Commercial Volumetric Rate (Up to 50,000 Gallons)	$ 1.89
Commercial Volumetric Rate (Above 50,000 Gallons)	$ 1.40

Project Work Plan

WRM has met the goals and objectives of this study by utilizing the following work-plan:

- Determine the City's current and future revenue requirements for the five-year study period for the Water and Wastewater Utility:
- Functionalize costs to cost categories (base costs, extra-capacity costs, and customer costs) based on the function related to that particular cost category;
- Allocate those costs to customer classifications based on the Customers' historical usage patterns;
- Project customer growth and billing units into the five-year study period; and
- Design rates that fully recover the City's costs associated with providing service.

Each stage of the project work-plan is further described, and the results of the analysis are presented in Sections 2.0 through 3.0, Methodology and Findings. WRM's recommendations for the City of Sweetwater are presented in Section 4.0 and Section 5.0 presents various supporting schedules.

Section 2.0: Methodology & Findings - Water

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Retail Revenue Requirement - Water

Development of Base Year Retail Revenue Requirement

Water/Wastewater Fund

The City of Sweetwater has an Enterprise fund that consists of six departments: Billing and Collection, Source of Supply, Purification Plant, Water Distribution, Wastewater Collection, Wastewater Treatment to account for the water and wastewater utility operations.

System Expenditures

The City of Sweetwater's future revenue requirements were determined by first developing a base-year estimate of costs, one that is reflective of the normal operation of the water utility, and adjusting that data for known and measurable changes into the future. WRM used the proposed FY 2009-2010 budget as the Test Year for the revenue requirement phase of the study. The budget was compared to the audited financial statements FY 2006-07 and FY 2007-08; as well as FY 2008-09 Annual Budget. Based on this comparison, the FY 2009-10 budget appears to provide a conservative estimate of the revenues and expenses associated with the operation of the Water Utility. Departments included in the Water Utility Revenue Requirement included a proportion of Billing and Collection (allocated based on percentage of customer count), Source of Supply, Purification Plant, and Water Distribution.

Revenue Offsets

In order to isolate the revenues that need to be collected by rates from all customers, it was necessary to capture all revenue offsets and remove the corresponding dollar amount from the gross revenue requirement to determine the net revenue requirement. Revenue offsets may be defined as items such as late fees and interest income that offset the City's expense.

Base Year Revenue Requirement

The base year total revenue requirement determined by the project team for the water and wastewater utility for FY 2009-10 was $ 6,219,699. Of that, $5,364,460 is required to be recovered from retail water and wastewater sales, $699,757 is required to be recovered from wholesale sales, and $155,482 from miscellaneous sources (interest income, misc. fees and penalties, etc.).

Water/Wastewater Split

The next phase of the analysis is to isolate the revenue that should be recovered by the water utility from the revenue that should be recovered by the wastewater utility. For the base year, the retail water revenue requirement was determined to be $ 3,615,351 and the retail wastewater revenue requirement was determined to be $1,749,108.

Five-Year Revenue Requirement

Inflation

WRM accounted for inflationary influences on annual expenditures by applying a 3.3% annual inflation rate for most expenditure categories in developing the five-year revenue requirement. A 5% inflation rate was applied to electricity.

Variable Costs

Chemicals and electricity were determined using a variable cost analysis. WRM determined the actual cost per thousand gallons for the previous year, and applied that cost, plus inflation, to projected water production in the future.

Capital Improvement Funding

WRM incorporated the City's capital improvement plan into the five-year revenue requirement. Most capital improvements were assumed cash-funded through rate revenues in the year in which they are required. However, the City projects it will need to replace the membrane in the Purification Plant within the 5-year planning period. In reviewing the City's current rate structure and CIP, WRM recommends that the City make annual Interest and Sinking Fund contributions in preparation of this improvement. Annual I&S contributions in lieu of Membrane Replacement are outlined on Table 8.

Table 8. Annual I&S Contributions for Membrane Replacement

	2010	2011	2012	2013	2014
Total Contribution	$ 500,000	$ 400,000	$ 300,000	$ 200,000	$ 74,200

Revenue Offsets

In the interest of being conservative, revenue-offsets were projected to remain constant into the study period.

Five-Year Revenue Requirement

The five-year revenue requirement for the Water Utility is presented on Schedule 1, in Section 5.0, and is summarized below:

Table 9: Water Utility Five-Year Revenue Requirement

	2010	2011	2012	2013	2014
Revenue Requirement	$ 3,615,296	$ 3,599,918	$ 3,577,379	$ 3,616,515	$ 3,533,589

Cost Functionalization

Background on Cost Functionalization

The base-extra capacity method of functionalization, allocating costs to service functions and distributing costs to customer classes, is commonly used in the water utility industry. The American Water Works Association ("AWWA") and the Texas Commission on Environmental Quality ("TCEQ") have accepted this methodology. This method recognizes the differences in the cost of providing service due to variations in average rate of use and peak rate of use by a customer class. The method also recognizes the effects of system diversity on costs. Costs are generally divided into three components:

- Base Costs
- Extra-Capacity Costs
- Customer Billing Costs

Base costs fluctuate with the total amount of water taken under average operating conditions. Extra-capacity costs are those costs incurred that are above the average operating conditions and are necessary to support peaking conditions. Customer billing costs are those costs associated with serving customers, such as meter reading and billing.

Cost Functionalization Analysis

The project team thoroughly analyzed the City of Sweetwater's cost structure and functionalized the costs into appropriate categories. Cost functionalization for the five-year study period is presented below:

Table 10: Cost Functionalization

	2010	2011	2012	2013	2014
Base Costs	$2,452,729	$2,440,364	$2,423,004	$2,448,509	$2,389,137
Extra-Capacity Costs	824,540	807,868	788,580	787,636	749,026
Customer Costs	338,082	351,744	365,856	380,434	395,493
	$3,615,351	$3,599,976	$3,577,440	$3,616,579	$3,533,655

Cost Allocation to Customer Classes

Customer Cost Allocation Background

The first step in the Customer Cost Allocation analysis is to first identify appropriate customer classifications. The establishment of customer classes is important in setting equitable rates for utility service. A customer class should include only those customers who (a) are in similar location in relation to the utility (b) use the same or similar facilities of the utility, (c) receive similar service from the utility, and (d) place similar demands on the utility. The objective of the distribution of costs to customer groups is to avoid cross-subsidization (inequities between customer classes). It is important, with this objective in mind, that differences in service commitment and service requirement be given full consideration in determining customer classes.

Once appropriate customer classifications have been determined, the next step is to analyze usage patterns for each customer class. Usage analysis includes evaluating the average and peak usage for each customer class. Finally, costs are allocated to customer classes based on their relative usage patterns.

Customer Cost Allocation Analysis

Customer Classifications

WRM examined usage for six different classifications of customers and developed various customer classification scenarios, which are presented later in this section.

Cost Allocations

The final step in this phase of analysis is to allocate the Base, Extra-Capacity and Customer Costs to customer classifications, based on their usage patterns. Retail customer cost allocations determined by the project team are listed on Table 11.

Table 11: Customer Cost Allocations, Retail Customers –

	2010	2011	2012	2013	2014
COM	$ 450,868	$ 450,513	$ 449,383	$ 455,463	$ 449,662
CTY	53,450	53,202	52,847	53,408	52,423
INS	141,826	140,391	138,613	139,537	135,717
MUL	1,069,396	1,058,263	1,044,523	1,051,274	1,021,944
RES	1,750,030	1,748,414	1,743,763	1,766,911	1,726,581
RO	1,330	1,339	1,347	1,372	1,371
SPR	148,452	147,854	146,964	148,615	145,956
	$ 3,615,351	$ 3,599,976	$ 3,577,440	$ 3,616,579	$ 3,533,655

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Customer Growth and Billing Units

Customer Growth

Population projections for a City can vary depending on the assumptions used in developing the projections. In estimating future growth patterns, projections are typically based on historical information and recent growth trends. Population projections are necessary because the projected water and wastewater volumes are directly tied to the existing number of customers and the projected growth in new customer accounts.

In reviewing historical growth for the City of Sweetwater, the project team assumed that the City would not experience any growth within the five-year planning period; the projected customer count is outlined on Table 12.

Table 12: Projected Customer Count

	2010	2011	2012	2013	2014
COM	495	495	495	495	495
CTY	82	82	82	82	82
INS	29	29	29	29	29
MUL	16	16	16	16	16
RES	3,888	3,888	3,888	3,888	3,888
RO	5	5	5	5	5
SPR	50	50	50	50	50
WHR	-	-	-	-	-
WHT	7	7	7	7	7
Total	4,572	4,572	4,572	4,572	4,572

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Billing Unit Projection

Billing units, otherwise known as water consumption, are projected by analyzing historical usage for each customer classification. Billing units are projected by establishing a "normalized" average usage per connection per month and applying that usage to the projected customer count to establish a projection of consumption for each customer class.

The project team reviewed historical water consumption data for each customer class for the prior three years and compared the average usage per connection for each year. In developing projections of future demands, WRM attempts to "normalize" the data. Ideally, projections should be made for "normal" operating conditions. The projected water consumption for the five-year study period is presented below:

Table 13: Projected Water Consumption (Thousand Gallons)

	2010	2011	2012	2013	2014
COM	100,557	100,557	100,557	100,557	100,557
CTY	7,144	7,144	7,144	7,144	7,144
INS	20,028	20,028	20,028	20,028	20,028
MUL	160,125	160,125	160,125	160,125	160,125
RES	250,864	250,864	250,864	250,864	250,864
RO	210	210	210	210	210
SPR	33,501	33,501	33,501	33,501	33,501
WHR	-	-	-	-	-
WHT	131,887	131,887	131,887	131,887	131,887
Total	**704,315**	**704,315**	**704,315**	**704,315**	**704,315**

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Water Rate Design

Many different rate design options may be employed with regard to the development of water rates. The goal, however, is to provide a fair and equitable rate for all customer classes.

Minimum Bill

WRM recommends that the City charge a minimum bill to all customers based on the size of the individual meter, regardless of customer class; including multi-family customers. Currently, the City charges apartments a minimum bill of $14.06 per apartment unit times 80% (a credit for vacancies). It is WRM's experience that charging based on the number of units is administratively difficult. Billing personnel have to obtain information on the number of apartment units from the permitting, and ensure this is documented in the billing system properly. Apartment managers often complain if they have vacancies. While the City provides a credit for 80% occupancy, this is an arbitrary amount. It is WRM's recommendation that the City charge all customers based on the size of their meter. As the minimum bill is intended to recover the cost of having the meter in place to provide service to customers, billing based on the meter size is a fair and equitable means of recovering that cost; and is measurable.

Furthermore, WRM recommends that the City utilize the AWWA meter equivalency factors in determining the amount of the minimum bill for larger meters, as outlined on Table 14.This helps recover the cost the utility incurs due to the potential increased demand placed on the system by that particular customer. Residential customers having a 5/8" meter would continue to pay their current minimum bill of $14.06 per month. However, residential customers having a meter larger than 5/8" would pay a higher minimum bill as outlined on Table 14 below.

Table 14: Minimum Bill

	Current Commercial	2010	2011	2012	2013	2014	AWWA Meter Equivalent
5/8" Meter - Residential	$ 14.06	$ 14.06	$ 14.06	$ 14.06	$ 14.06	$ 14.06	
5/8" Meter	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
3/4" Meter	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
1" Meter	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
1 1/2" Meter	$ 27.75	$ 36.07	$ 36.07	$ 36.07	$ 36.07	$ 36.07	1.8
2" Meter	$ 27.75	$ 58.12	$ 58.12	$ 58.12	$ 58.12	$ 58.12	2.9
3" Meter	$ 52.07	$ 220.44	$ 220.44	$ 220.44	$ 220.44	$ 220.44	11.0
4" Meter	$ 80.89	$ 280.56	$ 280.56	$ 280.56	$ 280.56	$ 280.56	14.0
6" Meter	$ 172.34	$ 420.84	$ 420.84	$ 420.84	$ 420.84	$ 420.84	21.0

Volumetric Rate

WRM has reviewed the City's current rate structure and has determined that City's currently adopted volumetric rates generate sufficient revenues to meet projected expenditures for the five-year planning period, assuming the city does not have any significant changes in its customer base, demand, or expenditures.

Section 3.0: Methodology & Findings – Wastewater

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Revenue Requirement - Wastewater

Development of Base Year Revenue Requirement

Water/Wastewater Fund

The City of Sweetwater has an Enterprise fund that consists of six departments: Billing and Collection, Source of Supply, Purification Plant, Water Distribution, Wastewater Collection, Wastewater Treatment to account for the water and wastewater utility operations.

System Expenditures

The City of Sweetwater's future revenue requirements were determined by first developing a base-year estimate of costs, one that is reflective of the normal operation of the water utility, and adjusting that data for known and measurable changes into the future. WRM used the proposed FY 2009-2010 budget as the Test Year for the revenue requirement phase of the study. The budget was compared to the audited financial statements FY 2006-07 and FY 2007-08; and FY 2008-09 annual Budget. Based on this comparison, the FY 2009-10 budget appears to provide a conservative estimate of the revenues and expenses associated with the operation of the Wastewater Utility. Departments included in the Wastewater Utility Revenue Requirement included a proportion of Billing and Collection (allocated based on percentage of customer count), Wastewater Collection and Wastewater Treatment.

Revenue Offsets

In order to isolate the revenues that need to be collected by rates from all customers, it was necessary to capture all revenue offsets and remove the corresponding dollar amount from the gross revenue requirement to determine the net revenue requirement. Revenue offsets may be defined as items such as late fees and interest income that offset the City's expense.

Base Year Revenue Requirement

The base year total revenue requirement determined by the project team for the water and wastewater utility for FY 2009-10 was $ 6,219,699. Of that, $5,364,460 is required to be recovered from retail water and wastewater sales, $699,757 is required to be recovered from wholesale sales, and $155,482 from miscellaneous sources (interest income, misc. fees and penalties, etc).

Water/Wastewater Split

The next phase of the analysis is to isolate the revenue that should be recovered by the wastewater utility from the revenue that should be recovered by the wastewater utility. For the base year, the retail water revenue requirement was determined to be $ 3,615,351 and the retail wastewater revenue requirement was determined to be $1,749,108.

Five-Year Revenue Requirement

Inflation

WRM accounted for inflationary influences on annual expenditures by applying a 3.3% annual inflation rate for most expenditure categories in developing the five-year revenue requirement. A 5% inflation rate was applied to electricity.

Variable Costs

Chemicals and electricity were determined using a variable cost analysis. WRM determined the actual cost per thousand gallons for the previous year, and applied that cost, plus inflation, to projected water production in the future.

Capital Improvement Funding

WRM incorporated the City's capital improvement plan into the five-year revenue requirement. Most capital improvements were assumed cash-funded through rate revenues in the year in which they are required.

Revenue Offsets

In the interest of being conservative, revenue-offsets were projected to remain constant into the study period.

Five-Year Revenue Requirement

The five-year revenue requirement for the Wastewater Utility is presented on Schedule 2, in Section 7.0, and is summarized below:

Table 15: Wastewater Utility Five-Year Revenue Requirement

	2010	2011	2012	2013	2014
Revenue Requirement	$ 1,749,108	$ 1,807,350	$ 1,878,874	$ 1,926,720	$ 1,975,221

Customer Growth and Billing Units

Customer Growth

The project team worked with City staff to develop reasonable growth projections for the City's Wastewater Utility for the five-year study period. All classes were projected to remain for the five-year study period.

Table 16: Wastewater Customer Count Projection

	2010	2011	2012	2013	2014
COM	414	414	414	414	414
CTY	11	11	11	11	11
INS	23	23	23	23	23
MUL	14	14	14	14	14
RES	3,616	3,616	3,616	3,616	3,616
RO	2	2	2	2	2
SPR	48	48	48	48	48
Total	**4,128**	**4,128**	**4,128**	**4,128**	**4,128**

Key:
COM – Commercial
CTY – City
INS – Institutional (schools, Hospitals, etc.)
MUL – Industrial (USG, TXU, Georgia Pacific)
RES – Residential Inside City
RO – Residential Outside City
SPR – Multi-Residential

Billing Unit Projection

Billing unit determination for the wastewater utility was determined by reviewing the historical water usage for the prior three years. Each year had a similar average usage per connection, so the entire period was considered in formulating an accurate projection of future use. In developing projections of future demands, WRM attempts to "normalize" the data. Ideally, projections should be made for "normal" operating conditions. The projected wastewater usage for the five-year study period is presented in Table 17. Residential usage was based on a 3-month winter average to gather a more accurate estimate of indoor use, as previously described. The usage for all other classes was based on 100% of water usage.

Table 17: Projected Wastewater Usage (Gallons)

	2010	2011	2012	2013	2014
COM	83,598	83,598	83,598	83,598	83,598
CTY	494	494	494	494	494
INS	18,042	18,042	18,042	18,042	18,042
MUL	85,293	85,293	85,293	85,293	85,293
RES	210,378	210,378	210,378	210,378	210,378
RO	133	133	133	133	133
SPR	31,671	31,671	31,671	31,671	31,671
Total	429,608	429,608	429,608	429,608	429,608

Key:
COM – Commercial
CTY – City
INS – Institutional (schools, Hospitals, etc.)
MUL – Industrial (USG, TXU, Georgia Pacific)
RES – Residential Inside City
RO – Residential Outside City
SPR – Multi-Residential

Rate Design - Wastewater

The City currently charges residential customers a minimum bill of $19.68 for the first 3,000 gallons of usage and a volumetric rate of $1.89 per thousand gallons thereafter, with a maximum charge of $32.86 per month (10,000 gallons of usage). This methodology of billing is not necessarily fair or equitable as some customers may use over 10,000 gallons of usage, all of which is sent to the system as wastewater, yet they are only billed for 10,000 gallons. Furthermore, during summer months, many customers are irrigating, meaning not all of their consumption is sent to the system as wastewater; yet, they are billed for all of the consumption up to 10,000 gallons. WRM recommends billing residents based on a 3-month winter average of water usage. This method more accurately isolates actual indoor water use that is sent to the wastewater treatment plant.

Commercial customers are billed based on 100% of their water consumption. WRM recommends that the City continue to bill using this methodology. The assumption is that any commercial customer who uses water for outdoor purposes should have an irrigation meter that is not charged for wastewater. WRM's recommended wastewater rates are presented below.

WRM also recommends that the City include 2,000 gallons of consumption in the minimum bill rather than the City's current policy of including 3,000 gallons. It must be noted that the below rates, coupled with the proposed change in billing methodology for residential customers to winter-averaging, would achieve the projected revenue-requirements.

Table 18. Recommended Wastewater Rates

	2010	2011	2012	2013	2014
Minimum Bill	$ 19.68	$ 19.68	$ 19.68	$ 19.68	$ 19.68
Volumetric Rate	$ 2.34	$ 2.52	$ 2.73	$ 2.88	$ 3.03

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Recommendations

The project team would like to make the following recommendations to the City of Sweetwater:

- **Adopt the Recommended Minimum Bill for Water Utility Services as Outlined Below.** WRM recommends that the City of Sweetwater adopted the outlined minimum bill for commercial and residential customers. This policy would influence the following classifications of customers:

  - **Residential Customers –**

    Currently, all residential customers pay a minimum bill of $14.06, regardless of meter size. It must be noted that customers having a larger sized meter put a larger cost impact on the utility. Those customers having a larger meter currently are subsidized by all other customers. As a result, WRM recommends that the City implement a policy in which all customers are assessed a minimum bill based on the size of the meter. This would alleviate any potential subsidization.

    It is WRM's understanding that the City currently does not track residential meters by the size of the meter. Therefore, it is WRM's recommendation that the City assume that all currently connected meters on the system are 5/8" meters. Therefore, this policy would only affect future connections onto the system.

  - **Commercial Customers -**

    The recommended minimum bill would only influence commercial customers having a meter which is larger than 1 ½". This policy change would alleviate subsidization of larger meters by other customers.

Table 19: Recommended Water Minimum Bill

	Current Commercial	2010	2011	2012	2013	2014	AWWA Meter Equivalent
5/8" Meter - Residential	$ 14.06	$ 14.06	$ 14.06	$ 14.06	$ 14.06	$ 14.06	
5/8" Meter - Commercial	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
3/4" Meter	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
1" Meter	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	$ 20.04	
1 1/2" Meter	$ 27.75	$ 36.07	$ 36.07	$ 36.07	$ 36.07	$ 36.07	1.8
2" Meter	$ 27.75	$ 58.12	$ 58.12	$ 58.12	$ 58.12	$ 58.12	2.9
3" Meter	$ 52.07	$ 220.44	$ 220.44	$ 220.44	$ 220.44	$ 220.44	11.0
4" Meter	$ 80.89	$ 280.56	$ 280.56	$ 280.56	$ 280.56	$ 280.56	14.0
6" Meter	$ 172.34	$ 420.84	$ 420.84	$ 420.84	$ 420.84	$ 420.84	21.0

- **Adopt the Recommended Volumetric Rates for Water Utility Services as Outlined on Table 20**. WRM's analysis indicates that the City's currently adopted volumetric rates are sufficient to meet the City's projected revenue requirements throughout the five-year study period. Therefore, WRM does not recommend any changes to the City's volumetric rate at this time.

Table 20: Recommended Water Volumetric Rates

	Current	2010	2011	2012	2013	2014
Residential 2,000-25,000 Gallons	6.08	$ 6.08	$ 6.08	$ 6.08	$ 6.08	$ 6.08
Residential Above 25,000 Gallons	6.54	$ 6.54	$ 6.54	$ 6.54	$ 6.54	$ 6.54
Commercial	5.74	$ 5.74	$ 5.74	$ 5.74	$ 5.74	$ 5.74

- **Adopt the Recommended Wastewater Rates as Outlined on Table 21**. WRM's analysis indicates that the City's wastewater volumetric rate should be adjusted in order to meet projected revenue requirements. Table 21 outlines the recommended wastewater rates for the five-year study period.

Table 21: Recommended Wastewater Rates

	Current	2010	2011	2012	2013	2014
Minimum Bill	19.68	$ 19.68	$ 19.68	$ 19.68	$ 19.68	$ 19.68
Volumetric Rate	1.89	$ 2.34	$ 2.52	$ 2.73	$ 2.88	$ 3.03

- **Utilize a Winter-Averaging Methodology for Residential Wastewater Billing Determinates**. The City currently bills residential customers for wastewater usage based on their actual water consumption. However, the City "caps" the wastewater bill at 10,000 gallons of usage. As wastewater is not typically measured, a reasonable means of estimating usage must be developed; the industrial has recognized as a "best-management" practice, the utilization of winter averaging as the most accurate and "fair" means of billing for wastewater services. This policy change usually levelizes revenues throughout the year and reduces the sensitivity of revenues to weather changes. Customers utilizing less water for "indoor" purposes would see their wastewater bill decrease, while those customers using more water for indoor purposes would see their monthly bill increase; alleviating cross-subsidies among customers. The rates listed on Table 21 above takes this policy change into consideration.

- **Reduce Gallons included in the Wastewater Minimum Bill from 3,000 Gallons to 2,000 Gallons**. The City currently includes 3,000 of consumption in the minimum bill for the wastewater utility. WRM recommends reducing this consumption to 2,000 gallons. This policy change results in a lower volumetric rate as you have more consumption to spread the cost. Furthermore, as a larger proportion of the monthly bill is usage driven, this policy puts a greater degree of responsibility on the customers to utilize their water and wastewater more responsibly.

- **Continually Monitor Financial Performance**. As the City's annual revenues and expenditures are subject to numerous outside influences (customer usage, growth, weather, inflation, etc.), and this analysis made certain assumptions pertaining to each of these factors, WRM emphases the importance of continuously monitoring the financial performance of this utility. The City should compare the projections made within this analysis to the City's actual costs and sales annually. Significant deviations between projections and actual performance should be thoroughly scrutinized.

- **Update this Analysis Every 3-5 Years**. WRM has performed a five-year analysis for the City of Sweetwater. As described above, this analysis made certain assumptions. As the actual operations and economic conditions are dynamic in nature, the City must also remain dynamic in nature, responding to change. WRM recommends revisiting a formal analysis such as this every three to five years.

Section 5.0: Schedules

Schedule 1 - Water Five-Year Revenue Requirements

Schedule 2 - Wastewater Five-Year Revenue Requirements