



**Report on the**

# Water Services Rate Study

**Town of Telluride, Colorado**

**Project No. 72447**

**August 2013**

# **Water Services Rate Study**

**prepared for**

**Town of Telluride, Colorado**

**August 2013**

**Project No. 72447**

**prepared by**

**Burns & McDonnell Engineering Company, Inc.  
Kansas City, Missouri**

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August 28, 2013

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P.O. Box 397  
Telluride, CO 81435

Water Services Rate Study  
Burns & McDonnell Project Number 72447

Ms. Guglielmon:

Burns & McDonnell is pleased to submit this report on the Water Services Rate Study (Study) completed on behalf of the Town of Telluride, Colorado (the Town). The report summarizes the Study findings and provides details regarding development of the financial plan, test year revenue requirement, allocation of costs, and proposed water rates.

To support the Study, the Town assembled a cross functional team with representation from utility management, utility operations, Town finance and billing, and others. This team provided excellent support on a broad array of matters including ready access to detailed data and direction on policy matters needed during the Study.

We appreciate the opportunity to be of service to the Town and are grateful for the cooperation and assistance received from staff throughout this project. Should you have any questions regarding this final report, please contact me.

Sincerely,

BURNS & MCDONNELL



David F. Naumann  
Project Manager

## TABLE OF CONTENTS

		<u>Page No.</u>
<b>1.0</b>	<b>EXECUTIVE SUMMARY</b> .....	<b>1-1</b>
1.1	Financial Planning .....	1-1
1.2	Proposed Rates.....	1-2
<b>2.0</b>	<b>INTRODUCTION</b> .....	<b>2-1</b>
2.1	Study Background.....	2-1
2.2	Project Approach .....	2-1
<b>3.0</b>	<b>FINANCIAL PLANNING ANALYSIS</b> .....	<b>3-1</b>
3.1	Water Utility Revenues under Existing Rates .....	3-1
3.1.1	Historical and Projected Customers.....	3-1
3.1.2	Historical and Projected Volumes .....	3-2
3.1.3	Existing Water Rates.....	3-2
3.1.4	User Revenues under Existing Rates .....	3-3
3.2	Water Utility Expenditures .....	3-3
3.2.1	O&M Expenses.....	3-4
3.2.2	Projected Capital Improvement Expenditures .....	3-4
3.2.3	Projected Debt Service Requirements .....	3-7
3.3	Water Utility Ten-Year Financial Plan.....	3-8
3.3.1	Water System Operating Flow of Funds.....	3-8
3.3.2	Water System Capital Flow of Funds .....	3-11
3.3.3	Consolidated Cash Flow Results .....	3-12
<b>4.0</b>	<b>COST OF SERVICE ANALYSIS</b> .....	<b>4-1</b>
4.1	Introduction.....	4-1
4.2	Net Revenue Requirements.....	4-1
4.3	Cost of Service Methodology .....	4-2
4.4	Functional Cost Assignment .....	4-3
4.4.1	Operating Expenses .....	4-3
4.4.2	Capital Costs .....	4-5
4.5	Units of Service.....	4-6
4.6	Unit Cost Development.....	4-7
4.7	Allocation of Costs to Customer Classes.....	4-7
<b>5.0</b>	<b>PROPOSED RATE DESIGN</b> .....	<b>5-1</b>
5.1	Introduction.....	5-1
5.2	Existing Water Rates.....	5-1
5.3	Proposed Water Rates .....	5-1
5.4	New Water Rate Components.....	5-2
5.5	Typical Bills and Regional Comparison .....	5-4

## LIST OF TABLES

	<u>Page No.</u>
Table 1-1: Proposed Water Revenue Increases .....	1-1
Table 1-2: Typical Water Bills .....	1-3
Table 3-1: Historical and Projected Accounts and Volume.....	3-2
Table 3-2: Existing Water Rates .....	3-3
Table 3-3: Historical and Projected Water User Revenues .....	3-3
Table 3-4: Historical and Projected Operation and Maintenance Expenses.....	3-5
Table 3-5: Capital Improvement Program .....	3-6
Table 3-6: Existing and Proposed Debt Service .....	3-8
Table 3-7: Proposed Water Revenue Increases .....	3-9
Table 3-8: Water Utility Ten-Year Financial Plan .....	3-10
Table 4-1: Water Utility Test Year 2014 Cost of Service .....	4-2
Table 4-2: Allocation of Operation and Maintenance Expenses .....	4-4
Table 4-3: Allocation of Capital Costs .....	4-6
Table 4-4: Units of Service .....	4-6
Table 4-5: Unit Cost Development.....	4-7
Table 4-6: Allocation of Costs to Customer Classes .....	4-8
Table 4-7: Comparison of Revenues under Existing Rates to Allocated Cost of Service .....	4-8
Table 5-1: Existing and Proposed 2014 Water Rates .....	5-3
Table 5-2: Typical Water Bills .....	5-4

## LIST OF FIGURES

	<u>Page No.</u>
Figure 1-1: Water Utility Operating Cash Flow with Proposed Revenue Adjustments .....	1-2
Figure 1-2: Regional Residential Water Bill Comparison .....	1-3
Figure 2-1: Study Methodology .....	2-2
Figure 3-1: Water Utility Operating Cash Flow under Existing Rates .....	3-8
Figure 3-2: Water Utility Operating Cash Flow with Proposed Revenue Adjustments .....	3-12
Figure 5-1: Regional Residential Water Bill Comparison .....	5-5

**LIST OF ABBREVIATIONS**

<b><u>Abbreviation</u></b>	<b><u>Term/Phrase/Name</u></b>
AWWA	American Water Works Association
BABs	Build America Bonds
BMcD	Burns & McDonnell
CIP	Capital Improvement Program
COPs	Certificates of Participation
FTE	Full Time Equivalent Employee
Mgal	One Thousand Gallons
O&M	Operation and Maintenance

## 1.0 EXECUTIVE SUMMARY

The Town of Telluride, Colorado (Town) retained Burns & McDonnell to perform a financial planning, cost of service, and rate design study (Study) for the Town's water and wastewater systems. The Study establishes a ten-year financial plan, and evaluates potential changes to the existing rate structure to equitably recover costs.

This Executive Summary and Report presents the major findings of the Study applicable to the Water Utility. A separate report has been prepared presenting the major findings of the Study applicable to the Wastewater Utility.

### 1.1 Financial Planning

Comprehensive financial planning conducted for the Water Utility indicates that revenues under existing rates are not adequate to meet the projected cash obligations of the utility over the Study period. The need for revenue adjustments is influenced by the following factors:

- Relatively flat user charge revenue projections;
- Inflationary impacts on operation and maintenance expenses;
- Completion of the Pandora Water Plant;
- Initiation of capital projects to renew or replace the aging distribution system.

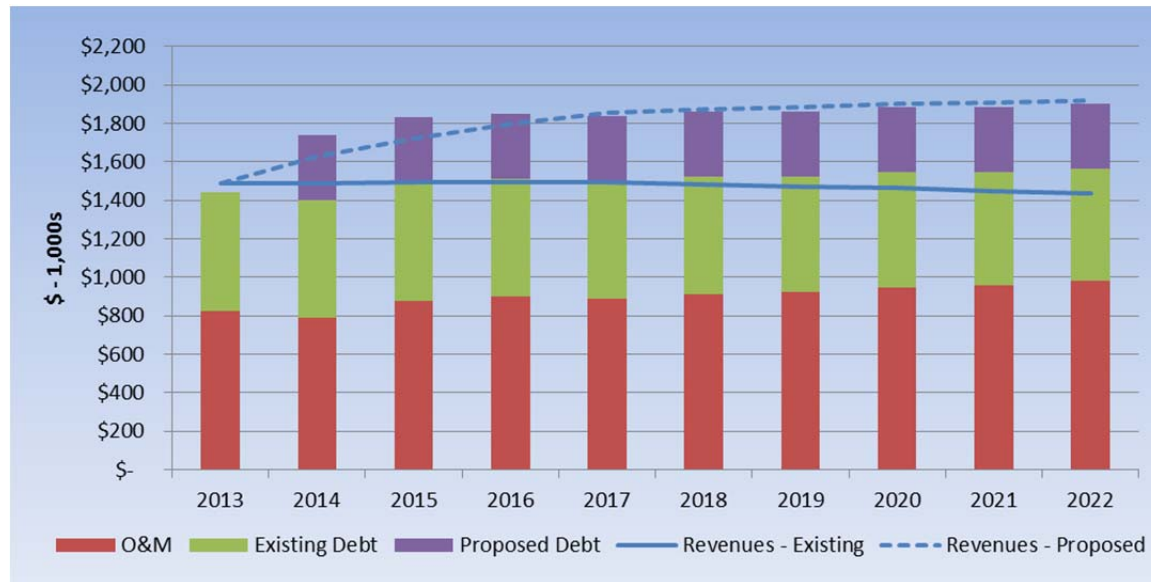
System-wide revenue adjustments have been proposed to provide adequate funding for operations and capital needs while maintaining an appropriate level of reserves for operating and capital purposes. These increases are summarized in Table 1-1 below, and assume implementation on January 1 of each indicated year.

**Table 1-1: Proposed Water Revenue Increases**

Year	Proposed Revenue Increase
2014	20.0%
2015	10.0%
2016	8.0%
2017	6.0%
2018	2.0%
2019	2.0%
2020	2.0%
2021	2.0%
2022	2.0%

The financial plan is illustrated in the Figure 1-1 below, which shows the major cash obligations in the bars and revenue both with and without proposed revenue adjustments in lines. As shown, the proposed revenue adjustments are sufficient to meet projected obligations.

**Figure 1-1: Water Utility Operating Cash Flow with Proposed Revenue Adjustments**



## 1.2 Proposed Rates

Detailed cost of service analysis was performed and provided necessary context in the development of proposed rates. The existing conservation-oriented rate structure was proposed to be maintained, with the addition of new rate components for irrigation accounts and size and deed restricted Residential customers. A comparison of typical bills under existing and proposed rates was completed and is shown in Table 1-2.

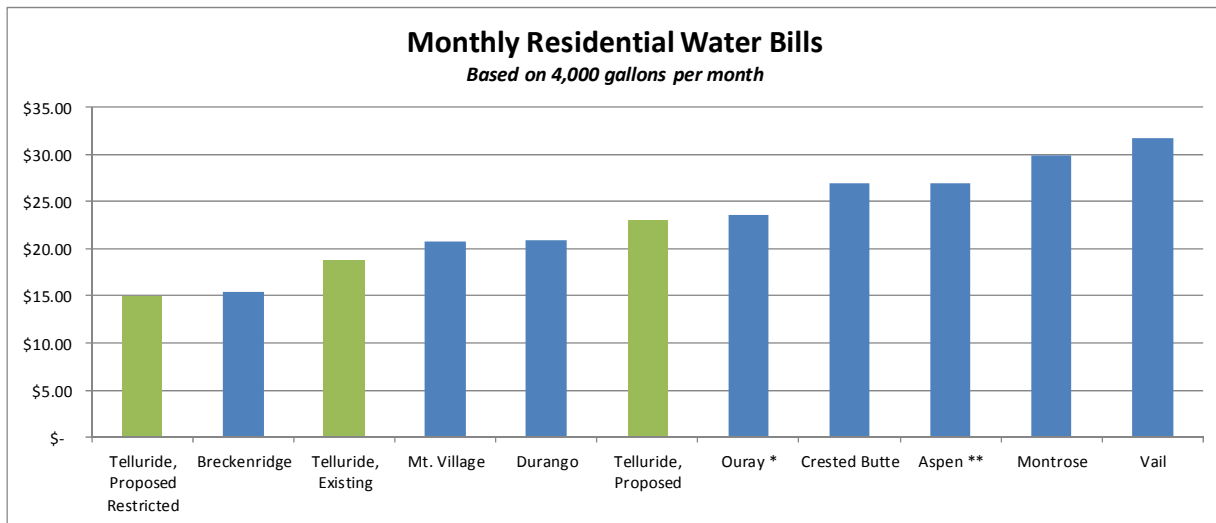
A comparison of monthly Residential typical bills from other regional water utilities was also conducted. The comparison shown in Figure 1-2 indicates that the typical residential water bill under proposed rates is competitively positioned among regional water utilities.



**Table 1-2: Typical Water Bills**

Line No.	Description	Billable Flow Mgal	Monthly Bill		Proposed Increase / (Decrease)		
			Under Existing Rates \$	Under Proposed Rates \$	\$	%	
<b>Residential In Town</b>							
1	Deed and Sq Ft Restricted	1.5	\$ 18.76	\$ 15.00	\$ (3.76)	-20.0%	
2	Average	3.0	\$ 18.76	\$ 23.07	\$ 4.31	23.0%	
3	High	6.0	\$ 25.76	\$ 31.97	\$ 6.21	24.1%	
<b>Commercial 5/8" In Town</b>							
4	Low	3.0	\$ 26.20	\$ 31.44	\$ 5.24	20.0%	
5	Medium	5.5	\$ 30.70	\$ 36.84	\$ 6.14	20.0%	
6	High	10.0	\$ 44.20	\$ 53.04	\$ 8.84	20.0%	
7	Average Commercial 2" In Town	38.0	\$ 205.72	\$ 246.86	\$ 41.14	20.0%	
8	Average Commercial 4" In Town	54.5	\$ 364.81	\$ 437.77	\$ 72.96	20.0%	

**Figure 1-2: Regional Residential Water Bill Comparison**



\* Excludes service fees  
 \*\* Reflects average of 7 billing areas

## 2.0 INTRODUCTION

### 2.1 Study Background

The Town of Telluride, Colorado (Town) retained Burns & McDonnell (BMcD) to perform a financial planning, cost of service, and rate design study (Study) for the Town's water and wastewater systems. The Study establishes a ten-year financial plan, and evaluates potential changes to the existing rate structure to equitably recover costs. The Water and Wastewater Utilities are facing the following financial challenges:

- Given the generally weak economic conditions prevalent within the community in recent years, efforts to maintain existing rate levels have made it difficult for both utilities to adequately fund operating costs.
- An asset management study concluded in 2013 assessed the condition of underground infrastructure for both utilities. Additional funding is necessary so that underground infrastructure in the most need of rehabilitation and repair can be addressed.
- The Water Utility is in the process of constructing a new water treatment plant (Pandora) which is planned to be operational in 2015. The Pandora plant represents a new source of water that will provide improved water supply levels with an improved quality of water to meet the Town's supply demands. Funding the remaining construction and future operating costs has been taken into consideration in this Study.

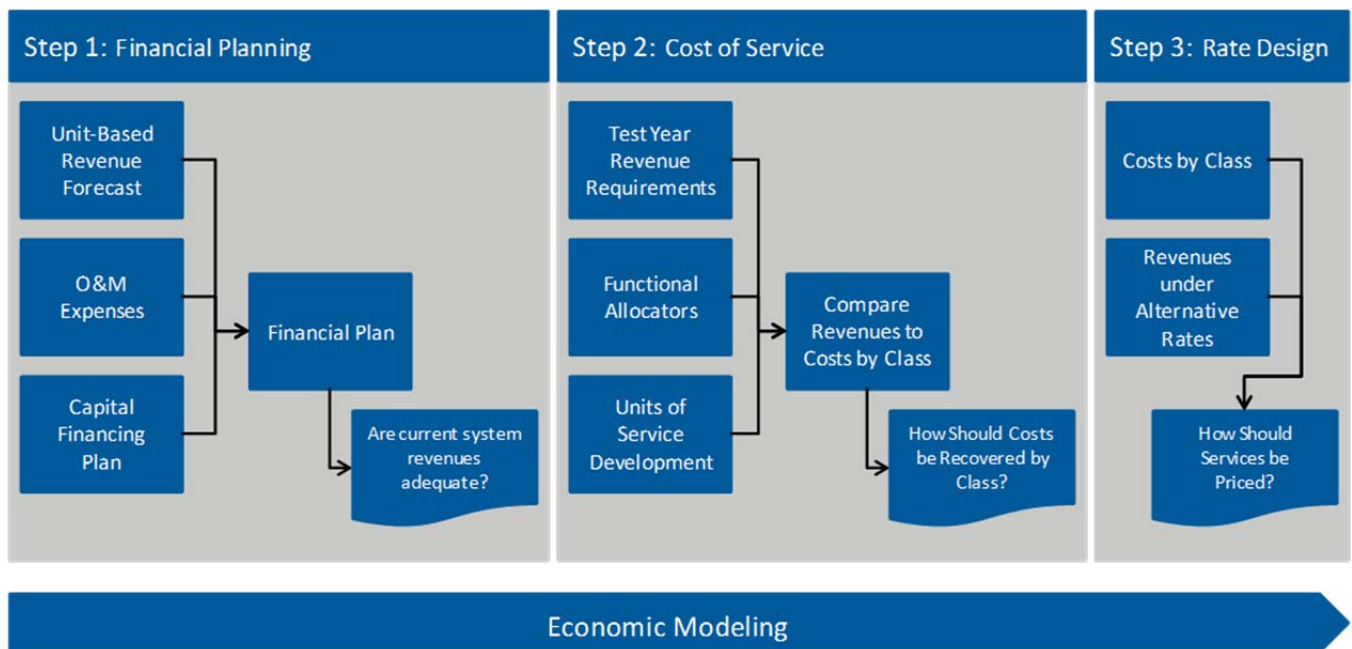
The financial plan presented herein for the Water Utility is designed to increase revenues to cover operating and capital requirements and to maintain utility reserves at an appropriate level. This report presents the findings of the Study applicable to the Water Utility. A separate report has been prepared for the Wastewater Utility.

### 2.2 Project Approach

To meet the project objectives identified by the Town, BMcD conducted the study in a three-step approach. This approach, depicted in Figure 2-1, is grounded in the principles established by the American Water Works Association (AWWA) *M1 Rate Manual*.

Step 1: Financial Planning provides an indication of the adequacy of the revenue generated by current rates. The results of the financial forecast analysis answer the questions "Are the existing rates adequate?" and "If not, what level of overall revenue increase is needed?" The Financial Planning Analysis is presented in Section 3.0 of this report.

**Figure 2-1: Study Methodology**



Step 2: Cost of Service focuses on assigning cost responsibility to customer classes. Each customer class is allocated an appropriate share of the overall system costs based on the level of service provided. The net revenue requirements (costs to be recovered from rates) identified in Step 1 are allocated to customers in accordance with industry standards and principles and system specifics. The Cost of Service Analysis is detailed in Section 4.0 of this report.

Step 3: Rate Design provides for the required revenue recovery. Once the overall level of revenue required is identified and customer class responsibility for that level of revenue is determined, schedules of rates for each rate class are developed that will generate revenues accordingly. The Rate Design Analysis is detailed in Section 5.0 of this report.

To oversee this Study effort, the Town established a cross functional team with representation from utility management, utility operations, and Town finance and billing. The team met during the course of the Study to discuss data, review deliverables, develop scenarios, and provide guidance on policies and other matters.

### 3.0 FINANCIAL PLANNING ANALYSIS

The primary issue addressed in the Financial Planning Analysis is revenue adequacy. The results of the Financial Planning Analysis answer the questions:

- "Are the existing rates adequate?"
- "If not, what level of overall revenue increase is needed?"

To determine if the existing schedule of rates can be expected to generate revenues sufficient to meet the Town's operating and capital costs, BMcD prepared a ten-year financial projection of revenues and expenditures for the utility. A comparison of projected revenues and expenditures provides insight into the adequacy of overall revenue levels.

Our approach to Financial Planning involves the following basic steps:

1. Project revenues under existing rates.
2. Project utility expenditures.
3. Develop ten-year financial plan, including the budget year and a nine-year forecast period.

The planning period includes the current fiscal year, 2013, as a budget year and a nine-year forecast period, FY 2014 – FY 2022. The Town utilizes a twelve-month fiscal year beginning January 1 and ending December 31. The Financial Plan Analysis recognizes and references the same fiscal year in the ten-year budget and planning period.

This Section of the report discusses how the water utility financial plan was developed, and identifies proposed revenue adjustments needed to provide adequate funding for future costs.

#### 3.1 Water Utility Revenues under Existing Rates

The first step in the Financial Plan Analysis was to project revenues under the existing schedule of rates. To complete this effort required an analysis of customers, volumes, and revenues.

##### 3.1.1 Historical and Projected Customers

Table 3-1 presents the historical water customers served by the Town from 2010 to 2012 and the projection of customers for the 2013 to 2022 planning period. In recent years, Telluride has experienced relatively little change in the number of accounts. The projection of accounts reflects a relatively minimal growth rate of approximately 0.50 percent annually for residential accounts for 2013 through 2022.

### 3.1.2 Historical and Projected Volumes

Table 3-1 also presents the historical water volumes, based on applicable water sales for 2010 to 2012, and the projection of volumes for the 2013 to 2022 planning period. Annual water volumes decreased from 113,409 thousand gallons (Mgal) in 2010 to 108,896 Mgal in 2012. Future volumes show a slight increase in water sales caused by the impact of modest account growth.

**Table 3-1: Historical and Projected Accounts and Volume**

Line No.	Historical			Projected									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Accounts</b>													
1 Residential	957	969	981	986	991	996	1,001	1,006	1,011	1,016	1,021	1,026	1,031
2 Commercial	227	230	232	232	232	232	232	232	232	232	232	232	232
3 Construction Discount	-	1	8	8	8	8	8	8	8	8	8	8	8
4 Residential - Out of Town	4	4	4	4	4	4	4	4	4	4	4	4	4
5 Commercial - Out of Town	29	29	29	29	29	29	29	29	29	29	29	29	29
6 Commercial - Hillside	12	12	12	12	12	12	12	12	12	12	12	12	12
7 Hillside	50	49	53	53	53	53	53	53	53	53	53	53	53
8 Lawson	142	145	145	145	145	145	145	145	145	145	145	145	145
9 Aldasoro	-	-	-	-	-	-	-	-	-	-	-	-	-
10 Total Accounts	1,421	1,439	1,464	1,469	1,474	1,479	1,484	1,489	1,494	1,499	1,504	1,509	1,514
<b>Billed Volume (1,000 Gallons)</b>													
11 Residential	43,150	44,698	42,579	43,110	43,330	43,550	43,770	43,990	44,210	44,420	44,640	44,860	45,080
12 Commercial	56,997	55,819	53,114	53,170	53,170	53,170	53,170	53,170	53,170	53,170	53,170	53,170	53,170
13 Construction Discount	-	44	43	40	40	40	40	40	40	40	40	40	40
14 Residential - Out of Town	530	472	394	410	410	410	410	410	410	410	410	410	410
15 Commercial - Out of Town	1,723	1,637	1,830	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740
16 Commercial - Hillside	2,443	2,418	2,553	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510
17 Hillside	2,594	2,544	2,411	2,450	2,450	2,450	2,450	2,450	2,450	2,450	2,450	2,450	2,450
18 Lawson	5,972	5,486	5,972	5,910	5,910	5,910	5,910	5,910	5,910	5,910	5,910	5,910	5,910
19 Aldasoro	-	-	-	-	-	-	-	-	-	-	-	-	-
20 Total Billed Volume	113,409	113,118	108,896	109,340	109,560	109,780	110,000	110,220	110,440	110,650	110,870	111,090	111,310

### 3.1.3 Existing Water Rates

The current water rate schedule is shown in Table 3-2 and features a fixed bi-monthly base fee and a minimum usage allowance that varies according to class and meter size. A conservation-oriented inclining block rate structure is in effect for billed volumes that exceed the minimum usage allowance.

For the In-Town Residential class, multiple inclining blocks may be applicable depending on water consumed. The base fee includes up to 8 Mgal. Usage between 8 and 12 Mgal is charged \$3.50 per thousand gallons, while usage between 12 and 15 Mgal is charged \$4.00 per thousand gallons. Rates for volumes exceeding 15 Mgal in the billing period start at \$4.50 per thousand gallons and increase by \$0.50 for each additional 5 Mgal. Charges for usage in excess of 100 Mgal are \$12.50 per thousand gallons.

The current rates were effective as of January 1, 2012.

**Table 3-2: Existing Water Rates**

<i>In-Town Rates</i>					<i>In-Town Rates</i>				
Rate Class	Meter Size	Water Bi-Monthly Base Fee	Usage Block per 1,000 Gallons	Charge per 1,000 Gallons	Rate Class	Meter Size	Water Bi-Monthly Base Fee	Usage Block per 1,000 Gallons	Charge per 1,000 Gallons
Residential - In Town		\$ 37.51	0 - 8	\$ -	Commercial	1"	\$ 52.40	0 - 16	\$ -
			8 - 12	\$ 3.50				16 - 33	\$ 3.00
			12 - 15	\$ 4.00				>30	\$ 4.00
			15 - 100	\$4.00 + \$0.50 per 5,000 gal	Commercial	1.5"	\$ 52.40	0 - 32	\$ -
			>100	\$ 12.50				32 - 64	\$ 3.00
EMT & Firefighter		\$ -	0 - 8	\$ -				>64	\$ 4.00
			8 - 12	\$ 3.50	Commercial	2"	\$ 52.40	0 - 48	\$ -
			12 - 15	\$ 4.00				48 - 150	\$ 3.00
			15 - 100	\$4.00 + \$0.50 per 5,000 gal				>150	\$ 4.00
			>100	\$ 12.50	Commercial	3"	\$ 52.40	0 - 72	\$ -
Commercial	5/8"	\$ 52.40	0 - 8	\$ -				72 - 160	\$ 3.00
			8 - 30	\$ 3.00				>160	\$ 4.00
			>30	\$ 4.00	Commercial	4"	\$ 52.40	0 - 96	\$ -
Commercial	3/4"	\$ 52.40	0 - 12	\$ -				96 - 310	\$ 3.00
			12 - 33	\$ 3.00				>310	\$ 4.00
			>33	\$ 4.00					

**Out-of-Town Rates:** All Out-of-Town customers will be charged rates of one hundred and twenty-five percent (125%) of the In-Town rates.

**Out-of-Town Debt Support Surcharge:** In addition, unless otherwise required by an ordinance or contract authorizing water service, or pre-existing annexation agreement, to Out-of-Town users there shall be imposed upon each Out-of-Town customer an annual service rate surcharge of One Hundred Ninety and 50/100 Dollars (\$190.50) payable in six equal bi-monthly installments.

### 3.1.4 User Revenues under Existing Rates

Table 3-3 presents historical user revenues for 2010 to 2012 and a projection of user revenues under existing rates for the 2013 to 2022 planning period. The projection of user revenues was estimated based on the forecasted accounts and volumes factored by the existing schedule of water rates.

Historical water user revenues were \$697,886 in 2010 and ranged up to \$707,218 in 2012. Forecasted user revenues reflect the growth in customers and volume levels previously presented. Overall, water user revenues under existing rates are projected to range from \$708,600 in 2013 to \$722,000 in 2022.

**Table 3-3: Historical and Projected Water User Revenues**

Line No.	Historical			Projected									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>User Charge Revenues under Existing Rates</b>													
1 Residential	\$ 270,685	\$ 287,688	\$ 293,280	\$ 294,800	\$ 296,300	\$ 297,800	\$ 299,300	\$ 300,800	\$ 302,200	\$ 303,700	\$ 305,200	\$ 306,700	\$ 308,200
2 Commercial	325,105	303,951	308,829	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800	308,800
3 Construction Discount	-	271	395	400	400	400	400	400	400	400	400	400	400
4 Residential - Out of Town	4,386	3,772	3,519	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
5 Commercial - Out of Town	19,429	18,550	20,823	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800	20,800
6 Commercial - Hillside	14,401	13,854	15,040	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
7 Hillside	21,399	23,324	23,294	23,300	23,300	23,300	23,300	23,300	23,300	23,300	23,300	23,300	23,300
8 Lawson	42,482	40,425	42,038	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000
9 Total UC Revenues	\$ 697,886	\$ 691,835	\$ 707,218	\$ 708,600	\$ 710,100	\$ 711,600	\$ 713,100	\$ 714,600	\$ 716,000	\$ 717,500	\$ 719,000	\$ 720,500	\$ 722,000

### 3.2 Water Utility Expenditures

The Water Utility's primary expenditures include the following operating and capital costs:

- Operation and Maintenance (O&M) Expenses
- Capital Improvement Program (CIP) Expenditures
- Debt Service Principal and Interest Payments

### 3.2.1 O&M Expenses

Table 3-4 presents the recent water O&M expense history and the projection of water system O&M expenses through the 2022 planning period. The water O&M expenses include the costs of Water Plant Expenditures, Water System Expenses, and Other Operating Expenses. Expenses summarized on Table 3-4 reflect operating costs associated with the Water Utility. As such, costs related to major capital projects are excluded from Table 3-4 and will be discussed later in this report.

Recent history indicates that water O&M expenses peaked in 2012 at \$918,520, caused in part by legal fees associated with water rights shown on Line 8 and 26 of Table 3-4. O&M costs for 2013 are based on the approved budget plus an additional \$31,500 anticipated for Pandora Water System (Bridal Veil Basin) O&M, shown on Line 11. Projected O&M expenses in general are escalated from budgeted 2013 amounts based on inflationary assumptions of 2.0 to 3.0 percent, with a few notable exceptions identified below.

In 2015, the addition of one new full time equivalent employee (FTE) is anticipated to assist with the operation of the Pandora water treatment facility. Costs associated with the new FTE are included with Salaries, Wages, & Benefits costs starting in 2015 on Line 1. An allowance has also been provided for incremental power and chemical costs associated with the Pandora facility. Water rights expenses are considered to have peaked and are projected to decline from current budgeted levels, as indicated on Lines 8 and 26. Finally, a credit to power costs is expected to result from the hydroelectric project, the benefits of which are included on Line 7 beginning in 2017.

### 3.2.2 Projected Capital Improvement Expenditures

Table 3-5 shows the projected capital improvement expenditures identified by Town personnel for the 2013 to 2022 planning period. Major initiatives and forecasted ten-year total costs are summarized below.

- Pandora construction and the related hydroelectric project, \$10.05 million
- Improvements at existing water treatment plants, \$1.63 million
- Phases 2 and 3 of the Colorado Avenue waterline replacement, \$1.40 million

**Table 3-4: Historical and Projected Operation and Maintenance Expenses**

Line No.	Historical			Budgeted	Projected										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
<b>Water Plant Expenditures</b>															
1	[1]	Salaries, Wages, & Benefits	82,691	80,873	81,499	91,600	93,500	167,100	170,700	174,300	178,000	181,700	185,500	189,300	193,200
2	51-40-241	Chemicals	8,047	5,383	6,466	10,000	10,200	10,400	21,200	21,600	22,000	22,400	22,800	23,300	23,800
3	51-40-247	Water Testing	7,797	9,710	7,329	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
4	51-40-248	Equipment Replacement	4,088	19,750	4,858	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
5	51-40-252	Water Meters	14,489	7,557	6,178	15,000	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700
6	51-40-253	Commercial Meter Repairs	11,806	10,342	9,702	12,000	12,200	12,400	12,600	12,900	13,200	13,500	13,800	14,100	14,400
7	51-40-270	Utilities	15,848	21,783	16,116	22,000	22,700	34,800	35,800	20,000	20,600	21,200	21,800	22,500	23,200
8	51-40-310	Water Rights Legal/Engineer	17,973	46,290	132,441	60,000	50,000	40,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
9	51-40-315	Prof/Technical Services	2,425	5,619	2,131	10,500	10,700	10,900	11,100	11,300	11,500	11,700	11,900	12,100	12,300
10	51-40-490	Fuel	7,403	8,757	4,870	7,500	7,700	7,900	8,100	8,300	8,500	8,700	8,900	9,100	9,300
11		Pandora System O&M	56,074	-	-	31,500	32,100	32,700	33,400	34,100	34,800	35,500	36,200	36,900	37,600
12		Mill Creek O&M Audits	-	-	-	-	8,000	-	8,000	-	8,000	-	8,000	-	8,000
13	[2]	All Other	7,149	7,462	7,029	18,000	18,300	18,700	19,100	19,500	19,900	20,300	20,700	21,100	21,500
14	Total Water Plant Expenses		235,788	223,526	278,618	296,800	299,800	370,000	385,800	368,500	383,700	382,900	398,200	397,700	413,300
				-5.2%	24.6%	6.5%	1.0%	23.4%	4.3%	-4.5%	4.1%	-0.2%	4.0%	-0.1%	3.9%
<b>Water System Expenses</b>															
15	51-50-248	System O&M	7,682	10,735	9,932	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
16	51-50-250	Operating Supplies	2,104	2,247	2,900	2,500	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400
17	51-50-254	Equipment Rental	-	55	-	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
18	51-50-263	Sidewalk Repair	-	-	1,058	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
19	51-50-266	Radio Repairs	-	-	-	300	300	300	300	300	300	300	300	300	300
20	51-50-267	Vehicle Maint & Repair	1,114	3,373	700	8,000	8,200	8,400	8,600	8,800	9,000	9,200	9,400	9,600	9,800
21	51-50-270	Utilities	-	-	302	500	500	12,500	12,800	13,100	13,400	13,700	14,000	14,300	14,600
22	51-50-271	Emergency Repairs	2,120	31,554	6,038	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
23	51-50-310	Prof Services	60	215	8,675	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900
24	Total Water System Expenses [3]		13,080	48,179	29,605	48,800	49,400	62,000	62,900	63,800	64,700	65,600	66,500	67,400	68,300
				268.3%	-38.6%	64.8%	1.2%	25.5%	1.5%	1.4%	1.4%	1.4%	1.4%	1.4%	1.3%
<b>Other Operating Expenses</b>															
25	51-55-910	Transfer to Gen Fund - Admin	408,370	390,927	390,927	390,900	398,700	406,700	414,800	423,100	431,600	440,200	449,000	458,000	467,200
26	51-91-200	Legal Fees/Blue Lake Easement	32,519	94,065	207,103	75,000	25,000	25,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
27	51-55-930	County Treasurer Fees	16,860	12,506	12,267	14,000	13,900	14,000	14,000	13,900	13,800	13,600	13,600	13,400	13,200
28	Total Other Operating Expenses [4]		457,749	497,498	610,297	479,900	437,600	445,700	448,800	457,000	465,400	473,800	482,600	491,400	500,400
				8.7%	22.7%	-21.4%	-8.8%	1.9%	0.7%	1.8%	1.8%	1.8%	1.9%	1.8%	1.8%
29	Total Water Operating Expenses		706,618	769,203	918,520	825,500	786,800	877,700	897,500	889,300	913,800	922,300	947,300	956,500	982,000
				8.9%	19.4%	-10.1%	-4.7%	11.6%	2.3%	-0.9%	2.8%	0.9%	2.7%	1.0%	2.7%

**Notes**

[1] Includes accounts 51-40-110 to -139, and budgeted amounts for 51-95-100 and -105.

[2] Includes accounts 51-40-240, 243-246, 249, 254-267, 280, 330-460, & 621. Account 758 (Fleet Replacement) is included in capital improvement program.

[3] Excludes accounts 51-50-271 (Emergency Repairs) and 750 (System Improvements); they are included in the capital improvement program.

[4] Excludes accounts 51-55-780, 804, and 812; they are included in the capital flow of funds and debt service schedule.

[5] Excludes all capital accounts 51-91-100 to -300, they are included in CIP.



**Table 3-5: Capital Improvement Program**

Line No.		Projected										Total
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
<b><u>Budgeted Projects</u></b>												
1	51-40-758 Fleet Replacement	-	-	-	-	-	-	-	-	104,000	-	104,000
2	51-50-750 System Improvements	75,000	77,300	79,600	82,000	84,500	87,000	89,600	92,300	95,100	98,000	860,400
3	51-91-100 Pandora Plant -Eng/Constr	6,700,000	2,700,000	650,000	-	-	-	-	-	-	-	10,050,000
4	51-91-300 Water Treatment Plant	260,000	130,000	130,000	130,000	130,000	230,000	130,000	130,000	130,000	230,000	1,630,000
5	-- Asset Mgmt - "Unsatisfactory" Pipe	-	-	-	-	-	125,000	215,000	275,000	275,000	319,300	1,209,300
6	-- Asset Mgmt - "Degraded" Pipe [1]	-	-	-	-	-	-	-	-	-	-	-
7	-- Asset Mgmt - "Adequate" Pipe	-	-	-	-	-	-	-	-	-	-	-
8	-- Colorado Ave Waterline Replacement	-	-	800,000	-	600,000	-	-	-	-	-	1,400,000
9	Grand Total Capital Improvement Projects	7,035,000	2,907,300	1,659,600	212,000	814,500	442,000	434,600	497,300	604,100	647,300	15,253,700
<b><u>Projects to be Funded through User Charges [2]</u></b>												
10	51-40-758 Fleet Replacement	-	-	-	-	-	-	-	-	41,600	-	41,600
11	51-50-750 System Improvements	75,000	56,000	35,000	32,800	33,800	34,800	35,800	36,900	38,000	44,100	422,200
12	51-91-100 Pandora Plant -Eng/Constr [3]	-	1,957,000	286,000	-	-	-	-	-	-	-	2,243,000
13	51-91-300 Water Treatment Plant	260,000	94,200	57,200	52,000	52,000	92,000	52,000	52,000	52,000	103,500	866,900
14	-- Asset Mgmt - "Unsatisfactory" Pipe	-	-	-	-	-	50,000	86,000	110,000	110,000	143,700	499,700
15	-- Asset Mgmt - "Degraded" Pipe [1]	-	-	-	-	-	-	-	-	-	-	-
16	-- Asset Mgmt - "Adequate" Pipe	-	-	-	-	-	-	-	-	-	-	-
17	-- Colorado Ave Waterline Replacement	-	-	352,000	-	240,000	-	-	-	-	-	592,000
18	CIP Funded Through User Charges	335,000	2,107,200	730,200	84,800	325,800	176,800	173,800	198,900	241,600	291,300	4,665,400
19	CIP To Be Funded through Other Sources	6,700,000	800,100	929,400	127,200	488,700	265,200	260,800	298,400	362,500	356,000	10,588,300

[1] Program spending related to Degraded Pipe anticipated to start in 2023 at approximately \$400k per year for a 5 year term.

[2] Excluding 2013 Pandora, CIP funded by utility funds: 100% 72% 44% 40% 40% 40% 40% 40% 40% 40% 45%

[3] Assumes 2013 Pandora project funded through existing balances and COP issuance.

- Rehabilitation and replacement of pipe characterized as “unsatisfactory” in the asset management study, \$1.21 million
- Other transmission and distribution repair and rehabilitation, \$0.86 million
- Fleet vehicle replacement, \$0.10 million

The asset management efforts to address unsatisfactory pipe are projected to begin in 2018. At the amounts proposed, it is anticipated the majority of pipe classified as unsatisfactory will be addressed by the end of the study period in 2022. It should be noted that asset management projects prioritized in the recent asset management study will continue beyond the end of the Study period in 2022.

The Town anticipates a portion of the CIP will be funded through user revenues while a portion will be funded through Other Sources. Other Sources may include existing balances, debt issuance, grant funding and Town Capital Fund transfers. Once the Pandora project is completed, Other Sources consist primarily of grant funding and Town Capital Fund Transfers. Footnote [2] of Table 3-5 shows the Water Utility anticipating slightly more than half of its capital projects will be funded through Other Sources in 2015 through 2022. The breakdown of assumed funding sources will be discussed more thoroughly later in this report.

### **3.2.3 Projected Debt Service Requirements**

Table 3-6 presents the existing and proposed debt service requirements for the Water Utility. The Water Utility issued debt to initiate the Pandora water treatment plant design and construction in 2010. A portion of these general obligation bonds were issued as Build America Bonds (BABs). BABs are designed to reduce the cost of borrowing through a federal government subsidy that lowers the effective cost of interest payments. The BABs issued by the Town are Direct Payment BABs, meaning the subsidy is remitted directly to the Town in an amount equivalent to 35 percent of the annual interest paid. This subsidy represents a revenue stream available to the Water Utility of approximately \$128,200 in 2013. The amount of reimbursement associated with the BABs will decline over time as interest payments reduce. The use of the BAB subsidy income stream will be discussed later in this report.

Completion of the Pandora project will require additional funding. The Water Utility anticipates issuing approximately \$4.5 million in Certificates of Participation (COPs) later in 2013. The proposed COPs, which are an alternative debt instrument to bonds, are expected to have a 20 year term and an average interest rate of about 4.30 percent. Under these assumptions, annual debt service is estimated to be approximately \$337,500 per year, with payments expected to begin in 2014.

**Table 3-6: Existing and Proposed Debt Service**

Line No.		Projected									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Existing Debt Issues</b>											
1	2010A	449,100	445,800	447,400	448,800	-	-	-	-	-	-
2	2010B	366,200	366,200	366,200	366,200	811,200	806,700	799,900	796,800	787,100	781,300
3	Gross Debt Service	815,300	812,000	813,600	815,000	811,200	806,700	799,900	796,800	787,100	781,300
<b>Proposed Debt</b>											
4	2013 COPs	-	337,500	337,500	337,500	337,500	337,500	337,500	337,500	337,500	337,500
5	Total Gross Debt Service	815,300	1,149,500	1,151,100	1,152,500	1,148,700	1,144,200	1,137,400	1,134,300	1,124,600	1,118,800

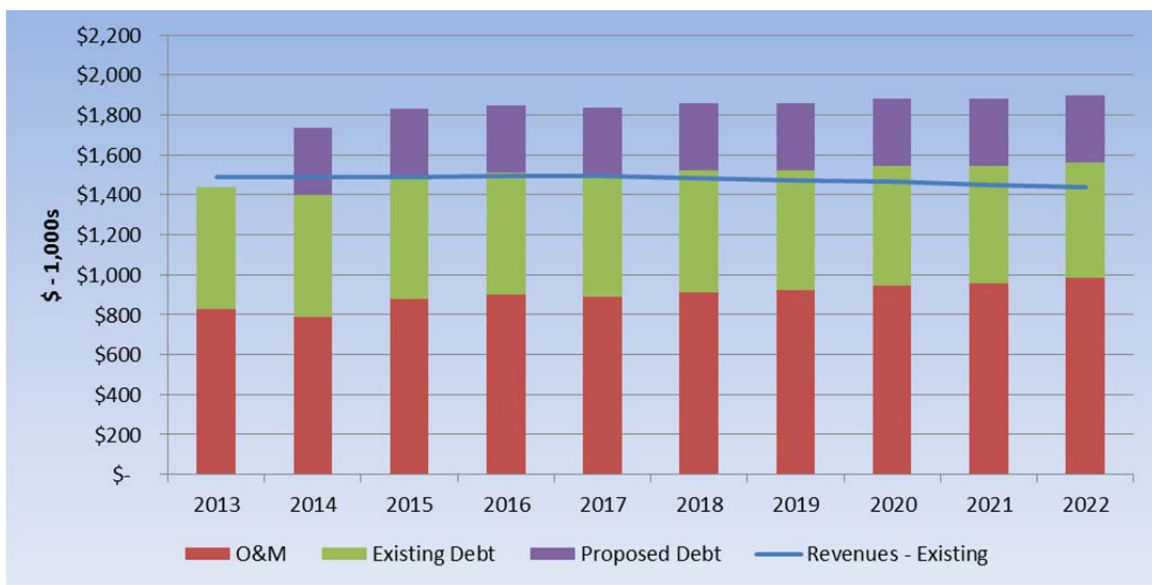
### 3.3 Water Utility Ten-Year Financial Plan

Based on the information developed for this report, a financial plan has been assembled. This financial plan aggregates the revenues and expenses forecasted and described previously to assess the adequacy of revenues to meet all operating and capital requirements. The cash flow analysis identifies the overall increase in revenues needed to meet the Town’s overall financial objectives.

#### 3.3.1 Water System Operating Flow of Funds

Figure 3-1 demonstrates the relationship between revenues under existing rates and the projected revenue requirements for the Water Utility. As indicated in Figure 3-1, beginning in 2014 revenues are not sufficient to meet the forecasted O&M and debt service expenses. This operating forecast is not sustainable; if forecasted revenues and costs are realized at the projected levels, Water Utility reserve balances will be nearly exhausted by the end of 2015.

**Figure 3-1: Water Utility Operating Cash Flow under Existing Rates**



The following revenue increases are proposed to address the projected operating deficits of the Water Utility.

**Table 3-7: Proposed Water Revenue Increases**

<b>Year</b>	<b>Proposed Revenue Increase</b>
2014	20.0%
2015	10.0%
2016	8.0%
2017	6.0%
2018	2.0%
2019	2.0%
2020	2.0%
2021	2.0%
2022	2.0%

These adjustments will address the projected operating deficits over time and provide needed capital funding to implement the CIP. A detailed cash flow illustrating the impact of these adjustments is presented in Table 3-8.

Line 1 of Table 3-8 shows user revenues under existing rates, as shown previously on Line 9 of Table 3-3. Lines 2 through 10 of Table 3-8 present the proposed revenue increases needed to finance the Town's operating and capital costs for the planning period. Total user revenues are summarized on Line 12 of Table 3-8. Other revenues are shown on Lines 13 through 15. Other Water Fund Revenue on Line 13 represents the aggregation of revenues from meter sales, material sales, water specific ownership tax, and the interest on taxes. Forecasts of Other Water Fund Revenue are projected to remain constant during the study period at \$33,000.

The Pandora Plant Mill Levy shown on Line 14 represents tax revenues assessed to recover the cost of the 2010 debt service. The amount trends lower over time as a result of the amortization structure of the bonds, whose payments also trend lower. Line 15 presents Miscellaneous Revenue, the majority represented by the BABs interest rate rebate. The level of rebate trends lower over time as interest payments decline. An additional allowance of \$5,000 per year for interest income is also included in the Miscellaneous Revenue projection. Line 16 shows the total operating revenues forecasted over the study period. Including proposed revenue adjustments, total Water Utility operating revenues are projected to range from \$1.49 million in 2013 to \$1.92 million in 2022.

Table 3-8: Water Utility Ten-Year Financial Plan

Line No.		Projected									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Water Utility Operating Flow of Funds</b>											
1	Revenue Under Existing Rates	708,600	710,100	711,600	713,100	714,600	716,000	717,500	719,000	720,500	722,000
<u>Proposed Revenue Adjustments</u>											
	<u>Year</u>	<u>Month</u>	<u>Increase</u>								
2	2014	1	20.0%	142,000	142,300	142,600	142,900	143,200	143,500	143,800	144,100
3	2015	1	10.0%		85,400	85,600	85,800	85,900	86,100	86,300	86,500
4	2016	1	8.0%			75,300	75,500	75,600	75,800	75,900	76,100
5	2017	1	6.0%				61,100	61,200	61,400	61,500	61,600
6	2018	1	2.0%					21,600	21,700	21,700	21,800
7	2019	1	2.0%						22,100	22,200	22,300
8	2020	1	2.0%							22,600	22,700
9	2021	1	2.0%								23,100
10	2022	1	2.0%								23,600
11	Total Proposed Additional Revenue	-	142,000	227,700	303,500	365,300	387,500	410,600	434,000	458,100	482,600
12	Total Water User Charge Revenue	708,600	852,100	939,300	1,016,600	1,079,900	1,103,500	1,128,100	1,153,000	1,178,600	1,204,600
13	Other Water Fund Revenue	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000
14	Pandora Plant Mill Levy	615,300	612,000	613,600	615,000	611,200	606,700	599,900	596,800	587,100	581,300
15	Miscellaneous Revenue	133,200	133,200	133,200	133,200	133,200	128,100	122,200	115,900	109,000	101,700
16	<b>Grand Total Water Revenue</b>	<b>1,490,100</b>	<b>1,630,300</b>	<b>1,719,100</b>	<b>1,797,800</b>	<b>1,857,300</b>	<b>1,871,300</b>	<b>1,883,200</b>	<b>1,898,700</b>	<b>1,907,700</b>	<b>1,920,600</b>
<u>Revenue Requirements</u>											
17	Operation and Maintenance Expense	825,500	786,800	877,700	897,500	889,300	913,800	922,300	947,300	956,500	982,000
Debt Service											
18	Existing G.O. Debt	815,300	812,000	813,600	815,000	811,200	806,700	799,900	796,800	787,100	781,300
19	Debt Reserve Fund Contribution	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)
20	Proposed Debt	-	337,500	337,500	337,500	337,500	337,500	337,500	337,500	337,500	337,500
21	Total Debt Service	615,300	949,500	951,100	952,500	948,700	944,200	937,400	934,300	924,600	918,800
22	Transfers to Capital	128,200	128,200	128,200	-	-	-	-	-	-	-
23	Other	-	-	-	-	-	-	-	-	-	-
24	<b>Total Revenue Requirements</b>	<b>1,569,000</b>	<b>1,864,500</b>	<b>1,957,000</b>	<b>1,850,000</b>	<b>1,838,000</b>	<b>1,858,000</b>	<b>1,859,700</b>	<b>1,881,600</b>	<b>1,881,100</b>	<b>1,900,800</b>
25	<b>Annual Operating Balance</b>	<b>(78,900)</b>	<b>(234,200)</b>	<b>(237,900)</b>	<b>(52,200)</b>	<b>19,300</b>	<b>13,300</b>	<b>23,500</b>	<b>17,100</b>	<b>26,600</b>	<b>19,800</b>
<b>Water Utility Capital Flow of Funds</b>											
Sources											
26	Tap Fees	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
27	Transfer from Town Capital Fund	-	800,000	279,400	127,200	-	265,200	160,800	298,400	262,500	356,000
28	Transfer from Operations	128,200	128,200	128,200	-	-	-	-	-	-	-
29	Anticipated Grants	-	-	650,000	-	550,000	-	100,000	-	100,000	-
30	Debt Issuance (C.O.P.)	4,500,000	-	-	-	-	-	-	-	-	-
31	<b>Total Capital Sources</b>	<b>4,828,200</b>	<b>1,128,200</b>	<b>1,257,600</b>	<b>327,200</b>	<b>750,000</b>	<b>465,200</b>	<b>460,800</b>	<b>498,400</b>	<b>562,500</b>	<b>556,000</b>
Uses											
32	CIP - User Charge Funded	335,000	2,107,200	730,200	84,800	325,800	176,800	173,800	198,900	241,600	291,300
33	CIP - Other Funding Sources	6,700,000	800,100	929,400	127,200	488,700	265,200	260,800	298,400	362,500	356,000
34	Bond Issuance Expense	90,000	-	-	-	-	-	-	-	-	-
35	<b>Total Capital Uses</b>	<b>7,125,000</b>	<b>2,907,300</b>	<b>1,659,600</b>	<b>212,000</b>	<b>814,500</b>	<b>442,000</b>	<b>434,600</b>	<b>497,300</b>	<b>604,100</b>	<b>647,300</b>
36	<b>Annual Capital Balance</b>	<b>(2,296,800)</b>	<b>(1,779,100)</b>	<b>(402,000)</b>	<b>115,200</b>	<b>(64,500)</b>	<b>23,200</b>	<b>26,200</b>	<b>1,100</b>	<b>(41,600)</b>	<b>(91,300)</b>
<b>Consolidated Cash Flow Results</b>											
37	Total Revenues	6,190,100	2,630,300	2,848,500	2,125,000	2,607,300	2,336,500	2,344,000	2,397,100	2,470,200	2,476,600
38	Total Expenses	8,565,800	4,643,600	3,488,400	2,062,000	2,652,500	2,300,000	2,294,300	2,378,900	2,485,200	2,548,100
39	Annual Balance	(2,375,700)	(2,013,300)	(639,900)	63,000	(45,200)	36,500	49,700	18,200	(15,000)	(71,500)
40	Beginning Balance [1]	5,454,500	3,078,800	1,065,500	425,600	488,600	443,400	479,900	529,600	547,800	532,800
41	Annual Balance	(2,375,700)	(2,013,300)	(639,900)	63,000	(45,200)	36,500	49,700	18,200	(15,000)	(71,500)
42	<b>Ending Balance</b>	<b>3,078,800</b>	<b>1,065,500</b>	<b>425,600</b>	<b>488,600</b>	<b>443,400</b>	<b>479,900</b>	<b>529,600</b>	<b>547,800</b>	<b>532,800</b>	<b>461,300</b>
43	<b>Minimum Operating Balance [2]</b>	<b>403,500</b>	<b>394,000</b>	<b>416,400</b>	<b>421,300</b>	<b>419,300</b>	<b>425,300</b>	<b>427,400</b>	<b>433,600</b>	<b>435,800</b>	<b>442,100</b>

[1] Available balance adjusted down \$2.0M to account for restricted debt service reserve.

[2] Based on 90 days operation and maintenance expense & allowance of \$200k for capital reserve.

Operating revenue requirements are shown on Lines 17 through 24 of Table 3-8 and include O&M expenses, debt service payments, and transfers to capital. O&M expenses, identified previously on Line 29 of Table 3-4, are shown on Line 17 of Table 3-8. Debt Service for the existing 2010 bonds and the proposed COPs are shown on Lines 18 and 20, respectively. Line 19 shows an annual \$200,000 credit that is funded by a reserve established at the time of issuance for the 2010 bonds. Total debt service net of the reserve fund contribution is equal to the Pandora Plant Mill Levy, and is shown on Line 21.

For 2013 through 2015, the Town decided to direct the BAB interest rebate to assist in the funding of the Pandora project. This amount is shown in the operating flow of funds as a revenue requirement on Line 22, and is shown on Line 28 as a source of funds for the capital improvement program.

Total revenue requirements are summarized on Line 24. This amount is deducted from Line 16 operating revenues to determine the annual operating balance. A negative annual operating balance indicates expenses exceed revenues, a situation that is projected to occur from 2013 through 2016 despite the proposed revenue adjustments. The cumulative effect of the proposed revenue adjustments is projected to restore the operating balance to a positive result beginning in 2017.

### **3.3.2 Water System Capital Flow of Funds**

The capital flow of funds is shown in Table 3-8 on Lines 26 through 36.

Sources of funds include tap fees, transfers from the Town Capital Fund, transfers from utility operations, potential grants, and issuance of debt. Tap fees are currently budgeted at \$200,000 per year and are projected to remain at that level throughout the Study period. Transfers from the Town Capital Fund are shown on Line 27. The amount of transfer peaks in 2014 at \$800,000 to assist with the remaining funding needs for the Pandora project. Future Town Capital Fund contributions are considerably lower from 2015 through 2022 and take into consideration the receipt of potential grant monies shown on Line 29.

Anticipated grants in 2015 and 2017 are associated with additional phases of the Colorado Avenue water line replacement. To the extent these grant funds do not become available, staff has indicated the timing of that project may be disrupted.

Uses of capital funds include the CIP program expenditures shown previously in Table 3-5. Additionally, expenses associated with the issuance of the COP debt in 2013 are estimated to be approximately 2.0 percent based on information provided by the Town's financial advisor.

Line 36 of Table 3-8 shows the Water Utility's annual capital balance. Negative amounts shown on Line 36 are funded through the use of reserves.

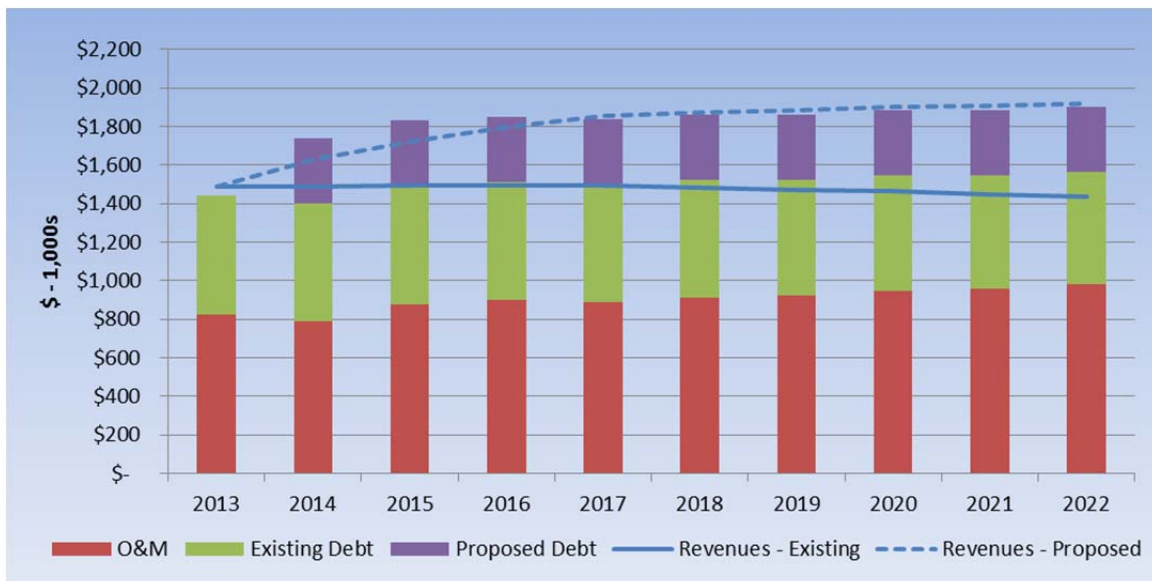
### 3.3.3 Consolidated Cash Flow Results

Consistent with the financial management of the utility, total operating and capital revenues are aggregated over the Study period and are summarized on Line 37 of Table 3-8. These revenues are compared to the total costs which are summarized on Line 38. The total annual balance for the Water Utility is represented on Line 39. Negative annual balances will draw down the utility’s cash reserves, while positive annual balances will contribute to reserves.

The beginning balance available to the Water Utility is shown on Line 40 and is estimated to be \$5,450,000 beginning January 1 of 2013. The available balance is projected to be drawn down substantially as the remaining 2010 bond proceeds are applied to the Pandora project.

A targeted minimum balance has been developed and is shown on Line 43. This amount is comprised of 90 days of operation and maintenance expenses, plus an additional \$200,000 for a capital projects reserve. The targeted minimum balance was developed to provide working capital liquidity and an emergency reserve to provide some protection against unforeseen events. The proposed revenue adjustments, the 2013 COP issuance, projected Town capital transfers, and available balances are projected to meet forecasted operating and capital expenses and provide the utility a reasonable reserve throughout the Study period. Figure 3-2 illustrates the impact of the proposed revenue adjustments.

**Figure 3-2: Water Utility Operating Cash Flow with Proposed Revenue Adjustments**



## 4.0 COST OF SERVICE ANALYSIS

### 4.1 Introduction

The cost of service analysis is focused on determining revenue responsibility. Once the overall need for revenue increases is identified through the financial planning, the results of the cost of service analysis help answer the following question:

- "Which customer class or classes are responsible for the costs incurred to provide service?"

To determine each customer class' equitable share of the cost of providing utility service, the cost of service analysis compares the revenues received from each customer class under the existing schedule of rates with the allocated cost responsibility for that class.

The cost of service analysis was developed in the following steps:

1. Determine the net revenue requirements to be recovered from user charges.
2. Estimate the system test period units of service.
3. Allocate test period operating and capital costs.
4. Develop test period unit costs of service by class.
5. Assign the costs of service to customer classes.

To equitably develop rates for water service, the utility's customer classes are allocated their respective share of the total cost of service according to their use of the system. Cost are assigned through consideration of the amount of water used, peak demand characteristics, customer costs, and other relevant factors. Ultimately, proposed rates must be sufficient to meet the net revenue requirements forecasted for the Water Utility.

### 4.2 Net Revenue Requirements

As described in Section 3 of this report, the cash needs of the Water Utility were projected over a ten year study period. The test period for the cost of service analysis is 2014, which corresponds to the first year for which revenue adjustments are proposed. For the water system, the revenue adjustment amounts to a 20 percent increase.

Table 4-1 summarizes the development of the net revenue requirements to be recovered from water rates in the 2014 test year. The net revenue requirements represent the level of costs that must be recovered from water sales under the established water rate schedule and are equal to total operating and capital cost expenditures less all sources of other revenue. As presented in Table 4-1, the net operating costs are



equal to \$514,600 and the net capital costs are equal to \$337,500 for a total net revenue requirement of \$852,100. This is 20.0 percent higher than revenues under existing water rates which is consistent with the 2014 revenue increase identified in the Water Utility Financial Plan.

**Table 4-1: Water Utility Test Year 2014 Cost of Service**

Line No.	Description	Operating Expense \$	Capital Cost \$	Total \$
<b>Revenue Requirements</b>				
1	Operating Expense	786,800	-	786,800
2	Debt Service	-	949,500	949,500
3	Revenue Capital Financing	-	128,200	128,200
4	Total	786,800	1,077,700	1,864,500
<b>Revenue Requirements Met from Other Sources</b>				
5	Other Operating Revenue	33,000	-	33,000
6	Pandora Plant Mill Levy	-	612,000	612,000
7	Interest Income	5,000	-	5,000
8	Interest Rebate - BABs	-	128,200	128,200
9	Use of / (Deposit to) Reserves	234,200	-	234,200
10	Total	272,200	740,200	1,012,400
11	Cost of Service to be met by User Charges	514,600	337,500	852,100
12	Revenue under Existing Rates			710,100
13	Indicated System Revenue Adjustment			20.0%

### 4.3 Cost of Service Methodology

Two alternative cost allocation methodologies are generally accepted by the American Water Works Association as described in *AWWA Manual M1, Principles of Water Rates, Fees, and Charges*: (1) the Base-Extra Capacity Method, and (2) the Commodity-Demand Method. Both methods are similar in that each customer class' average water usage requirements and peak demand water usage requirements are reflected in the allocation process. Although the allocation approach varies slightly in the assignment of costs, both approaches are centered on the recovery of costs related to both average and peak conditions.

For this study the Base-Extra Capacity method was followed. Under the Base-Extra Capacity method, costs are assigned to functional components including base, extra capacity, and customer costs. Base costs vary directly with the volume of water used and reflect the costs associated with serving customers under average load conditions. Base costs tend to include items such as power and chemicals costs.

Extra capacity costs reflect costs incurred to meet the peak demand at both a maximum day and a maximum hour. These costs include operating and capital costs necessary to provide additional capacity beyond average load conditions.

Customer costs are those that generally vary in accordance with the quantity of customers served. Such costs typically include meter reading, billing, customer care, and related support costs.

#### **4.4 Functional Cost Assignment**

The Town's water utility system includes a variety of facilities that work in concert with one another to meet the average and peak demands of the system. Peak demand requirements generally vary across customer classes, reflecting the diversity of class usage. As such, water systems are designed to meet peak coincidental demands of the system as a whole. For every volume-related element within the water system, an average demand is served and therefore a portion of such costs is attributable to the base cost component. Water system elements designed for the purpose of meeting average day demand are assigned 100 percent to the base component. Extra capacity requirements exceeding the base are distinguished between maximum day and maximum hour demands.

Historical system operating characteristics and engineering reports were examined to develop reasonable ratios to apportion costs related to base, maximum day, and maximum hour components. A ratio of maximum day to average day demand of 2.06 was used based on system operating history and engineering analysis. For a system element whose purpose is to meet maximum day requirements of the system, this ratio results in approximately 49 percent ( $1/2.06$ ) of costs being allocated to the base component. The remaining 52 percent ( $(2.06-1)/2.06$ ) is assigned to the maximum day extra capacity component.

A ratio of maximum hour to average day demand of 3.00 was estimated based on system operating characteristics, engineering analysis, and professional judgment. For a system element whose purpose is to meet maximum hour requirements, this ratio results in approximately 33 percent ( $1/3.00$ ) of costs being allocated to the base component. Approximately 35 percent ( $(2.06-1)/3.00$ ) percent is assigned to the maximum day extra capacity component, while the remaining 31 percent ( $(3.00-2.06)/3.00$ ) is assigned to the maximum hour extra capacity demand component.

##### **4.4.1 Operating Expenses**

Operating expenses for the water system are budgeted and actual expenses are recorded to reflect costs associated with water treatment, the distribution system, and other general costs. These costs were

forecasted previously in Table 3-4 of this report. Test year 2014 operating costs are assigned to functional components in Table 4-2.

**Table 4-2: Allocation of Operation and Maintenance Expenses**

Line No.	Description	Test Year 2014		Maximum	Maximum	Customer	Billing
		Total	Base	Day	Hour	Meters	
		\$	\$	\$	\$	\$	\$
<b><u>Water Plant Expenditures</u></b>							
1	Salaries, Wages, & Benefits	93,500	45,300	48,200	-	-	-
2	Chemicals	10,200	10,200	-	-	-	-
3	Water Testing	10,200	10,200	-	-	-	-
4	Equipment Replacement	8,900	4,300	4,600	-	-	-
5	Water Meters	15,300	-	-	-	15,300	-
6	Commercial Meter Repairs	12,200	-	-	-	12,200	-
7	Utilities	22,700	20,400	2,300	-	-	-
8	Water Rights Legal/Engineer	50,000	24,200	25,800	-	-	-
9	Prof/Technical Services	10,700	10,700	-	-	-	-
10	Fuel	7,700	3,700	4,000	-	-	-
11	Pandora System O&M	32,100	15,600	16,500	-	-	-
12	Mill Creek O&M Audits	8,000	8,000	-	-	-	-
13	All Other	18,300	18,300	-	-	-	-
14	Total Water Plant O&M	299,800	170,900	101,400	-	27,500	-
<b><u>Water System Expenses</u></b>							
15	System O&M	10,200	3,400	3,600	3,200	-	-
16	Operating Supplies	2,600	900	900	800	-	-
17	Equipment Rental	1,500	500	500	500	-	-
18	Sidewalk Repair	1,000	300	400	300	-	-
19	Radio Repairs	300	100	100	100	-	-
20	Vehicle Maint & Repair	8,200	2,700	2,900	2,600	-	-
21	Utilities	500	200	200	100	-	-
22	Emergency Repairs	20,000	6,700	7,100	6,200	-	-
23	Prof Services	5,100	1,700	1,800	1,600	-	-
24	Total Water System O&M	49,400	16,500	17,500	15,400	-	-
<b><u>Other Operating Expenses</u></b>							
Transfer to Gen Fund - Admin							
25	Billing	43,900	-	-	-	-	43,900
26	Meter Reading	10,000	-	-	-	10,000	-
27	All Other	344,800	152,800	112,400	12,700	30,800	36,100
28	Legal Fees/Blue Lake Easement	25,000	12,100	12,900	-	-	-
29	County Treasurer Fees	13,900	6,700	7,200	-	-	-
30	Total Other Water O&M	437,600	171,600	132,500	12,700	40,800	80,000
31	Total Water Utility O&M	786,800	359,000	251,400	28,100	68,300	80,000
<b><u>Less Other Operating Revenue</u></b>							
32	Other Operating Revenue	33,000	14,500	10,800	1,200	3,000	3,500
33	Interest Income	5,000	2,300	1,600	200	400	500
34	Use of / (Deposit to) Reserves	234,200	103,800	76,400	8,600	20,900	24,500
35	Subtotal Other Operating Revenue	272,200	120,600	88,800	10,000	24,300	28,500
36	Net Water O&M Expense	514,600	238,400	162,600	18,100	44,000	51,500

Water Plant operating costs were allocated based on several considerations, including:

- The design basis of the supply/treatment plant infrastructure, which is influenced primarily by average and maximum day service requirements.
- The design basis of the distribution system, which is influenced primarily by the maximum day and maximum hour service requirements.
- Directly assignable costs of meter reading and maintenance and customer billing.
- Town input regarding the functional purpose of certain costs.

In light of these considerations, water plant expenditures were allocated primarily to either base or base/maximum day using the factors described previously in this Section. Power costs were assigned 90 percent to base and 10 percent to maximum day, while meter costs were assigned directly to customer meters. Water system expenses were allocated to the base/maximum day/maximum hour components.

Other operating expenses include a transfer to the Town's General Fund to recover costs associated with general support and administrative duties performed by Town personnel. In consultation with Town and Utility staff, costs were estimated for billing and meter reading functions and were allocated directly to their respective functional components. All other costs within the transfer were allocated based on the subtotal of previously assigned costs, indicative of the general administrative support provided by Town personnel.

Other operating revenues applicable to the utility operations are allocated on the basis of previously assigned costs. These sources of funds are deducted from operation and maintenance expenses to determine the net water operation and maintenance expenses by function shown on Line 36 of Table 4-2.

#### **4.4.2 Capital Costs**

Cash capital costs for the water system include existing and proposed debt, and are assigned to functional components in Table 4-3. These costs were forecasted previously in Table 3-6 of this report. All existing and proposed debt payments are related to the Pandora Water Treatment Plant project. Following the design basis, these costs are allocated to the base/maximum day functional components.

Other sources of revenue are deducted from the capital costs to derive the net water capital expense to be recovered from rates. These other sources include the Pandora Plant Mill Levy and the interest rate rebate associated with the 2010 BABs issued by the Town.

**Table 4-3: Allocation of Capital Costs**

Line No.	Description	Test Year 2014		Maximum	Maximum	Customer	Billing
		Total	Base	Day	Hour	Meters	
		\$	\$	\$	\$	\$	\$
<b>Capital Costs</b>							
1	Existing & Proposed Debt	949,500	465,300	484,200	-	-	-
2	Revenue Financed Capital	128,200	62,800	65,400	-	-	-
3	Total Water Capital Costs	1,077,700	528,100	549,600	-	-	-
<b>Less Other Sources</b>							
4	Pandora Plant Mill Levy	612,000	299,900	312,100	-	-	-
5	Interest Rebate - BABs	128,200	62,800	65,400	-	-	-
6	Use of / (Deposit to) Reserves	-	-	-	-	-	-
7	Subtotal Other Revenue	740,200	362,700	377,500	-	-	-
8	Net Water Capital Expense	337,500	165,400	172,100	-	-	-

## 4.5 Units of Service

Functional costs responsibility of each customer class may be established based on the respective service requirements of each class. These service requirements are referred to as units of service and are summarized in Table 4.4.

**Table 4-4: Units of Service**

Line No.	Customer Class	Usage Total Annual Mgal	Average Day Mgal/day	Maximum Day			Maximum Hour			Customer	
				Capacity Factor %	Total Capacity Mgal/day	Extra Capacity (a) Mgal/day	Capacity Factor %	Total Capacity Mgal/day	Extra Capacity (b) Mgal/day	Equivalent Meters	Billed Units
1	Residential In Town	43,370	118.8	250%	297.1	178.3	400%	475.2	178.1	1,540	6,410
2	Commercial In Town	53,170	145.7	225%	327.8	182.1	300%	437.0	109.2	944	1,392
3	Out of Town	16,275	44.6	242%	107.8	63.2	368%	163.9	56.1	429	1,898
4	Total	112,815	309.1		732.7	423.6		1,076.1	343.4	2,913	9,700

(a) Extra capacity in excess of average day usage.

(b) Extra capacity in excess of maximum day demand.

Base cost responsibility is determined by the water volume used under average day conditions. Average day quantities are based on billing records, forecasted demand, and existing agreements for service to Out of Town customers. Extra capacity costs are assigned to classes based on the estimate of individual class peak demand characteristics and the relationship of these peaks to average use. The estimated capacity factors were developed based on experience and judgment.

Projected customers for Test Year 2014 are the basis for the customer-related units of service. Equivalent meter ratios reflecting the relationship of the costs to install and maintain various sized meters to a standard 5/8-inch meter provide a reasonable basis for estimating the variation in meters and services operating costs. Billing costs are allocated to classes based on the projected number of billed units.

#### 4.6 Unit Cost Development

Based on the functionalized operation and maintenance expenses and capital costs shown in Tables 4-2 and 4-3, respectively, and the units of service developed in Table 4-4, unit costs of service for each functional cost component may be determined. Table 4-5 indicates for each functional component the unit of measure and applicable unit cost.

**Table 4-5: Unit Cost Development**

Line No.	Description	Test Year 2014		Maximum	Maximum	Customer	Billing
		Total	Base	Day	Hour	Meters	
		\$	\$	\$	\$	\$	\$
1	Total Units of Service		112,815	424	343	2,913	9,700
2	Unit of Measure		Mgal	Mgal/Day	Mgal/Day	Eq. Meters	Billed Units
3	Net Operating Expense - \$	514,600	238,400	162,600	18,100	44,000	51,500
4	Unit Cost - \$/Unit		2.1132	383.8366	52.7082	15.1060	5.3091
5	Net Capital Costs - \$	337,500	165,400	172,100	-	-	-
6	Unit Cost - \$/Unit		1.4661	406.2624	-	-	-
7	Total Cost of Service	852,100	403,800	334,700	18,100	44,000	51,500
8	Unit Cost - \$/Unit		3.5793	790.0990	52.7082	15.1060	5.3091

#### 4.7 Allocation of Costs to Customer Classes

Applying the unit costs by function to each customer class' units of service allows for the distribution of costs to customer classes, as indicated in Table 4-6. Units of service for each class are as shown in Table 4-4.

After Test Year 2014 costs are assigned to customer classes, they may be compared against revenue under existing rates. This comparison provides an indication of equity in the recovery of costs through revenues under existing rates. As shown in Table 4-7, the total system adjustment is indicated to be 20 percent. Each class is indicated to share in the overall revenue adjustment.

It is important to note that cost of service results are instructive but for many reasons should not be interpreted as prescriptive in the development of proposed rates. Section 5 will discuss proposed rates for the Water Utility.

**Table 4-6: Allocation of Costs to Customer Classes**

Line No.	Description	Test Year 2014		Maximum Day	Maximum Hour	Customer Meters	Billing
		Total	Base				
1	Unit Cost of Service - \$/Unit		3.5793	790.0990	52.7082	15.1060	5.3091
	Residential In Town						
2	Units of Service		43,370	178	178	1,540	6,410
3	Allocated Cost - \$	362,400	155,300	140,700	9,400	23,100	33,900
	Commercial In Town						
4	Units of Service		53,170	182	109	944	1,392
5	Allocated Cost - \$	361,700	190,300	143,900	5,800	14,300	7,400
	Out of Town						
6	Units of Service		16,275	63	56	429	1,898
7	Allocated Cost - \$	128,000	58,200	50,100	2,900	6,600	10,200
8	Total Units of Service		112,815	424	343	2,913	9,700
9	Total Cost of Service - \$	852,100	403,800	334,700	18,100	44,000	51,500

**Table 4-7: Comparison of Revenues under Existing Rates to Allocated Cost of Service**

Line No.	Description	Revenue Under Existing Rates	Total Allocated Cost of Service	Indicated Increase / (Decrease)	Indicated Increase / (Decrease)
		\$	\$	\$	%
1	Residential In Town	296,300	361,600	65,300	22.0%
2	Commercial In Town	308,800	361,700	52,900	17.1%
3	Out of Town	98,700	128,800	30,100	30.5%
4	Subtotal	703,800	852,100	148,300	21.1%
5	Surcharge Revenues (a)	6,300			
6	Total	710,100	852,100	142,000	20.0%

(a) Reflects debt surcharge paid by Hillside for recovery of utility debt costs not paid in that service area through taxes.

## 5.0 PROPOSED RATE DESIGN

### 5.1 Introduction

The primary focus of Step 3, Rate Design is the examination of revenue recovery. Generally speaking, the objective is to design rates for the utility to achieve the following:

- Generate adequate revenues to meet the projected operating and capital costs, while maintaining sound financial performance.
- Provide revenue stability.
- Provide cost recovery that is reasonably commensurate with the cost of providing service.

Additionally, the Town wished to explore the development of irrigation rates for the Water Utility and residential rates for both utilities that reflected certain size and deed restrictions.

### 5.2 Existing Water Rates

The existing schedule of water rates, which was shown previously in Table 3-2, became effective January 1, 2012. The rate schedule is comprised of a minimum bill or base charge that for residential customers includes a bi-monthly allowance of 8 Mgal. A conservation-oriented inclining block rate structure applies to all usage in excess of 8 Mgal. The inclining block rates are designed to increase at \$0.50 per block. For usage over 100 Mgal per bi-monthly period, the highest block rate is \$12.50 per Mgal. Similar to residential rates, commercial water rates consist of a minimum or base bill. However, the level of fee and the amount of usage allowed in the minimum bill vary by meter size. For usage exceeding the minimum bill allowance, volume rates apply and are inclining over a two block structure. The volume within each block varies for commercial customers according to meter size. Out of Town customers rates are 125 percent of the In Town rates. Additionally, certain Out of Town areas include a debt service surcharge as an additional component of their base fee.

### 5.3 Proposed Water Rates

It is important to acknowledge that cost of service studies are the result of engineering and professional estimates, based to an extent on judgment and experience. Therefore cost of service results should be interpreted as instructive in the development of proposed rates but not as a literal prescription for rate design. Past utility rate practice, contractual agreements, financial impact on customers, and local policy direction are among the factors to be considered in the development of proposed rates beyond cost of service results.



The existing rate structure was considered to be serving the Water Utility appropriately based on the following considerations.

- **Revenue stability:** The base fee/minimum bill provides a reliable revenue source, especially in consideration of the seasonal occupancy of second homes in the service area.
- **Fixed cost coverage:** The majority of Water Utility costs are fixed, meaning they do not vary proportionately with the volume of water produced. The issuance of additional debt in the form of COP's will add to the fixed cost nature of the Water Utility's cost structure. The high fixed nature of utility costs reasonably aligns with the existing rate structure's minimum bill design.
- **Conservation orientation:** A conservation-oriented inclining block rate structure applies to all usage above the minimum allowance for both Residential and Commercial customers. For Residential customers, the incremental cost of additional usage increases substantially. The Town's inclining block structure compares favorably to other utilities in the region.
- **Ease of explanation:** The existing rate structure has been in effect for a considerable amount of time and is familiar to both customers and Town staff.

Based on these considerations no material changes are proposed to the existing rate structure. However, two new rates are proposed to address the Town's goals and objectives for water rate design.

Proposed water rates are shown in Table 5-1 and are assumed to be effective on January 1, 2014.

#### 5.4 New Water Rate Components

As a part of the study effort, the Town wanted to consider specific rate development for irrigation meters and for size and deed restricted Residential accounts.

The Town currently has about 11 accounts that serve irrigation systems. These accounts include Residential and Commercial customers both in and out of Town. Irrigation systems require water in the summer months that coincide with the peak water demand of the system, followed by little to no usage in the cold weather months. As such, the relationship between peak and average demand for these accounts is relatively high, meaning their service requirements are more expensive to provide. It is proposed that irrigation accounts be charged the same minimum bill that would otherwise be applicable to their class (Residential or Commercial) and meter size. For use in excess of the minimum allowance, volume rates are proposed to be 125 percent of the inclining block rates applicable to their respective class and meter

**Table 5-1: Existing and Proposed 2014 Water Rates**

Line No.	Description	Base Fee		Volume Charge								Block Definitions				
		Total Existing	Total Proposed	Existing Block Rates				Proposed Block Rates				One	Two	Three	Add'l	
		\$/bill	\$/bill	One	Two	Three	Additional	One	Two	Three	Additional	Mgal	Mgal	Mgal	Mgal	
1	Residential	\$ 37.51	\$ 46.14	\$ -	\$ 3.50	\$ 4.00	\$4.00 + \$0.50	\$ -	\$ 4.45	\$ 5.05	\$5.05 + \$0.60	0 - 8	8 - 12	12 - 15	15 - 100+	
2	Residential, Restricted		\$ 30.00	\$ -			per 5,000 gal (a)				per 5,000 gal (b)	0 - 8	8 - 12	12 - 15	15 - 100+	
Commercial																
3	5/8"	\$ 52.40	\$ 62.88	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 8	8 - 30	>30		
4	3/4"	\$ 59.54	\$ 71.45	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 12	12 - 33	>33		
5	1"	\$ 84.54	\$ 101.45	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 16	16 - 33	>30		
6	1.5"	\$ 196.47	\$ 235.76	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 32	32 - 64	>64		
7	2"	\$ 327.44	\$ 392.93	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 48	48 - 150	>150		
8	3"	\$ 517.95	\$ 621.54	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 72	72 - 160	>160		
9	4"	\$ 690.61	\$ 828.73	\$ -	\$ 3.00	\$ 4.00		\$ -	\$ 3.60	\$ 4.80		0 - 96	96 - 310	>310		
10	Residential - Out of Town	\$ 46.89	\$ 57.67	\$ -	\$ 4.38	\$ 5.00	\$5.00 + \$0.625	\$ -	\$ 5.56	\$ 6.31	\$6.31 + \$0.75	0-8	8 - 12	12 - 15		
Commercial - Out of Town																
11	5/8"	\$ 65.50	\$ 78.60	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 8	8 - 30	>30		
12	3/4"	\$ 74.43	\$ 89.31	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 12	12 - 33	>33		
13	1"	\$ 105.68	\$ 126.81	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 16	16 - 33	>30		
14	1.5"	\$ 245.59	\$ 294.71	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 32	32 - 64	>64		
15	2"	\$ 409.30	\$ 491.16	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 48	48 - 150	>150		
16	3"	\$ 647.44	\$ 776.93	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 72	72 - 160	>160		
17	4"	\$ 863.26	\$ 1,035.92	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 96	96 - 310	>310		
Commercial - Hillside																
18	5/8"	\$ 79.46	\$ 92.56	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 8	8 - 30	>30		
19	3/4"	\$ 88.39	\$ 103.27	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 12	12 - 33	>33		
20	1"	\$ 119.64	\$ 140.77	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 16	16 - 33	>30		
21	1.5"	\$ 259.55	\$ 308.67	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 32	32 - 64	>64		
22	2"	\$ 423.26	\$ 505.12	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 48	48 - 150	>150		
23	3"	\$ 661.40	\$ 790.89	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 72	72 - 160	>160		
24	4"	\$ 877.22	\$ 1,049.88	\$ -	\$ 3.75	\$ 5.00		\$ -	\$ 4.50	\$ 6.00		0 - 96	96 - 310	>310		
25	Hillside	\$ 60.85	\$ 71.63	\$ -	\$ 4.38	\$ 5.00	\$5.00 + \$0.625	\$ -	\$ 5.56	\$ 6.31	\$6.31 + \$0.75	0 - 8	8 - 12	12 - 15	15 - 100+	
26	Lawson	\$ 46.89	\$ 57.67	\$ -	\$ 4.38	\$ 5.00	\$5.00 + \$0.625	\$ -	\$ 5.56	\$ 6.31	\$6.31 + \$0.75	0 - 8	8 - 12	12 - 15	15 - 100+	

(a) Beyond 15 Mgal, the In Town Residential rate increases by \$0.50 for each additional 5 Mgal increments. Maximum existing rate is \$12.50/Mgal for usage above 100 Mgal.

(b) Beyond 15 Mgal, the In Town Residential rate increases by \$0.60 for each additional 5 Mgal increments. Maximum existing rate is \$15.25/Mgal for usage above 100 Mgal.

size. Also, it is current Utility practice to charge irrigation meters the prevailing water and sewer rates. Upon implementation of the water irrigation rate, it is proposed that irrigation accounts are no longer assessed sewer user charges.

The Town currently has about 45 Residential accounts that are deed restricted and occupy 850 square feet or less. These accounts include Residential customers both in and out of Town. As a matter of policy the Town has considered adopting a lower base fee for size and deed restricted Residential accounts. Proposed rates have been developed to assess a lower base fee for size and deed restricted Residential accounts. For usage above the minimum allowance, prevailing inclining block rates are proposed to be applicable.

## 5.5 Typical Bills and Regional Comparison

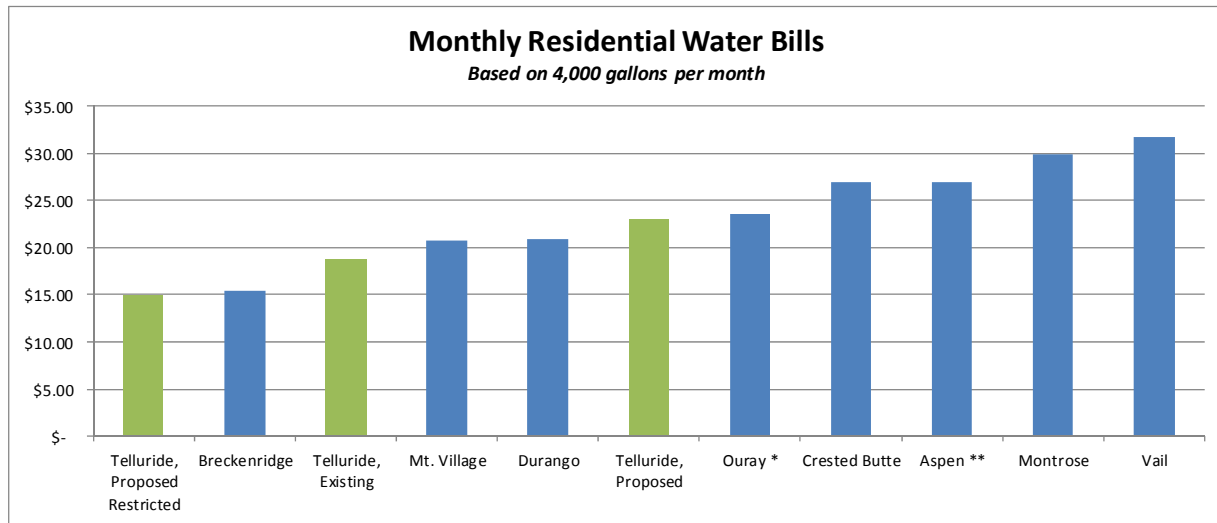
A comparison of typical monthly water bills under existing and proposed rates is shown in Table 5-2. Typical bills are calculated for various Residential and Commercial customer profiles. As shown in Table 5-2, the monthly water bill for an average residential customer will increase \$4.31 per month.

**Table 5-2: Typical Water Bills**

Line No.	Description	Billable Flow Mgal	Monthly Bill		Proposed Increase / (Decrease)		
			Under Existing Rates	Under Proposed Rates	\$	%	
Residential In Town							
1	Deed and Sq Ft Restricted	1.5	\$ 18.76	\$ 15.00	\$ (3.76)	-20.0%	
2	Average	3.0	\$ 18.76	\$ 23.07	\$ 4.31	23.0%	
3	High	6.0	\$ 25.76	\$ 31.97	\$ 6.21	24.1%	
Commercial 5/8" In Town							
4	Low	3.0	\$ 26.20	\$ 31.44	\$ 5.24	20.0%	
5	Medium	5.5	\$ 30.70	\$ 36.84	\$ 6.14	20.0%	
6	High	10.0	\$ 44.20	\$ 53.04	\$ 8.84	20.0%	
7	Average Commercial 2" In Town	38.0	\$ 205.72	\$ 246.86	\$ 41.14	20.0%	
8	Average Commercial 4" In Town	54.5	\$ 364.81	\$ 437.77	\$ 72.96	20.0%	

A comparison of monthly Residential typical bills from other regional water utilities was also conducted and is shown in Figure 5-1. Under existing rates, the typical Telluride residential bill is indicated to be on the low range of this regional comparison. Under proposed rates, the Town's typical residential bill is in the middle of the range, while the Town's new size and deed restricted residential bill is on the low end of the comparison.

**Figure 5-1: Regional Residential Water Bill Comparison**



\* Excludes service fees  
 \*\* Reflects average of 7 billing areas



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