

AMERICAN FORK CITY CULINARY WATER AND PRESSURIZED IRRIGATION RATE STUDY

PREPARED FOR:

AMERICAN FORK CITY



PREPARED BY:

**BOWEN, COLLINS & ASSOCIATES
154 EAST 14000 SOUTH
DRAPER, UTAH 84020**



MAY 2012

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Bowen, Collins & Associates
154 E. 14000 S.
Draper, Utah 84020

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SECTION 1 PROJECTED REVENUE NEEDS

INTRODUCTION

American Fork City authorized Bowen, Collins & Associates (BC&A) to update its culinary water and pressurized irrigation rates in June of 2011. The purpose of this study is to update City culinary water and pressurized irrigation rates based on current system revenue requirements. The rate study will calculate detailed rates for the next five years and present a longer term finance plan to achieve the City's primary objectives of:

- Maintaining high quality, reliable culinary water and pressurized irrigation service at affordable prices for customers;
- Encouraging wise use of resources through water conservation;
- Maintaining stable revenue generation adequate to fund system needs; and
- Minimizing the City's long-term costs by avoiding further debt where possible.

Implementing the recommendations contained in this report will help American Fork City keep its water systems adequately funded to maintain its current infrastructure and keep pace with its currently approved capital improvements plans. The report will first examine culinary water rates and then discuss pressurized irrigation rates.

PROJECTED REVENUE NEEDS

Before calculating detailed rates, it is important to consider the overall plan for meeting the future revenue needs of the City. The first step in this process is to project future expenditures. Historic and projected expenditures for the City from 2011 through 2021 are shown in Figures 1-1 through 1-3. Figure 1-1 shows water expenditures, Figure 1-2 shows pressurized irrigation expenditures, and Figure 1-3 shows combined revenues. Future expenditures can be grouped into three categories:

- **Operation and Maintenance Expenditures** – These are the annual costs of running the system. They include items such as salary and benefit costs for City staff, equipment and supplies, power costs, and all other costs associated with doing business throughout the year. Operation and maintenance (O&M) costs are relatively constant from year to year and tend to follow the rate of inflation.
- **Debt Service Expenditures** – These are the costs paid toward bonds taken out by the City in previous years. These costs are easily predictable because they are tied to set payment schedules for each bond. Currently, debt service obligations incurred for the construction of the pressurized irrigation system represent the single most significant cost to the city's culinary water and pressurized irrigation budgets.

Figure 1-1
10-Year Revenue and Expenditures - Culinary Water

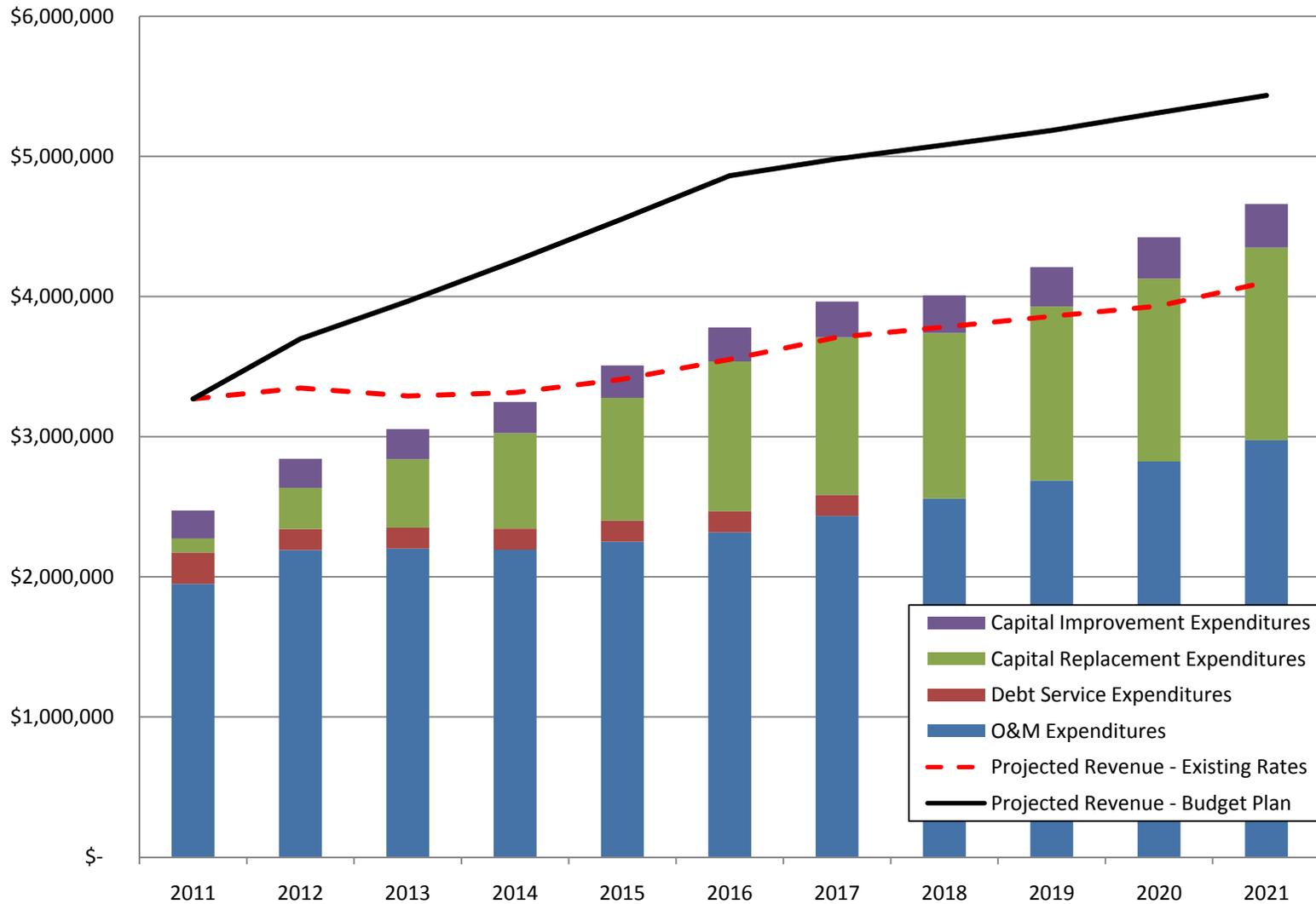


Figure 1-2
10-Year Revenue and Expenditures - Pressurized Irrigation

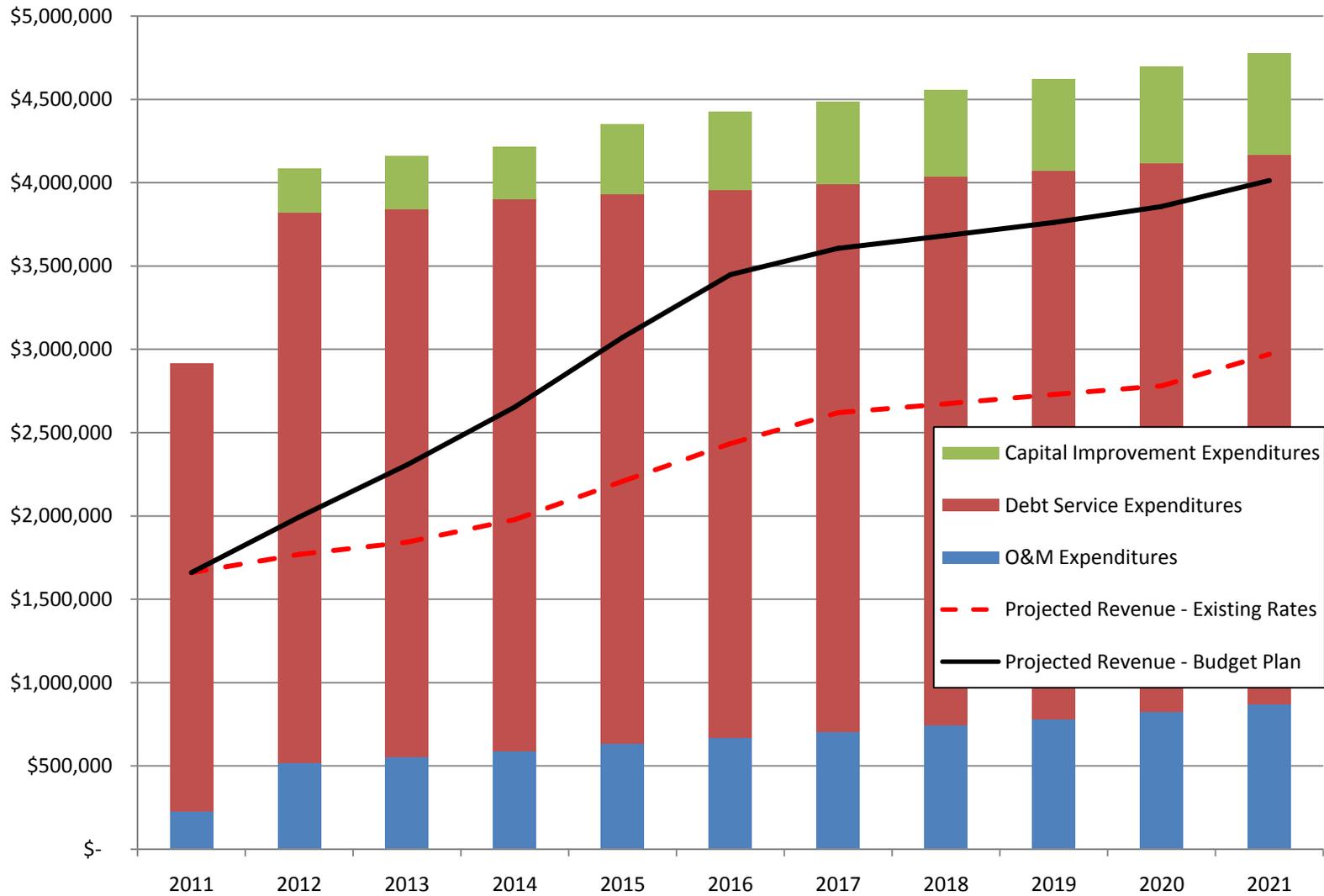
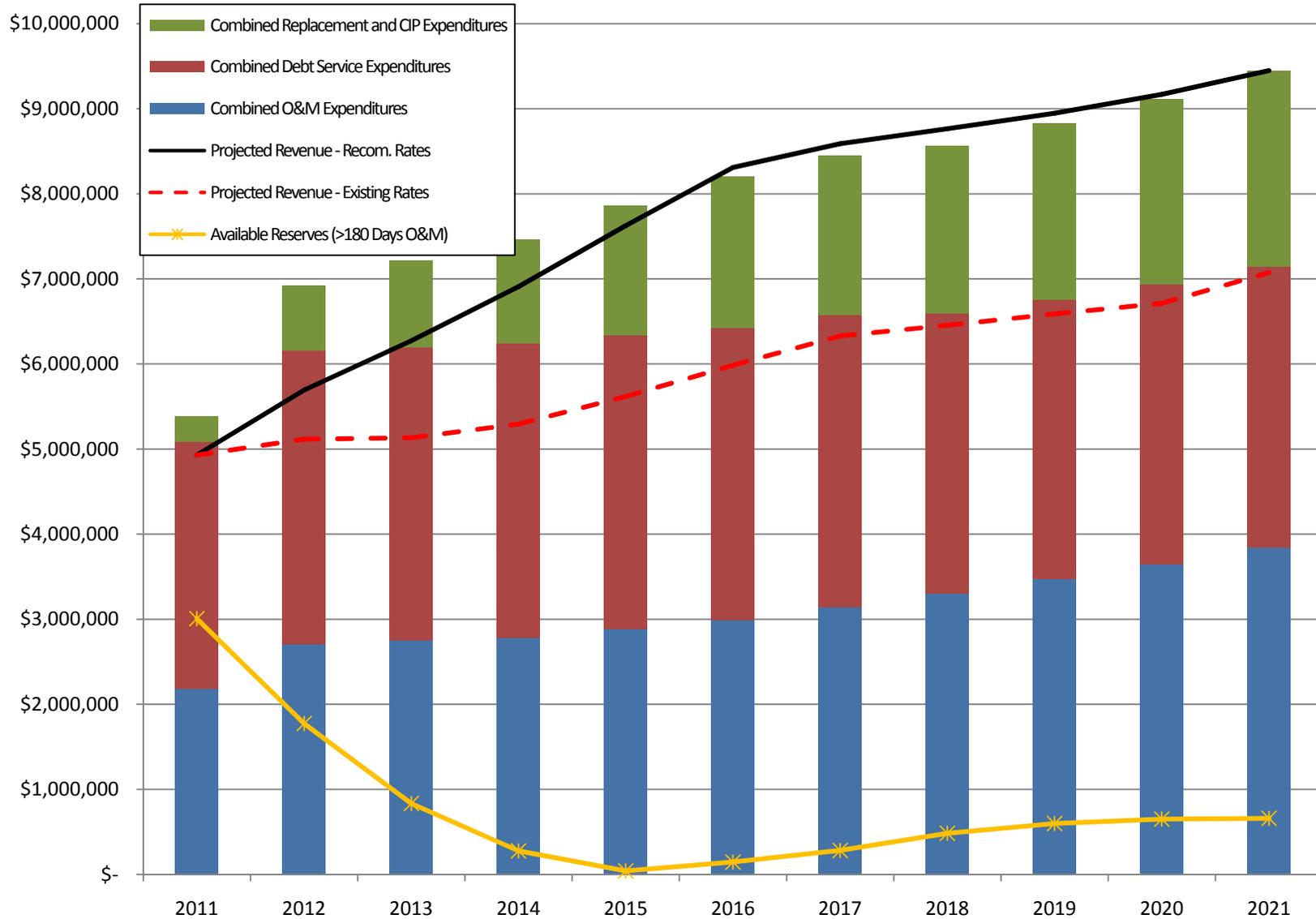


Figure 1-3
10-Year Revenue and Expenditures - Combined



- **Capital Improvement and Capital Replacement Expenditures** –These are costs for constructing new facilities within the City. This includes completely new facilities or replacement of existing facilities. In the culinary water budget, capital improvement and capital replacements costs and budgets have traditionally been tracked separately, which is maintained in the new budgets. For the pressurized irrigation budget, the capital improvement category includes new and replacement costs. Capital improvement expenditures are usually the most volatile of expenditure categories. Because O&M and debt service costs are basically fixed, budgets are usually balanced by increasing or decreasing capital improvement expenditures as necessary.

10-YEAR BUDGET PLAN

With the expected expenditures outlined above, it is possible to prepare a future budget plan. A budget plan has been developed for both culinary water and pressurized irrigation and is shown on top of projected expenditures in Figures 1-1 through 1-3. The process of creating this budget plan was as follows:

1. **Identify projected revenue based on existing culinary water and pressurized irrigation rates** –Using the City’s existing culinary water and pressurized irrigation rates, BC&A calculated the revenue the City could expect to receive over the next ten years. Determining the projected growth of the system and the related impacts on revenue is a key component of this calculation. .

Traditionally, BC&A has used the growth rates predicted by a City’s master plan when projecting future growth and the associated budget impacts. In this case, the City’s current plan shows a projected growth rate of 1.3-2.4 percent over the next ten years. When making projections for future growth, especially in preparing budgets, care must be taken to not overestimate the potential for growth. If growth is overestimated, revenues could easily fall short of expenditures. Given the current economic conditions and the accompanying slow growth rates, we have assumed growth rates of 0.5percent for the next two years for the purposes of this study. Growth rates are then accelerated over the following three years at which point they match those rates shown in the City’s most current master plan. This approach reflects the reality of slow growth that has been experienced over the last several years but also recognizes that better times are ahead.

2. **Identify recommended level of funding based on long-term system needs** –As with most things, each component of a water system has a finite service life. Therefore, it is necessary to continually budget money for the rehabilitation or replacement of these system components. If adequate funds are not set aside for regular system renewal, the system will fall into disrepair and be incapable of providing the level of service customers in the City expect. As can be seen in Figures 1-1 through 1-3 in year 2011, existing budgets for capital improvements and replacements are very limited. A review of past years’ budgets shows these line items have been reduced for several years, presumably to keep overall expenditures from exceeding revenues. This is an unsustainable practice that must be corrected in order to maintain the long-term viability of the city systems. To maintain the both systems in good operating condition, it is

recommended that the City's annual investment be approximately equal to the replacement value of the system divided by its estimated service life.

- **Culinary Water System** – Based on the City's current master plan, the estimated replacement value of the City's water system is approximately \$112 million. This estimate includes the value of City pipelines, pump stations, wells, and storage reservoirs. The service life for water facilities can vary greatly depending on the type of facility it is and the conditions in which it serves. For the purposes of this analysis, it has been assumed that the average life of water facilities in the City system is 40 to 80 years. This would suggest the City should invest between \$1.4 and \$2.8 million dollars per year into its water system. However, given current economic conditions the City has stated that they recognize the need invest in the upkeep and maintenance of the water system but also need to balance those needs with the impacts of large rate increases. As such, the City has directed that budgets for replacement programs start at \$1.0 million with an additional \$250,000 for other required capital improvements. The City has also directed that the increases in these budget items be phased in over the five-year planning period.
- **Pressurized Irrigation System** – The estimated replacement value of the City's pressurized irrigation system is \$48 million. Similar to the culinary water system, the design life is expected to be 40 to 80 years. This would suggest the City should invest between \$600,000 and \$1.2 million per year into its system. For the same reasons outlined for culinary water above, the city has directed that \$500,000 be allocated to the capital improvements budget for the pressurized irrigation system and that it be gradually increased from current levels over the next five years.

The recommended system investment budgets identified above were added to the City's projected O&M costs to estimate a recommended long-term level of funding based on system needs. This projected funding level is shown in Figures 1-1 through 1-3.

3. **Identify level of funding required to meet the City's debt service obligations** – As can be noted in Figures 1-2 and 1-3, the City carries a significant debt service resulting from the construction of the pressurized irrigation system in 2009 and 2010. The culinary water system also carries a small, but significant debt service payment through 2017, as shown in Figure 1-1. Payments to satisfy the bond obligation in both systems are approximately \$3.5 million per year.
4. **Create a plan to transition from existing revenue to revenue adequate to support long-term system needs and meet debt service requirements** – As can be easily noted in Figures 1-1 through 1-3, the current and projected revenue provided by the City's existing rates for culinary water and pressurized irrigation is not enough to meet the projected O&M, capital improvements and debt service expenditures. Rates of both systems must be increased in order to provide the revenue required to cover their projected expenditures.

In implementing its pressurized irrigation system, the City determined that it would be an extension of the culinary water system, rather than a completely independent system.

The pressurized irrigation system is used to reduce peak demands on the culinary water system and utilize lower quality waters for irrigation while preserving higher quality waters for culinary purposes, reducing potential treatment costs. This symbiotic relationship should be and is recognized in the city budget process.

In order to realize the beneficial effects of the pressurized irrigation system, users of both systems must perceive the value of using the pressurized irrigation system. The success the city has seen in having users convert from the culinary water system to the pressurized irrigation system, as shown by an 85 percent conversion rate, is evidence that users recognize the value of using the irrigation system versus the cost of using the culinary water system. In order to preserve this value, it is important to maintain the existing balance between culinary water and pressurized irrigation rates.

The budget plan was developed with the combined budgets of the culinary water and pressurized irrigation systems, as shown in Figure 1-3. This approach allows the proposed rate increases to be approximately the same for both systems, preserving the relationship between their existing rates and thus the incentive to convert to and use the pressurized irrigation system. This means that projected revenues generated by the proposed budget plan for the culinary water system will exceed the projected expenditures of the culinary water system, as shown in Figure 1-1. These revenues represent the value the secondary irrigation system provides to the culinary system and as such will be used to supplement the revenues of the secondary irrigation system in meeting its projected expenditures. Conversely, Figure 1-2 shows that the projected revenues of the budget plan for the secondary irrigation systems are not enough to meet its projected expenditures. However, when taken together as shown in Figure 1-3, the proposed budget plan provides the required revenue to meet the projected expenditures of both systems.

To close the gap between projected revenue from existing rates and recommended revenue for long-term system needs and debt service, it is recommended that existing rates be increased over the next five years. To minimize the pain for customers (especially under the difficult current economic conditions), it is recommended that this increase be completed gradually over several years as shown in Figures 1-1 through 1-3. To generate the revenue shown in the budget plan in the figures, annual increases to existing rates (both culinary water and pressurized irrigation) will need to be as shown in Table 1-1.

**Table 1-1
Recommended Annual Rate Increases**

Year	Percent Rate Increase
2012	14.5%
2013	11.3%
2014	8.8%
2015	6.7%
2016	4.6%

Once the recommended rate increases have been implemented it is also recommended that the city implement a yearly rate adjustment to keep pace with inflation. Without these yearly adjustments, costs slowly begin to overcome revenue. Ultimately the difference between revenue and expenses becomes too great and a major rate increase must be implemented, which is hard for rate payers to understand and accommodate in their own budgets. A better approach is for the City to adopt small rate adjustments every year to adjust its budgets for the cost of inflation. With consistent, small increases, residents can adjust their budgets more easily and develop a better feel for the true cost of services they are receiving and the City can maintain its systems in a responsible manner.

5. **Provide revenues to adequately fund Capital Improvements and Replacements** – To date the City has tried to balance its budgets by severely reducing or eliminating the capital improvements and capital replacements funds of both systems. In the short term, this practice can solve immediate budget shortfalls, however chronic depletion of these funds leads to a poorly maintained and unreliable system. Based on discussion with the City, BC&A has identified funding levels for capital improvements for the culinary water and pressurized irrigation systems and created a plan to gradually incorporate those funding objectives into the system rate structures.
6. **Maintain Adequate Reserves** – As part of the 10-year plan, BC&A reviewed the current reserve funds held by the City in the culinary water and pressurized irrigation funds. Of primary interest is the City's Operating Reserve.

The Operating Reserve includes funds to cover O&M costs should unexpected changes occur to O&M costs or revenue. This could include items such as decreased revenue resulting reduced water sales during a wet summer or increased pumping costs from an unexpected increase in power rates. The American Water Works Association (AWWA) recommends a minimum of 90 days of O&M costs be held in the Operating Reserve. For improved bond ratings and greater security, BC&A would recommend that the City maintain 180 days of O&M costs in the reserve. Currently, the City maintains a reserve fund that exceeds the 180 day recommendation. These excess funds will be used to supplement the city's pressurized irrigation budgets over the next five years. This will allow the city to incrementally increase rates, as recommended, to the levels required to meet the City's obligation while continuing to make bond payments and meet system needs. At no point over the next five years should Operating Reserves be depleted below the recommended 180 days of O&M costs.

SECTION 2

CULINARY WATER RATE ANALYSIS

In Section 1, a ten-year budget plan was developed for both the culinary water and pressurized irrigation systems. Based on this overall budget plan, detailed rates can now be calculated for each utility. The purpose of this chapter is to calculate detailed water rates for the next five years based on the overall budget plan.

This analysis focuses on four major tasks:

1. **Projecting Water Use:** Future water sales were estimated by examining current use patterns and by projecting water system growth for the next several years.
2. **Calculating Revenue Requirements:** Total revenue requirements for the system were projected for the next several years based on the budget plan outlined in Section 1. Non-rate revenue (including impact fee revenue) was deducted from the total to give the net revenue requirement to be recovered from rate payers.
3. **Cost Allocation:** This analysis generally follows the basic cost-of-service approach recommended by the AWWA.¹ The essential principle of this method is that “water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.”² To accomplish this goal, the system revenue requirements were allocated to four customer service characteristics: average day demand, peak day demand, billing and collection, and meters and services.
4. **Rate Design:** Rates were calculated to recover the allocated cost of service for each customer service characteristic based on a given rate structure. The report discusses and develops rates for three basic rate structures (uniform rates, seasonal rates, and increasing block rates).

The remainder of this report details the results of each of these four major tasks. Detailed rate tables from the model used to develop the rate recommendations are located in Appendix A.

KEY ASSUMPTIONS

The results presented in this report are based on the following assumptions:

1. The Culinary Water Fund will continue to be a self-funding, enterprise-type fund.
2. The study follows the basic recommended methodologies of AWWA in developing cost-of-service water rate options for consideration by American Fork City. Only the “cash basis” approach has been used to allocate costs to users. The “cash basis” study methodology is summarized later in this report.

¹American Water Works Association. *Principles of Water Rates, Fees, and Charges: Manual M1*. 2000.

²*Ibid.*, p. xix.

3. The City’s current rate structure includes a water allowance in the monthly base charge. It has been assumed this practice will continue.
4. Whereas the pressurized irrigation system reduces demand on the culinary system, utilizes lower cost water that would have to be treated to be included in the culinary water system, reduces the peaks experienced by the culinary water system, and provides other benefits to the culinary water system, some revenues collected from the culinary water rates will be used to subsidize the pressurized irrigation system.
5. Rate structures should be designed with water conservation in mind as increased conservation translates to reduced revenue. However, the city’s existing rate structure (increasing block rates) has already resulted in significant conservation. In addition, summer water use represents the bulk of the potential conservation savings that can be obtained in a water system. With the majority of the city converted to pressurized irrigation for summer time water, the need to account for conservation in the new rates is diminished. As such, no additional conservation will be considered as part of this study. Although additional water conservation will not be included in this study, new rate structures can have varying effects on conservation. In addition, factors outside of the rate structure can also have a significant effect on conservation. Possible factors affecting conservation include public education, changes in City ordinances, weather, and mandated water restrictions. City personnel should closely monitor the effect of conservation on rate revenue to determine if adjustments are needed.
6. This rate study is based on projections of future water demands and projected system operation, maintenance, and improvement costs. These projections are based on current economic conditions and weather patterns over the last several years. Because conditions may change over time, it is recommended that American Fork City review the rates annually to determine if adjustments are needed to provide a revenue stream that will adequately fund operation and maintenance costs as well as needed capital improvements. It is also recommended that a comprehensive review and updating of water rates be undertaken in three to five years so the basic analytical foundations of this study can be re-evaluated.

PROJECTING WATER USE

Historical Water Use

American Fork City provides water service to almost 7,500 accounts, as summarized in Table 2-1.

**Table 2-1
2011 Account and Water Use Summary**

Customer Class	Annual Use (kgal)	Accounts	Average Use per Account (kgal/month)
All Customers	1,145,690	7,495	152.9

Projected Accounts

Current master plan projections available from the City project growth rates between 1.3 and 2.4 percent over the next ten years. Because of the current ongoing economic downturn, however, a slightly more conservative growth projection has been used for rate planning purposes. In this report, it has been assumed that growth will be 0.50 percent for the next two years and then gradually increase until it matches the master plan growth projections in 2017. Projected growth rates and the associate projected accounts are summarized in Table 2-1.

**Table 2-2
Projected Growth in System Accounts**

	2012	2013	2014	2015	2016
Customer Class	0.50%	0.50%	0.74%	1.22%	1.71%
All Customers	7,532	7,570	7,626	7,719	7,850

Projected Water Use

Future water demands were projected by multiplying the average use per account in 2011 from Table 2-1 by the projected number of accounts in Table 2-2. However, the effects of the recent conversion to pressurized irrigation on the average account must be accounted for in the future projections. This adjustment was made assuming future culinary use will gradually decrease as customers continue to convert to and use the pressurized irrigation system. Using this methodology, the projected growth in total water sales are shown in Table 2-3.

**Table 2-3
Projected Growth in Water Use**

Customer Class	Average Historic Use/Acct.	Amount (kgal)				
		2012	2013	2014	2015	2016
% Historic Use		98%	92%	88%	84%	82%
All Customers	152.9	1,133,980	1,067,778	1,027,349	990,997	983,174

Peaking Characteristics

Table 2-4 shows the estimated peaking factor for the system. The peak day peaking factor is the ratio of the peak day rate of flow divided by the average day rate of flow. Due to the ongoing conversion to the pressurized irrigation system, data is not available to calculate the actual system peaking factor. A value of 2.0 has been assumed based on previous experience. This value should be reevaluated in future rate studies as better data becomes available.

**Table 2-4
Peaking Factor by Customer Class**

All Customers	Max. Day/ Avg. Day
Assumed System Peak Day to Average Day Factor	2.00

Meters

Table 2-5 summarizes the number of existing meters in the American Fork City water system by size. Meters range in size from 5/8-inch to 4-inch. For accounting purposes, all meters 3/4-inch and smaller are grouped into one category. Over 88 percent of the meters are 5/8-inch and 3/4-inch meters. Only 6 meters are 4-inch or larger, representing just 0.1 percent of the system. Table 2-5 also presents equivalent meter data based on AWWA meter cost-of-service criteria. The information in Table 2-5 is used to develop monthly base rates by meter size.

**Table 2-5
Meters and Equivalent Meters by Size**

	Size (Inches)									Total
	3/4 and smaller	1	1 1/2	2	3	4	6	8	10	
Number of Meters	6,582	798	91	75	0	6	0	0	0	7,552
% of Total	87.2%	10.6%	1.2%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100.0%
AWWA Equiv. Meter Ratios	1.0	1.4	1.8	2.9	11.0	14.0	21.0	29.0	40.0	
Equivalent Meters	6,582	1,117	164	218	0	84	0	0	0	8,165
% of Total	80.6%	13.7%	2.0%	2.7%	0.0%	1.0%	0.0%	0.0%	0.0%	100.0%

CALCULATING REVENUE REQUIREMENTS

There are two methods for determining a water utility’s revenue requirements. One is called the Cash Basis of revenue requirements. The other method is called the Utility Basis of revenue requirements. The revenue requirements for each approach are summarized below.

<u>Cash Basis</u>	<u>Utility Basis</u>
Operation and Maintenance Costs	Operation and Maintenance Cost
Plus: Debt Service	Plus: Depreciation
Cash-Financed Capital Outlays	Return on Investment
Taxes (if applicable)	Taxes (if applicable)
<u>Net Additions to Reserves</u>	
Total Requirements	Total Requirements
Less: <u>Non-Rate Revenues</u>	Less: <u>Non-Rate Revenues</u>
Equals: Net Requirements from Rates	Equals: Net Requirements from Rates

The cash basis of revenue requirements is based on the actual cash expenditures of the system. Its goal is to make sure revenues match the cash needs of the system. In public utilities, this method generally matches the budgetary expenditures for the period. It has the additional advantage of being more understandable to most ratepayers and more directly meets any debt service coverage requirements that the system might need to comply with.

The utility basis approach simulates the financial requirements of private sector companies. It ensures that revenue requirements reflect the depreciation incurred by the system, as well as a return on the investment in rate base by system owners. In the municipal utility setting, the utility basis is most often used when there is significant utility service to customers outside the jurisdictional boundaries of the system owners (such as outside-City customers). It allows the system owners (i.e., inside-City customers) to earn a return from the investments to serve the outside-City customers. Because American Fork City has very limited outside-City users, rates for this study were developed under the cash basis.

Impact Fee Revenue

The projected impact fee revenue for the next six years is estimated to increase from about \$104,136 a year to \$461,557 a year as summarized in Table 2-6. The projected annual revenue from impact fees is based on the projected number of new accounts as discussed previously. For this analysis, it has been assumed that the City’s current impact fee rates will be constant throughout the planning period. If the City updates its impact fees, the rates calculated in this report will need to be adjusted accordingly.

**Table 2-6
Projected Impact Fee Revenue**

Year	2012	2013	2014	2015	2016	2017
Annual Growth Rate	0.50%	0.50%	0.74%	1.22%	1.71%	2.09%
Projected Impact Fee Revenue	\$104,136	\$106,951	\$157,612	\$261,748	\$368,699	\$461,577

Non-Rate Revenue

The projected non-rate revenue for the City is summarized in Table 2-7. This revenue is the net income from activities not associated with water sales. It may include service charges, net interest income, fees, and tax revenue. For accounting purposes the City separates this income into operations and expansions and replacement revenue. The biggest portion of this revenue comes from the CUP Water Fee.

**Table 2-7
Projected Non-Rate Revenue**

Item	Projected 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016
<i>Operations</i>					
50-3710-150 CUP Water Fee	\$592,956	\$595,920	\$600,288	\$607,542	\$617,760
50-3710-200 Irrigation Sales	\$0	\$0	\$0	\$0	\$0
50-3710-450 Water Late Fees	\$30,000	\$31,050	\$32,210	\$33,568	\$35,148
50-3710-600 Other	\$20,000	\$20,700	\$21,473	\$22,379	\$23,432
50-3710-700 Interest Earnings	\$5,500	\$5,693	\$5,905	\$6,154	\$6,444
Total Operations Non-Rate Revenue	\$648,456	\$653,363	\$659,876	\$669,643	\$682,783
<i>Expansion and Replacement</i>					
50-3710-300 Water Impact Fees	\$104,136	\$106,951	\$157,612	\$261,748	\$368,699
50-3710-400 Water Hookup Fees	\$40,000	\$41,400	\$42,946	\$44,757	\$46,864
50-3710-800 RDA Reimbursement	\$0	\$0	\$0	\$0	\$0
50-3710-850 Notes Receivable-Heritage	\$42,000	\$43,470	\$45,094	\$46,995	\$49,207
50-3710-960 Developer Contributions	\$0	\$0	\$0	\$0	\$0
Total Expansion Non-Rate Revenue	\$186,136	\$191,821	\$245,652	\$353,501	\$464,769
Total Non-Rate Revenue	\$834,592	\$845,183	\$905,528	\$1,023,144	\$1,147,552

City Expenditures

The projected City expenditures for the planning period are summarized in Table 2-8. Included in the table are the projected total costs for the three major categories of expenditures: operations and maintenance, debt service, and capital expenditures. Each of these categories is discussed in more detail in following sections.

**Table 2-8
Projected Revenue Requirements**

Item	2012	2013	2014	2015	2016
O&M	\$3,045,024	\$3,113,607	\$3,199,465	\$3,294,518	\$3,394,000
Debt Services	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Capital	\$501,000	\$702,245	\$904,248	\$1,107,620	\$1,312,519
Total Expenditures	\$3,696,024	\$3,965,852	\$4,253,713	\$4,552,138	\$4,856,518

Operation and Maintenance Costs

The projected operation and maintenance (O&M) costs for the City have been taken from the City’s budget for 2012. A detailed list of all O&M budget categories is included as part of the rate model in Appendix A. Beyond 2012, it has been assumed that most of these O&M cost categories will increase at a rate equal to half the system growth rate in each year and an assumed inflation rate of 3.0 percent (e.g. budget growth in 2013 = 0.25%/2 + 3% = 3.125%). Water Assessment Fees, an accumulation of assessments the City pays to certain water providers, decrease over the budget period based on projections provided by the City. Water Stock Purchases also decrease over the budget period as determined by pre-arranged purchase

agreements. Finally, the CUP Water Fee is a fixed amount based on purchase agreements with the Central Utah Water Project.

A final O&M cost incurred by the City relates to the pressurized irrigation system. In its base role, the pressurized irrigation system reduces demand on the culinary water system, reduces costly peaks in the culinary water system, and allows higher quality source waters to be conserved for culinary uses. However, customers must find it economical to hook up to and use the pressurized irrigation system in order for these benefits to the culinary system to be realized. Historic rates of conversion from culinary water to pressurized irrigation and the widespread acceptance of the pressurized irrigation system in American Fork City indicate that the City has found the right balance between culinary water and pressurized irrigation rates. In order to capture the benefits the pressurized irrigation system provides to the culinary system and balance the pressurized irrigation system budget, some revenue collected from the culinary water system is transferred to the pressurized irrigation system fund. For the five-year budget period of this study, the amount transferred to the pressurized irrigation fund was calculated as the amount required to allow both rate structures to experience similar rate increases.

Debt Service Costs

The projected debt service costs for the City have been taken from the City's bond payment schedule through 2016. A detailed list of all bond payments is included as part of the rate model in Appendix A.

Capital Improvement Costs

American Fork City recognizes the need to invest in their culinary water system in order to preserve its long-term viability and to reliably provide service to its customers now and in the future. However, recent economic times, and the demands of the debt service incurred to fund the pressurized irrigation system construction has limited the City's ability to adequately invest in the capital improvements the water system requires. As stated previously in this report, water systems generally have a service life of 40-80 years, at which point they must be replaced. With a current replacement value of \$110 million, an annual capital improvement/replacement budget of \$1.4 to \$2.8 million dollars is warranted. The industry standard minimum investment is 1.0 percent of the system value. Per the direction of the City, the capital improvement and replacement budgets have been increased from current levels to \$1.3 million over the next five years.

COST ALLOCATIONS

A key step in a cost-of-service rate analysis is the allocation of costs to customer service characteristics. The allocation approach used in this rate update reflects the basic approaches recommended by the AWWA. The cost allocation method is the Base-Extra Capacity Method, which is one of the two methods specifically recognized by AWWA. Unlike the AWWA suggested approach, this update limits the analysis of peaking costs to peak day costs. It does not include peak hour costs as a customer service characteristic. This is because American Fork City does not have any estimates of peak hour requirements. This variation is minor and does not materially affect the outcome of the analysis or the validity of the results. AWWA

specifically recognizes that utilities' circumstances may justify changes from the AWWA methods, and this is one such variation.

Customer Service Characteristics

Customer service characteristics are demands or other "services" that each customer receives. Specifically, the customer service characteristics considered in this rate study include:

- average demand,
- peak day demand,
- billing & collection, and
- meters & services.

The first step in allocating costs is to divide each of the City's revenue requirements into these four categories. This has been done in the water rate model (see Tables 13 and 14 of Appendix A). In each case, these allocations are based on information provided by City personnel, professional engineering judgment, and knowledge of system operations. Table 13 in Appendix A provides a division by customer service characteristic for O&M expenditures. Table 14 in Appendix A provides the same information for capital and bonding expenditures.

To understand how this has been done, it may be useful to consider a few examples. As one example, the majority of costs for distribution pipelines (60 percent) are attributed to average day demand. This basically represents the cost of maintaining pipes and valves in the ground to provide water to system users. However, the size of the pipelines in the system must be larger than would be required to convey average flow, because of daily and seasonal fluctuations in system flow. Thus, a portion of the distribution budget (30 percent) has been allocated to peak demand to account for the increased costs of maintaining a larger system. The remaining amount (10 percent) has been allocated to cover the costs of meters and service lines.

In contrast to the distribution pipelines is the postage O&M budget item. Because this budget item is associated with working with individual customers, 100 percent is assigned to billing and collection. Each of the other revenue requirements has been divided among the customer service characteristic categories based on similar logic.

Using the percentages assigned to each budget category, the system revenue costs are distributed among the customer service characteristics. This is also shown in detail in the rate model. The total revenue requirement for each customer service characteristic is given in Table 16 of Appendix A. Table 17 of Appendix A shows the total cost allocation for each customer class.

RATE DESIGN

Projected revenues based on existing City water rates are shown in Table 2-9.

**Table 2-9
Projected Revenue Based on Existing Water Rates**

	2012	2013	2014	2015	2016
Projected Rate Revenue-Existing Rates	\$2,510,076	\$2,443,794	\$2,408,826	\$2,384,549	\$2,397,970
Projected Rate Revenue Requirements	\$2,861,432	\$3,120,668	\$3,348,185	\$3,528,994	\$3,708,966
Projected Difference	\$(351,356)	\$(676,874)	\$(939,359)	\$(1,144,445)	\$(1,310,996)

As shown in the table, current water rates are inadequate to meet projected revenue requirements in any of the next five years. This table indicates an annual budget shortfall increasing from \$350,000 in 2012 to \$1.3 million by 2016, representing nearly 55 percent shortfall in revenues. Changes will need to be made to the existing rate structure to meet this shortfall.

This section discusses potential rate options and then calculates a recommended rate structure that will ultimately meet projected revenue requirements.

Rate Structures

Water rates are commonly divided into two components: monthly base charges and volumetric charges. The monthly base charge is the amount charged to existing users to be connected to the system, regardless of the amount of water used. This is usually assessed based on meter size and may or may not include a monthly water allowance. Volumetric charges are those charges assessed based on the amount of water used by the customer.

Volumetric charges can be assessed using one of three general rate structures: uniform rates, seasonal rates, and block rates (both increasing and decreasing).

- **Uniform Rates** –A uniform rate structure charges the same for each gallon of water regardless of the amount of water used or time of year. Uniform rate structures are among the easiest rate structures to administer and understand. Unfortunately, they do little to encourage conservation.
- **Seasonal Rates** –A seasonal rate structure charges one rate during the winter and another rate during the summer. Generally, higher rates are charged during the summer months to account for the additional costs of producing water during times of peak demand. This also provides a financial incentive for users to conserve during the summer months. Unfortunately, it does little to encourage conservation during the winter months. However, this is not a major concern since the vast majority of water use and the greatest opportunity for conservation occurs during the summer months. Seasonal rates also have the advantage of being easy to understand and easy to implement.
- **Block Rates** –Block rates charge different amounts for each gallon of water depending on the total amount of water metered each month. For example, the first 10,000 gallons of water sold during a month may be charged at one rate, while any water in excess of

10,000 gallons is charged at a different rate. Blocks can increase with the amount of water sold as well as decrease. Since decreasing blocks generally discourage conservation, they will not be discussed further. In contrast, increasing block rates have the greatest potential of all rate structures for encouraging conservation. The greatest challenge with increasing block rates is that they are difficult to implement and administer fairly. Although one set of blocks could be developed to encourage conservation among family residential users, this same set of blocks would unfairly penalize a large commercial user.

Any of the above rate structures could be used to develop reasonable, cost-based rates that could be implemented by American Fork City. They all generate the same revenues and meet the basic standards established by AWWA for equitable, cost-of-service approaches for rate development. Additionally, any combination of the rate structures could be used to develop an acceptable pricing policy for American Fork City. Therefore, within this set of rates, a recommendation for any individual rate structure is based only on differences in objectives or concepts among the options.

The City currently has an increasing block rate structure with five blocks that is equally applied to all customers with the goal of encouraging conservation. The rate model has been used to calculate the water rates required to meet revenue needs for the next five years. It also showed that some changes to the existing rate structure were warranted. Table 2-10 shows the new recommended rate structure and proposed rates. A discussion of the proposed changes follows after Table 2-10.

**Table 2-10
Recommended Water Rates
(Does not include Water Agency Assessment)
Residential Rates**

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
All meters	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Block Rates¹						
Base Allowance						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Block 2 Rate	\$2.00					
6,000 to 9,000 gallons/month	\$2.50	\$2.27	\$2.67	\$3.00	\$3.28	\$3.49
Block 3 Rate	\$3.00					
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.69	\$4.20	\$4.64	\$4.96

¹ Block rates for existing are 0-6, 6-8, 8-10, 10-12, and 12+ kgals.

Commercial, Multi-Family, Industrial, and Institutional

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
3/4 and smaller	\$14.00	\$18.07	\$20.48	\$22.53	\$24.26	\$25.46
1	\$14.00	\$19.22	\$21.73	\$23.87	\$25.65	\$26.90
1 1/2	\$14.00	\$20.37	\$22.97	\$25.21	\$27.04	\$28.33
2	\$14.00	\$23.53	\$26.39	\$28.90	\$30.88	\$32.29
3	\$14.00	\$46.82	\$51.57	\$56.07	\$59.10	\$61.39
4	\$14.00	\$55.45	\$60.90	\$66.13	\$69.55	\$72.17
6	\$14.00	\$75.58	\$82.66	\$89.60	\$93.94	\$97.32
8	\$14.00	\$98.58	\$107.54	\$116.43	\$121.82	\$126.06
10	\$14.00	\$130.21	\$141.73	\$153.32	\$160.15	\$165.58
Block Rates						
Base Allowance						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Block 2 Rate						
6,000 to 9,000 gallons/month	\$2.50	\$2.04	\$2.38	\$2.65	\$2.90	\$3.07
Block 3 Rate						
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.07	\$3.07	\$3.07	\$3.07

Monthly Base Charges

The first component of the proposed rate is the monthly base charge. The monthly base charge will be the same for all residential customers. The recommended base charge for a residential meter needs to be \$16.03 per month in 2012, with a 6,000 gallon allowance included in this amount. This represents an increase of 14.5 percent in the monthly base charge over the existing rate of \$14.00 per month. This rate will need to increase annually over the next 5 years to \$21.68 per month by 2016, representing a total increase of 55 percent over current rates.

For commercial, multi-family, industrial and institutional customers, BC&A recommends that the City adopt a base charge that corresponds to the size of the meter serving the customer. Larger meters carry inherent larger costs for their maintenance and replacement and represent a larger demand on the system. As such, those costs should be recuperated through the base rate relative to the meter size. Recommended rates for each meter size are shown in Table 2-10.

Volumetric Rates

The existing rate structure has five blocks, including the base allowance. While the strength of the block rate structure is encouraging conservation, it also adds complexity and difficulty in administration and billing. These difficulties are magnified with increasing numbers of blocks but conservation does not necessarily increase with the number of blocks. In order to simplify the City's billing procedure while maintaining the conservation derived from block rates, it is recommended that a new rate structure be adopted for residential customers with three blocks, including the base allowance. It is also recommended that the rate for each block adjust annually over the next five years to help the city meet its revenue requirements. The recommended residential block definitions are as follows:

- Residential Blocks
 - Block 1 (Base Allowance) = 0 to 6,000 gallons per month
 - Block 2 = 6,001 to 9,000 gallons per month
 - Block 3 = Greater than 9,000 gallons per month

As discussed previously, one of the primary challenges with block rate structures is that they are difficult to administer fairly to users with dramatically different water use patterns. This is especially true for large water users such as commercial, multi-family, industrial, and institutional customers. Block rates are meant to recapture costs relative to peaking. In the case of large, stable water users, the block rates result in charges that can be more than the actual cost of providing water. There are two options for addressing this issue:

1. **Custom Blocks By Meter Size** – Custom blocks can be developed for different sized customers (i.e. a unique set of blocks can be developed for each size of meter to reflect the particular use characteristics of that meter size). This approach has two main challenges. First, it is difficult to administer. Second, even within common meter sizes, there can be wide variations in use among large customers. To be fair to all of the users, it almost becomes necessary to develop custom blocks for each large user. This is impractical in most situations.
2. **Use Flat Rates for Large Customers** – The most straight forward method of eliminating the challenges of block rates for large customers is to use a different rate structure. In the case of American Fork, using a flat rate structure appears to be the most logical. Under this approach, large customers would pay the same rate for all water, regardless of use. This rate would be higher than Block 1 rates for residential customers, but would be less than the residential rates for higher blocks. This would better reflect the cost of serving these large customers.

Based on the difficulties of developing and administering custom blocks, it is recommended that the block rates for commercial, multi-family, industrial and institutional customers be phased out and transitioned to a uniform rate over the next five years. Table 2-10 shows the recommended rate structure for these users.

A few items should be noted about the recommended rates:

1. The recommended base rates shown do not include the City's Water Agency Assessment fee. This fee should continue to be charged on top of the rates shown.
2. These rates are based on the assumption that conservation will not be significant over the next five years. This is based on the aggressive conservation the City has already seen over the last few years as well as the transition to a pressurized irrigation system. It should be understood that the assumption of no conservation is for the near future and may not be the level of conservation experienced on a long-term basis. Water use should be closely monitored in future years and the level of per connection water use in the rate model should be modified accordingly.

SECTION 3 PRESSURIZED IRRIGATION RATE ANALYSIS

In Section 1, a ten-year budget plan was developed for both the culinary water and pressurized irrigation systems. Based on this overall budget plan, detailed rates can now be calculated for each utility. The purpose of this chapter is to calculate detailed pressurized irrigation rates for the next five years based on the overall budget plan.

This analysis focuses on three major tasks:

1. **Projecting Future Connections:** Future pressurized irrigation connections were estimated by examining current connections and by projecting system growth for the next several years. This includes consideration of both the conversion of existing culinary connections and the construction of new connections.
2. **Calculating Revenue Requirements:** Total revenue requirements for the system were projected for the next several years based on the budget plan outlined in Section 1. Non-rate revenue (including impact fee revenue) was deducted from the total to give the net revenue requirement to be recovered from rate payers.
3. **Rate Design:** Rates were calculated to generate the required rate revenue.

The remainder of this report details the results of each of these four major tasks. Detailed rate tables from the model used to develop the rate recommendations are located in Appendix B.

KEY ASSUMPTIONS

The results presented in this report are based on the following assumptions:

1. The pressurized irrigation fund will continue to be an enterprise-type fund.
2. Customers will continue to be billed using the City's existing rate structure.
3. The pressurized irrigation system is not metered, therefore detailed use data is not available. As such, a detailed cost-of-service study, based on AWWA methodologies, cannot be performed. Instead, an analysis of projected costs and projected revenues was performed to determine the new revenue required.
4. Whereas the pressurized irrigation system reduces demand on the culinary system, utilizes lower cost water that would have to be treated to be included in the culinary water system, reduces the peaks experienced by the culinary water system, and provides other benefits to the culinary water system, some revenues collected from the culinary water rates will be used to subsidize the pressurized irrigation system.
5. This rate study is based on projections of future water demands and projected system operation, maintenance, and improvement costs. These projections are based on current economic conditions and weather patterns over the last several years. Because conditions may change over time, it is recommended that American Fork City review the rates

annually to determine if adjustments are needed to provide a revenue stream that will adequately fund operation and maintenance costs as well as needed capital improvements. It is also recommended that a comprehensive review and updating of water rates be undertaken in three to five years so that the basic analytical foundations of this study can be re-evaluated.

PROJECTING WATER USE

Historical Accounts

American Fork City provides pressurized irrigation service to approximately 5,500 accounts, as summarized in Table 2-1. Pressurized irrigation system is unmetered, therefore current usage per account and future usage is cannot be calculated. However, future revenue can be estimated based on the historic annual revenue and average revenue generated per account.

**Table 3-1
2011 Account and Revenue Use Summary**

Customer Class	Annual Revenue (2011)	Accounts	Average Revenue per Account
All Customers	\$ 1,504,485	5,492	\$ 274

Projected Accounts

Current master plan projections available from the City project growth rates between 1.3 and 2.4 percent over the next 10 years. Because of the current ongoing economic downturn, however, a slightly more conservative growth projection has been used for rate planning purposes. As shown in Table 3-2, the growth rates established for the culinary water system will be adapted to the pressurized irrigation system. In the culinary water system it was noted that, for 2011, actual customer accounts (connections) numbered 7,495 with ERCs of 13,008, giving a ratio of 0.58 accounts per ERC. System growth in the culinary water system was projected on an ERC basis ranging from 0.5 to 2.09 percent over the next 5 years. Pressurized irrigation system growth, on an account basis, will be 0.58 times the growth in the culinary water system ERCs for each year. The growth has been reduced by five percent to reflect the fact that not all potential irrigation connections are realized.

Also shown in Table 3-2, additional growth in the pressurized irrigation system will be realized as existing properties continue to transition from the culinary water system to the pressurized irrigation system. The actual conversion rate is difficult to predict, but it has been assumed that most of the remaining connections will take place in the early part of the study period and will taper off towards the end. As these customers were part of the city when the pressurized system was created, impact fees are not collected.

**Table 3-2
Projected Growth in System Accounts**

Customer Class	Projected	Projected	Projected	Projected	Projected
	2012	2013	2014	2015	2016
Projected Growth Rate	0.50%	0.50%	0.74%	1.22%	1.71%
Culinary Water System – Projected ERC Growth	65	65	97	161	228
New Pressurized Irrigation Accounts - Growth	36	36	53	89	126
New Pressurized Irrigation Accounts – Conservation	320	229	154	155	79
Pressurized Irrigation Accounts	5848	6113	6320	6564	6769

Impact Fee Revenue

The projected impact fee revenue for the next six years is estimated to increase from about \$164,700 a year to \$718,275 a year as summarized in Table 3-3 and based on current impact fees of \$4,575 PER NEW ACCOUNT. The projected annual revenue from impact fees is based on the projected number of new accounts as discussed previously. For this analysis, it has been assumed that the City’s current impact fee rates will be constant throughout the planning period. If the City updates its impact fees, the rates calculated in this report will need to be adjusted accordingly.

**Table 3-3
Projected Impact Fee Revenue**

Year	2012	2013	2014	2015	2016
Annual Growth (Accounts)	36	36	53	89	126
Projected Impact Fee Revenue	\$164,700	\$164,700	\$242,475	\$407,175	\$576,450

Non-Rate Revenue

The projected non-rate revenue for the pressurized irrigation system is summarized in Table 3-4. This revenue is the net income from activities not associated with water sales. It may include service charges, net interest income, and fees. It also includes transfers from other city funds. For accounting purposes the City separates this income into operations and expansions and replacement revenue. The biggest portion of this revenue comes from the CUP Water Fee.

**Table 3-4
Projected Non-Rate Revenue**

Item	Projected 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016
<i>Operations</i>					
50-3770-600 Other Income	\$1,000	\$1,035	\$1,074	\$1,119	\$1,172
50-3770-700 Interest	\$0	\$0	\$0	\$0	\$0
50-3770-900 Funds from Surplus	\$0	\$0	\$0	\$0	\$0
50-3770-960 Contributions	\$0	\$0	\$0	\$0	\$0
Transfer from Culinary Water Fund	\$854,021	\$911,950	\$1,005,939	\$1,043,560	\$1,077,498
Transfer from Reserve Fund	\$1,232,753	\$939,114	\$557,017	\$236,039	\$0
Total Operations Non-Rate Revenue	\$2,087,774	\$1,852,099	\$1,564,030	\$1,280,718	\$1,078,670
<i>Expansion and Replacement</i>					
50-3770-300 Connection Fees	\$2,500	\$2,688	\$2,859	\$3,055	\$3,243
50-3770-400 Secondary Water Impact Fees	\$164,700	\$164,700	\$242,475	\$407,175	\$576,450
Total Expansion Non-Rate Revenue	\$167,200	\$167,388	\$245,334	\$410,230	\$579,693
Total Non-Rate Revenue	\$2,254,974	\$2,019,487	\$1,809,364	\$1,690,949	\$1,658,362

As indicated in Chapter 1, base rates will need to be increased at least 55 percent in order to provide the revenue required to meet the City’s obligations. However, large, singular rate increases are unpopular and can cause financial difficulties for water users. To mitigate the impacts of the rate increase, it is recommended that the city gradually implement the required increase over the next five years, allowing customers to adjust to the additional expense. Of course, this means that rate revenue will not be enough to meet the expenses for the pressurized irrigation system during the five-year implementation period and additional revenue will need to be found to make up the difference.

Over the last several years, the City has developed a significant reserve fund through wise spending and prudent saving. The state of Utah requires that reserve funds equal to 90 days of operating costs be maintained at all times. In order to maintain favorable bond ratings and more adequately provide for unforeseen problems or emergencies, BC&A recommends that reserve funds be no less than 180 days of operating costs. At this time, reserve funds in the city water system exceed 365 days of operating expenses. It is recommended that these excess reserve funds be used to supplement rate revenue during the implementation period for the new rates. This funds transfer is shown in Table 3-4.

Also shown in Table 3-4 is a transfer of funds from the Culinary Water Fund. As noted previously, the pressurized irrigation system provides certain benefits to the culinary water system and as such, a portion of the water revenue funds are used to subsidize the pressurized irrigation budget.

City Expenditures

The projected City expenditures for the planning period are summarized in Table 3-5. Included in the table are the projected total costs for the three major categories of expenditures: operations and maintenance, debt service, and capital expenditures. Each of these categories is discussed in more detail in following sections.

**Table 3-5
Projected Revenue Requirements**

Item	2012	2013	2014	2015	2016
O&M	\$516,522	\$553,396	\$590,848	\$631,403	\$670,061
Debt Services	\$3,304,400	\$3,289,060	\$3,312,894	\$3,304,390	\$3,288,341
Capital	\$264,385	\$315,949	\$367,512	\$419,076	\$470,640
Total Expenditures	\$4,085,307	\$4,158,405	\$4,271,254	\$4,354,869	\$4,429,042

Operation and Maintenance Costs

The projected operation and maintenance (O&M) costs for the City have been taken from the City’s budget for 2012. A detailed list of all O&M budget categories is included as part of the rate model in Appendix B. Beyond 2012, it has been assumed that most of these O&M cost categories will increase at a rate equal to half the system growth rate in each year and an assumed inflation rate of 3.0 percent (e.g. budget growth in 2013 = $0.25\%/2 + 3\% = 3.125\%$). Based on past budgets, AF Water Irrigation Company payments are constant for the planning period. Also, city staff indicated that current O&M budget levels were inadequate and requested that a minimum budget of \$500,000 be included in the study. This adjustment is reflected in the rate model.

Debt Service Costs

The projected debt service costs for the City have been taken from the City’s bond payment schedule through 2017. A detailed list of all bond payments is included as part of the rate model in Appendix B.

Capital Improvement Costs

American Fork City recognizes the need to invest in the pressurized irrigation system in order to preserve its long-term viability and to reliably provide service to its customers now and in the future. However, recent economic times, and the demands of the debt service incurred to fund the construction of the system has limited the City’s ability to adequately invest in the capital improvements and replacement costs. As stated previously in this report, water systems generally have a service life of 40-80 years, at which point they must be replaced. With a current replacement value of \$48 million, an annual capital improvement/replacement budget of \$0.6 to \$1.2 million is warranted. The industry standard minimum investment is 1.0% of the system value. Per the direction of the City, the capital improvement and replacement budgets have been increased from current levels to approximately \$500,000 over the next 5 years.

RATE DESIGN

Projected rate revenues based on existing pressurized irrigation rates are shown in Table 3-6.

**Table 3-6
Projected Revenue Based on Existing Pressurized Irrigation Rates**

	2012	2013	2014	2015	2016
Projected Rate Revenue-Existing Rates	\$1,602,352	\$1,674,962	\$1,731,680	\$1,798,536	\$1,854,706
Projected Rate Revenue Requirements	\$1,830,333	\$2,138,918	\$2,461,890	\$2,663,921	\$2,770,679
Projected Difference	(\$227,981)	(\$463,956)	(\$730,210)	(\$865,385)	(\$915,973)

As shown in the table, current pressurized irrigation rates are inadequate to meet projected revenue requirements in any of the next six years. This table indicates an annual budget shortfall increasing from \$227,981 in 2012 to \$915,973 by 2016, representing nearly 55% shortfall in revenues. Rates will need to be increased to resolve this budget discrepancy.

Recommended Rates

It is recommended that no changes be made to the existing pressurized irrigation rate structure. The existing structure appears to meet the needs of the City, and given the wholesale changes recommend for the culinary water rate structure, it is not prudent to also effect significant changes to the pressurized irrigation system at this time. Although structural changes are not recommended, the pressurized irrigation rates must be increased to meet the revenue requirements of the system. It is recommended that the rates be incrementally increased over the next five years. The recommended rates are summarized in Table 3-7.

**Table 3-7
Recommended Pressurized Irrigation Rates**

	Existing	2012	2013	2014	2015	2016
<i>Unmetered</i>						
Base Rate (\$/month)	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Overage (\$/SF/month)	\$0.00175	\$0.00200	\$0.00223	\$0.00243	\$0.00259	\$0.00271
<i>Metered</i>						
<i>Base Allowance (\$/month)</i>						
0 to 8,000 gallons/month	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
<i>Block 2 Rate (\$/kgal)</i>						
8,000 to 16,000 gallons/month	\$1.25	\$1.43	\$1.60	\$1.74	\$1.85	\$1.93
<i>Block 3 Rate (\$/kgal)</i>						
Above 16,000 gallons/month	\$3.31	\$3.77	\$4.23	\$4.60	\$4.90	\$5.12

SECTION 4 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis contained in the previous sections of this report, BC&A would recommend the following actions:

Adopt the Recommended Rate Increases: It is recommended that American Fork City adopt the proposed rate increases as summarized below in Tables 4-1 and 4-2. This equates to approximately a 14 percent increase in sales revenue in the first year. Rate increases in each subsequent year are 11, 9, 7 and 5 percent. This study was commissioned in the 2011 fiscal year (FYE) with the intent that rates would be adjusted in the FYE 2012. Even though most of FYE 2012 is nearly complete, the first year rate increases need to be adopted as soon as possible in order to capture as much revenue as possible. Ideally, the FYE 2013 rate increase would be adopted at the beginning of the fiscal year; however, given the close proximity in time to the first increase, it is recommended that the FYE 2013 rate increase be implemented in the Fall of 2012. Future adjustments should take place near the beginning of the Fiscal Year, with the caveat that summertime rate increases can be problematic with customers given the increased summertime water use that typically occurs. With the pressurized irrigation system providing the bulk of the peak summertime water, this may not be an issue for American Fork City, but the City should consider it in deciding when to make rate increases effective.

**Table 4-1
Recommended Culinary Water Rates
(Does not include Water Agency Assessment)**

Residential Rates

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
All meters	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Block Rates¹						
<i>Base Allowance</i>						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<i>Block 2 Rate</i>	\$2.00					
6,000 to 9,000 gallons/month	\$2.50	\$2.27	\$2.67	\$3.00	\$3.28	\$3.49
<i>Block 3 Rate</i>	\$3.00					
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.69	\$4.20	\$4.64	\$4.96

¹ Block rates for existing are 0-6, 6-8, 8-10, 10-12, and 12+ kgals.

Commercial, Multi-Family, Industrial, and Institutional

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
3/4 and smaller	\$14.00	\$18.07	\$20.48	\$22.53	\$24.26	\$25.46
1	\$14.00	\$19.22	\$21.73	\$23.87	\$25.65	\$26.90
1 1/2	\$14.00	\$20.37	\$22.97	\$25.21	\$27.04	\$28.33
2	\$14.00	\$23.53	\$26.39	\$28.90	\$30.88	\$32.29
3	\$14.00	\$46.82	\$51.57	\$56.07	\$59.10	\$61.39
4	\$14.00	\$55.45	\$60.90	\$66.13	\$69.55	\$72.17
6	\$14.00	\$75.58	\$82.66	\$89.60	\$93.94	\$97.32
8	\$14.00	\$98.58	\$107.54	\$116.43	\$121.82	\$126.06
10	\$14.00	\$130.21	\$141.73	\$153.32	\$160.15	\$165.58
Block Rates						
<i>Base Allowance</i>						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<i>Block 2 Rate</i>						
6,000 to 9,000 gallons/month	\$2.50	\$2.04	\$2.38	\$2.65	\$2.90	\$3.07
<i>Block 3 Rate</i>						
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.07	\$3.07	\$3.07	\$3.07

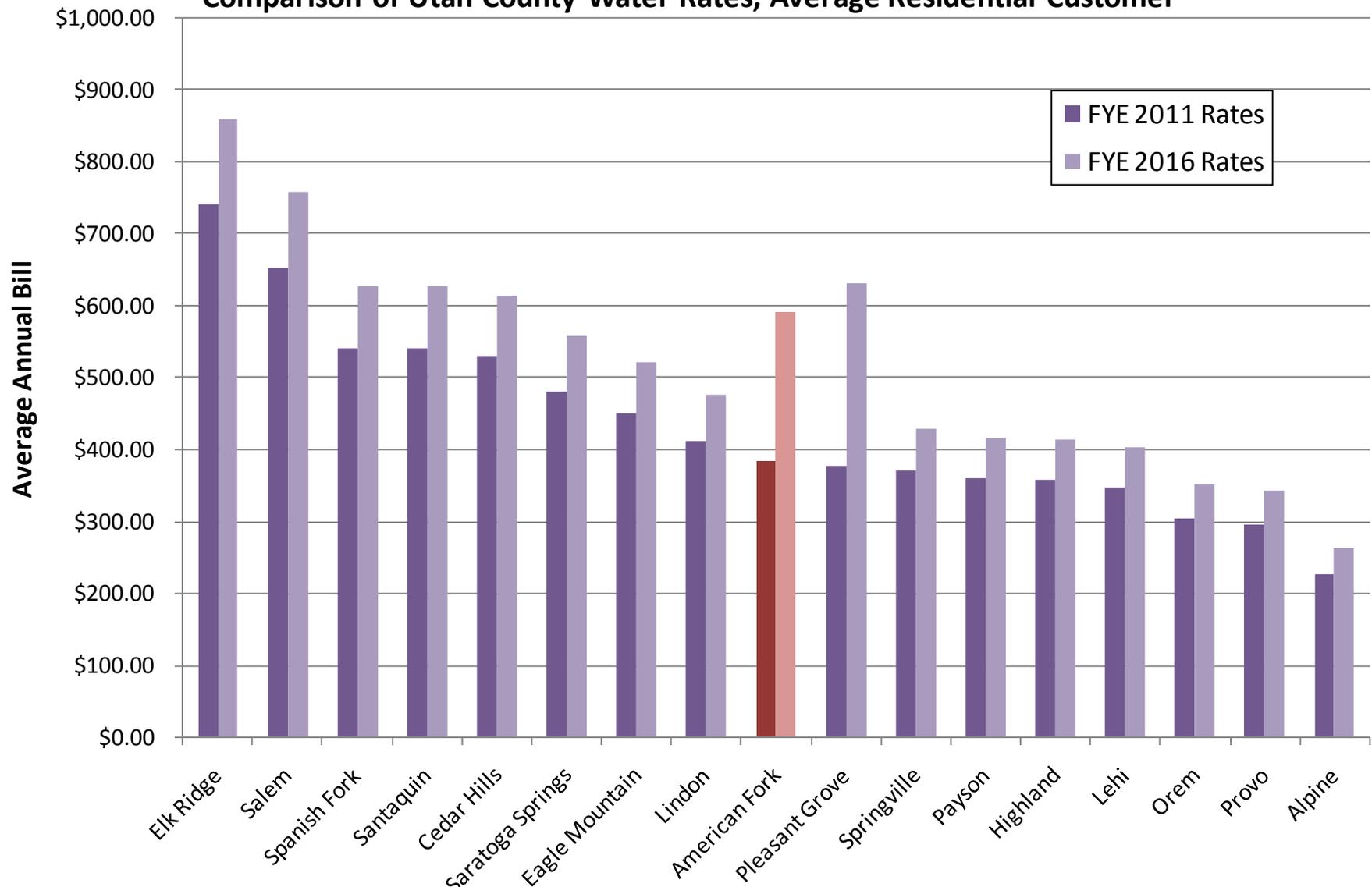
**Table 4-2
Recommended Pressurized Irrigation Rates**

	Existing	2012	2013	2014	2015	2016
<i>Unmetered</i>						
Base Rate (\$/month)	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Overage (\$/SF/month)	\$0.00175	\$0.00200	\$0.00223	\$0.00243	\$0.00259	\$0.00271
<i>Metered</i>						
<i>Base Allowance (\$/month)</i>						
0 to 8,000 gallons/month	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
<i>Block 2 Rate (\$/kgal)</i>						
8,000 to 16,000 gallons/month	\$1.25	\$1.43	\$1.60	\$1.74	\$1.85	\$1.93
<i>Block 3 Rate (\$/kgal)</i>						
Above 16,000 gallons/month	\$3.31	\$3.77	\$4.23	\$4.60	\$4.90	\$5.12

For comparison purposes, Figure 4-1 and corresponding Table 4-3 show the existing and proposed future rates for American Fork City and other communities along the Wasatch Front. The tables show the average annual bill that each municipality charges a residential connection for all water used by the customer. Combined accounts must be considered because many cities do not offer pressurized irrigation services. For American Fork City, the future annual rate shown assumes the City adopts the rates recommended in this report. For all other cities, future annual rates are simply based on a constant annual inflation of three percent. This likely underestimates future rates for most cities, but provides a starting point for comparison.

Figure 4-1

Comparison of Utah County Water Rates, Average Residential Customer



*FYE 2016 rates based on annual increase to account for inflation only (3%) except for Pleasant Grove where published rates were available through 2014.

Table 4-3
Total Water Rate Comparison
(Culinary and Pressurized Irrigation Combined)

City	Cost per Average Residential Connection ¹ for FYE 2011	Cost per Average Residential Connection for FYE 2016 ²
Elk Ridge	\$742.40	\$860.65
Salem	\$654.00	\$758.17
Spanish Fork	\$541.32	\$627.54
Santaquin	\$541.32	\$627.54
Cedar Hills	\$530.76	\$615.30
Saratoga Springs	\$482.19	\$558.99
Eagle Mountain	\$451.20	\$523.06
Lindon	\$412.08	\$477.71
American Fork	\$384.00	\$604.08
Pleasant Grove	\$379.20	\$631.32
Springville	\$371.00	\$430.09
Payson	\$360.48	\$417.90
Highland	\$358.92	\$416.09
Lehi	\$349.44	\$405.10
Orem	\$305.04	\$353.62
Provo	\$297.48	\$344.86
Alpine	\$228.10	\$264.43

¹ Based on 8,000 gal/month indoor and 8,000 gal/month May and October, 26,000 gal/month June and September and 50,000 gal/month July and August outdoor per average residential connection

² Assumes other City rates are inflated at 3.0% annually

As can be seen in the table, American Fork City currently has rates toward the middle of the pack. With the proposed increases identified in this report, American Fork would slide a few spots higher on the table if other entities' increases are limited to inflation. Given the rising costs of water, this seems unlikely (as evidenced by the rates for Pleasant Grove, the only other entity with published long-term rates). Once other Cities consider their own needs and publish future rates, it is expected that American Fork City will remain at about the same spot compared to the other communities surveyed.

Consider Multiple Year Rate Schedules: It is recommended that American Fork City pursue adopting multiple year rate schedules (up to the full rate schedules above). By adopting multiple year rate schedules, the City can program small annual increases to the culinary water and pressurized irrigation rates consistent with the results of this report. This will help avoid large

rate increases in future years and will minimize the potential for “rate shock” to customers. Small, affordable changes in rate levels and rate structures are more acceptable to the public and benefit the utility in terms of financial stability. If small changes are needed to this multiyear schedule in the future, the City can always revise these rates at that time.

Update This Rate Study Periodically: After the implementation of any change to the rate structure, we would suggest that the City monitor customer responses and demand patterns for a period of one year. Following this initial observation period, the change should be re-examined to determine if there should be any subsequent adjustments. A comprehensive review of this rate study should also be performed in three to five years. The projections, assumptions, and data contained in this report may need to be revised over time. For these reasons, it is prudent to update water rates to ensure they are sufficient to meet system requirements, as well as maintain cost-of-service equity in charges to customers.

Meter the Pressurized Irrigation System: Currently it is uncommon for pressurized irrigation systems to meter water use of each individual customer. This practice makes it difficult to monitor demands on the pressurized irrigation system and to fairly charge customers for their water use. When the water bill is not tied to actual usage it becomes easy for the users to abuse the system and there is no incentive for conservation. However, as water supplies struggle to meet the demands created by a growing population, metered connections will be critical to ensuring those supplies are used as efficiently as possible.

Past arguments against meters in pressurized irrigation systems included the contention that existing meter systems were not designed to accurately, reliably measure irrigation water that may contain grit and other contaminants not typically found in culinary water systems. This remains somewhat true today, but advances are being made in the water meter market and meters suitable for use in irrigation applications are becoming available. As these meters become more readily available and as more is demanded of the City’s water supplies, the City should consider metering the use of individual customers and adapting a rate schedule to fairly assess system costs to each customer according to their use.

Timing of Rate Increases: This study was commissioned in May of 2011 with the intent of initiating needed changes to the rates at the beginning of Fiscal Year ending in 2012 (July 2011). At the request of the City, this study has been delayed for a variety of reasons. In spite of the delay, it is still important that the recommended increase take place on schedule in order to meet the City’s obligations and preserve the required Reserve Fund. As such, it is recommended that the 2012 rate increases be implemented as soon as possible. Ideally, the 2013 rate adjustment would take place at the beginning of Fiscal Year 2013 (July 2012), but given the close proximity to the 2012 adjustment, it will be prudent to delay implementation until September or October. Future adjustments should take place near the beginning of the Fiscal Year, with the caveat that summer time rate increases can be problematic with customers given the increased summertime water use that typically occurs. With the pressurized irrigation system providing the bulk of the peak summertime water, this may not be an issue for American Fork City, but the City should consider it in deciding when to make rate increases effective.

APPENDIX A

DETAILED WATER RATE MODEL TABLES

Table 1
American Fork City Culinary Water Rate Model
Historical Water Use
(kgal)

Customer Class	2009			2010			2011			Planning Use/Acct.	Use/Acct. (kgal/month)
	Use	Accounts	Use per Account	Use	Accounts	Use per Account	Use	Accounts	Use per Account		
All Customers	1,997,230	7,305	273.4	1,688,659	7,399	228.2	1,145,690	7,495	152.9	152.9	12.7
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0	0.0
Total	1,997,230	7,305	273.4	1,688,659	7,399	228.2	1,145,690	7,495	152.9	152.9	12.7

Table 2
American Fork City Culinary Water Rate Model
Projected Accounts

Customer Class		Number				
		2012	2013	2014	2015	2016
	% Growth	0.50%	0.50%	0.74%	1.22%	1.71%
All Customers		7,532	7,570	7,626	7,719	7,850
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Total		7,532	7,570	7,626	7,719	7,850

Table 3
American Fork City Culinary Water Rate Model
Projected Annual Water Use

Customer Class	3-Year Avg. Use/Acct.	Amount (kgal)				
		2012	2013	2014	2015	2016
	% Historic Water Use	98%	92%	88%	84%	82%
All Customers	152.9	1,133,980	1,067,778	1,027,349	990,997	983,174
Unused	0.0	0	0	0	0	0
Unused	0.0	0	0	0	0	0
Unused	0.0	0	0	0	0	0
Unused	0.0	0	0	0	0	0
Unused	0.0	0	0	0	0	0
Total		1,133,980	1,067,778	1,027,349	990,997	983,174

Table 4
American Fork City Culinary Water Rate Model
Peaking Factors

Customer Class	Max. Mo./ Avg. Mo.	Est. Peak Day Factor
All Customers	2.00	2.00
Unused	0.00	-
System	2.00	2.00

System Peak Day to Average Day Factor	2.00
---------------------------------------	------

Table 5
American Fork City Culinary Water Rate Model
Projected Water Peaking Characteristics

Customer Class	Estimated Peak Day (kgal)						Excess Over Average (kgal)				
	2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016
All Customers	6,213.59	5,850.84	5,629.31	5,430.12	5,387.26	5,500.09	3,106.79	2,925.42	2,814.65	2,715.06	2,693.63
Unused	-	-	-	-	-	-	-	-	-	-	-
Unused	-	-	-	-	-	-	-	-	-	-	-
Unused	-	-	-	-	-	-	-	-	-	-	-
Unused	-	-	-	-	-	-	-	-	-	-	-
Unused	-	-	-	-	-	-	-	-	-	-	-
Total	6,213.59	5,850.84	5,629.31	5,430.12	5,387.26	5,500.09	3,106.79	2,925.42	2,814.65	2,715.06	2,693.63

Table 6
American Fork City Culinary Water Rate Model
Projected Summer Water Use (May through October)

Number of Summer Months = 6						
Customer Class	Summer Percent	Summer Use (kgal)				
		2012	2013	2014	2015	2016
All Customers	55.0%	623,689	587,278	565,042	545,048	540,746
Unused	0.0%	-	-	-	-	-
Unused	0.0%	-	-	-	-	-
Unused	0.0%	-	-	-	-	-
Unused	0.0%	-	-	-	-	-
Unused	0.0%	-	-	-	-	-
Total		623,689	587,278	565,042	545,048	540,746

Table Use 7
American Fork City Culinary Water Rate Model
Block Water Use

All Customers Meter Size	Upper Block Limits (kgal)				FY 2008-09 Total Use by Block			
	Block 1	Block 2	Block 3	Block 4	Block 1	Block 2	Block 3	Block 4
3/4" and smaller	6	9	+	+	539,640	545,445	60,605	0.0
1"	6	9	+	+	0	0	0	0
1 1/2"	6	9	+	+	0	0	0	0
2"	6	9	+	+	0	0	0	0
3"	6	9	+	+	0	0	0	0
4"	6	9	+	+	0	0	0	0
6"	6	9	+	+	0	0	0	0
8"	6	9	+	+	0	0	0	0
10"	6	9	+	+	0	0	0	0
Total	--	--	--	--	539640.0	545445.0	60605.0	0.0
Percentage of Total Use	--	--	--	--	47.1%	47.6%	5.3%	0.0%

Table 8
American Fork City Culinary Water Rate Model
Meters and Equivalent Meters

Meters	2011										Total	% of Total
	Size (Inches)											
Customer Class	3/4 and smaller	1	1 1/2	2	3	4	6	8	10			
All Customers	6,582	798	91	75	0	6	0	0	0	7,552	100.0%	
Unused	0	0	0	0	0	0	0	0	0	0	0.0%	
Unused	0	0	0	0	0	0	0	0	0	0	0.0%	
Unused	0	0	0	0	0	0	0	0	0	0	0.0%	
Unused	0	0	0	0	0	0	0	0	0	0	0.0%	
Unused	0	0	0	0	0	0	0	0	0	0	0.0%	
Total	6,582	798	91	75	0	6	0	0	0	7,552	100.0%	
% of Total	87.2%	10.6%	1.2%	1.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100.0%		

AWWA Equiv. Meter Ratios	1.0	1.4	1.8	2.9	11.0	14.0	21.0	29.0	40.0

Equivalent Meters

Customer Class	Size (Inches)									Total	% of Total
	3/4 and smaller	1	1 1/2	2	3	4	6	8	10		
All Customers	6,582	1,117	164	218	0	84	0	0	0	8,165	100.0%
Unused	0	0	0	0	0	0	0	0	0	0	0.0%
Unused	0	0	0	0	0	0	0	0	0	0	0.0%
Unused	0	0	0	0	0	0	0	0	0	0	0.0%
Unused	0	0	0	0	0	0	0	0	0	0	0.0%
Unused	0	0	0	0	0	0	0	0	0	0	0.0%
Total	6,582	1,117	164	218	0	84	0	0	0	8,165	100.0%
% of Total	80.6%	13.7%	2.0%	2.7%	0.0%	1.0%	0.0%	0.0%	0.0%	100.0%	

Table 9
American Fork City Culinary Water Rate Model
Projected Number of Equivalent Meters by Size

Customer Class	2012	2013	2014	2015	2016
All Customers	8,205	8,246	8,307	8,409	8,551
Unused	0	0	0	0	0
Unused	0	0	0	0	0
Unused	0	0	0	0	0
Unused	0	0	0	0	0
Unused	0	0	0	0	0
Total	8,205	8,246	8,307	8,409	8,551

Table 10
American Fork City Culinary Water Rate Model
Connection Fee Revenue

	Impact Fee	Projected	Projected	Projected	Projected	Projected
		2012	2013	2014	2015	2016
Per ERU	\$1,634	\$104,136	\$106,951	\$157,612	\$261,748	\$368,699
Total Impact Fee Revenue		\$104,136	\$106,951	\$157,612	\$261,748	\$368,699

Table 11
American Fork City Culinary Water Rate Model
Non-Rate Revenue (Including Connection Fees)

Assumed Inflation Rate = 3.0%

Item	Projected	Projected	Projected	Projected	Projected
	2012	2013	2014	2015	2016
<i>Operations</i>					
50-3710-150 CUP Water Fee	\$592,956	\$595,920	\$600,288	\$607,542	\$617,760
50-3710-200 Irrigation Sales	\$0	\$0	\$0	\$0	\$0
50-3710-450 Water Late Fees	\$30,000	\$31,050	\$32,210	\$33,568	\$35,148
50-3710-600 Other	\$20,000	\$20,700	\$21,473	\$22,379	\$23,432
50-3710-700 Interest Earnings	\$5,500	\$5,693	\$5,905	\$6,154	\$6,444
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Total Operations Non-Rate Revenue	\$648,456	\$653,363	\$659,876	\$669,643	\$682,783
<i>Expansion and Replacement</i>					
50-3710-300 Water Impact Fees	\$104,136	\$106,951	\$157,612	\$261,748	\$368,699
50-3710-400 Water Hookup Fees	\$40,000	\$41,400	\$42,946	\$44,757	\$46,864
50-3710-800 RDA Reimbursement	\$0	\$0	\$0	\$0	\$0
50-3710-850 Notes Receivable-Heritage	\$42,000	\$43,470	\$45,094	\$46,995	\$49,207
50-3710-960 Developer Contributions	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Total Expansion Non-Rate Revenue	\$186,136	\$191,821	\$245,652	\$353,501	\$464,769
Total Non-Rate Revenue	\$834,592	\$845,183	\$905,528	\$1,023,144	\$1,147,552

Table 12
American Fork City Culinary Water Rate Model
Revenue Requirements
Cash Basis

Item	Projected	Projected	Projected	Projected	Projected
	2012	2013	2014	2015	2016
<i>O&M</i>					
50-51100-100 Wages	\$373,200	\$385,329	\$398,306	\$412,678	\$428,578
50-51100-110 Overtime Wages	\$30,000	\$30,975	\$32,018	\$33,173	\$34,452
50-51100-120 Temporary Wages	\$0	\$0	\$0	\$0	\$0
50-51100-130 Employee Benefits	\$218,800	\$225,911	\$233,519	\$241,945	\$251,267
50-51100-210 Subscriptions and Memberships	\$0	\$0	\$0	\$0	\$0
50-51100-230 Travel	\$3,200	\$3,304	\$3,415	\$3,539	\$3,675
50-51100-240 Postage	\$8,800	\$9,086	\$9,392	\$9,731	\$10,106
50-51100-250 Equipment Supplies and Maintenance	\$20,000	\$20,650	\$21,345	\$22,116	\$22,968
50-51100-260 Insurance	\$34,000	\$35,105	\$36,287	\$37,597	\$39,045
50-51100-270 Electric Power Pumps	\$170,000	\$175,525	\$181,436	\$187,983	\$195,226
50-51100-280 Telephone	\$3,000	\$3,098	\$3,202	\$3,317	\$3,445
50-51100-310 Professional and Technical	\$80,000	\$82,600	\$85,382	\$88,463	\$91,871
50-51100-330 Schools and Education	\$2,400	\$2,478	\$2,561	\$2,654	\$2,756
50-51100-460 Clothing	\$0	\$0	\$0	\$0	\$0
50-51100-480 Special Department Supplies	\$120,000	\$123,900	\$128,073	\$132,694	\$137,806
50-51100-490 Water Assessment Fees	\$315,887	\$315,889	\$255,887	\$255,887	\$257,889
50-51100-500 To General Fund	\$368,000	\$379,960	\$392,756	\$406,928	\$422,606
50-51100-660 Reserved for Liability	\$30,000	\$30,975	\$32,018	\$33,173	\$34,452
50-51100-740 Equipment	\$22,500	\$23,231	\$24,014	\$24,880	\$25,839
50-51100-760 Water Stock Purchase	\$61,091	\$23,269	\$23,278	\$23,272	\$23,269
50-51100-770 CUP Water Payment	\$322,525	\$322,525	\$322,525	\$322,525	\$322,525
50-51100-790 Other	\$0	\$0	\$0	\$0	\$0
50-51100-800 Land Lease State of Utah	\$7,600	\$7,847	\$8,111	\$8,404	\$8,728
50-51100-850 Contribute to Fund Surplus (Reserve Fund)	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Transfer to/(from) Secondary Fund	\$854,021	\$911,950	\$1,005,939	\$1,043,560	\$1,077,498
Total O&M	\$3,045,024	\$3,113,607	\$3,199,465	\$3,294,518	\$3,394,000
<i>Debt Service</i>					
50-51100-550 Transfer to Debt Service	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
50-51100-810 Principal Dept Service	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Total Debt Service	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
<i>Capital Improvements</i>					
Growth Related					
50-51100-710 Water Line Projects	\$0	\$0	\$0	\$0	\$0
50-51100-720 Water Line Replacements	\$294,000	\$488,000	\$682,000	\$876,000	\$1,070,000
50-51100-730 Water System Improvements	\$207,000	\$214,245	\$222,248	\$231,620	\$242,519
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Transfer to/(from) Reserve Fund	\$0	\$0	\$0	\$0	\$0
Total Capital Outlays	\$ 501,000	\$ 702,245	\$ 904,248	\$ 1,107,620	\$ 1,312,519
Gross Revenue Requirements	\$ 3,696,024	\$ 3,965,852	\$ 4,253,713	\$ 4,552,138	\$ 4,856,518
LESS:					
Operations Non-Rate Revenue	\$648,456	\$653,363	\$659,876	\$669,643	\$682,783
Expansion Non-Rate Revenue	\$186,136	\$191,821	\$245,652	\$353,501	\$464,769
Net Revenue Requirements	\$ 2,861,432	\$ 3,120,668	\$ 3,348,185	\$ 3,528,994	\$ 3,708,966

Table 13
American Fork City Culinary Water Rate Model
Cost Allocation Percentages to Service Characteristics

Item	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total
<i>O&M</i>					
50-51100-100 Wages	60%	10%	15%	15%	100%
50-51100-110 Overtime Wages	60%	10%	15%	15%	100%
50-51100-120 Temporary Wages	60%	10%	15%	15%	100%
50-51100-130 Employee Benefits	60%	10%	15%	15%	100%
50-51100-210 Subscriptions and Memberships	60%	10%	15%	15%	100%
50-51100-230 Travel	60%	10%	15%	15%	100%
50-51100-240 Postage	0%	0%	100%	0%	100%
50-51100-250 Equipment Supplies and Maintenance	60%	10%	15%	15%	100%
50-51100-260 Insurance	60%	10%	15%	15%	100%
50-51100-270 Electric Power Pumps	60%	40%	0%	0%	100%
50-51100-280 Telephone	0%	0%	100%	0%	100%
50-51100-310 Professional and Technical	60%	10%	15%	15%	100%
50-51100-330 Schools and Education	60%	10%	15%	15%	100%
50-51100-460 Clothing	60%	10%	15%	15%	100%
50-51100-480 Special Department Supplies	60%	10%	15%	15%	100%
50-51100-490 Water Assessment Fees	100%	0%	0%	0%	100%
50-51100-500 To General Fund	60%	10%	15%	15%	100%
50-51100-660 Reserved for Liability	60%	10%	15%	15%	100%
50-51100-740 Equipment	60%	10%	15%	15%	100%
50-51100-760 Water Stock Purchase	100%	0%	0%	0%	100%
50-51100-770 CUP Water Payment	100%	0%	0%	0%	100%
50-51100-790 Other	60%	10%	15%	15%	100%
50-51100-800 Land Lease State of Utah	60%	10%	15%	15%	100%
50-51100-850 Contribute to Fund Surplus (Reserve Fund)	60%	10%	15%	15%	100%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Unused	0%	0%	0%	0%	0%
Transfer to/(from) Secondary Fund	60%	10%	15%	15%	100%

Table 14
American Fork City Culinary Water Rate Model
Fixed Assets Allocations to Service Characteristics

Item	Assets	Percent				Total	Allocated Amount				
		Average Demand	Peak Day	Billing & Collection	Meters & Services		Average Demand	Peak Day	Billing & Collection	Meters & Services	Total
Computer	\$15,851	0.0%	0.0%	50.0%	50.0%	100%	\$0	\$0	\$7,926	\$7,926	\$15,851
Buildings	\$277,873	0.0%	0.0%	0.0%	100.0%	100%	\$0	\$0	\$0	\$277,873	\$277,873
Fleet	\$149,027	60%	10%	15%	15%	100%	\$89,416	\$14,903	\$22,354	\$22,354	\$149,027
Land	\$564,678	60%	10%	15%	15%	100%	\$338,807	\$56,468	\$84,702	\$84,702	\$564,678
Water Rights	\$16,941,336	60.0%	40.0%	0.0%	0.0%	100%	\$10,164,802	\$6,776,534	\$0	\$0	\$16,941,336
PRV Vaults	\$77,000	60.0%	30.0%	0.0%	10.0%	100%	\$46,200	\$23,100	\$0	\$7,700	\$77,000
Pipelines	\$23,143,000	60.0%	30.0%	0.0%	10.0%	100%	\$13,885,800	\$6,942,900	\$0	\$2,314,300	\$23,143,000
Machinery & Equipment	\$530,191	60%	10%	15%	15%	100%	\$318,115	\$53,019	\$79,529	\$79,529	\$530,191
Storage Tanks	\$3,102,000	40.0%	60.0%	0.0%	0.0%	100%	\$1,240,800	\$1,861,200	\$0	\$0	\$3,102,000
Wells	\$2,178,000	60.0%	40.0%	0.0%	0.0%	100%	\$1,306,800	\$871,200	\$0	\$0	\$2,178,000
Total	\$46,978,956						\$27,390,739	\$16,599,324	\$194,510	\$2,794,383	\$46,978,956
Percent							58.3%	35.3%	0.4%	5.9%	100.0%

Table 15
American Fork City Culinary Water Rate Model
Allocation of O&M Costs to Service Characteristics

Item	2012					2013					2014					2015					2016					
	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	
<i>O&M</i>																										
50-51100-100 Wages	\$223,920	\$37,320	\$55,980	\$55,980	\$373,200	\$231,197	\$38,533	\$57,799	\$57,799	\$385,329	\$238,983	\$39,831	\$59,746	\$59,746	\$398,306	\$247,607	\$41,268	\$61,902	\$61,902	\$412,678	\$257,147	\$42,858	\$64,287	\$64,287	\$428,578	
50-51100-110 Overtime Wages	\$18,000	\$3,000	\$4,500	\$4,500	\$30,000	\$18,585	\$3,098	\$4,646	\$4,646	\$30,975	\$19,211	\$3,202	\$4,803	\$4,803	\$32,018	\$19,904	\$3,317	\$4,976	\$4,976	\$33,173	\$20,671	\$3,445	\$5,168	\$5,168	\$34,452	
50-51100-120 Temporary Wages	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
50-51100-130 Employee Benefits	\$131,280	\$21,880	\$32,820	\$32,820	\$218,800	\$135,547	\$22,591	\$33,887	\$33,887	\$225,911	\$140,111	\$23,352	\$35,028	\$35,028	\$233,519	\$145,167	\$24,195	\$36,292	\$36,292	\$241,945	\$150,760	\$25,127	\$37,690	\$37,690	\$251,267	
50-51100-210 Subscriptions and Memberships	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
50-51100-230 Travel	\$1,920	\$320	\$480	\$480	\$3,200	\$1,982	\$330	\$496	\$496	\$3,304	\$2,049	\$342	\$512	\$512	\$3,415	\$2,123	\$354	\$531	\$531	\$3,539	\$2,205	\$367	\$551	\$551	\$3,675	
50-51100-240 Postage	\$0	\$0	\$8,800	\$8,800	\$8,800	\$0	\$0	\$9,086	\$9,086	\$9,086	\$0	\$0	\$9,392	\$9,392	\$9,392	\$0	\$0	\$9,731	\$9,731	\$9,731	\$0	\$0	\$10,106	\$10,106	\$10,106	
50-51100-250 Equipment Supplies and Maintenance	\$12,000	\$2,000	\$3,000	\$3,000	\$20,000	\$12,390	\$2,065	\$3,098	\$3,098	\$20,650	\$12,807	\$2,135	\$3,202	\$3,202	\$21,345	\$13,269	\$2,212	\$3,317	\$3,317	\$22,116	\$13,781	\$2,297	\$3,445	\$3,445	\$22,968	
50-51100-260 Insurance	\$20,400	\$3,400	\$5,100	\$5,100	\$34,000	\$21,063	\$3,511	\$5,266	\$5,266	\$35,105	\$21,772	\$3,629	\$5,443	\$5,443	\$36,287	\$22,558	\$3,760	\$5,639	\$5,639	\$37,597	\$23,427	\$3,905	\$5,857	\$5,857	\$39,045	
50-51100-270 Electric Power Pumps	\$102,000	\$68,000	\$0	\$0	\$170,000	\$105,315	\$70,210	\$0	\$0	\$175,525	\$108,862	\$72,574	\$0	\$0	\$181,436	\$112,790	\$75,193	\$0	\$0	\$187,983	\$117,135	\$78,090	\$0	\$0	\$195,226	
50-51100-280 Telephone	\$0	\$0	\$3,000	\$3,000	\$3,000	\$0	\$0	\$3,098	\$3,098	\$3,098	\$0	\$0	\$3,202	\$3,202	\$3,202	\$0	\$0	\$3,317	\$3,317	\$3,317	\$0	\$0	\$3,445	\$3,445	\$3,445	
50-51100-310 Professional and Technical	\$48,000	\$8,000	\$12,000	\$12,000	\$80,000	\$49,560	\$8,260	\$12,390	\$12,390	\$82,600	\$51,229	\$8,538	\$12,807	\$12,807	\$85,382	\$53,078	\$8,846	\$13,269	\$13,269	\$88,463	\$55,123	\$9,187	\$13,781	\$13,781	\$91,871	
50-51100-330 Schools and Education	\$1,440	\$240	\$360	\$360	\$2,400	\$1,487	\$248	\$372	\$372	\$2,478	\$1,537	\$256	\$384	\$384	\$2,561	\$1,592	\$265	\$398	\$398	\$2,654	\$1,654	\$276	\$413	\$413	\$2,756	
50-51100-460 Clothing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
50-51100-480 Special Department Supplies	\$72,000	\$12,000	\$18,000	\$18,000	\$120,000	\$74,340	\$12,390	\$18,585	\$18,585	\$123,900	\$76,844	\$12,807	\$19,211	\$19,211	\$128,073	\$79,616	\$13,269	\$19,904	\$19,904	\$132,694	\$82,684	\$13,781	\$20,671	\$20,671	\$137,806	
50-51100-490 Water Assessment Fees	\$315,887	\$0	\$0	\$0	\$315,887	\$315,889	\$0	\$0	\$0	\$315,889	\$255,887	\$0	\$0	\$0	\$255,887	\$255,887	\$0	\$0	\$0	\$255,887	\$257,889	\$0	\$0	\$0	\$257,889	
50-51100-500 To General Fund	\$220,800	\$36,800	\$55,200	\$55,200	\$368,000	\$227,976	\$37,996	\$56,994	\$56,994	\$379,960	\$235,654	\$39,276	\$58,913	\$58,913	\$392,756	\$244,157	\$40,693	\$61,039	\$61,039	\$406,928	\$253,564	\$42,261	\$63,391	\$63,391	\$422,606	
50-51100-660 Reserved for Liability	\$18,000	\$3,000	\$4,500	\$4,500	\$30,000	\$18,585	\$3,098	\$4,646	\$4,646	\$30,975	\$19,211	\$3,202	\$4,803	\$4,803	\$32,018	\$19,904	\$3,317	\$4,976	\$4,976	\$33,173	\$20,671	\$3,445	\$5,168	\$5,168	\$34,452	
50-51100-740 Equipment	\$13,500	\$2,250	\$3,375	\$3,375	\$22,500	\$13,939	\$2,323	\$3,485	\$3,485	\$23,231	\$14,408	\$2,401	\$3,602	\$3,602	\$24,014	\$14,928	\$2,488	\$3,732	\$3,732	\$24,880	\$15,503	\$2,584	\$3,876	\$3,876	\$25,839	
50-51100-760 Water Stock Purchase	\$61,091	\$0	\$0	\$0	\$61,091	\$23,269	\$0	\$0	\$0	\$23,269	\$23,278	\$0	\$0	\$0	\$23,278	\$23,272	\$0	\$0	\$0	\$23,272	\$23,269	\$0	\$0	\$0	\$23,269	
50-51100-770 CUP Water Payment	\$322,525	\$0	\$0	\$0	\$322,525	\$322,525	\$0	\$0	\$0	\$322,525	\$322,525	\$0	\$0	\$0	\$322,525	\$322,525	\$0	\$0	\$0	\$322,525	\$322,525	\$0	\$0	\$0	\$322,525	
50-51100-790 Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
50-51100-800 Land Lease State of Utah	\$4,560	\$760	\$1,140	\$1,140	\$7,600	\$4,708	\$785	\$1,177	\$1,177	\$7,847	\$4,867	\$811	\$1,217	\$1,217	\$8,111	\$5,042	\$840	\$1,261	\$1,261	\$8,404	\$5,237	\$873	\$1,309	\$1,309	\$8,728	
50-51100-850 Contribute to Fund Surplus (Reserve Fund)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Unused	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Transfer to/(from) Secondary Fund	\$512,413	\$85,402	\$128,103	\$128,103	\$854,021	\$547,170	\$91,195	\$136,792	\$136,792	\$911,950	\$603,564	\$100,594	\$150,891	\$150,891	\$1,005,939	\$626,136	\$104,356	\$156,534	\$156,534	\$1,043,560	\$646,499	\$107,750	\$161,625	\$161,625	\$1,077,498	
Total	\$2,099,735	\$284,372	\$336,358	\$324,558	\$3,045,024	\$2,125,527	\$296,632	\$351,816	\$339,632	\$3,113,607	\$2,152,799	\$312,949	\$373,156	\$360,562	\$3,199,465	\$2,209,555	\$324,374	\$386,819	\$373,770	\$3,294,518	\$2,269,743	\$336,244	\$400,782	\$387,231	\$3,394,000	
Percent	69.0%	9.3%	11.0%	10.7%	100.0%	68.3%	9.5%	11.3%	10.9%	100.0%	67.3%	9.8%	11.7%	11.3%	100.0%	67.1%	9.8%	11.7%	11.3%	100.0%	66.9%	9.9%	11.8%	11.4%	100.0%	

Table 16
American Fork City Culinary Water Rate Model
Revenue Requirements by Service Characteristics

Item	2012					2013					2014					2015					2016				
	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total	Average Demand	Peak Day	Billing & Collection	Meters & Services	Total
O&M	\$2,099,735	\$284,372	\$336,358	\$324,558	\$3,045,024	\$2,125,527	\$296,632	\$351,816	\$339,632	\$3,113,607	\$2,152,799	\$312,949	\$373,156	\$360,562	\$3,199,465	\$2,209,555	\$324,374	\$386,819	\$373,770	\$3,294,518	\$2,269,743	\$336,244	\$400,782	\$387,231	\$3,394,000
Debt Service	\$87,456	\$53,000	\$621	\$8,922	\$150,000	\$87,456	\$53,000	\$621	\$8,922	\$150,000	\$87,456	\$53,000	\$621	\$8,922	\$150,000	\$87,456	\$53,000	\$621	\$8,922	\$150,000	\$87,456	\$53,000	\$621	\$8,922	\$150,000
Capital Outlays	\$292,104	\$177,021	\$2,074	\$29,800	\$501,000	\$409,439	\$248,128	\$2,908	\$41,771	\$702,245	\$527,215	\$319,503	\$3,744	\$53,786	\$904,248	\$645,790	\$391,361	\$4,586	\$65,883	\$1,107,620	\$765,254	\$463,759	\$5,434	\$78,071	\$1,312,519
Less: Operations Non-Rate Revenue	\$447,151	\$60,559	\$71,629	\$69,117	\$648,456	\$446,023	\$62,245	\$73,825	\$71,269	\$653,363	\$444,006	\$64,544	\$76,962	\$74,364	\$659,876	\$449,114	\$65,932	\$78,625	\$75,972	\$669,643	\$456,612	\$67,643	\$80,627	\$77,901	\$682,783
Less: Expansion Non-Rate Revenue	\$108,525	\$65,769	\$771	\$11,072	\$186,136	\$111,840	\$67,777	\$794	\$11,410	\$191,821	\$143,226	\$86,798	\$1,111	\$14,612	\$245,746	\$206,106	\$124,904	\$1,464	\$21,027	\$353,501	\$270,980	\$164,219	\$1,924	\$27,645	\$464,769
Total	\$1,923,620	\$388,066	\$266,653	\$283,092	\$2,861,432	\$2,064,560	\$467,737	\$280,725	\$307,647	\$3,120,668	\$2,180,239	\$534,110	\$299,448	\$334,294	\$3,348,091	\$2,287,582	\$577,899	\$311,937	\$351,576	\$3,528,994	\$2,394,861	\$621,141	\$324,286	\$368,678	\$3,708,966

2011 CULINARY WATER AND PRESSURIZED IRRIGATION RATE STUDY

Table Rates 18
American Fork City Culinary Water Rate Model
Calculated Rates

Meter Size	2012	2013	2014	2015	2016
<i>All Customers</i>					
3/4 and smaller	\$ 5.83	\$ 6.20	\$ 6.63	\$ 6.86	\$ 7.04
1	\$ 6.98	\$ 7.45	\$ 7.97	\$ 8.25	\$ 8.48
1 1/2	\$ 8.13	\$ 8.69	\$ 9.31	\$ 9.64	\$ 9.91
2	\$ 11.29	\$ 12.11	\$ 13.00	\$ 13.48	\$ 13.87
3	\$ 34.58	\$ 37.29	\$ 40.17	\$ 41.70	\$ 42.97
4	\$ 43.21	\$ 46.62	\$ 50.23	\$ 52.15	\$ 53.75
6	\$ 63.34	\$ 68.38	\$ 73.70	\$ 76.54	\$ 78.90
8	\$ 86.34	\$ 93.26	\$ 100.53	\$ 104.42	\$ 107.64
10	\$ 117.97	\$ 127.45	\$ 137.42	\$ 142.75	\$ 147.16

Flat and Seasonal Volume Rates (\$/kgal)

	2012	2013	2014	2015	2016
<i>Flat Volume Rate</i>					
All Customers	\$ 2.04	\$ 2.38	\$ 2.65	\$ 2.90	\$ 3.07
<i>Winter Rate</i>					
All Customers	\$ 1.70	\$ 1.94	\$ 2.13	\$ 2.31	\$ 2.44
<i>Summer Rate</i>					
All Customers	\$ 2.33	\$ 2.74	\$ 3.08	\$ 3.38	\$ 3.59

Block Volume Rates (\$/kgal)

	2012	2013	2014	2015	2016
<i>Block 1 Rate</i>					
All Customers	\$ 1.70	\$ 1.94	\$ 2.13	\$ 2.31	\$ 2.44
<i>Block 2 Rate</i>					
All Customers	\$ 2.27	\$ 2.67	\$ 3.00	\$ 3.28	\$ 3.49
<i>Block 3 Rate</i>					
All Customers	\$ 3.07	\$ 3.69	\$ 4.20	\$ 4.64	\$ 4.96

Table Rates 19
American Fork City Culinary Water Rate Model
Recommended Rates

Residential Rates

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
All meters	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Volume Rates ¹						
Base Allowance						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Block 2 Rate	\$2.00					
6,000 to 9,000 gallons/month	\$2.50	\$2.27	\$2.67	\$3.00	\$3.28	\$3.49
Block 3 Rate	\$3.00					
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.69	\$4.20	\$4.64	\$4.96

¹ Block rates for existing are 0-6, 6-8, 8-10, 10-12, and 12+ kgal.

Commercial, Industrial, and Institutional

	Existing	2012	2013	2014	2015	2016
Monthly Base Rate						
3/4 and smaller	\$14.00	\$18.07	\$20.48	\$22.53	\$24.26	\$25.46
1	\$14.00	\$19.22	\$21.73	\$23.87	\$25.65	\$26.90
1 1/2	\$14.00	\$20.37	\$22.97	\$25.21	\$27.04	\$28.33
2	\$14.00	\$23.53	\$26.39	\$28.90	\$30.88	\$32.29
3	\$14.00	\$46.82	\$51.57	\$56.07	\$59.10	\$61.39
4	\$14.00	\$55.45	\$60.90	\$66.13	\$69.55	\$72.17
6	\$14.00	\$75.58	\$82.66	\$89.60	\$93.94	\$97.32
8	\$14.00	\$98.58	\$107.54	\$116.43	\$121.82	\$126.06
10	\$14.00	\$130.21	\$141.73	\$153.32	\$160.15	\$165.58
Volume Rates						
Base Allowance						
0 to 6,000 gallons/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Block 2 Rate	\$2.00					
Above 6,000 gallons/month	\$2.50	\$2.04	\$2.38	\$2.65	\$2.90	\$3.07
Block 3 Rate	\$3.00					
Above 9,000 gallons/month	\$3.31	\$3.07	\$3.07	\$3.07	\$3.07	\$3.07

APPENDIX B

DETAILED PRESSURIZED IRRIGATION RATE STUDY

Table 1
American Fork City Pressurized Irrigation Rate Model
Historical Account Revenue

Customer Class	2009			2010			2011			Planning Rev./Acct.
	Total Revenue	Accounts	Revenue per Account	Total Revenue	Accounts	Revenue per Account	Total Revenue	Accounts	Revenue per Account	
All Customers	\$188,141	1,233	\$152.6	\$958,048	3,853	\$248.6	\$1,504,485	5,492	\$273.9	\$273.9
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0
Unused	0	0	0.0	0	0	0.0	0	0	0.0	0.0
Total	\$188,141	1,233	\$152.6	\$958,048	3,853	\$248.6	\$1,504,485	5,492	\$273.9	\$273.9

Table 2
American Fork City Pressurized Irrigation Rate Model
Projected Accounts

Customer Class	Conversion Rate	Number				
		2012	2013	2014	2015	2016
		5.97%	4.03%	2.63%	2.64%	1.42%
Additional Connections		328	235	151	149	80
	% Growth	0.50%	0.50%	0.74%	1.22%	1.71%
All Customers		5,847	6,112	6,318	6,562	6,767
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Unused		0	0	0	0	0
Total		5,847	6,112	6,318	6,562	6,767

Table 3
American Fork City Pressurized Irrigation Rate Model
Projected Impact Fee and User Rate (Existing) Revenue

2011 Average Yearly Bill per Connection =	\$274	Projected	Projected	Projected	Projected	Projected
2011 Connections =	5492	2012	2013	2014	2015	2016
Projected ERC Growth - Culinary Water System		65	65	97	161	228
Total New Pressurized Irrigation Connections		36	36	53	89	126
Total Impact Fee Revenue (\$4,575/Connection)		\$164,700	\$164,700	\$242,475	\$407,175	\$576,450
Additional Connections via Conversion		320	229	154	155	79
Total Pressurized Irrigation Connections		5848	6113	6320	6564	6769
Projected Rate Revenue		\$1,602,352	\$1,674,962	\$1,731,680	\$1,798,536	\$1,854,706

Table 4
American Fork City Pressurized Irrigation Rate Model
Non-Rate Revenue (Including Connection Fees)

Assumed Inflation Rate = 3.0%

Item	Projected	Projected	Projected	Projected	Projected
	2012	2013	2014	2015	2016
<i>Operations</i>					
50-3770-600 Other Income	\$1,000	\$1,035	\$1,074	\$1,119	\$1,172
50-3770-700 Interest	\$0	\$0	\$0	\$0	\$0
50-3770-900 Funds from Surplus	\$0	\$0	\$0	\$0	\$0
50-3770-960 Contributions	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0
Transfer to/(from) Water Budget	\$854,021	\$911,950	\$1,005,939	\$1,043,560	\$1,077,498
Transfer to/(from) Reserve Fund	\$1,232,753	\$939,114	\$557,017	\$236,039	\$0
Total Operations Non-Rate Revenue	\$2,087,774	\$1,852,099	\$1,564,030	\$1,280,718	\$1,078,670
<i>Expansion and Replacement</i>					
50-3770-300 Connection Fees	\$2,500	\$2,688	\$2,859	\$3,055	\$3,243
50-3770-400 Secondary Water Impact Fees	\$164,700	\$164,700	\$242,475	\$407,175	\$576,450
	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Total Expansion Non-Rate Revenue	\$167,200	\$167,388	\$245,334	\$410,230	\$579,693
Total Non-Rate Revenue	\$2,254,974	\$2,019,487	\$1,809,364	\$1,690,949	\$1,658,362

Table 5
American Fork City Pressurized Irrigation Rate Model
Revenue Requirements
Cash Basis

Item	Projected 2012	Projected 2013	Projected 2014	Projected 2015	Projected 2016
<i>O&M</i>					
50-5410-100 Wages	\$90,100	\$93,028	\$96,161	\$99,631	\$103,470
50-5410-110 Overtime Wages	\$15,000	\$15,488	\$16,009	\$16,587	\$17,226
50-5410-120 Temporary Wages	\$0	\$0	\$0	\$0	\$0
50-5410-130 Employee Benefits	\$58,100	\$59,988	\$62,008	\$64,246	\$66,721
50-5410-230 Travel	\$1,100	\$1,136	\$1,174	\$1,216	\$1,263
50-5410-240 Postage	\$8,800	\$9,086	\$9,392	\$9,731	\$10,106
50-5410-250 Equipment Supplies and Maintenance	\$4,000	\$4,130	\$4,269	\$4,423	\$4,594
50-5410-260 Insurance	\$19,000	\$19,618	\$20,278	\$21,010	\$21,819
50-5410-270 Utilities	\$2,500	\$2,581	\$2,668	\$2,764	\$2,871
50-5410-310 Professional and Technical	\$0	\$0	\$0	\$0	\$0
50-5410-330 Education	\$600	\$620	\$640	\$663	\$689
50-5410-460 Clothing	\$0	\$0	\$0	\$0	\$0
50-5410-480 Special Department Supplies	\$20,000	\$20,650	\$21,345	\$22,116	\$22,968
50-5410-500 To General Fund	\$0	\$0	\$0	\$0	\$0
50-5410-600 Other	\$0	\$0	\$0	\$0	\$0
50-5410-660 Reserved for Liability	\$10,000	\$10,325	\$10,673	\$11,058	\$11,484
50-5410-670 AF Water Irrigation Co.	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
50-5410-740 Equipment Purchases	\$1,500	\$1,549	\$1,601	\$1,659	\$1,723
50-5410-850 Contribute to Fund Balance (Reserve Fund)	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Budget Adjustment	\$265,822	\$295,198	\$324,628	\$356,299	\$385,128
Total O&M	\$516,522	\$553,396	\$590,848	\$631,403	\$670,061
<i>Debt Service</i>					
50-5410-830 Principal Debt Service	\$1,125,000	\$1,150,000	\$1,215,000	\$1,250,000	\$1,280,000
50-5410-840 Interest Debt Service	\$2,176,900	\$2,136,479	\$2,095,226	\$2,051,626	\$2,005,470
50-5410-845 Paying Agent Fees	\$2,500	\$2,581	\$2,668	\$2,764	\$2,871
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Total Debt Service	\$3,304,400	\$3,289,060	\$3,312,894	\$3,304,390	\$3,288,341
<i>Capital Improvements</i>					
Growth Related					
50-5410-710 Secondary Irrigation Projects	\$160,000	\$165,600	\$171,786	\$179,030	\$187,454
50-5410-730 Secondary Irrigation Improv.	\$104,385	\$150,349	\$195,726	\$240,046	\$283,186
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Unused	\$0	\$0	\$0	\$0	\$0
Transfer to/(from) Reserve Fund	\$0	\$0	\$0	\$0	\$0
Total Capital Outlays	\$ 264,385	\$ 315,949	\$ 367,512	\$ 419,076	\$ 470,640
Gross Revenue Requirements	\$ 4,085,307	\$ 4,158,405	\$ 4,271,254	\$ 4,354,870	\$ 4,429,042
LESS:					
Operations Non-Rate Revenue	\$2,087,774	\$1,852,099	\$1,564,030	\$1,280,718	\$1,078,670
Expansion Non-Rate Revenue	\$167,200	\$167,388	\$245,334	\$410,230	\$579,693
Net Revenue Requirements	\$ 1,830,333	\$ 2,138,918	\$ 2,461,890	\$ 2,663,921	\$ 2,770,679

Table Rates 6
American Fork City Pressurized Irrigation Rate Model
Recommended Pressurized Irrigation Rates

	Existing	2012	2013	2014	2015	2016
<i>Unmetered</i>						
Base Rate (\$/month)	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
Overage (\$/SF/month)	\$0.00175	\$0.00200	\$0.00223	\$0.00243	\$0.00259	\$0.00271
<i>Metered</i>						
<i>Base Allowance (\$/month)</i>						
0 to 8,000 gallons/month	\$14.00	\$16.03	\$17.84	\$19.41	\$20.72	\$21.68
<i>Block 2 Rate (\$/kgal)</i>						
8,000 to 16,000 gallons/month	\$1.25	\$1.43	\$1.60	\$1.74	\$1.85	\$1.93
<i>Block 3 Rate (\$/kgal)</i>						
Above 16,000 gallons/month	\$3.31	\$3.77	\$4.23	\$4.60	\$4.90	\$5.12