DRAFT FINAL REPORT

City of Kalama

Water & Sewer Rate Study

October 2015

Ms. Coni McMaster
City Clerk/Treasurer
City of Kalama
P.O. Box 1007
Kalama, WA 98625

September 30, 2015

Subject: Water & Sewer Utility Rate Study – Draft Final Report

Dear Ms. McMaster:

HDR is pleased to present our draft final report on the water and sewer utility rate study conducted for the City of Kalama (City). The objectives of the utility rate study were to provide an independent review of the City's five-year financial plan, develop rate structure alternatives for the City's consideration, and develop a five-year rate schedule that is projected to result in adequate revenue to fund the operating and capital needs of the water and sewer utilities. This report outlines the approach, methodology, findings, and conclusions of the comprehensive rate study process.

Our report was developed using the City's accounting, operating, and historical customer billing records. HDR relied upon this information to develop our analyses that form our findings, conclusions, and recommendations. At the same time, this study was developed using generally accepted water and sewer rate setting principles and methodologies. The conclusions and recommendations contained within this report are intended to provide the City with cost-based and equitable water and sewer utility rates.

We appreciate the assistance provided by the City staff, management, and Council with developing this study and its recommendations, and look forward to future opportunities to provide the City with professional utility rate, finance and engineering services.

Sincerely yours,
HDR Engineering, Inc.

Joe Healy
Senior Financial Analyst

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Executive Summary

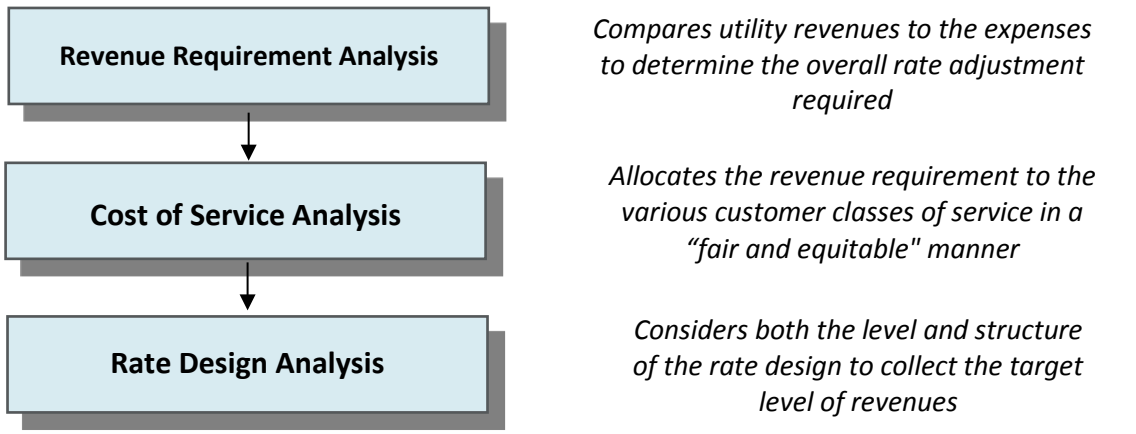
ES-1 Introduction

HDR was retained by the City of Kalama (City) to perform a water and sewer cost of service study. This study examines the adequacy of the current water and sewer rates, provides the cost basis for adjustments to rates, and seeks to adequately and equitably fund the operating and capital needs of the City's utilities. This report describes the methodology, findings, and conclusions of the water and sewer rate study process.

ES-2 Overview of the Rate Study Process

A comprehensive water and sewer rate study uses three interrelated analyses to assess the adequacy and equity of a utility's rates. These three analyses are a revenue requirement analysis, a cost of service analysis, and a rate design analysis. These analyses are illustrated below in Figure ES-1.

Figure ES – 1
Overview of the Comprehensive Rate Analyses



For the City's water and sewer rate study, HDR conducted all three analyses based on the current rate structure, operating expenses, and planned capital project expenses of each utility.

ES-3 Key Rate Study Results

Each utility was financially evaluated on a stand alone basis. By reviewing the water and sewer utilities on a stand alone basis, the need to adequately fund both operation and maintenance (O&M) expenses and capital infrastructure expenses must be balanced against the rate impacts to customers.

Based on the technical analysis undertaken as part of this study, the following findings, conclusions, and recommendations were noted.

- Revenue requirement analyses were developed for the water and sewer utilities for 2015 – 2020.
- The starting point for the revenue requirement analyses was the 2015 water & sewer utility budgets and current capital improvement plans.
- A five-year (2016 – 2020) rate transition plan was developed to adequately fund the operating and capital needs of each utility.
- A cost of service analysis was developed for each utility to determine the equitable and cost-based level of revenue to collect from each customer class of service (i.e., residential, multi-family, commercial).
- Cost-of-service differences were found among the customer classes in each utility, but no cost-of-service adjustments are recommended at this time.
- A rate transition plan was developed for both the water and sewer utilities.
  - ✓ Water rate transition plan – 4.0% for 2016 and 2.0% annual adjustments from 2017 through 2020.
  - ✓ Sewer rate transition plan – 9.5% annually from 2016 - 2018, 8.5% for 2019, and then 2.0% in 2020.
- Rates were developed for a 5-year period to provide the City with rate structures that are projected to meet future operating and capital needs, while meeting reserve fund goals.
- Based on the technical analysis, it is HDR's opinion that the proposed rate adjustments are necessary to adequately fund the financial needs of each utility and maintain prudent financial measures. These prudent financial measures include but are not limited to:
  - ✓ Adequate funding of capital improvement projects (CIP) funded from rates to maintain renewal and replacement programs of existing infrastructure.
  - ✓ Building and maintaining adequate minimum reserve levels for operating and capital expenses including emergencies and unanticipated operating and capital costs.
  - ✓ Developing a stable financial forecast to minimize future rate impacts and provide a foundation for future system improvements.
- By 2020, the City should review its financial plans and rates to determine the need for any future rate adjustments and/or a rate structure review.

ES-4 Water Rate Study

The water rate study determined the overall adequacy of the existing water rates, at current (existing) revenue levels. The water utility was evaluated on a stand alone basis. That is, no funding sources other than those generated by the water utility, such as water sales and other water-related fees and revenues, were used to fund water utility expenses.

Water Revenue Requirement Analysis

The starting point of the revenue requirement analysis was the 2015 water budget. HDR developed a projection of revenues and expenses for future years based on assumed escalation

(inflationary) factors. The study was developed for a five-year period to review future rate needs based on operating and capital needs.

The revenue requirement analysis examines the utility's operating and capital expenses, compares them to total water revenues, and determines the overall rate revenue adjustment required. Provided in Table ES-1 is a summary of the water revenue requirement analysis.

Table ES – 1
Summary of the Water Revenue Requirements ($000s)

	Budgeted	Projected				
	2015	2016	2017	2018	2019	2020
Revenues						
Rate Revenues	$1,320	$1,333	$1,350	$1,370	$1,390	$1,411
Other Revenues	6	6	6	7	8	10
Total Revenues	**$1,326**	**$1,339**	**$1,356**	**$1,376**	**$1,398**	**$1,421**
Expenses						
O&M Expenses	$726	$747	$768	$790	$813	$837
Rate Funded Capital	0	165	180	200	225	255
Taxes & Transfers	203	237	243	250	256	263
Net Debt Service	225	225	225	225	225	225
Change in Working Capital[1]	172	19	22	24	23	19
Total Expenses	**$1,326**	**$1,393**	**$1,438**	**$1,489**	**$1,542**	**$1,598**
Bal./(Def.) of Funds	$0	($53)	($82)	($112)	($144)	($177)
Bal. as % of Rev from Rates	0.0%	4.0%	6.1%	8.2%	10.4%	12.6%
Proposed Rate Adjustments	**0.0%**	**4.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**
Add'l Revenue with Rate Adj.	$0	$53	$82	$112	$144	$177
Bal./Def. After Rate Adj.	$0	$0	$0	$0	$0	$0
Avg. Residential Bill	$30.40	$31.62	$32.25	$32.89	$33.55	$34.22
Debt Service Coverage						
Before Rate Adjustment	2.34	2.31	2.28	2.27	2.25	2.24
After Rate Adjustment	2.34	2.54	2.65	2.77	2.89	3.03

Based upon the water utility revenue requirement analysis summarized in Table ES-1, HDR recommends the City annually increase the overall revenue levels by 4.0% in 2016 and 2.0% annually from 2017 through 2020. The projected revenue deficiency in 2016, before any rate adjustments, is approximately $53,000 which increases, absent any rate adjustments, to $177,000 by 2020. The proposed annual rate adjustments are primarily the result of the need to fund the annual debt service for the Todd Road water main project and the assumed inflation of O&M expenses over time. In addition, the proposed water rate adjustments will maintain debt service coverage ratios and reserve funds at a level to allow the City the flexibility to issue additional long-term debt, if necessary, to fund future capital improvements. A more detailed summary of the revenue requirement analysis is provided in Section 1.1 of this report.

Water Cost of Service Analysis

The second analytical step of the comprehensive water rate study is the cost of service analysis. A cost of service analysis determines the equitable allocation of the revenue requirement to the various customer classes of service. The City's customer classes of service reviewed were residential, multi-family, and commercial/industrial (inside and outside city limits). The objective of the cost of service analysis is different from determining the revenue requirement. A revenue requirement analysis determines the utility's overall financial needs, while the cost of service analysis determines the fair and equitable manner to collect the required level of revenue. A summary of the cost of service results is provided in Table ES-2.

Table ES – 2
Summary of the Water Cost of Service Analysis ($000s)

Class of Service	Present Rate Revenue	Allocated Costs	Plus: Return Component	Total Allocated Costs	$ Difference	% Difference
Residential - Inside	$194	$309	($106)	$203	($9)	4.5%
Residential - Outside	382	308	85	393	(11)	2.7%
Multi-Family - Inside	52	75	(28)	47	5	-9.4%
Multi-Family - Outside	11	9	3	12	(1)	5.9%
Com/Ind - Inside	97	127	(49)	78	19	-19.3%
Com/Ind - Outside	425	375	120	494	(69)	16.2%
10" Com/Ind - Outside	171	124	34	159	12	-7.1%
Total	**$1,333**	**$1,327**	**$59**	**$1,386**	**($53)**	**4.0%**

When looking at the water system and allocating its costs, it is important to keep in mind the different customer classes' consumption characteristics and facility requirements. The results of the water cost of service show that cost differences exist between serving the various customer classes of service. A simple way to assess the equity between customer classes of service is if a customer group is within +/- 5% of the overall system revenue adjustment. If so, then the customer class is reasonably presumed to be paying an equitable share of costs. In the City's case, the results show minor cost differences between the customer classes of service.

It is important to note that the City has an outside differential in place and cost of service results may be affected by it. Additional consideration should be given to the fact that this is the first cost of service study undertaken by the City. Cost of service results can vary from year to year so it is not recommended to make large adjustments based on a single study. Rather the City should conduct another cost of service review in about five years. If the results validate the cost of service difference, then the rates should be adjusted accordingly. At that time, the City could begin to adjust rates to reflect the cost of service results. Section 1.2 of this report provides a more detailed discussion of the water cost of service analysis conducted for the City's system.

Water Rate Design Analysis

The final component of the comprehensive rate study is developing a proposed rate structure. The proposed rates should be reflective of the overall revenue needs, as developed in the revenue requirement analysis, along with the results of the cost of service analysis. As part of the water rate design, two rate alternatives were developed. The first alternative maintains the current rate structure and adjusts rates "across the board" meaning all components are adjusted by the proposed percentage. The second alternative also maintains the current rate structure but a greater proportion of the rate adjustment is applied to the fixed charge. The City currently receives approximately 27% of its rate revenue from the fixed charge. This leaves the utility vulnerable to large revenue swings in the event that consumption characteristics shift. The proposed rate designs are discussed in more detail in the following sections of the report.

For residential customers, HDR proposes that the water rate structure remains the same. The current rate structure is effective and contemporary with a fixed charge per account and a volumetric component charge on a per hundred cubic foot (CCF) basis.

For outside city customers, there is a differential in place which is to help the City recoup costs for expanding the water system outside of its jurisdiction. This figure is applied to all components of the rate structure. Table ES-3 summarizes the present and proposed residential rates for 2016 through 2020 for the first alternative.

Table ES – 3
Present and Proposed Residential Water Rates (Inside City) – Alternative 1

	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
¾" or 1"	$19.00	$19.76	$20.16	$20.56	$20.97	$21.39
Volume Charge ($/CCF)						
All Consumption	$1.90	$1.98	$2.02	$2.06	$2.10	$2.14

At present rates, a typical residential customer with a ¾" meter and 6 CCF of monthly consumption will pay $30.40 per month. Under the proposed rates, the same customer would pay $31.64 in 2016 and $32.28 in 2017. This results in a $1.24 and $1.88 per month increase, respectively.

Table ES-4 shows the present and proposed rates under Alternative 2. This alternative aims to increase fixed charge sourced revenues by maintaining the current consumption charge and instead applying the entire rate adjustment to the fixed charge component.

Table ES – 4 Present and Proposed Residential Water Rates (Inside City) – Alternative 2						
	Present Rate	**Proposed**				
		2016	**2017**	**2018**	**2019**	**2020**
Fixed Charge ($/Acct./Bi-Mo)						
¾" or 1"	$19.00	$20.71	$21.64	$22.61	$23.54	$24.51
Volume Charge ($/CCF)						
All Consumption	$1.90	$1.90	$1.90	$1.90	$1.90	$1.90

The rest of the rate design alternatives for the other customer classes along with the proposed rate designs are discussed in detail in Section 1.3 of this report.

ES-5 Sewer Rate Study

Similar to the water rate study, the sewer rate study determined the overall adequacy of the existing sewer rates. No funding sources other than those generated by the sewer utility were used to fund sewer utility operating or capital expenses.

Sewer Revenue Requirement Analysis

As with the water analysis, the starting point of the sewer revenue requirement analysis was the 2015 sewer budgets. HDR developed a projection of revenues and expenses for future years based on assumed escalation (inflationary) factors. The analysis was developed for a projected five-year period to review future rate needs based on operating and capital needs.

The revenue requirement analysis sums the sewer utility's operating and capital expenses and compares it to the total sewer revenues to determine the overall rate adjustment required. A rate transition plan was then developed to meet the various financial needs of the utility. Table ES-5 provides a summary of the sewer revenue requirement and illustrates the need for rate adjustments in order to properly fund the sewer utility.

Table ES – 5
Summary of the Sewer Revenue Requirements ($000s)

	Budgeted	Projected				
	2015	2016	2017	2018	2019	2020
Revenues						
Rate Revenues	$960	$969	$979	$989	$999	$1,009
Other Revenues	3	3	3	4	4	4
Total Revenues	**$963**	**$973**	**$982**	**$992**	**$1,003**	**$1,013**
Expenses						
O&M Expenses	$561	$577	$593	$611	$629	$648
Taxes & Transfers	127	131	132	137	138	143
Rate Funded Capital	$0	0	60	70	80	100
Net Debt Service	295	350	350	485	580	529
Change in Working Capital[1]	(19)	7	42	(1)	(0)	50
Total Expenses	**$963**	**$1,065**	**$1,177**	**$1,302**	**$1,427**	**$1,470**
Bal./(Def.) of Funds	$0	($92)	($195)	($309)	($424)	($457)
Bal. as % of Rev from Rates	0.0%	9.5%	19.9%	31.3%	42.5%	45.3%
Proposed Rate Adjustments	**0.0%**	**9.5%**	**9.5%**	**9.5%**	**8.5%**	**2.0%**
Add'l Revenue with Rate Adj.	$0	$92	$195	$309	$424	$457
Bal./Def. After Rate Adj.	$0	$0	$0	$0	$0	($0)
Average Residential Sewer Bill	$74.50	$81.58	$89.33	$97.81	$106.13	$108.25
Debt Service Coverage						
Before Rate Adjustment	1.31	1.08	1.06	0.75	0.61	0.66
After Rate Adjustment	1.31	1.61	2.18	2.03	2.08	2.38

The results of the sewer revenue requirement indicated the need for 9.5% annual adjustments from 2016 through 2018 followed by adjustments of 8.5% in 2019 and 2.0% in 2020. The annual dollar deficit ranges from $92,000 in 2016 to $457,000 by 2020 cumulatively, assuming no adjustment to rates. The projected revenue deficiency is driven mainly by the need to adequately fund capital improvements and the assumed inflation associated with the projected O&M expenses. The proposed rate adjustments are designed to provide sufficient revenue to fund the annual O&M and capital needs of the sewer utility, as well as maintain strong financial metrics for debt service coverage ratios and reserve balances. Upholding these financial goals and objectives will provide the utility flexibility for planned and unplanned capital and operating expenditures. A detailed discussion of the sewer revenue requirement is provided in Section 2.1 of this report.

Sewer Cost of Service Analysis

Similar to the water cost of service analysis, the customer classes of service reviewed are residential, multi-family, and commercial. The City does not provide sewer services outside of

the City limits so there are not inside- and outside-city rates as in water. Provided below in Table ES-6 is a summary of the sewer cost of service analysis.

Table ES – 6
Summary of the Sewer Cost of Service Analysis ($000s)

Class of Service	Present Rate Revenues	Allocated Costs	$ Difference	% Difference
Residential	$580	$603	($23)	4.0%
Multi-Family	190	214	(23)	12.4%
Commercial	199	245	(46)	22.9%
Total	**$969**	**$1,061**	**($92)**	**9.5%**

The allocation of sewer costs reflects the facilities and costs allocated to each customer class and their respective benefit. The cost-of-service results indicate that there are slight cost differences between the customer classes of service. It is important to note again that there has not previously been a cost of service study completed. Cost of service study results can vary from year to year depending on numerous variables such as climate, economy, and customer consumption characteristics. For these reasons, it is not recommended to make large cost adjustments between classes, especially with only one study as the basis. Given that results have such volatility from year to year and that there have been no previous studies, HDR does not recommend any cost of service adjustments at this time. A more detailed discussion of the cost of service analysis is provided in Section 2.2 of this report.

Sewer Rate Design Analysis

The proposed rate designs for the sewer utility maintain the current sewer rate structures; only the level of the sewer rates is proposed for adjustment based on the recommendations of the study. The first rate design alternative, as in water, applies the proposed rate adjustment percentage equally to all rate components. Table ES-7 summarizes the present and proposed sewer rates for Alternative 1.

Table ES – 7
Present and Proposed Sewer Rates Alternative 1 – All Customers

	Present Rate	Proposed				
		2015	2016	2017	2018	2019
Fixed Charge	**$/Month**					
Residential	$38.50	$42.16	$46.17	$50.55	$54.85	$55.94
Multi-Family	33.50	36.68	40.16	43.98	47.72	48.67
Commercial						
3/4"	$44.50	$48.73	$53.36	$58.43	$63.40	$64.67
3/4"(Out)	44.50	48.73	53.36	58.43	63.40	64.67
1"	56.00	61.32	67.15	73.53	79.78	81.38
1.5"	127.50	139.61	152.87	167.39	181.62	185.25
2"	183.50	200.93	220.02	240.92	261.40	266.63
3"	340.00	372.30	407.67	446.40	484.34	494.03
4”	510.00	558.45	611.50	669.59	726.51	741.04
10”	1,525.00	1,669.88	1,828.52	2,002.23	2,172.42	2,215.87
Variable Charge	**$/CCF**					
All Consumption [1]	$6.00	$6.57	$7.19	$7.87	$8.54	$8.71

[1] – Residential is billed on winter water average, commercial is billed on all consumption

The second alternative, shown below in Table ES-8, is similar to that of water. The main goal in the rate design was to increase the rate revenue from the fixed charge. Currently, the City’s sewer utility collects approximately 52% of the revenue from the fixed charge. Although this figure is higher than the water utility, it still leaves the sewer utility vulnerable to fluctuations in revenues generated by the variable consumption charge. In addition, when looking at the costs that the sewer utility incurs to operate, a large percentage of them are fixed in nature, meaning they are not dependent on sewage flows.

Table ES – 8
Present and Proposed Sewer Rates Alternative 2 – All Customers

	Present Rate	Proposed				
		2015	2016	2017	2018	2019
Fixed Charge	**$/Month**					
Residential	$38.50	$44.66	$51.36	$58.71	$65.93	$67.77
Multi-Family	33.50	39.20	45.43	52.24	58.93	60.64
Commercial						
3/4"	$44.50	$64.75	$86.96	$111.31	$135.24	$141.33
3/4"(Out)	44.50	64.75	86.96	111.31	135.24	141.33
1"	56.00	81.48	109.43	140.07	170.19	177.85
1.5"	127.50	185.51	249.14	318.90	387.46	404.90
2"	183.50	266.99	358.57	458.97	557.65	582.74
3"	340.00	494.70	664.38	850.41	1,033.25	1,079.75
4”	510.00	742.05	996.57	1,275.61	1,549.87	1,619.61
10”	1,525.00	2,218.88	2,979.96	3,814.35	4,634.44	4,842.99
Variable Charge	**$/CCF**					
All Consumption [1]	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00

[1] – Residential is billed on winter water average, commercial is billed on all consumption

A more detailed discussion of the sewer rate design is provided in Section 2.3 of this report.

ES-6 Summary of the Water and Sewer Rate Study

Based on the comprehensive rate analysis completed for the City’s water and sewer utilities, it is recommended that rate revenues be adjusted to adequately fund each utility. The revenue adjustments are necessary to maintain reserves and allow the City to complete the planned capital improvement projects as well as fund O&M. Based upon the results of the cost of service analysis, no interclass adjustments (i.e. cost of service adjustments) are recommended at this time for either the water or sewer utility.

1.0 Water Rate Study

1.1 Water Revenue Requirement

This section describes the development of the revenue requirement analysis for the City's water utility. The revenue requirement analysis is the first analytical step in the comprehensive rate study process. This analysis determines the adequacy of the overall water revenue at current rate levels. From this analysis, a determination can be made as to the overall level of rate adjustment needed to provide adequate funding for both operating and capital needs.

1.1.1 Determining the Water Utility Revenue Requirement

In developing the revenue requirement, it was assumed the water utility must financially "stand on its own" and be properly funded. As a result, the revenue requirement, as developed herein, assumes the full and proper funding needed to operate and maintain the system on a financially sound and prudent basis. This includes maintaining adequate reserve levels, prudently funding annual renewal and replacement needs (rate-funded capital), and meeting other industry standard financial metrics (e.g., debt service coverage). Provided in the following subsections is a more detailed discussion of the development of the revenue requirement analysis for the City's water utility.

1.1.2 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement for the water utility was to establish a time frame for the revenue requirement analysis. For this study, the revenue requirement was developed for the budget year 2015 plus a five-year projected time period (2016 – 2020). Reviewing a multi-year time period is recommended to help in identifying any major expenses that may be on the horizon and to be able to see any trends that may be happening in customer growth, expenses, or capital needs. By anticipating future financial requirements, the City can begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates.

The second step in determining the revenue requirement was to decide on the basis of accumulating costs. For the City's revenue requirement, a "cash basis" methodology was utilized. This is the most commonly used methodology by municipal utilities to set their revenue requirements. The actual revenue requirement developed for the City was customized to follow its system of accounts (budget documents). However, the revenue requirement still contains the basic cost components of a cash basis methodology.

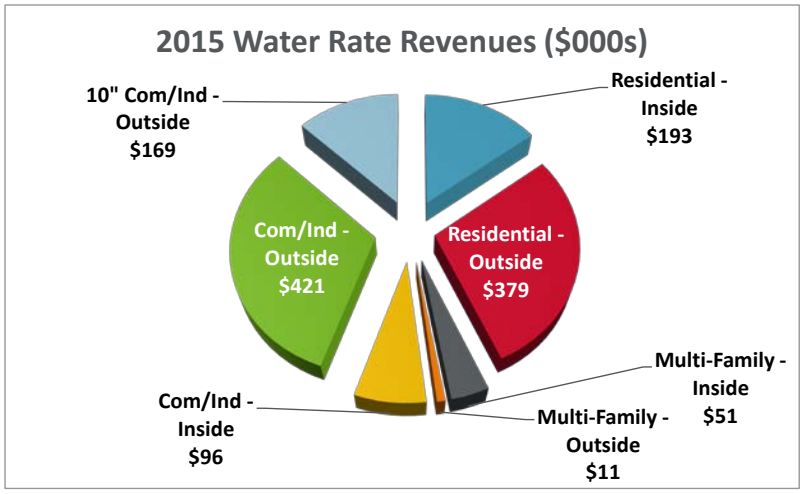
The primary financial inputs in this process were the City's historical billing records, operating budget, and current capital improvement plan. Provided below is a detailed discussion of the steps and key assumptions contained in the development of the projections of the City's water utility revenues and expenses.

1.1.3 Projection of Revenues

The City receives revenue from two primary sources, water rates and other revenue. Rate revenues are based on the current water rate structure. Other revenue includes items such as permits, deposits, and other miscellaneous revenues. The following will provide a discussion of the water revenue collected by the City.

1.1.3.1 Rate Revenue Projection

The first step in developing the revenue requirement was to develop a projection of rate revenues, at present rate levels. In general, this process involved developing projected consumption/billing units for each customer group. The billing units were then multiplied by the applicable current rates. This method of independently calculating revenues assures that the projected revenues used in the analysis tie to the projected billing units used in the cost of service and rate design analyses. The consumption for the metered customers was based on the most recent 12 month period of historical consumption records.



The City has three water customer classes of service: residential, multi-family, and commercial/industrial. Each customer class is further differentiated by those inside and outside of the city limits. A majority of the City's water rate revenue, as graphically shown above, is collected from commercial outside-city customers. At present rates, the City is projected to receive approximately $1.3 million in water rate revenues in 2015. Over the planning horizon of this study, customer growth is expected to be between 1.0% and 1.5% annually, resulting in total water rate revenues of approximately $1.4 million in 2020, before any rate adjustments.

1.1.3.2 Other Revenue

In addition to rate revenues, the City's water utility also receives a variety of other revenues. There is projected to be approximately $6,000 in other revenues in 2015. Other revenues are expected to increase slightly over time and are estimated at $10,000 in 2020.

On a combined basis, taking into account the rate revenues along with other revenues, the City's total projected revenues are expected to be approximately $1.3 million in 2015, increasing to $1.4 million in 2020.

1.1.4 Projection of Operations and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the City to operate and maintain plant in service. The costs incurred in this area are expensed during the current year and are not capitalized or depreciated. In general, operation and maintenance O&M expenses are grouped into a number of different functional categories.

To forecast O&M expenses over the planning horizon, escalation factors were developed for the basic types of expenses incurred: salaries and benefits, materials and supplies, utilities, insurance, and miscellaneous expenses. Escalation factors were projected based on recent inflationary trends and assumed to be approximately 1.0% - 6.0% per year depending on the specific cost category.

The total water operation and maintenance expenses for the City are projected to be approximately $726,000 in 2015. O&M expenses are projected to increase to approximately $837,000 in 2020 primarily as a result of assumed inflation over the time period. No additional O&M was anticipated or incorporated over the review period.

1.1.5 Capital Improvement Projects

The City has a capital improvement plan that was utilized for the rate study. The water capital improvement plan (CIP) totals approximately $2.4 million over the 2015 – 2020 time horizon. The actual capital projects completed during the time period will depend on available funding sources and priority of the projects. The funding sources for these projects include the water system improvement fund[1], developer funded, and long-term borrowing. Table 1-1 provides a summary of the CIP and funding sources for the 2015 – 2020 rate setting period.

[1] The primary sources of funds for the system improvement fund include approximately $80,000 to 90,000 in annual water hookup fees and an annual transfer of $225,000 from the Operating Fund.

Table 1 – 1
Summary of the Water Capital Improvement Plan ($000s)

	2015	2016	2017	2018	2019	2020
Capital Improvement Projects						
Upgrade Water meters (Radio Read)	$100	$0	$0	$0	$0	$0
Water/Sewer Rate Study (50%)	15	0	0	0	0	0
Update Water System Plan	40	0	0	0	0	0
Water Line Replacements	15	0	0	0	0	0
Water Plant Turbidity Sensors	10	0	0	0	0	0
WTP Software	0	40	0	0	0	0
Simmons Road Booster Station Replcmnt	0	0	0	256	0	0
Lower Green Mountain Reservoir Replacement and new Agate Mt BPS	0	0	0	0	0	604
South Port to Todd Road Water Main	0	536	0	0	0	0
Simmons Reservoir Replcmnt Project	0	0	0	0	398	0
Old Pacific Highway Water Main	0	0	306	0	0	0
Future Unidentified Projects	0	0	0	0	0	74
Total Capital Improvements	**$180**	**$576**	**$306**	**$256**	**$398**	**$678**
Less: Outside Funding Sources						
Fund 408 - Water Sys Improv. Reserve	$180	$61	$126	$55	$173	$0
Fund 410 - Public Works Equipment Reserve	0	0	0	0	0	0
Developer Funded	0	0	0	0	0	423
Assumed New Low Interest Loan	0	350	0	0	0	0
Additional Revenue Bonds	0	0	0	0	0	0
Total Funding Sources	**$180**	**$411**	**$126**	**$55**	**$173**	**$423**
Rate Funded Capital	**$0**	**$165**	**$180**	**$200**	**$225**	**$255**

There are a number of different methods which may be used to fund the capital needs. Among them are long-term debt, grants, tap fees, capital reserves, and rates. As shown in Table 1-1, the City is funding the water CIP primarily through rates and the water system improvement reserve. Hookup fees and transfers from the operating fund are the primary funding sources for the water system improvement reserve. It is also assumed that the City will issue a low interest loan to help fund the South Port to Todd Road water main project.

A general financial guideline states that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through rates. Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of plant investment needs to be replaced to maintain the existing level of infrastructure. In addition, consideration should be given to rate funding some amount greater than annual depreciation expense for renewals and replacements as costs escalate over time. The City of Kalama doesn't currently keep track of depreciation expense so this figure was

estimated based on the current asset listing. The depreciation expense for 2014 was estimated at $350,000. Over the review period, City funding of the renewal and replacement projects starts at $165,000 in 2016 and ramps up to $255,000 in 2020. The City will need to continue to increase this line item annually for adequate funding of its renewal and replacement needs.

1.1.6 Taxes & Transfers

The next component of the revenue requirement is related to taxes and transfers. Typically, this component contains any taxes payable to local, state, or federal governments, as well as any transfer payments that the utility may make. The City's water utility makes transfers to the equipment reserve, the benefit reserve, and the general fund for services such as accounting. The water utility also pays state taxes of 5.029% of rate revenue and 1.5% of miscellaneous revenues. In 2015, taxes and transfers are $203,000. With revenue growth and inflation, that figure climbs to $263,000 in 2020.

1.1.7 Projection of Debt Service

The final component of the City's revenue requirement is debt service. There are numerous advantages and disadvantages with the issuance of long term debt and it is important to weigh all of them when deciding whether to issue long-term debt. Long term debt does have prudent applications whereby it acts as a financial device to spread the costs of a larger project, such as a new source of supply, over multiple years. Doing so then allocates the costs to the customers who are benefiting from the new project. Existing and future customers are said to be paying their fair share, as opposed to cash financing when only current customers pay for the project.

Presently, the City has two outstanding debt obligations in the form of low interest loans through the Public Works Trust Fund (PWTF) program: the Cloverdale Reservoir and the Water Treatment Plant. The debt service payment for the Cloverdale Reservoir is approximately $9,000 and is retired after 2015. The WTP loan has an annual payment of $225,000 and is scheduled to retire in 2022. As part of the capital funding analysis the City provided, it is projected that a new low interest loan will need to be issued in 2016 for the South Port to Todd Road water main projects. The issuance is calculated to be for the amount of $350,000 and the estimated annual debt service is $28,000. The terms provided by the City for the low interest loan are 2.0% interest for 20 years.

During the planning period of this study, it is assumed that the City will not require any further long-term debt issuances.

1.1.8 Summary of the Water Revenue Requirement

Given the above projections of revenues and expenses, a summary of the revenue requirement for the City's water utility is developed. In developing the water revenue requirement, consideration was given to the financial planning considerations. In particular, emphasis was placed on attempting to minimize rate impacts, yet still have adequate funds to support the operational activities and capital projects throughout the projected time period. Presented in Table 1-2 is a summary of the revenue requirement.

When reviewing Table 1-2, it is important to note the annual deficiencies are cumulative prior to any assumed revenue (rate) adjustments, that is, any adjustment in the initial years will reduce the deficiency as well as the needed revenue adjustments in the following years.

Table 1 - 2
Summary of the Water Revenue Requirements ($000s)

	Budgeted	Projected				
	2015	2016	2017	2018	2019	2020
Revenues						
Rate Revenues	$1,320	$1,333	$1,350	$1,370	$1,390	$1,411
Other Revenues	6	6	6	7	8	10
Total Revenues	**$1,326**	**$1,339**	**$1,356**	**$1,376**	**$1,398**	**$1,421**
Expenses						
O&M Expenses	$726	$747	$768	$790	$813	$837
Rate Funded Capital	0	165	180	200	225	255
Taxes & Transfers	203	237	243	250	256	263
Net Debt Service	225	225	225	225	225	225
Change in Working Capital	172	19	22	24	23	19
Total Expenses	**$1,326**	**$1,393**	**$1,438**	**$1,489**	**$1,542**	**$1,598**
Bal./(Def.) of Funds	$0	($53)	($82)	($112)	($144)	($177)
Bal. as % of Rev from Rates	0.0%	4.0%	6.1%	8.2%	10.4%	12.6%
Proposed Rate Adjustments	**0.0%**	**4.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**
Add'l Revenue with Rate Adj.	$0	$53	$82	$112	$144	$177
Bal./Def. After Rate Adj.	$0	$0	$0	$0	$0	$0
Avg. Residential Bill	$30.40	$31.62	$32.25	$32.89	$33.55	$34.22
Debt Service Coverage						
Before Rate Adjustment	2.34	2.31	2.28	2.27	2.25	2.24
After Rate Adjustment	2.34	2.54	2.65	2.77	2.89	3.03

The results of the water revenue requirement analysis indicate a deficiency of funds over the rate setting period (2016 – 2020). The deficiency ranges by year and is driven by the capital funding plan, meeting financial targets, and the assumed annual escalation of operational expenses. The cumulative deficiency, prior to any assumed rate adjustments, is approximately $53,000 in 2016 increasing to $177,000 in 2020. The proposed rate adjustments are intended to provide adequate funding for annual operating, debt service, and capital needs. To meet these requirements and financial targets, rate revenue adjustments of 4.0% for 2016 and 2.0% annually thereafter are proposed at this time.

1.1.9 Debt Service Coverage Ratios

Generally, long-term debt issues contain rate covenants requiring rates to be set at an adequate level to assure meeting a specified minimum debt service coverage (DSC) ratio. DSC is a financial measure of the utility's ability to repay the debt. Typically, the DSC ratio is set at a

level such that revenues less operating expenses will be 1.30 times greater than the maximum annual debt service on the outstanding debt. However, each specific debt issue may have its own rate covenant and minimum debt ratio. Given a minimum DSC, it is prudent to plan or set rates at a level which exceeds this minimum requirement. This provides greater assurance of meeting the minimum DSC and a slight cushion for unexpected changes (e.g. reduced sales). A higher DSC ratio should also strengthen the City's ability to issue long-term debt in the future, if necessary, since the financial market would review the past financial strength and the City's ability to repay the debt. In 2015, the DSC is projected to be 2.34, which is strong. Over time, without rate adjustments the projected DSC drops to 2.24 by 2020. With the proposed rate adjustments, the DSC is projected to be 3.03 in 2020.

1.1.10 Review of Reserve Levels

Reserves are an important part of a utility's financial picture. There can be many different purposes or uses for reserves. For this review, the City's water utility has been set up with three reserve funds including the Operating Fund, Water System Improvement Reserve, and Equipment Reserve.

The water Operating Fund reserve is designated to handle cash-flow issues and mitigate annual budget revenue shortfalls (actual revenue less than projected revenue), should they occur, due to changes in the economic environment and/or one-time unanticipated expenditures. The minimum target reserve is 90 days of operating expense. In 2015, the Operating Fund had a beginning balance of $75,000. This is projected to increase over the review period and has an ending balance of $354,000 in 2020. This exceeds the target funding level of 90 days of O&M expenses.

The Water System Improvement reserve enables the City to store funds in surplus years and apply them to capital projects in those years that are more capital project intensive. This strategy will further help the utility smooth rate adjustments and avoid any large fluctuations in rates. This reserve has a beginning balance of $313,000 in 2015. Changes to the projected fund balance include a one-time inter-fund loan repayment of $275,000 in 2015. Other additions to the fund balance include approximately $80,000 to 90,000 in annual water hookup fees and an annual transfer of $225,000 from the Operating Fund. After spending from this fund on debt service and capital projects, the projected ending balance in 2020 is approximately $399,000.

The water utility's share of the Equipment Reserve fund was $32,000 at the beginning of 2015. After additions to this fund, the projected ending balance in 2020 is $214,000. Presently, the City has no plans to spend money from this fund on equipment.

In total, the City's water reserve funds are projected to increase from $420,000 at the beginning of 2015 to nearly $970,000 at the end of 2020. Half of this increase can be linked to the inter-fund loan repayment in 2015. The other half is due to a combination of projected customer and consumptive growth, consistently increasing revenue from hookup fees, and consistent transfers of funds to the Equipment Reserve for water treatment plant equipment and meter replacement.

1.1.11 Water Revenue Requirement Recommendations

Based upon the revenue requirement analysis developed herein, HDR recommends adjustments of 4.0% in 2016 and 2.0% annually from 2017 – 2020. The proposed adjustments should allow the City's water utility to fully fund projected operations and planned capital improvements, as well as continue to maintain its financially secure footing going forward.

1.2 Water Cost of Service

In the previous subsection, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the City's water utility. This section will discuss the development of the cost of service analysis.

A cost of service analysis is concerned with the equitable allocation of the total revenue requirement between the various customer classes of service (e.g., residential, commercial). The 2016 revenue requirement was utilized in the development of the cost of service analysis.

In recent years, increasing emphasis has been placed on cost of service studies by government agencies, customers, utility regulatory commissions, and other parties. This interest has been generated in part by continued inflationary trends, increased operating and capital expenditures, and concerns of equity in rates among customers. Following the generally-accepted guidelines and principles of a cost of service analysis will inherently lead to rates which are equitable, cost-based, and not viewed as arbitrary in nature.

1.2.1 Objectives of a Cost of Service Study

There are two primary objectives in conducting a cost of service study:

1. Equitably allocate the revenue requirement between the customer classes of service
2. Derive average unit costs for subsequent rate designs

The objectives of the water cost of service analysis are different from determining the revenue requirement. As noted in the previous section, a revenue requirement analysis determines the utility's overall financial needs, whereas the cost of service study determines the fair and equitable manner to collect the revenue requirement from each class of service.

The second rationale for conducting a cost of service analysis is to ensure a rate is designed such that it properly reflects the costs incurred by the utility in providing the service. For example, a water utility incurs costs related to average day, peak day, fire protection, and customer-related cost components. A water utility must build sufficient capacity to meet peak capacity needs. Therefore, the customers creating this peak requirement should pay their equitable share of the cost to meet this peak demand requirement.

1.2.2 Determining the Customer Classes of Service

The first step in a cost of service study is to determine the customer classes of service. Currently, the City has a separate rate schedule for all of its customers, with an outside city differential as well. Based on the current rate schedules and customer characteristics the classes of service used within the water cost of service study are:

- Residential (inside)
- Residential (outside)
- Multi-Family (inside)
- Multi-Family (outside)
- Commercial/Industrial (inside)
- Commercial/Industrial (outside)
- 10” Com/Ind - Outside

In determining classes of service for cost of service purposes, the objective is to group customers together into similar or homogeneous groups based upon facility requirement and/or flow characteristics.

1.2.3 General Cost of Service Procedures

In order to determine the cost to serve each customer class of service on the City’s water system, a cost of service analysis was conducted. This analysis utilizes a three-step approach to review costs. These steps are functionalization, allocation, and distribution. Provided below is a detailed discussion of the water cost of service study conducted for the City, and the specific steps taken within the analysis.

1.2.3.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (infrastructure) data by major operating functions. For example, the water utility functional components are related to source of supply, treatment, pumping, distribution, etc. Within this study, the functionalization of the cost data was largely accomplished through the water utility’s system of accounts.

1.2.3.2 Allocation of Costs

The second analytical task performed in a water cost of service study is the allocation of the costs. Allocation determines why the expenses were incurred or what type of need is being met. The water utility’s plant accounts (infrastructure) and revenue requirement (operating expenses) were reviewed and allocated using the following cost allocations:

- **Commodity-Related Costs:** Commodity-related costs are those incurred under average load (demand) conditions and are generally specified for a period of time such as a year. Chemicals or electricity used in the treatment of water are an example of a commodity-related cost, since these costs tend to vary based upon the total production of water.
- **Capacity-Related Costs:** Capacity costs are those which vary with peak demand, or the maximum rates of flow to customers. For water utilities, capacity-related costs are generally related to the sizing of facilities needed to meet a customer’s maximum water demand at any point in time. For example, portions of distribution storage reservoirs and mains (pipes) must be adequately sized for this particular type of requirement.
- **Customer-Related Costs:** Customer costs are those cost which vary with the number of customers on the system and do not vary with consumption levels. An example is postage

for mailing bills as the cost does not vary from customer to customer based on size or consumption characteristics.

- **Public Fire Protection-Related Costs:** Public fire protection costs are those costs related to providing fire protection through the water system. Fire protection costs are related to hydrants, the over-sizing of mains and distribution storage reservoirs.
- **Revenue-Related Costs:** Certain costs associated with the utility may vary with the amount of revenue received. An example is a tax based upon the amount of rate revenues received by the water utility.
- **Direct Assignments:** Sometimes, certain operating costs may be traced directly to a specific customer or class of service (e.g., bad debt expenses). In such cases, these costs are then directly assigned to that specific class of service. This assures that other classes of service will not be allocated any portion of costs or facilities from which they do not benefit.

1.2.3.3 Development of Distribution Factors

Once the classification process is complete, and the customer groups have been defined, the various allocated costs are distributed to each customer group. The water utility's allocated costs were distributed to the various customer groups using the following distribution factors.

- **Commodity Distribution Factor:** As noted earlier, commodity-related costs vary with the total flow of water. The commodity allocation factor was based upon the projected total metered consumption plus system losses for each class of service for the projected test period (2016).
- **Capacity Distribution Factor:** The capacity allocation factor was developed based on the assumed contribution to peak day use of each class. Peak day use by customer group was estimated using assumed monthly metered consumption data for each customer group. The peaking factor was defined as the relationship between peak month contribution and average month use. Peaking factors were determined for each customer class based on a review of the City's consumption data.
- **Customer Distribution Factor:** Customer costs vary with the number of customers on the system. Several different types of customer allocation factors were developed for the water utility's cost of service study. The first customer allocation factor was based on the number of accounts in each class of service. This was the primary allocation factor used in the distribution of costs. The second customer allocation factor was based on the number of customers developed within the revenue requirement by customer class of service. The final customer allocation factor was based on a weighted basis to reflect any cost differences associated with serving the various customer classes of service.
- **Public Fire Protection Distribution Factor:** The development of the allocation factor for public fire protection expenses involved an analysis of each class of service and their fire flow requirements.
- **Revenue-Related Distribution Factor:** The revenue-related allocation factor was developed from the projected rate revenues for 2016 for each customer group. These same revenues were used within the revenue requirement analysis.

1.2.4 Functionalization and Allocation of Water Plant in Service

The first step of the cost of service is the functionalization and allocation of water plant in service. In performing the functionalization of plant in service, HDR utilized the City's asset list which included the original year in service and the original cost. From this listing, the net book value for each asset was calculated. Once the plant assets were functionalized, the analysis shifted to allocation of the asset. The allocation process included reviewing each group of assets and determining which cost classifiers the assets were related to. The City's assets were allocated as: capacity-related, commodity-related, customer-related, public fire protection-related, revenue-related, or directly assigned.

1.2.4.1 Treatment

The treatment plant assets were allocated between commodity and capacity-related costs as they provide both average day and peak day services. The facilities were classified as 47% commodity related and 53% capacity related. This allocation reflects the water system's peak demand needs in relation to their average day needs.

1.2.4.2 Pump Stations

Similar to source of supply, the water system's assets related to pumping were allocated 53% to capacity and 47% to commodity to reflect the use of these assets for both average day and peak day needs.

1.2.4.3 Storage

Water storage assets were allocated 79% to capacity to handle the peak day needs and 21% to public fire protection. This allocation reflects the water system's oversizing related to meeting fire protection needs, as well as how the tanks are sized to meet peak day demands.

1.2.4.4 Transmission and Distribution

Water distribution lines (mains) are typically assumed to provide three types of costs. First, a distribution system must be in place to meet a customer's minimum requirements for water. This portion of the distribution main plant investment is considered customer related, or a function of the number of customers on the system. Next, a portion of the distribution system mains is considered a function of peak flow requirements on the system. Distribution mains must be sized to adequately meet the peak flows demanded by customers. This portion of the distribution main plant investment is considered capacity-related. Finally, distribution mains must also be sized for fire flow demands. This final portion of over-sizing for distribution plant investment is classified as public fire protection related. The allocation of the distribution mains was therefore 50% capacity, 35% actual customer, and 15% fire protection related.

1.2.5 Functionalization and Allocation of Operating Expenses

Operating expenses are generally functionalized and allocated in a manner similar to the corresponding plant account. For example, maintenance of distribution mains is typically allocated in the same manner (classification percentages) as the plant account for distribution mains. This approach to allocation of operating expenses was used for this analysis. For the City's water cost of service study, the revenue requirement for 2016 was functionalized, allocated, and distributed. As noted earlier, the City utilized a "cash basis" revenue requirement but for the cost of service, a "utility-basis" was used as it allows for a return component which

is needed given the differential for outside city customers. A more detailed review of the classification of revenue requirements can be found in the Technical Appendices.

1.2.6 Major Assumptions of the Cost of Service Study

A number of key assumptions were used within the City's water cost of service study. Below is a brief discussion of the major assumptions used.

- The test period used for the cost of service analysis was 2016. The revenue and expense data was previously developed within the revenue requirement analysis.
- A "utility basis" approach was utilized which conforms to generally accepted water cost of service approaches and methodologies.
- The water system's infrastructure costs were based on the book value of the existing system.
- The allocation of plant in service was developed based upon generally accepted cost allocation techniques.
- Metered consumption data used within this study was provided for each class of service from the City's historical usage information.
- Capacity allocation factors were based on a review of the consumption data for each customer class of service, along with certain estimates of the relationship by class of service.

1.2.7 Summary of the Cost of Service Results

In summary, the cost of service analysis began by functionalizing the water plant asset records and then the 2016 water revenue requirement. The functionalized plant and expense accounts were then allocated into their various cost components. The individual allocation totals were then distributed to the various customer groups based upon the appropriate distribution factors. The distributed expenses for each customer group were then aggregated to determine each customer group's overall revenue responsibility. A summary of the detailed cost responsibility developed for each class of service is shown in Table 1-3.

Table 1 – 3
Summary of the Water Cost of Service Analysis ($000s)

Class of Service	Present Rate Revenue	Allocated Costs	Plus: Return Component	Total Allocated Costs	$ Difference	% Difference
Residential - Inside	$194	$309	($106)	$203	($9)	4.5%
Residential - Outside	382	308	85	393	(11)	2.7%
Multi-Family - Inside	52	75	(28)	47	5	-9.4%
Multi-Family - Outside	11	9	3	12	(1)	5.9%
Com/Ind - Inside	97	127	(49)	78	19	-19.3%
Com/Ind - Outside	425	375	120	494	(69)	16.2%
10" Com/Ind - Outside	171	124	34	159	12	-7.1%
Total	**$1,333**	**$1,327**	**$59**	**$1,386**	**($53)**	**4.0%**

The distribution of costs reflects the facilities and costs distributed to each customer class based on their respective benefit. A simple rule for assessing the cost of service is if a class is within +/- 5% of the overall system wide adjustment, then the class is presumed to be paying its "fair share". The water cost of service results indicate that minor costs differences exist between customer classes.

1.2.8 Consultant's Conclusions and Recommendations

As noted in Table 1-3, minor cost differences exist between the various classes of service. At this time, it is not recommended that any interclass cost of service adjustments be made which would change the customer classes' revenue target. This is due to the fact that this is the first cost of service analysis that the City has undertaken. It is important to note that cost of service results can change over time as customer consumption patterns and facility requirements change as a result of rate adjustments, economic factors, or other influences on water consumption. The results can even vary substantially from year to year. For this reason, it is recommended that this study be used as an initial test and a subsequent cost of service analysis be completed in the future. The results should be compared and if the studies show similar results, the City may need to make interclass adjustments to reflect the cost of service results.

1.2.9 Summary

This section of the report has provided a summary of the water cost of service developed for the City. This analysis was prepared using generally accepted cost of service techniques. The following section of the report will provide a summary of the present and proposed rates for the City's water utility.

1.3 Water Rate Design

The final step of the comprehensive rate study process is the design of water rates to collect the desired levels of revenues, based upon the results of the revenue requirement and cost of service analyses. In reviewing the rate designs, consideration is given to the level of the rates and the structure of the rates. The level of the rates refers to the amount of revenue that needs to be collected (i.e., $1,000,000) while the structure of the rates refers to how the customers are charged to collect the target revenue levels.

1.3.1 Rate Design Goals and Objectives

Prudent rate administration dictates that several criteria must be considered when setting utility rates. Some of these rate design goals are listed below:

- Rates which are easy to understand from the customer's perspective
- Rates which are easy for the utility to administer
- Consideration of the customer's ability to pay
- Continuity, over time, of the rate making philosophy
- Policy considerations (encourage conservation, economic development, etc.)
- Provide revenue stability from month to month and year to year
- Promote efficient allocation of the resource

- Equitable and non-discriminatory (cost-based)

Many contemporary rate economists and regulatory agencies feel the last consideration, cost-based rates, should be of paramount importance and provide the primary guidance to utilities on rate structure and policy. HDR agrees that equitable and non-discriminatory rates are paramount to providing customers with a proper price signal as to what their consumption is costing. This goal may be approached through rate level and structure.

When developing the proposed rate designs, all the above listed criteria were taken into consideration. However, it should be noted that it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration the customer's ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between the goals and objectives.

1.3.2 Review of the Overall Rate Adjustments

The results of the revenue requirement indicated the need to adjust rates over the next five years. As a result, the priority for the City was to implement rates that meet the overall funding needs for operating and capital over the review period. As noted in the cost of service analysis, minor cost differences exist between customer classes but with all the considerations taken into account, the revenue targets for each class have not been adjusted. Based on the discussion with City staff, water rates have been developed for the five-year period of 2016 to 2020 based on the rate transition plan.

1.3.3 Rate Alternatives

After the revenue requirement and cost of service analyses determined the magnitude and distribution of revenue needed to fund the water utility, rate design alternatives were developed for review by City staff and management. HDR developed rates around two alternatives:

- **Alternative 1:** Current rate structure with across-the-board rate adjustments
- **Alternative 2:** Current rate structure with increased fixed charges

Each alternative rate structure had certain advantages and disadvantages, along with different bill (dollar) impacts at varying consumption levels.

1.3.4 Present and Proposed Water Rates

In developing the proposed water rate designs, and as noted previously, the City's existing rate structure was examined and analyzed. Based on the proposed rate transition plan, and the alternative rate structure, proposed rates were developed for 2016 – 2020 for each class of service. As noted, the proposed rate structure will be the same for all customer classes of service. The City also has in place an outside City differential which is used to earn a return on investment for providing service outside of its jurisdiction. For residential customers, the outside city differential is 85%; for commercial it's 50%. The City also has a program for low income residents. A discount of $5.75/month for the fixed charge and $0.20/CCF for the volumetric charge is given after the resident has been approved.

The City's current rate structure is contemporary, effective at collecting revenues, and successful at achieving the goals of the City. For these reasons, it was not recommended to change the rate structure at this time.

1.3.4.1 Present and Proposed Residential Rates

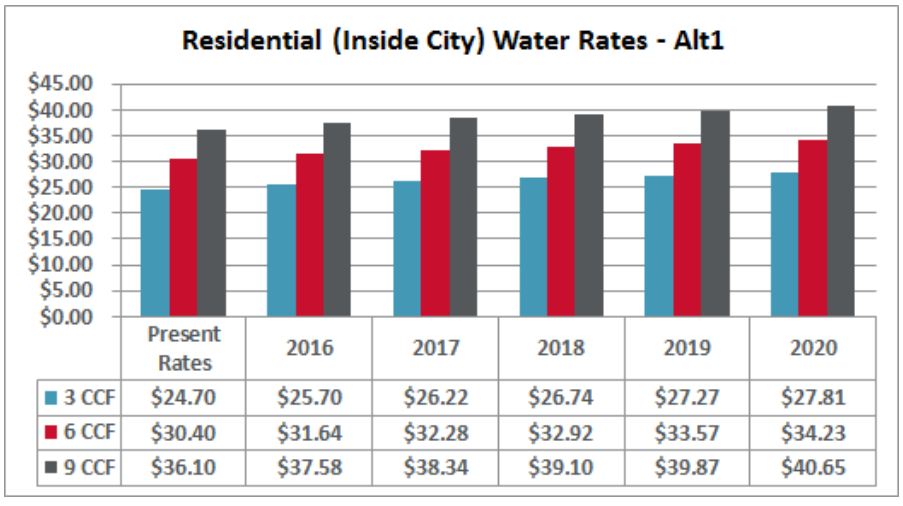
The present (current) residential rate structure includes a bi-monthly fixed charge which is charged on a per account basis as well as a uniform consumption charge on a per CCF basis.

In developing the proposed residential rates, the basic elements of the current rate structure were maintained. Additionally, the outside city differentials were not adjusted. Table 1-4 provides a summary of the present and proposed rates for residential customers.

Table 1 – 4
Present and Proposed Residential Water Rates – Alternative 1

	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Inside City - ¾" or 1"	$19.00	$19.76	$20.16	$20.56	$20.97	$21.39
Outside City – ¾" or 1"	$35.15	$36.56	$37.30	$38.04	$38.79	$39.57
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.98	$2.02	$2.06	$2.10	$2.14
Outside City - All Consumption	3.52	3.66	3.74	3.81	3.89	3.96

At present rates, a typical residential customer which uses 6 CCF of monthly water consumption would pay $30.40. Under the proposed rates, the same customer would pay $31.64 in 2016 and $32.28 in 2017. This results in a $1.24 and $1.88 per month increase, respectively. Bill comparisons are included within the technical appendices to show the range of impacts to customers based on various consumption levels.

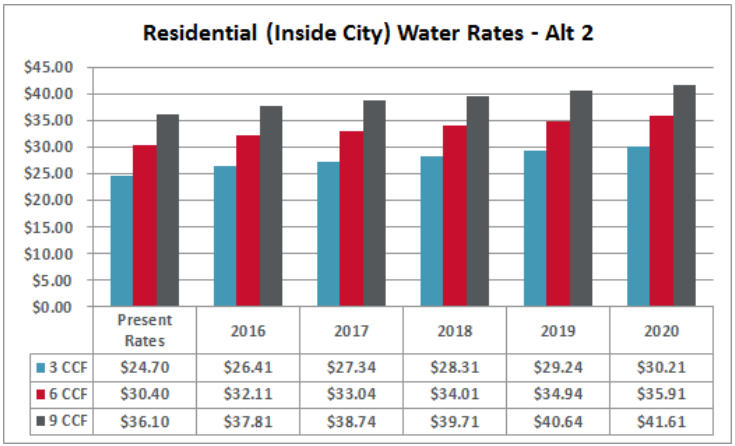


The second alternative, as previously mentioned maintains the current rate structure. Also unchanged are the rate adjustments from the rate transition plan. Unlike the first alternative, however, which applies the rate adjustment to all the components of the rate design, the second alternative only increases the fixed charge component. This will increase the fixed revenue for the water utility and improve

revenue stability. Table 1-5 provides a summary of the inside and outside city rates for residential customers under Alternative 2.

Table 1 – 5
Present and Proposed Residential Water Rates – Alternative 2

	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Inside City - ¾" or 1"	$19.00	$20.71	$21.64	$22.61	$23.54	$24.51
Outside City – ¾" or 1"	$35.15	$38.31	$40.03	$41.83	$43.55	$45.34
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.90	$1.90	$1.90	$1.90	$1.90
Outside City - All Consumption	3.52	3.52	3.52	3.52	3.52	3.52



Under the proposed Alternative 2 rates, a typical residential customer with 6 CCF of monthly consumption would pay $32.11 in 2016 and $33.04 in 2017. This results in a $1.71 and $2.64 per month increase, respectively, over the same bill at present rates. Bill comparisons are included within the technical appendices to show the range of impacts to customers based on various consumption levels.

1.3.4.2 Present and Proposed Multi-Family Rates

The present multi-family rate structure includes a monthly fixed charge which is charged on a per unit basis. The consumption charge is a uniform rate charged on a per CCF basis. The proposed multi-family rate structure is the same as the proposed residential rate structure. The proposed rates maintain the current fixed and variable charges. Table 1-6 is a summary of the present and proposed rates for the multi-family customers.

Table 1 – 6 Present and Proposed Multi-Family Water Rates – Alternative 1						
	Present Rate	**Proposed**				
		2016	**2017**	**2018**	**2019**	**2020**
Fixed Charge ($/Acct./Bi-Mo)						
Inside City - ¾"	$30.00	$31.20	$31.82	$32.46	$33.11	$33.77
Inside City – 1"	50.00	52.00	53.04	54.10	55.18	56.28
Inside City – 2"	160.00	166.40	169.73	173.12	176.58	180.11
Outside City – ¾"	$55.50	$57.72	$58.87	$60.05	$61.25	$62.47
Outside City – 1"	92.50	96.20	98.12	100.09	102.08	104.12
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.98	$2.02	$2.06	$2.10	$2.14
Outside City - All Consumption	3.52	3.66	3.74	3.81	3.89	3.96

Again, there is no significant change to the multi-family rate structure. The proposed rate adjustments were simply applied across the board to all rate components in Alternative 1. Bill impacts will vary depending on the specific customer account consumption.

Alternative 2, summarized below in Table 1-7, utilizes the same overall rate revenue adjustments as Alternative 1. However, the rate adjustment is only applied to the fixed charge. This is done in order to increase fixed revenues and provide greater revenue stability for the water utility.

Table 1 – 7 Present and Proposed Multi-Family Water Rates – Alternative 2						
	Present Rate	**Proposed**				
		2016	**2017**	**2018**	**2019**	**2020**
Fixed Charge ($/Acct./Bi-Mo)						
Inside City - ¾"	$30.00	$34.20	$36.42	$38.79	$41.12	$43.46
Inside City – 1"	50.00	57.00	60.71	64.66	68.54	72.45
Inside City – 2"	160.00	182.40	194.26	206.89	219.30	231.80
Outside City – ¾"	$55.50	$63.27	$67.38	$71.76	$76.07	$80.40
Outside City – 1"	92.50	105.45	112.31	119.62	126.80	134.03
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.90	$1.90	$1.90	$1.90	$1.90
Outside City - All Consumption	3.52	3.52	3.52	3.52	3.52	3.52

1.3.4.3 Commercial/Industrial Water Rate Design

Currently, commercial/industrial customers are charged in the same manner as residential and multi-family with a fixed monthly charge and uniform rate consumption charge. There is also an outside city differential in place for the City, but for commercial it is 50%. The proposed rate structure maintains the same components as the current rate structure. For Alternative 1, all the rate structure components for commercial/industrial customers have been adjusted according to the rate transition plan. Table 1-8 provides the present and proposed non-residential rates.

Table 1 – 8
Present and Proposed Commercial/Industrial Water Rates – Alternative 1

	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Inside City						
3/4"	$11.50	$11.96	$12.20	$12.44	$12.69	$12.94
1"	14.50	15.08	15.38	15.69	16.00	16.32
1.5"	68.00	70.72	72.13	73.57	75.04	76.54
2"	115.00	119.60	121.99	124.43	126.92	129.46
3"	175.00	182.00	185.64	189.35	193.14	197.00
4"	235.00	244.40	249.29	254.28	259.37	264.56
Outside City						
3/4"	$17.25	$17.94	$18.30	$18.66	$19.04	$19.41
1"	21.75	22.62	23.07	23.54	24.00	24.48
1.5"	102.00	106.08	108.20	110.36	112.56	114.81
2"	172.50	179.40	182.99	186.65	190.38	194.19
3"	262.50	273.00	278.46	284.02	289.71	295.50
4"	352.50	366.60	373.94	381.42	389.06	396.84
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.98	$2.02	$2.06	$2.10	$2.14
Outside City - All Consumption	2.85	2.97	3.03	3.09	3.15	3.21

The second alternative for commercial/industrial customers uses the same basic rate structure as Alternative 1. The difference is that the proposed rate revenue adjustment is applied only to the meter charge and the volumetric component remains unchanged. This is done as a measure to increase fixed revenues and expand the revenue stability of the water utility. Table 1-9 is a summary of the proposed rates for Alternative 2.

Table 1 – 9
Present and Proposed Commercial/Industrial Water Rates – Alternative 2

	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Inside City						
3/4"	$11.50	$15.53	$17.47	$19.48	$21.53	$23.58
1"	14.50	19.58	22.03	24.56	27.14	29.72
1.5"	68.00	91.80	103.27	115.15	127.24	139.33
2"	115.00	115.00	129.38	144.26	159.41	174.55
3"	175.00	175.00	196.88	219.52	242.57	265.61
4"	235.00	235.00	264.38	294.78	325.73	356.67
Outside City						
3/4"	$17.25	$23.30	$26.21	$29.22	$32.30	$35.37
1"	21.75	29.37	33.05	36.84	40.71	44.58
1.5"	102.00	137.70	154.91	172.73	190.86	209.00
2"	172.50	172.50	194.07	216.39	239.12	261.83
3"	262.50	262.50	295.32	329.28	363.86	398.42
4"	352.50	352.50	396.57	442.17	488.60	535.01
Volume Charge ($/CCF)						
Inside City – All Consumption	$1.90	$1.96	$1.96	$1.96	$1.96	$1.96
Outside City - All Consumption	2.85	2.94	2.94	2.94	2.94	2.94

1.3.4.4 Large User

The City currently has a single qualified, large user. This customer has the same current rate structure as the other commercial customer with one exception. The consumption charge is a declining block rate structure instead of a uniform. This is typically afforded to large users that will have a flat consumption profile with little to no peaking. This means that the customer will use approximately the same, large amount of water on a consistent basis. This makes the demands on the system more predictable. Table 1-10 includes a summary of the present and proposed rates for the large user under Alternative 1.

Table 1 – 10 Present and Proposed Large User Water Rates – Alternative 1						
	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Outside City - 10"	$700.00	$728.00	$742.56	$757.41	$772.56	$788.01
Volume Charge ($/CCF)						
0 - 3,500	$2.55	$2.65	$2.70	$2.75	$2.81	$2.87
3,501 - 20,000	2.10	2.17	2.21	2.25	2.30	2.35

For the second alternative, the fixed charge is again the only component increased. The rate revenues for the large user customer are approximately 5% sourced from the fixed charge. Although this type of user may often have a much lower fixed charge component on a percentage basis then a typical commercial or industrial customer, this level of fixed revenue is substantially low. For Alternative 2, in conjunction with moving toward a higher fixed charge, the declining block rate structure is moved to a uniform consumption charge on a per CCF basis, just as the other classes of service. This is a more contemporary rate design and reflects current industry trends. Table 1-11 is a summary of the large user rate schedule under Alternative 2.

Table 1 – 11 Present and Proposed Large User Water Rates – Alternative 2						
	Present Rate	Proposed				
		2016	2017	2018	2019	2020
Fixed Charge ($/Acct./Bi-Mo)						
Outside City - 10"	$700.00	$945.00	$1,086.75	$1,249.76	$1,399.73	$1,609.69
Volume Charge ($/CCF)						
0 - 3,500	$2.55	$2.55	$2.55	$2.55	$2.55	N/A
3,501 - 20,000	2.10	2.27	2.35	2.42	2.50	N/A
All Consumption	N/A	N/A	N/A	N/A	N/A	$2.55

1.4 Summary of the Water Rate Study Update

This completes the rate study for the City's water utility. Based on the operating and capital needs, it is recommended that rates be increased 4.0% in 2016 and 2.0% annually from 2017 to 2020 with a transition for the consumption component for the non-residential customers. These proposed adjustments will enable the City to remain strong fiscally and maintain the ability to react to unforeseen changes and future improvement needs. Full and complete technical appendices of the development of the water rate study and the proposed rate adjustments can be found in the appendices of this report.

2.0 Sewer Rate Study

2.1 Sewer Revenue Requirement

This section of the report provides a detailed discussion of the development of the sewer rate study. Similar to the water rate study, a revenue requirement, cost of service, and rate design analyses were conducted for the City's sewer utility. One of the main objectives of the sewer rate study is to develop cost-based sewer rates while attempting to minimize the impacts to the utility's customers. Provided below is a detailed discussion of the technical analyses, along with our findings, conclusions and recommendations.

2.1.1 Determining the Sewer Utility Revenue Requirement

In developing the sewer revenue requirement, similar to the water utility, it was assumed the sewer utility must financially "stand on its own" and be properly funded. As a result, the revenue requirement, as developed herein, assumes the full and proper funding needed to operate and maintain the system on a financially prudent basis.

2.1.2 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement for the sewer utility was to establish a time frame for the revenue requirement analysis. For this study, the revenue requirement was developed for the 2015 budget and projected time period of 2016 – 2020, the same time period reviewed for the water utility. Reviewing a multi-year time period is recommended in an attempt to identify any major expenses that may be on the horizon. By anticipating future financial requirements, the City can begin planning for these expenses sooner, avoiding future sewer rate spikes and minimizing rates to the extent possible.

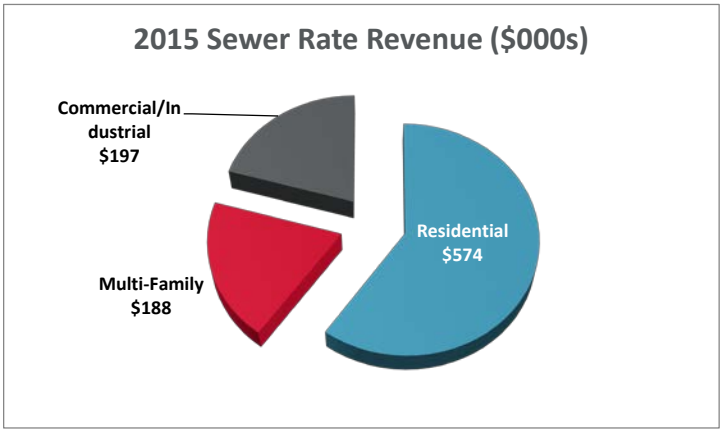
The second step in determining the revenue requirement for the City was to decide on the basis of accumulating costs. As noted, the water utility's revenue requirement was established using a "cash basis" approach, this is the method used to develop the sewer utility revenue requirement as well. Again, the cash basis approach is the most commonly used methodology by municipal utilities to set their revenue requirement. The actual revenue requirement developed was customized to follow the existing sewer system of accounts.

The primary financial inputs in this process were the City's historical customer and billing records, sewer budget, and sewer capital improvement plan. Presented below is a discussion of the steps and key assumptions contained in the development of the projections of the sewer utility's revenues and expenses.

2.1.3 Projecting Sewer Rate Revenue and Other Miscellaneous Revenues

The first step in developing the revenue requirement was to develop a projection of sewer rate revenues, at present (current) rate levels. In general, this process involved developing projected number of customers and billed flows for each customer class of service. For commercial customers, all water use is utilized and billed whereas for residential customers, only the winter water average is billed. The number of accounts for each customer class and the billed flows

were then multiplied by the respective sewer charges. This method of independently calculating sewer rate revenues helps to confirm that the projected revenues used within the analysis tie to the projected billing units for cost of service and rate design analyses. The projected billing units by class of service were based on historical billing records.



There are three customer classes of service: residential, multi-family, and commercial/industrial. At present sewer rates, the City is projected to receive approximately $960,000 in rate revenue in 2015. Over the planning horizon of this study, customer growth is expected to be 1.0% annually, resulting in projected rate revenues of approximately $1.0 million in 2020.

In addition to rate revenues, the utility receives a minimal amount of other revenues from items including reimbursements, fees, other miscellaneous revenue, and earned interest. The utility is projected to receive approximately $3,300 in miscellaneous revenues in 2015 which increases to $4,400 in 2020.

In total, including both sewer rate and miscellaneous revenues, the sewer utility's total projected revenues are expected to be approximately $963,000 in 2015 and, with assumed growth, gradually increase to $1.0 million by 2020.

2.1.4 Projecting Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the utility to operate and maintain the existing sewer plant in service. The costs incurred in this area are expensed during the current year and are not capitalized or depreciated. To begin the process of projecting O&M expenses over the planning horizon, escalation factors were developed for the basic types of expenses the City incurs: salaries, benefits, materials and supplies, utilities, equipment, insurance, medical benefits, and miscellaneous expenses. Consistent with the water utility, the escalation factors ranged from 1.0% to 6.0% per year.

To start, the 2015 budgeted O&M expenses were taken and projected over the five year period based on the escalation factors described above for each of the various categories. The total O&M expenses for the sewer utility in 2015 are expected to be approximately $561,000. O&M expenses are projected to gradually increase over time as a result of the assumed escalation factors. Total sewer O&M is projected to be approximately $648,000 by 2020.

2.1.5 Projecting Rate Funded Capital

The City's sewer utility has several capital improvement projects planned over the study's time horizon. Over the planning period of 2015 – 2020, there is approximately $6.4 million in projected capital projects with the majority of the projects planned for 2018 and 2019. A summary of the capital funding plan developed for the City's sewer utility is shown in Table 2-1. Table 2-1 also includes assumed funding sources for the projects.

Table 2 - 1
Summary of the Sewer Capital Improvement Plan ($000s)

Capital Projects	2015	2016	2017	2018	2019	2020
Replace Sections of Leaking Sewer Line	$0	$25	$25	$25	$25	$25
Purchase Pipe Camera	0	0	0	0	0	0
Replace Equipment at Wastewater Treatment Plant	0	10	0	0	40	40
Install New Sewer Line Cloverdale to Parkland	0	0	250	0	0	0
Install New Sewer Line Rebel Under I-5 to Hendrickson	0	0	0	300	0	0
Install Pump Station at Rebel	0	0	0	400	0	0
Install New Sewer Line Hendrickson @ Temco to WWTP	0	0	0	1,000	0	0
Install New Sewer Line Old Pac Hwy - Stone Forest to Todd Rd	0	0	0	2,000	0	0
Lift Station Upgrades	0	0	0	25	40	40
Rehab Sewer Lines North and East Elm Street	0	0	0	0	2,000	0
Rate Study (50%)	15	0	0	0	0	0
Future Unidentified Capital Projects	0	0	0	0	0	45
Total Capital Projects	**$15**	**$35**	**$275**	**$3,750**	**$2,105**	**$150**
Less: Outside Funding Sources						
Fund 413 - I & I IMPROVEMENT RESERVE	$0	$25	$25	$25	$25	$0
Fund 415 - SEWER IMPROVEMENT RESERVE	15	10	65	105	0	50
Fund 410 –PUBLIC WORKS EQUIPMENT RESERVE	0	0	0	0	0	0
Grant	0	0	0	0	0	0
Developer Funded	0	0	125	2,300	0	0
Low Interest Loans	0	0	0	1,250	2,000	0
Revenue Bonds	0	0	0	0	0	0
Total Funding Sources	**$15**	**$35**	**$215**	**$3,680**	**$2,025**	**$50**
Rate Funded Capital	**$0**	**$0**	**$60**	**$70**	**$80**	**$100**

Among the methods that may be used to finance these capital improvement projects are long-term debt, developer funded, grants, reserves, hook-up fees, and rates. A general financial guideline states that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through rates. Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of plant

investment needs to be replaced to maintain the existing level of infrastructure. In addition, consideration should be given to funding within rates some amount greater than annual depreciation expense for renewals and replacements as costs escalate over time and replacement cost is greater than depreciation expense. Whenever possible, the City should be funding capital projects from rates in an amount greater than annual depreciation expense which, in 2012, was estimated at $336,000. Currently, it does not appear that there is much rate funded capital for the City but over the course of the review period, annual funding for sewer renewal and replacement projects increases to $100,000. Although this is not the level that meets depreciation expense, it is an improvement from the City's current financing mix.

2.1.6 Taxes & Transfers

The next component of the revenue requirement is related to taxes and transfers. Typically, this component contains any taxes payable to local, state, or federal governments as well as any transfer payments that the utility may make. The City's sewer utility makes transfers to the equipment reserve, the benefit reserve, and the general fund for services such as accounting. The sewer utility also pays state taxes on revenues. In 2015, taxes and transfers are $127,000. Through revenue growth and inflation, that figure will climb to $143,000 in 2020.

2.1.7 Projecting Debt Service

The final component of the sewer revenue requirement is debt service. Currently, the City has three outstanding debt obligations. All three issuances are related to the wastewater treatment plant with two state revolving fund (SRF) loans and one public works trust fund (PWTF) loan. Combined, the projected annual debt service payments for the three loans are approximately $407,000. One SRF loan is retired during the planning period in 2018 but the other two are outside the timeframe in 2022 and 2027. It is also assumed that the City will issue long-term debt in 2018 and 2019. The amounts are estimated to be $1.25 million in 2018 and $2.0 million in 2019 with debt service calculated at $80,000 and $128,000, respectively. The terms assumed for modeling purposes only are 2.0% for 20 years. HDR is not a municipal advisor, as defined by the SEC and is not giving advice or proposing structure on the issuance of debt.

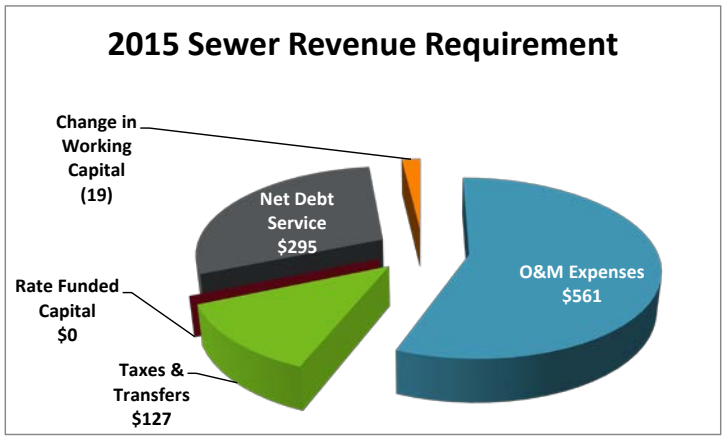
2.1.8 Summary of the Revenue Requirement

From the above projections of sewer revenues and expenses, a summary of the sewer revenue requirement analysis can be developed. Table 2-2 presents a summary of the sewer revenue requirement.

Table 2 – 2
Summary of the Sewer Revenue Requirements ($000s)

	Budgeted	Projected				
	2015	2016	2017	2018	2019	2020
Revenues						
Rate Revenues	$960	$969	$979	$989	$999	$1,009
Other Revenues	3	3	3	4	4	4
Total Revenues	**$963**	**$973**	**$982**	**$992**	**$1,003**	**$1,013**
Expenses						
O&M Expenses	$561	$577	$593	$611	$629	$648
Taxes & Transfers	127	131	132	137	138	143
Rate Funded Capital	$0	0	60	70	80	100
Net Debt Service	295	350	350	485	580	529
Change in Working Capital[1]	(19)	7	42	(1)	(0)	50
Total Expenses	**$963**	**$1,065**	**$1,177**	**$1,302**	**$1,427**	**$1,470**
Bal./(Def.) of Funds	$0	($92)	($195)	($309)	($424)	($457)
Bal. as % of Rev from Rates	0.0%	9.5%	19.9%	31.3%	42.5%	45.3%
Proposed Rate Adjustments	**0.0%**	**9.5%**	**9.5%**	**9.5%**	**8.5%**	**2.0%**
Add'l Revenue with Rate Adj.	$0	$92	$195	$309	$424	$457
Bal./Def. After Rate Adj.	$0	$0	$0	$0	$0	($0)
Average Residential Sewer Bill	$74.50	$81.58	$89.33	$97.81	$106.13	$108.25
Debt Service Coverage						
Before Rate Adjustment	1.31	1.08	1.06	0.75	0.61	0.66
After Rate Adjustment	1.31	1.61	2.18	2.03	2.08	2.38

It is important to note that the annual deficiencies in Table 2-2 are cumulative. That is, any adjustment in the initial years will reduce the needed deficiency in the following years. The results of the revenue requirement analysis indicate a deficiency of funds over the planning period (2015 - 2020). The deficiency ranges from $92,000 in 2016 to $457,000 in 2020. The level of needed rate adjustment is being driven by a variety of factors. The City recognizes the need to adjust rates to a level that can fund the daily operations, debt service, and capital projects over the five year period. Based on the City's sewer revenue requirement analysis, it is proposed that sewer rate be adjusted by 9.5% annually from 2016 through 2018, 8.5% in 2019, and 2.0% in 2020. This rate transition plan will provide the flexibility to fund the necessary capital



infrastructure projects while at the same time strengthen the overall financial health of the sewer utility.

2.1.9 Review of the Reserve Levels

Reserves are an important part of a utility's financial picture. There can be many different objectives and purposes for establishing reserves. The sewer utility currently has five reserve funds including the Operating Reserve Fund, I&I Improvement Reserve, Sewer Improvement Reserve, Sewer Loan Reserve, and Equipment Reserve. The Operating Reserve will mediate the cash flow variances of the utility such as storing funds when there is a surplus and using funds when there is a shortfall or deficit. This will help the sewer utility maintain stable rates and reduce fluctuations in future rates. The target minimum reserve balance for the Operating fund is 60 days of O&M expense; the Sewer Improvement Reserve target is equal to annual depreciation expense; the Sewer Loan Reserve target is prescribed by the City's sewer loan documents; the I&I Improvement Reserve and Equipment Reserve do not have specific targets at this point. The following list includes a summary of fund balances:

- Operating Fund – The 2015 beginning balance is $75,000 and the fund is projected to have and ending balance of approximately $113,000 in 2020.
- I&I Improvement Reserve – The beginning balance in 2015 is $90,000. This fund benefits in 2015 from an inter-fund loan repayment of $75,000. After capital project spending to replace sections of leaking sewer lines, the projected ending balance in 2020 is $67,000.
- Sewer Improvement Reserve – The beginning balance in 2015 is $267,000. Additions to this fund include approximately $80,000 in annual hook-up fees and an annual transfer from the Operating Fund that ranges between $300,000 and $600,000 annually. After projects and debt service payments, the ending balance in 2020 is projected to be $346,000.
- Sewer Loan Reserve – This fund will carry the balance of $232,000 until the City's existing sewer loan is retired.
- Equipment Reserve – The sewer utility's share of this fund was $32,000 at the beginning of 2015. After additions to this fund, the projected ending balance in 2020 is $52,000. Presently, the City has no plans to spend money from this fund on equipment.

2.1.10 Debt Service Coverage Ratio (DSC)

Generally, revenue bonds contain covenants requiring rates to be set at an adequate level to assure annual payments (i.e. repayment) of principal and interest. This ability to repay debt is often assessed via a debt service coverage (DSC) ratio. For more on DSC ratios, see Section 1.1.9 of this report.

On a stand-alone basis, the sewer utility currently has a calculated DSC of 1.31, but that figure decreases to 0.66 absent any rate adjustments. With the proposed rate adjustments, the sewer utility maintains a strong DSC ratio throughout the rate study planning period. It is important to note that one debt obligation is retired during the period and two issuances are added.

2.1.11 Consultant's Conclusions for Sewer Revenue Requirement

Based on the City's sewer revenue requirement analysis, it is recommended that the overall sewer rate revenue be adjusted by 9.5% annually from 2016 through 2018. It is also proposed

that sewer rates be adjusted by 8.5% in 2019 and by 2.0% in 2020. The proposed adjustments would maintain the utility's ability to fully support the current level of operations and infrastructure replacement, as well as the current and future infrastructure improvements.

2.2 Sewer Cost of Service Analysis

In the previous section, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the City's sewer utility. This section will discuss the development of the sewer cost of service analysis. A sewer cost of service analysis is concerned with the equitable allocation of the total sewer revenue requirement between the various customer classes of service (e.g., residential, commercial). The previously developed sewer revenue requirement was utilized in the development of the cost of service analysis.

2.2.1 Objectives of a Cost of Service Study

As described in Section 1.2.1, there are two primary objectives in conducting a cost of service study:

1. Equitably allocate the revenue requirement between the customer classes of service
2. Derive average unit costs for subsequent rate designs

The purpose of a sewer cost of service study is to determine the fair and equitable manner to collect the revenue requirement. The second rationale for conducting a sewer cost of service analysis is to ensure a rate is designed such that it properly reflects the costs incurred by the utility. For example, a sewer utility typically incurs costs related to flow, strength, and customer cost components. Each of these types of costs may be collected in a slightly different manner to allow for the development of rates that recover costs in the same manner as they are incurred.

2.2.2 Determining the Customer Classes of Service

The first step in a sewer cost of service study is to determine the customer classes of service. Based on the current rate schedules, the classes of service used within the sewer study are:

- Residential
- Multi-Family
- Commercial/Industrial

In determining classes of service for cost of service purposes, the objective is to group customers together into similar groups based upon facility requirement and/or flow characteristics.

2.2.3 General Cost of Service Procedures

A cost of service study utilizes a three-step approach to review costs. These take the form of functionalization, allocation, and distribution. Provided below is a detailed discussion of the sewer cost of service study conducted for the City, and the specific steps taken within the analysis.

2.2.3.1 Functionalization of Costs

The first analytical step in the sewer cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (plant) data by major operating functions within the sewer utility (e.g. treatment, pumping, collection, etc.). Within this study, the functionalization of the sewer cost data was largely accomplished through the sewer utility's system of accounts.

2.2.3.2 Allocation of Costs

The second analytical task performed in a sewer cost of service study is the allocation of the costs. Allocation determines why the expenses were incurred or what type of need is being met. The sewer infrastructure records and revenue requirement analysis were reviewed and allocated using the following cost allocations:

- **Volume:** Volume related costs are those costs which tend to vary with the total quantity of wastewater. An example of a volume related cost is electricity used for pumping wastewater or the sizing of the collection system to meet customer demands.
- **Strength:** Strength related costs are those costs associated with the additional handling and treatment of high "strength" wastewater. Strength of wastewater is typically measured in biochemical oxygen demand (BOD) and total suspended solids (SS). Increased levels of BOD or SS generally equate to increased treatment costs.
- **Customer:** Customer related costs vary with the addition or deletion of a customer. Customer related costs typically include the costs of billing, collecting, and accounting. These costs may also be further categorized as actual or weighted.
- **Revenue:** Some costs associated with the sewer utility may vary with the amount of revenue received by the utility. An example of a revenue related cost would be a utility tax which is based on gross utility revenue.
- **Direct Assignments:** Certain costs associated with operating the utility may be directly traced to a specific customer or class of service. These costs are then "directly assigned" to that specific class of service to assure that other classes of service will not be allocated any portion of costs or facilities from which they do not benefit

2.2.3.3 Development of Distribution Factors

Once the allocation process was complete, and the customer groups have been defined, the various allocated costs were distributed to each customer class of service. The revenue requirement was allocated to the various customer classes of service using the following allocation factors.

- **Volume Allocation Factor:** The volume distribution factor was based on the projected total wastewater flows for each class of service for the projected test period and based on average winter water use for residential customers and all use for commercial/industrial.
- **Strength Allocation Factor:** Strength-related costs are classified between biochemical oxygen demand (BOD) and suspended solids (SS). Both of these types of costs are allocated to the various classes of service based upon the relative estimated strengths that each class of service contributed.

- **Customer Allocation Factor:** Customer costs within the cost of service study are allocated to the various customer classes of service based upon their respective customer counts. The number of customers, by customer class of service, was developed within the revenue requirement study. Two types of customer allocation factors were developed, actual and weighted. Actual customer costs are based on the actual number of accounts for each class of service. The weighted customer allocation factor attempts to reflect the disproportionate costs associated with serving larger customers. These customers are assigned a higher per-customer cost because they may require additional administrative costs and monitoring.
- **Revenue Related Allocation Factor:** The revenue related allocation factor was developed from the projected rate revenues for 2016 for each customer group. These same revenues were used within the revenue requirement analysis previously.

2.2.4 Functionalization and Allocation of Sewer Plant in Service

The next step of the cost of service is the functionalization and allocation of the sewer plant in service. In performing the functionalization of plant in service, HDR utilized the sewer utility's historical asset records. Once the assets were functionalized, the analysis shifted to allocation of the asset. Below in Table 2-3 is a summary of how the sewer plant was allocated.

Table 2 – 3
Summary of the Allocation of Plant in Service

	Volume Related	BOD Related	SS Related	Actual Customer
Collection	0%	0%	0%	100%
Lift Station	100%	0%	0%	0%
Treatment	50%	25%	25%	0%
Land & Buildings	100%	0%	0%	0%

2.2.5 Functionalization and Allocation of Operating Expenses

Operating expenses are generally functionalized and classified in a manner similar to the corresponding plant account. For example, maintenance of collection lines is typically allocated in the same manner (allocation percentages) as the plant account for collection lines. This approach to allocation of operating expenses was used for this analysis. The revenue requirement for 2016 was functionalized, allocated, and distributed. As noted earlier, the cash basis was utilized for the revenue requirement, which was comprised of operation and maintenance expenses, taxes & transfers, debt service, and capital funded from rates.

2.2.6 Major Assumptions of the Cost of Service Study

A number of key assumptions were used within the sewer cost of service study.

- The test period used for the sewer cost of service analysis was 2016. The revenue and expense data was previously developed within the revenue requirement study.
- A cash basis approach was utilized which conforms to generally accepted sewer cost of service approaches and methodologies.

- The allocation of plant in service was developed using the sewer utility's specific data and generally accepted cost allocation techniques.

2.2.7 Summary of the Cost of Service Results

In summary form, this cost of service analysis began by functionalizing the sewer utility's plant asset records and then the sewer revenue requirement (2016 operating expenses). The functionalized plant and expense accounts were then allocated into their various cost components. The individual allocation totals were then distributed to the sewer customer classes of service based upon the appropriate distribution factors. A summary of the detailed sewer cost responsibility developed for each class of service is shown in Table 2 - 4.

Table 2 – 4
Summary of the Sewer Cost of Service Analysis ($000s)

Class of Service	Present Rate Revenues	Allocated Costs	$ Difference	% Difference
Residential	$580	$603	($23)	4.0%
Multi-Family	190	214	(23)	12.4%
Commercial/Industrial	199	245	(46)	22.9%
Total	**$969**	**$1,061**	**($92)**	**9.5%**

The allocation of costs attempted to assure the facilities and costs allocated to each customer class reflected their respective benefit. The sewer cost of service results indicated no cost differences between the customer classes of service. As a note, this cost of service analysis is based on one year's data and customer information, and customer characteristics may change over time resulting in different cost of service cost distributions.

2.2.8 Consultant's Conclusions and Recommendations

As noted in Table 2-4, cost differences apparently exist between the three classes of service. Given this outcome, along with the overall objective of the sewer utility financially standing on its own, it is recommended the overall level of rates be adjusted to collect the revenue requirements over the test period. No cost of service adjustments are proposed at this time and the proposed rate adjustments from the revenue requirement analysis can be applied "across-the-board". As in the water utility cost of service study, this sewer analysis is the first completed by the City. With that in mind, it is not typically advisable to make adjustments based on the results of a single study.

2.3 Sewer Rate Design

The final step of the sewer rate study process is the design of sewer rates to collect the desired levels of revenues based on the results of the revenue requirement analysis. In reviewing sewer rate designs, consideration is given to the level of the rates and the structure of the rates.

2.3.1 Present and Proposed Sewer Rates

All sewer customers are charged a flat monthly rate and a variable consumption charge. For residential and multi-family customers, the fixed charge is the same regardless of meter size. For commercial customers, the fixed charge is based on the water meter diameter. All customer classes pay the same uniform volumetric consumption on a per CCF basis. However, it is important to note that residential customers are charged based on the winter water average while commercial customers are charged on all water usage.

Similar to the rate design for the water utility, the sewer rate design provided two alternatives. The first alternative is an "across the board" adjustment. This means that all of the rate components are increased by the rate adjustment. Presented below in Table 2-5 is a summary of the present and proposed sewer rates for all sewer customers for Alternative 1.

Table 2 – 5
Present and Proposed Sewer Rates Alternative 1 – All Customers

	Present Rate	Proposed				
		2015	2016	2017	2018	2019
Fixed Charge	**$/Month**					
Residential	$38.50	$42.16	$46.17	$50.55	$54.85	$55.94
Multi-Family	33.50	36.68	40.16	43.98	47.72	48.67
Commercial						
3/4"	$44.50	$48.73	$53.36	$58.43	$63.40	$64.67
3/4"(Out)	44.50	48.73	53.36	58.43	63.40	64.67
1"	56.00	61.32	67.15	73.53	79.78	81.38
1.5"	127.50	139.61	152.87	167.39	181.62	185.25
2"	183.50	200.93	220.02	240.92	261.40	266.63
3"	340.00	372.30	407.67	446.40	484.34	494.03
4"	510.00	558.45	611.50	669.59	726.51	741.04
10"	1,525.00	1,669.88	1,828.52	2,002.23	2,172.42	2,215.87
Variable Charge	**$/CCF**					
All Consumption [1]	$6.00	$6.57	$7.19	$7.87	$8.54	$8.71

As with the water utility, Alternative 2 aims to increase fixed charge revenue. Currently, the City collects approximately 52% of rate revenues through the fixed charge. Although this is a higher percentage than water, it still leaves vulnerability for large revenue fluctuations. In order to hedge this, Alternative 2 increases the fixed charges and maintains the current volumetric charge. Table 2-6 provides a summary of the Alternative 2 rate design.

Table 2 – 6
Present and Proposed Sewer Rates Alternative 2 – All Customers

	Present Rate	Proposed				
		2015	2016	2017	2018	2019
Fixed Charge	**$/Month**					
Residential	$38.50	$44.66	$51.36	$58.71	$65.93	$67.77
Multi-Family	33.50	39.20	45.43	52.24	58.93	60.64
Commercial						
3/4"	$44.50	$64.75	$86.96	$111.31	$135.24	$141.33
3/4"(Out)	44.50	64.75	86.96	111.31	135.24	141.33
1"	56.00	81.48	109.43	140.07	170.19	177.85
1.5"	127.50	185.51	249.14	318.90	387.46	404.90
2"	183.50	266.99	358.57	458.97	557.65	582.74
3"	340.00	494.70	664.38	850.41	1,033.25	1,079.75
4”	510.00	742.05	996.57	1,275.61	1,549.87	1,619.61
10”	1,525.00	2,218.88	2,979.96	3,814.35	4,634.44	4,842.99
Variable Charge	**$/CCF**					
All Consumption [1]	$6.00	$6.00	$6.00	$6.00	$6.00	$6.00

No cost of service or rate structure change recommendations are proposed for the sewer rates for either Alternative 1 or Alternative 2.

2.4 Summary of the Sewer Rate Study

This completes the analysis for the City’s sewer rate study. The proposed rates were developed using “generally accepted” rate making methods and principles. The proposed adjustments for 2016 through 2020 are necessary given the results of the revenue requirement analysis. Adoption of the proposed sewer rates will provide adequate funding for the sewer utility over the planning period, and position the utility for anticipated future capital needs. The City should revisit the rates annually to test their ability to cover expenses and maintain financial metrics.

Technical Appendices