Colorado Water Conservation Board
Office of Water Conservation and Drought Planning
1313 Sherman Street, 7th Floor
Denver, CO 80203

RE: City of Fountain Water Efficiency Plan Update

Board,

Enclosed is a copy of the City of Fountain's (the City) updated Water Efficiency Plan. Last revised in 2009, this plan was prepared in accordance with the 2004 Colorado Water Conservation Act with reference to CWCB guidance documents and sample plan.

Located in El Paso County, the City provides treated water to a 10 square mile service area with approximately 28,753 residents. The following table demonstrates water delivered from 2013 through 2017 along with its corresponding population served within each year.

**Water Deliveries and Service Area Population**

| Year | Water Delivery (acre-ft) | Estimated Population |
|---|---|---|
| 2013 | 2,870 | 27,535 |
| 2014 | 2,856 | 27,627 |
| 2015 | 2,761 | 28,164 |
| 2016 | 2,771 | 28,459 |
| 2017 | 2,865 | 28,753 |

The Water Efficiency Plan was available for public review and comment from February 14th 2018 through April 14th 2018. During this time, the City held two open houses inviting the community to provide feedback and ask questions. While both open houses attracted attendees, no official comments (written or oral) were received. The Efficiency Plan was presented to the Mayor and Fountain City Council on May 8th 2018 and received approval by resolution. Please direct any questions about the Efficiency Plan to the City's Conservation and Sustainability Programs Manager, Ms. Katie Helm at (719) 322-2029.

Regards,

Katie Helm
Conservation & Sustainability Program Manager
Enclosure: City of Fountain 2018 Water Efficiency Plan

# 2018 Water Efficiency Plan

## City of Fountain

## El Paso County, Colorado

Prepared for:

Colorado Water Conservation Board

1313 Sherman St., room 721

Denver, CO 80203

Prepared by:

Katie Helm

101 N. Main St

Fountain, CO 80817

# Table of Contents

# Introduction

On August 30, 2001 the City of Fountain (hereafter referred to as the City), adopted a water efficiency plan in accordance with the Water Conservation Act of 1991. Since then, the City's Water Efficiency Plan has been revised in 2006, 2009 and the current document detailing the 2018 revision.

In 2006, the City's baseline demand was 1,057,541,400 gallons a year. As of December 2016, it has reduced its average system-wide demand by 14.6%. This level of savings, equivalent to 475 acre-feet per year, demonstrates the City's dedication to water conservation and accomplishments within the last decade.

The City's 2009 Water Master Plan (Master Plan) defined the integral role of water conservation in Fountain's overall water supply planning, and it became necessary to update the Water Conservation Plan to achieve additional water savings. This report has been prepared to update the City's 2009 Water Conservation Plan by documenting all of the City's present and proposed water conservation activities. The updated plan includes the water efficiency measures and programs from the City's initial plan, and it summarizes the water conservation activities that have been implemented after the initial plan was adopted. In addition, the updated plan incorporates the water conservation measures and programs that the City has proposed for future implementation. Changes to the City's water supply system and water rights operations (since development of the initial plan) were also included in the updated plan.

The City has had a full time Conservation and Sustainability Programs Manager since 2009. The Conservation and Sustainability Programs Manager is responsible for the implementation, monitoring, review, and revision of the Water Efficiency Plan. This plan encompasses a variety of initiatives associated with capital improvements, educational outreach, regulatory enhancements and incentive based programs to achieve its efficiency goals.

This Conservation Plan projects savings over a 10 year period from 2018-2028. If the City's population growth continues at 2.30% annually as predicted by ESRI Business Analyst Online (ESRI Business Analyst Online, U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2017 and 2022 Esri converted Census 2000 data into 2010 geography), in 2028 it's population is estimated to reach 36,925. If buildout is reached, the City is predicted to provide water service to approximately 60,000 people. Baseline water demand in 2016 was 902,950,000 gallons or 2,771 acre-feet (AF). The City estimated that the water efficiency measures identified within this plan will reduce annual water demand by approximately 71 AF each year through 2028. This implies a cumulative savings of 781 AF over the ten year period. These goals will be re-evaluated every 5 to 7 years as required by state standards.

The development of this document and its contents were established and assembled in accordance with the recommendations stated within the Colorado Water Conservation Board's *Municipal Water Efficiency Plan Guidance Document*. This plan is complementary to the City's Water Master Plan as they two documents contain overlying goals.

# 1.0 Profile of Existing Water Supply System

## 1.1 Overview

The City of Fountain is located in South Central Colorado in El Paso County. Fountain Utilities provides treated water services to a 10 square mile service area with approximately 28,753 people. The City supplies over 2,850 AF of water per year to both residential and commercial entities. This has decreased 153 AF since 2008. The City's water distribution system is supplied from Fryingpan-Arkansas (Fry-Ark) Project water and other fully consumable water delivered through the Fountain Valley Authority (FVA) Pipeline and from four (4) wells located in the alluvial aquifer of Fountain Creek. The City also utilizes wells outside of its distribution system to meet the demands of selected customers, as well as groundwater pumped from the Widefield Aquifer. The City stores its water supplies in Pueblo Reservoir and in its distribution system tanks. Historically, it has satisfied its water demand needs using approximately 70% surface water supplies and 30% ground water.

The following maps can be found in Appendix A:

- Fountain's existing and future service area
- Well locations
- Reservoirs and Water Sources
- Water Main Distribution Zones

**Wastewater Treatment:** Wastewater from Fountain's municipal water system is collected and treated by the Fountain Sanitation District, except for a small area that is provided sewer service by Widefield Water and Sanitation District through both the Fountain Sanitation District Plant and the Lower Fountain Water Treatment Plant. Treated wastewater is subsequently released into Fountain Creek. The district has two treatment plants including the Harold D. Thompson and Richard J. Christian Treatment Plant.
A wastewater treatment facility with a capacity of 1.5 million gallons per day (2.56 MGD peak) was placed in operation in August 1998. The Lower Fountain Plant with a capacity of 2.5 MGD began treatment operations in 2013.

The Fountain Sanitation facility uses an extended aerator activated sludge process to treat its water. It consists of the following processes:

1. **Preliminary Treatment:** This step includes waste water screening, removal of grit and measurement of influent flows.
2. **Secondary Treatment:** This step includes extended aeration activated sludge treatment, sedimentation removal, sludge removal and scum pumping.
3. **Post-Secondary Treatment:** Sludge is sent to a concrete basin for aerobic digestion and later dewatered.

Fountains potable supply (surface water) is treated by the Fountain Valley Authority Treatment Plant just south of the city.

**Historical Deliveries:** The following table summarizes total water deliveries for the past five years along with the estimated population of its service area.

**Table 1: Water Delivery and Population**

| Water Deliveries and Service Area Population | | |
|---|---|---|
| **Year** | **Water Delivery (acre-ft)** | **Estimated Population** |
| 2013 | 2,870 | 27,535 |
| 2014 | 2,856 | 27,627 |
| 2015 | 2,761 | 28,164 |
| 2016 | 2,771 | 28,459 |
| 2017 | 2,865 | 28,753 |
| Average | 2,825 | 28,295 |

The water deliveries listed above equal the total gross diversions into the City's distribution system and include system losses. Approximately 14% of these deliveries account for water loss. The population estimates demonstrated in Table 1 are provided by the Census Bureau 2010 report via ESRI Business Analyst Online.

## 1.2 Water Supply Reliability

The City's water distribution system is supplied from Fryingpan-Arkansas (Fry-Ark) Project or other fully consumable water delivered through the Fountain Valley Authority (FVA) Pipeline, four wells located in the alluvial aquifer of Fountain Creek, and from groundwater pumped from the Widefield Aquifer. Fry-Ark Project and other fully consumable water is stored in Pueblo Reservoir and pumped to Fountain through the FVA Pipeline. The City receives a contractual delivery of approximately 2,000 acre-feet per year through the pipeline. This water is used directly in the City's water system for municipal purposes as a base-load supply. Water is delivered throughout the year, but at a somewhat higher delivery rate during summer than in winter.

### Wells

The four municipal wells in the Fountain Creek alluvial aquifer have a total combined capacity of about 2.8 MGD. The City also receives water pumped from the Widefield Aquifer pursuant its lease of the Venetucci wells and water rights. The deliveries from this source are limited under the terms of the lease agreement and the Widefield Aquifer Stipulation that governs municipal pumping within the Widefield Aquifer. As of December 31$^{st}$ 2016, deliveries to the City are limited to approximately 130 AF per year, but future deliveries may be reduced based on the use of the Venetucci wells by other parties to the lease. Fountain, Security Water District, and Widefield Water and Sanitation District have jointly re-drilled the Venetucci wells and agreed to improve their water distribution infrastructure to maximize the yield from this water supply source.

### Southern Delivery System

The City participated in the development of the Southern Delivery System (SDS) Pipeline. Construction of the pipeline began in 2010 and was completed in 2016. The pipeline delivers additional water from Pueblo Reservoir to the distribution systems of Colorado Springs, Security, and Fountain. The City's SDS participation provides pipeline capacity for an annual delivery of 2,500 acre-feet per year, thus improving system reliability. This regional project includes 50 miles of pipeline.

The City also utilizes wells outside of its distribution system to meet the demands of selected customers in its service area. The City owns two existing wells that provide a water supply to Pikes Peak

International Speedway. Under an agreement with Fountain-Fort Carson School District No. 8, the City provides augmentation water to support pumping of the Aragon Well that irrigates grounds at the Aragon Elementary School.

**Storage**

The City stores its water supply in Pueblo Reservoir and four storage tanks. Fountain has 9,500 acre-feet of storage available in Pueblo Reservoir pursuant to Fountain's Fry-Ark Project allocation. In the past, the City had also entered into annual contracts for Excess Capacity storage in Pueblo Reservoir but ceased in 2017 due to additional long term storage contacts. Storage within the City's distribution system totals 7 acre-feet. Through the City's ownership of Fountain Mutual Ditch shares, it previously held approximately 435 acre-feet of storage through Big Johnson Reservoir. Drainage of this reservoir began in the summer of 2016 in preparation for repair to three outlet dates. The city does not anticipate having any storage capacity through Big Johnson Reservoir again until 2019 at the earliest. The City's total available storage capacity is approximately 9,533 acre-feet at the present time.

While Keeton Reservoir, Big Johnson Reservoir, Holbrook Reservoir and Lake Meredith do not serve as a source or storage, they are used for augmentation water. Keeton Reservoir currently (2017) provides 17 AF of storage to Fountain. The City has, on occasion, exchanged surface water with agricultural users in the Arkansas Basin. Normally these waters would be used to augment well depletions but ceased following discovery of PFC contamination to the ground water supply.

## 1.3 Supply-Side Limitations & Future Needs

### PFC Groundwater Contamination

In January of 2016, the City discovered a presence of perfluorinated compounds in its groundwater supply which exceeded health advisory level. This pollution is a result of training activity at Peterson Air Force Base just 13 miles north of Fountain. The training included the use of aqueous film-forming foam to extinguish fuel based fires. This discovery led the City to cease use of its groundwater sources and rely solely on surface water to meet demand. In considering that groundwater satisfies 30% of the City's water supply, this event resulted in significant loss to the city's water supply portfolio. This loss is critical as groundwater is far less affected by drought as surface water supply. A map detailing the impacted area is included in Appendix A.

### Carbon Filtration System

Since event discovery, the Air Force has provided two pairs of granular activated carbon filtration systems to aid in PFC removal. Each two part filter has a treatment capacity of 500 gallons per minute (GPM), totaling a 1,440,000 gallon or 4.5 AF daily treatment capacity. With the help of these carbon filters, the City plans to utilize 25% of its groundwater resources by the summer of 2018. The City continues to work directly with the Air Force on environmental service agreements and funding to assist in groundwater treatment. Aside from this, the City has contracted additional supply since 2016 and has the ability to continue this contract as needed. The City plans to expand groundwater treatment processes by installing two additional carbon filters by 2020. This is still in the design process.

### Best Management Practices

In an effort to lower demand, the City has amended its water curtailment plan and incorporated a fee structure for non-compliance as of 2017.

**Table 2: Supply Limitations and Future Needs**

| Supply-Side Limitations and Future Needs | | | | |
|---|---|---|---|---|
| **Future Need/Challenge** | **Yes** | **No** | **Comments on Limitation/Future Need** | **How is Limited/Future Need Being addressed** |
| System is in a designated critical water supply shortage area | | X | | |
| System experiences frequent water supply shortages and/or emergencies | | X | | |
| System has substantial real or apparent water losses. | | X | | |
| Experiencing high rates of population and demand growth | | X | | |
| Planning substantial improvements or additions | X | | Legacy systems require repair | Pursuing grants to complete repair to system. |
| Increases to wastewater system capacity anticipated | | X | | |
| Need additional drought reserves | | X | | |
| Drinking Water Quality Issues | X | | PFC contaminated ground water supply | Installation of carbon filters |
| Aging Infrastructure | | X | | |
| Issues with water pressure in portions of distribution system. | X | | Additional distribution lines needed in southwest portion of the service area to improve reliability and pressure. | Install of two additional pipelines have been proposed. |

## Water Supply Alternatives

In the 2006 Water Master Plan, Black and Veatch evaluated three water supply alternatives and one sub-alternative that would meet the City's demands. The three scenarios are differentiated by the diversion, storage, and treatment of water pumped from the City's well field. All three scenarios assume the City will receive deliveries from Pueblo Reservoir through the FVA pipeline and the SDS delivery pipeline. Schematics of these three alternatives are included in the 2006 Water Master Plan executive summary as Figures ES-2 through ES-4 in Appendix E.

Alternatives 1 through 3 were studied using the City's projected demands without water conservation. To incorporate water conservation savings into the Master Plan, Black and Veatch evaluated Alternative 3a. This sub-alternative is the same as Alternative 3, except that the City's average day and maximum day demands (without conservation) were reduced by 20 percent throughout the entire study period. As described previously, this demand reduction was assumed to be achieved under the City's existing and future water conservation activities.

### Evaluation of Water Supply Alternatives

Tables ES-9 and ES-10 in the executive summary of the Master Plan compare the capital and operation and maintenance (O&M) cost opinions for each of the alternatives. On the basis of these costs, Black and Veatch recommended that the City implement Alternative 3a, which is the sub-alternative to Alternative 3 that includes a water conservation element.

Alternative 3 and Alternative 3a both have lower capital and O&M costs than Alternatives 1 and 2. The capital cost opinion for Alternative 3a equals $175,967,000, which is approximately $31,087,000 less than the estimated cost of $207,054,000 without water conservation (Alternative 3). Similarly, the total O&M costs for Alternative 3a were estimated to equal $159,877,000. This total cost is 45,758,000 less than the total O&M cost of 205,635,000 for Alternative 3. Based on these estimates, the City will save $76,845,000 ($31,087,000 + $45,758,000) during years 2006 through 2046 by achieving the level of water conservation recommended in the Master Plan.

### Capital Improvements Plan

Black and Veatch recommended improvements to Fountain's distribution system. The capital and O&M costs associated with Alternative 3a and the distribution system improvements were then combined to develop the capital improvements plan, which is presented in Table ES-12 of the 2006 Water Master Plan executive summary.

# 2.0 Water Demands & Historical Demand Management

The City of Fountain's Customer Service Department is the billing and accounting agency within the City Utilities that tracks all metered water usage. The current tracking system divides customers into the following five categories: Residential; Commercial/Industrial/Institutional; Construction Water; Farmer's Hydrant; and Municipal. The definition of each Sector is as follows:

**Residential:** The Residential Sector is by far the largest Sector in both number of customers and amount of water delivered, with approximately 94% of the total number of customers and up to 75% of the total amount of water billed. This Sector sums all forms of customers in residences, including the city housing as well as private housing, with both rental and owner-occupied dwellings in both single-family and multi-family configurations.

**Commercial/Industrial/Institutional:** The actual differences between the uses within this Sector are not tracked differentially by the Customer Service Department, so the uses range from traditional Commercial uses (stores, gas stations, restaurants) to Industrial customers (metal fabrication, wooden truss assembly plant) to Institutional (School District 8, School District 3, Fountain Sanitation District). The City has 45 additional customer taps, so these are not included in the compilation under the Commercial/Industrial/Institutional Sector but under Municipal.

**Construction Water:** The City sells Construction Water to Contractors using hydrant meters. This usage varies with the intensity of the construction activities. These activities include using the water as a dust

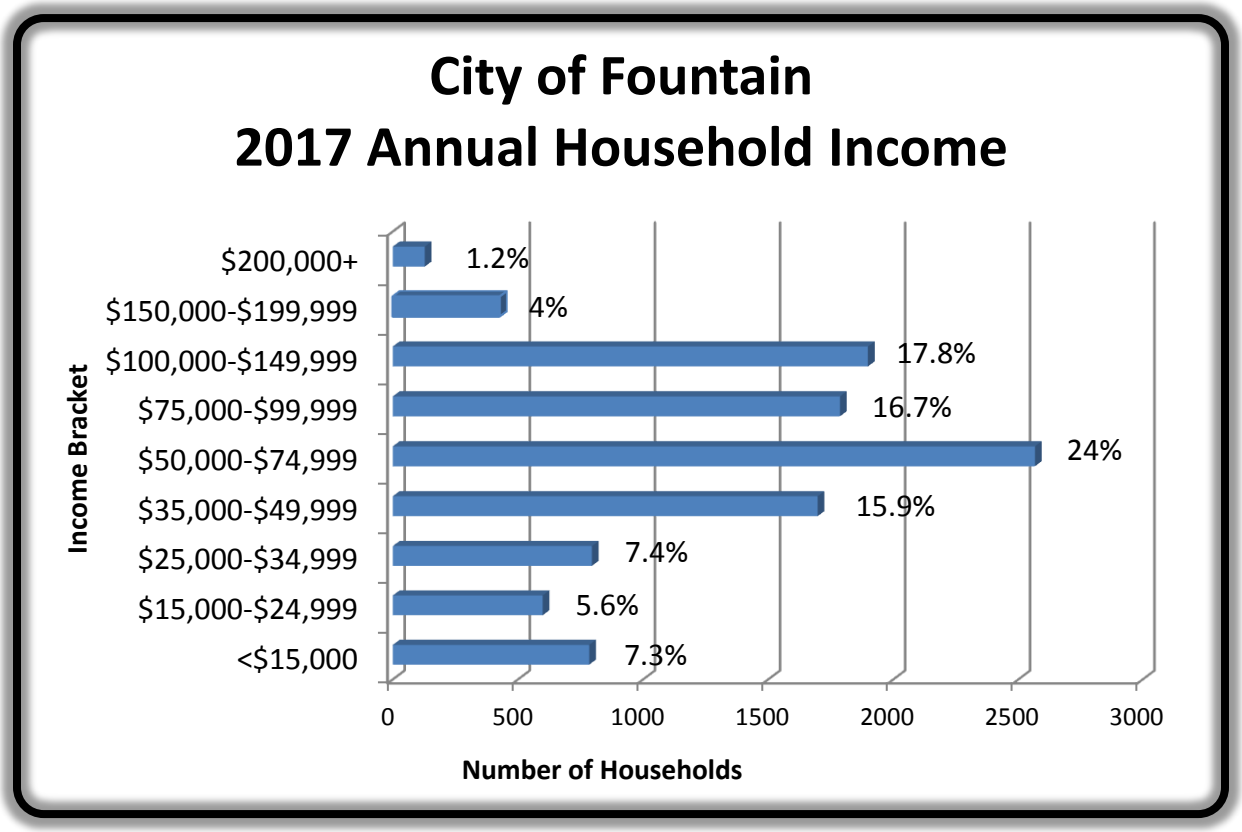
palliative and as water for compaction of engineered soils in road bases. The number of Customers is the combines the maximum number of Construction Water Customers during any single month in that calendar year.

**Farmer's Hydrant:** the City sells water from a metered tap near City Hall to residents of the city who do not have access to the water distribution system. This usage and the number of customers (currently 5) have steadily been declining as the water distribution network continues to expand.

**Municipal Use:** The City maintains 45 connections for the municipal buildings, parks and irrigation for landscaped streetscapes. These include municipal buildings such as City Hall, Customer Service, Police and Fire Stations and the Public Works Campus buildings. City of Fountain Housing Authority buildings are not included in this accounting; they are combined with all other Residential buildings in the Residential Sector.

## 2.1 Demographics & Service Area Characteristics

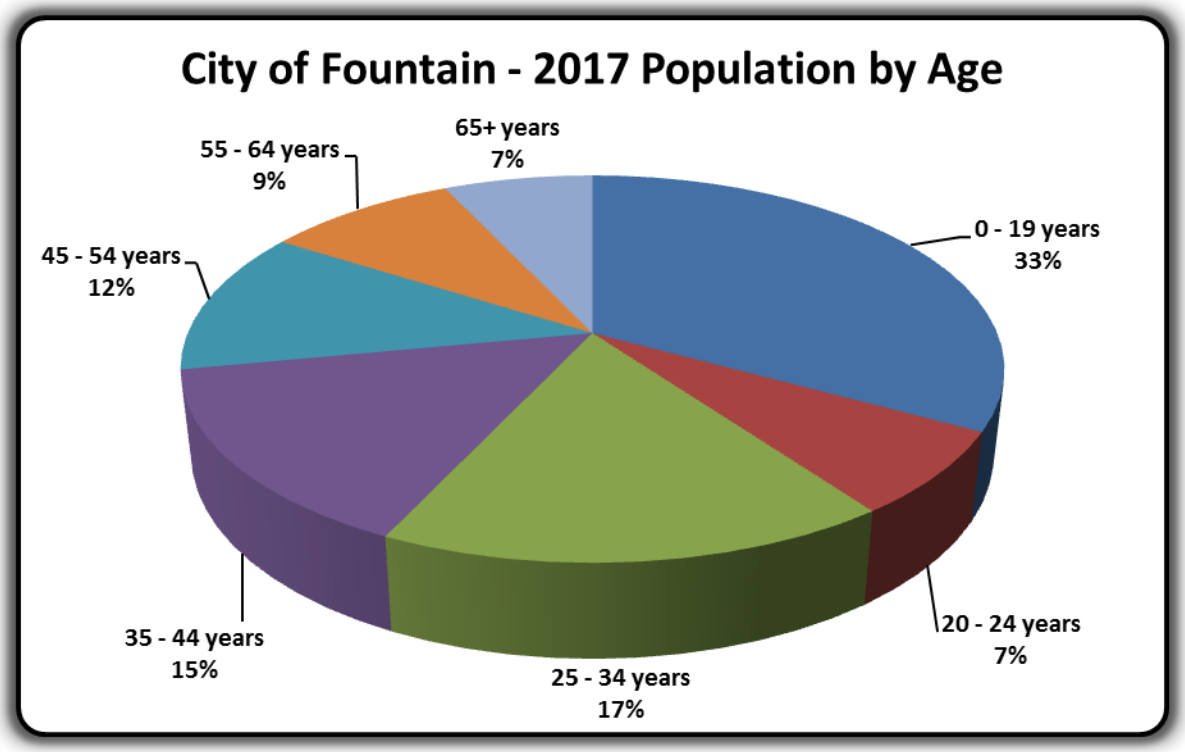
Customer base demographics will play a vital role in establishing effective outreach campaigns as well as determining likely participation rates. Some program requirements and fees may vary based on household income. For that reason, income details are provided below.




Source: ESRI Business Analyst Online (Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography)

**Figure 1: Annual Household Income**

Age will continue to play a vital role in determining effective outreach campaigns. The City will need to utilize a variety of methods including social media, hard copy newsletter, event attendance and more in an effort to reach all customer types.

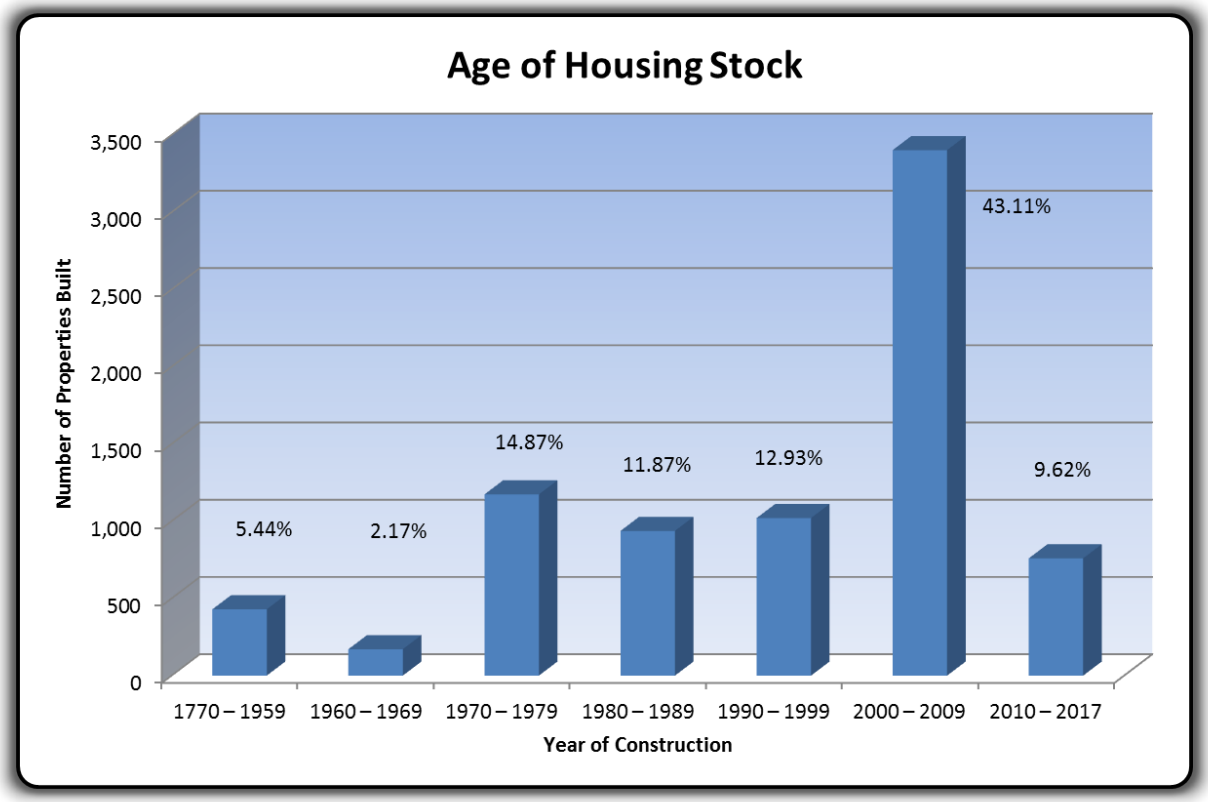



Source: ESRI Business Analyst Online (U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography)

**Figure 2: Population by Age**

In 2010, ESRI Business Analyst Online predicted that the average Fountain household size would reach 3.31 in 2017. It also estimates the City of Fountain's daytime population to consist of 6,502 workers and 17,063 residents, totaling 23,565 during 2017.

**Owner or Renter Occupied:** According to the ESRI Business Analyst Online, 73% of Fountain residences are owner occupied, 27% are renter occupied. This is likely due to high population of active military residing within the community. This information is important in considering program guidelines and anticipating participation rates if owner occupancy coincides with eligibility.




Source: ESRI Business Analyst Online (Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri converted Census 2000 data into 2010 geography)

**Figure 3: Age of Housing Stock**

**Housing Stock:** Recognizing the age of residential properties will assist in determining how many customers are eligible to participate in incentives such as rebates. In some cases, rebates require that the newly purchased appliance is replacing one of a certain age. Assuming that the manufacture date of the water fixture being replaced, matches the age of the property, the City can more accurately predict annual water savings and overall benefit of the program. Acknowledgement of evolving plumbing standards over the decades has assisted in determining accurate projected savings as identified in this plan.

**Infrastructure:** Most of the City's distribution system is less than 30 years old and repairs are conducted as needed.

## 2.2 Historical Water Demands

According to Black and Veatch, the purpose of the Master Plan is to "assist the City of Fountain with the long-range planning of its water supply, treatment and distribution systems". The intent of this plan is to provide an assessment of the City's water supply needs through the year 2046. In addition, this plan

identifies water supplies and treatment, as well as improvements to the distribution system to meet existing and future demands based on anticipated growth within the current service areas and surrounding areas that are likely to be served by the City in the future. For this reason, the Efficiency Plan will continue to reference various initiatives described within the 2006 Master Plan as the goals frequently overlap or at the least, complement one another.

The following data tables demonstrate the past five years of water demand data including treated deliveries, non-potable deliveries, losses, number of customer accounts within each category and annual consumption for that category. As displayed in the graphs to follow, residential customers account for the majority of water demand, followed by Commercial, Industrial, Institutional (CII) customers. The usage of Residential, CII and Municipal customers consistently rises during the warmer months due to irrigation although fluctuates slightly alongside climatic conditions.

**Table 3: System Wide Demand Data Including Losses**

| System Wide Demand Data | | | |
|---|---|---|---|
| Year | Total Annual Distributed Treated Water in gallons | Total Annual Raw Distributed Non-Potable and Reclaimed Water | Total Annual Non-Revenue Water |
| 2013 | 935,193,600 | 9,637,500 | 160,393,987 |
| 2014 | 930,631,680 | 8,495,800 | 143,910,181 |
| 2015 | 899,675,794 | 8,302,900 | 177,330,589 |
| 2016 | 902,934,309 | 8,065,000 | 144,510,690 |
| 2017 | 933,659,570 | 9,086,200 | 197,900,527 |

**Table 4: Annual Water Demand History by Customer Category**

| Annual Water Demand History by Customer Category | | | | | |
|---|---|---|---|---|---|
| **Year** | **Residential Customers & Use** | **Commercial, Industrial, Institutional & Use** | **Construction Customers & Use** | **Farmers Hydrant & Use** | **Municipal Customers & Use** |
| 2013 | 7,358<br>580,491,828 | 278<br>192,229,910 | 13<br>2,064,375 | 8<br>84,000 | 46<br>14,027,530 |
| 2014 | 7,509<br>581,525,339 | 346<br>201,572,170 | 11<br>3,515,490 | 7<br>237,500 | 49<br>19,371,690 |
| 2015 | 7,572<br>542,905,535 | 328<br>177,121,670 | 16<br>2,234,400 | 8<br>162,500 | 48<br>13,293,790 |
| 2016 | 7,834<br>579,887,854 | 330<br>175,729,765 | 9<br>2,673,200 | 7<br>204,200 | 45<br>15,820,966 |
| 2017 | 7,922<br>555,378,190 | 344<br>177,309,503 | 7<br>2,021,292 | 8<br>187,000 | 45<br>31,233,569 |

**Figure 4: Annual Water Demand History by Customer Category**

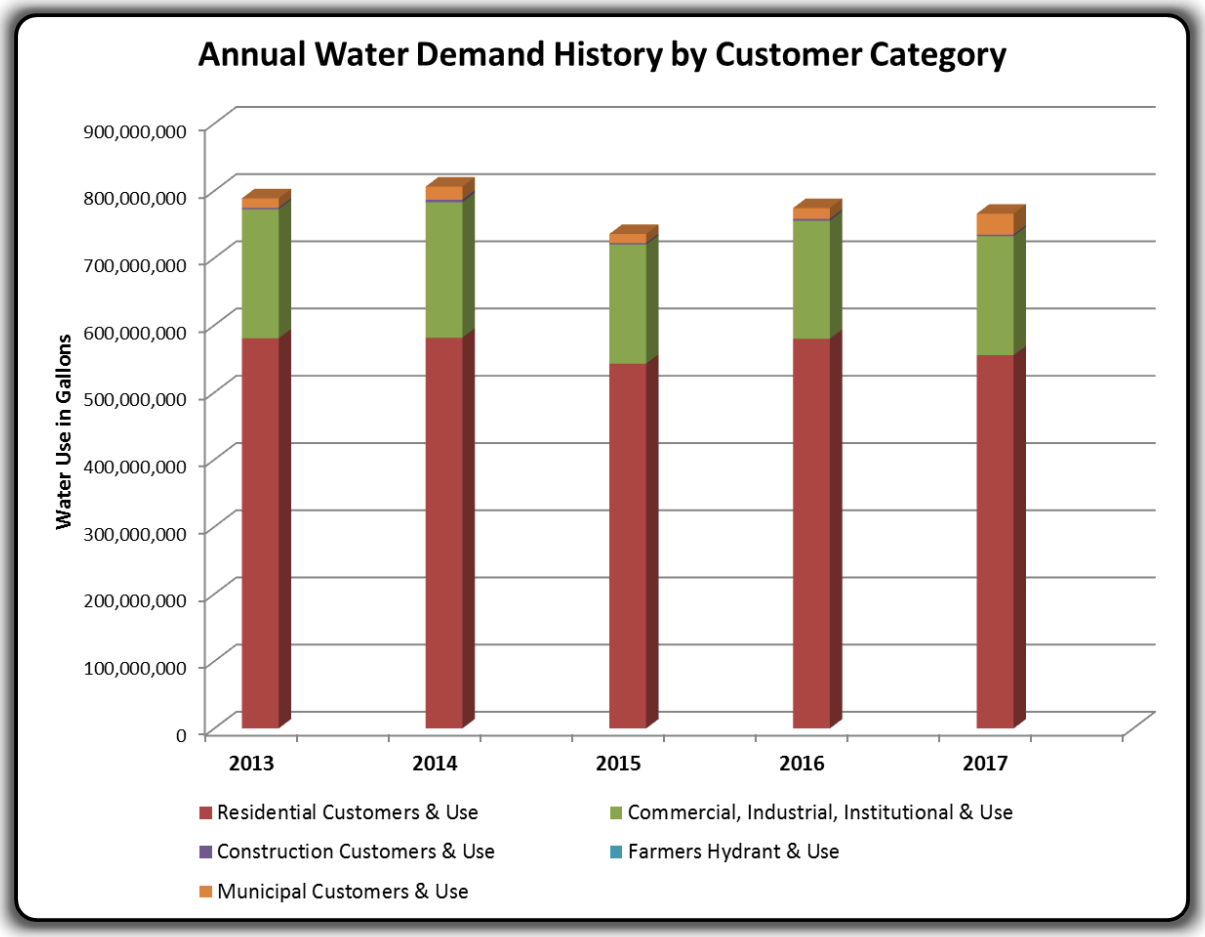



**Table 5: 2016 Monthly Water Demand by Customer Category**

| 2016 Monthly Water Demand by Customer Category | | | | | |
|---|---|---|---|---|---|
| **Month** | **Residential** | **CII** | **Construction** | **Farmers Hyd** | **Muni** |
| January | 35,533,680 | 6,132,567 | 159,600 | 14,200 | 718,432 |
| February | 33,895,540 | 6,326,086 | 15,100 | 14,800 | 489,310 |
| March | 35,275,180 | 6,110,667 | 40,200 | 15,900 | 118,420 |
| April | 38,856,856 | 9,220,240 | 106,400 | 17,100 | 1,114,990 |
| May | 49,453,258 | 13,885,210 | 87,800 | 18,500 | 1,749,650 |
| June | 61,943,120 | 22,261,160 | 256,770 | 19,600 | 2,832,690 |
| July | 66,730,900 | 28,935,777 | 54,300 | 19,000 | 2,298,150 |
| August | 60,333,350 | 22,657,167 | 261,700 | 18,900 | 2,112,340 |
| September | 57,180,760 | 18,582,683 | 134,060 | 18,600 | 2,334,452 |
| October | 60,680,290 | 22,588,339 | 279,500 | 16,300 | 1,813,992 |
| November | 44,667,490 | 12,839,744 | 132,600 | 15,800 | 718,432 |
| December | 35,337,430 | 6,190,125 | 1,145,170 | 15,500 | 108,770 |

## System Water Losses

The City experiences an annual water loss of approximately 14%. It is estimated that the majority of the real losses resulting from leakage or theft account for the majority of overall water loss. The remaining are apparent losses are due to meter malfunction resulting in an underestimate of actual usage. Current water loss is estimated by comparing the amount produced to that which was sold. The city does not have plans to use the AWWA M36 Methodology during the scope of this plan.

## Annual Peak Day Demands

The City's peak day demand in 2017 was on June 27th, reaching 6,205,000 gallons. Comparably, June was the highest use month this same year, totaling 162,161,000 gallons. July 30th 2016 reached peak demand at 4,245,000 gallons while the month of July totaled 113,959,000 gallons. Historically July and August remain our highest use months due to irrigation and newly installed landscapes. Average daily distribution in 2016 was 2,473,835 gallons or 7.6 acre-feet. Water used for irrigation remains a dominating factor in developing the water efficiency goals as detailed in the plan below.

W. W. Wheeler and Associates had performed an analysis of the City's water use during the period from 1991 through 1996, as documented in the 1996 report, *City of Fountain Water Supply Analysis*. The City had not implemented any significant water conservation measures during the 1991 through 1996 period. The City's annual municipal well production and Fry-Ark water deliveries (through the Fountain Valley Authority Pipeline) during this time averaged 1,629 acre-feet per year. This amount represented the City's average annual water usage through its distribution system (including system losses). In the 1996 report, Wheeler also estimated the service area population to be approximately 10,000 people at that time. Consequently, the average per capital use equaled approximately 145 gallons per capita per day (gpcd). The 2009 Water Conservation Plan revealed the gpcd had been reduced to 128 with a population of 17,875 people.

From 2003-2007, the City's deliveries through its distribution system averaged 2,569 acre-feet per year. As with the 1991 through 1996 data, this amount equals well diversions and FVA Pipeline deliveries into the city's distribution system and includes system losses. The average population of the City's service area during this time was estimated to be approximately 17,875 people. As a result, the corresponding average per capita use was equal to approximately 128 gpcd.

The following per capita demands were calculated based on total production, divided by the current population and number of days in a year. This includes system losses. This information demonstrates the success of the City's demand management activities as well as the community's response to water conservation programs.

**Figure 5: System Wide Gallons Per Capita per Day**

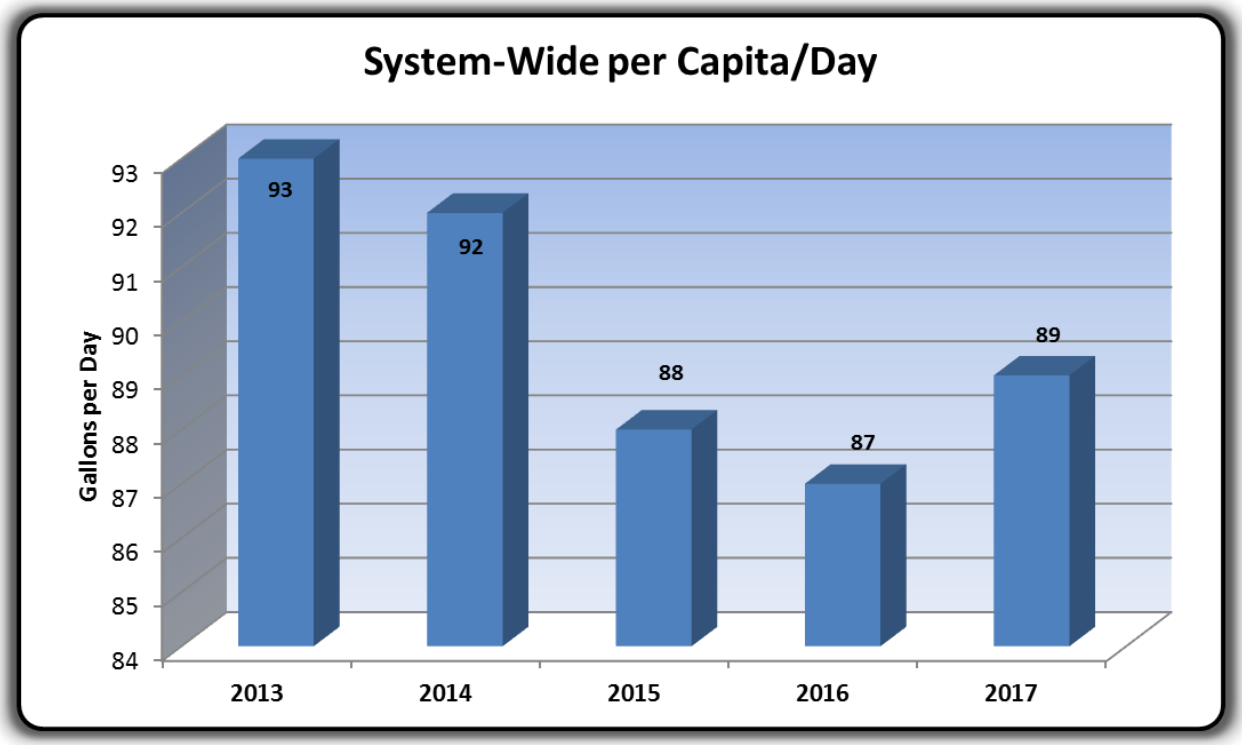



Figure 6 below displays daily and monthly water use of Fountain community members based on 2016 averages.

**Table 6: Gallons Per Capita per Day Excluding System Losses**

| 2016 Average Water Use | | |
|---|---|---|
| **Household Size** | **Average Gallons per Day** | **Average Gallons per Month** |
| 1 | 73 | 2,190 |
| 2 | 146 | 4,380 |
| 3 | 219 | 6,570 |
| 4 | 292 | 8,760 |
| 5 | 365 | 10,950 |
| 6 | 438 | 13,140 |
| 7 | 511 | 15,330 |
| 8 | 584 | 17,520 |

## 2.3 Past & Current Demand Management Activities

The Master Plan confirmed that water conservation will allow the City to minimize the water rights purchases and infrastructure development required to accommodate projected growth in its service area. To meet the Master Plan recommendations, the Water Conservation Plan must produce savings of at least 20 percent of its projected demands (without water conservation). The Master Plan applied the 20-percent demand reduction throughout the entire 2006 through 2046 study period (see Appendix E). With this amount of savings in mind, the 2009 Efficiency Plan determined the incentives and projected savings in Table 7.

### Achievements to Date

The 2009 Water Efficiency Plan revision projected the following participation rates and savings. Individual program calculations for the previous plan's savings are included under the table below.

**Table 7: Anticipated Savings According to 2009 Water Efficiency Plan**

Incentives Savings (Projected)

| YEAR | FAUCETS REPLACED | SHOWERHEADS REPLACED | TOILETS REPLACED | IRR. CONTROLLERS INSTALLED | ESTIMATED TOTAL VOLUME SAVED (Gal/Year) | CUMULATIVE VOLUME SAVED (Gal/Year) |
|---|---|---|---|---|---|---|
| 2009 | 30 | 30 | 10 | 10 | 427,000 | 427,000 |
| 2010 | 50 | 50 | 30 | 20 | 811,000 | 1,238,000 |
| 2011 | 75 | 75 | 45 | 30 | 1,216,500 | 2,454,500 |
| 2012 | 100 | 75 | 45 | 30 | 1,254,000 | 3,708,500 |
| 2013 | 125 | 75 | 45 | 30 | 1,291,500 | 5,000,000 |
| 5-Year TOTALS | 380 Total Faucets Replaced 2009-13 | 305 Total Showerheads Replaced 2009-13 | 175 Total Toilets Replaced 2009-13 | 120 Total Controllers Installed 2009-13 | 5,000,000 Total Savings 2009-2013 | 12,828,000 Gallons Saved Saved 2009-13 |

**Faucet Replacement Calculations:** Residential application was targeted, with replacement of existing units that allow over 3.0 gallons per minute with current 2.2 GPM units. Each series of faucets replaced in a household is estimated to (conservatively) save 1,000 to 2,000 gallons per year (reference: Vicker, Table 2.15, 2009 Water Efficiency Plan). For this estimate, 1,500 GPY is incorporated into the table above. For this estimate, each household will replace three faucets.

**Showerhead Replacement Calculations:** Residential application was targeted for this incentive option during its initial implementation. The AWWA publication The Water Conservation Manager's Guide to Residential Retrofit presents the following algorithm:

(Sa-Sb) X M X C =D
Sa: Existing Showerhead Flow Rate in gallons per minute (GPM)
Sb: Replacement Showerhead Flow Rate in GPM
M: Average Number of Minutes per Shower
C: Average Number of Showers per Year. For this estimate, Sa will be 4.0 GPM, Sb will be 2.5 GPM, M will equal 5 minutes and C will be 700.

**Washer Replacement Calculations:** The savings measured below assume that an EnergyStar certified washing machine which uses 13 GPL or less is replacing a 23 GPL device and approximately 400 loads of laundry per household each year. This means that a single washer replacement is equivalent to 4,000 gallons saved annually per participating household. According to the Alliance for Water Efficiency, clothes washers manufactured prior to 2010 used 30-45 gallons per load (Alliance for Water Efficiency, 2016). Due to the high population of active military, it is unlikely that pre 2010 washing machines will be replaced with each rebate. For that reason, the GPL of the replacement device has been lowered appropriately.

**Toilet Replacement Calculations:** The savings estimate for this application assumes that incentives will address residential toilet replacement and that the replacement fixtures will be more efficient that the code-mandated 1.6 gallons per flush (GPF) units. Dual flush or early closure devices will be the target retrofit devices, only using 1.0 GPF and replacing toilets that use (on average) 4.5 GPF. The per unit savings (per year) estimate is based on 300 flush cycles per year. This means that one toilet replacement per participating household will equate to 1,050 gallons.

**Irrigation Controller Calculations:** As with the other three potential incentive elements, this addresses residential landscape irrigation. Assuming that single family residential homes 1. Average 3,500 square feet of irrigated turf; 2. Water a minimum of 1.5" (1 gallon) per square foot, once a week, for 20 weeks a year and 3. Fountain maintains 15" of annual precipitation. It is estimated that a 20% reduction in outdoor water use resulted from rain sensor install. The savings for this incentive was generated using the recommended water consumption for Kentucky Blue Grass as demonstrated in the Lawn Watering Guide for Southeastern Colorado.

*Square Footage X 1 gallon X 20 weeks / .20% = Annual savings per single family residence*

*3,500 X 1 X 20 = 70,000 / .20 = 14,000 gallons saved per residence per year*

The calculations for each year below include passive savings from previous year's program participants.

**Table 8: Actual Savings Based on Goals Listed in 2009 Water Efficiency Plan**

| Actual Savings 2012-2017 | | | | | |
|---|---|---|---|---|---|
| **Year** | **Showerheads Replaced & gallons saved** | **Faucet Replacements & gallons saved** | **Washers Replaced & gallons saved** | **Toilets Replaced & gallons saved** | **Irrigation Controllers Installed & gallons saved** |
| **2012** | 0 | 30<br>15,000 | 111<br>444,000 | 35<br>36,750 | 150<br>2,100,000 |
| **2013** | 0 | 50<br>40,000 | 67<br>712,000 | 30<br>68,250 | 176<br>4,564,000 |
| **2014** | 164<br>861,000 | 75<br>77,500 | 54<br>928,000 | 31<br>100,800 | 131<br>6,398,000 |
| **2015** | 211<br>1,968,750 | 100<br>127,500 | 40<br>1,088,000 | 17<br>118,650 | 115<br>8,008,000 |
| **2016** | 294<br>3,512,250 | 125<br>190,000 | 31<br>1,212,000 | 10<br>324,450 | 129<br>9,814,000 |
| **Total 5 year cumulative savings** | 669<br>6,342,000 | 380<br>450,000 | 203<br>4,384,000 | 123<br>648,900 | 701<br>30,884,000 |

Tracking for the incentive programs detailed above did not begin until 2012. Assuming that participation rates initially remained consistent due to available funding and eventually steady declined, participation was likely abundant from 2009-2011.

### Showerhead Replacement

Beginning in 2014, this program continues to far exceed projected savings as it continues to nearly double anticipated participation.

### Faucet Replacement

This program was not tracked and therefore it is assumed that these metrics were met.

### Washers Replaced

This incentive was not included in the 2009 revision but continues to be a successful offering to the community. It has been in place since 2009.

### Toilets Replaced

This program was originally introduced in 2009. Participation has steadily declined and fallen below expectations since 2011. Moving forward, this program will target CII users while implementing a more robust outreach program and housing data demonstrates that we have not yet saturated the market. Due to the City's high population of rental properties, there has likely been less incentive to participate.

Additionally, program requirements have promoted toilets using 1.28 GPF or less, slightly skewing the projected savings which anticipated replacements using 1.00 GPF or less.

### Irrigation Controllers

Irrigation controllers are installed at all new build properties. Fountain's steady population growth confirms that this metric has been achieved.

### High Bill Investigations

The City continues to respond to reports of high bills by customer request and proactive data analysis of high users. Once an appointment is scheduled, a field technician performs an indoor and outdoor investigation of the properties water use as well as inspection of the meter. Moving forward, the field technicians will provide water conserving and leak detection tools. These can include high efficiency showerheads and aerators, leak detecting dye tabs, flow rate bags, dish scrapers and educational handouts which empower the client with information to help them reduce their water consumption. While this practice was in place prior to creation of the Water Efficiency Plan, it has and will continue to evolve over time with the goal of customer empowerment. Water savings for this program are not measureable.

### Voluntary Restrictions

The City has promoted voluntary water restrictions annually since 2009. As a voluntary program, it is difficult to track water savings.

### Billing Systems

In October of 2017 the Utilities Department regrouped its billing cycles in an effort to evenly disperse customer inquiries and payments both in person and via phone call. Although some customers experienced a bill date change, the frequency of billing has remained the same, occurring monthly. Implementing this change has improved the City's ability to provide excellent customer service by reducing wait times and allowing for more time to be spent answering customer inquiries, performing high bill investigations and promoting conservation related programming. Below is a table which lists the current amount of accounts per billing cycle.

**Table 9: Billing Cycles and Number of Accounts per Cycle**

| Billing Cycles & Account Totals | | | |
|---|---|---|---|
| **Cycle 1** | **Cycle 2** | **Cycle 3 Commercial only** | **Cycle 4** |
| 1,666 accounts | 354 accounts | 3,482 accounts | 2,767 accounts |

### Demand Data

The demand data available through the billing system includes historical usage that may be separated by customer category or meter size. Data may be displayed over months or years. Demand data is also available for customers. The customer portal uses graphs available to property owners demonstrating their individual usage over the past twelve months.

### Water Returns Class

Beginning in 2007, two Water Returns workshops were held annually, attracting an average of 20 participants each year. During this class, participants are educated in low water landscaping install, management and benefits. Water savings for this program cannot be measured.

### Water Wise Demonstration Gardens

Beginning in 2014, water wise demonstration gardens have been installed at the following city properties:

- Customer Service: 101 N. Main St
- Water Department: 301 E Iowa
- Well House 3: 230 S. Main St
- City Hall: 116 S. Main St

Preexisting demonstration gardens are located at the Electric Department, Hibbard Park, Fountain Valley Museum and the Library. Not only do these gardens demonstrate the City's commitment to low water landscape, but they inspire the community with creative ideas to reduce their outdoor water use while beautifying the community. A map of the newly installed demonstration garden locations throughout the city can be found in Appendix A. Water savings for these garden beds cannot be measured.

### UtiliNews

The Utilities Customer Service Center provides a monthly water bill newsletter known as UtiliNews to all customers. This newsletter includes promotion of energy and water saving tips, conservation campaigns, rebates and events. Approximately 16,000 hard copy newsletters and 2,000 electronic versions are mailed each month. Water savings for this method cannot be measured.

### Social Media Campaigns

The City utilizes Facebook, Twitter and YouTube to educate and inspire the community regarding efficient water use through a variety of campaigns. Water savings associated with this program cannot be measured.

### Distribution System Leak ID and Repair

The 2009 Water Efficiency Plan continued the City's large scale saddle tap and fire hydrant replacement program. Progress averaged 10-20 fire hydrants and 20-60 tap saddles each year until all were completed. As explained in the 2009 plan, many of the saddle taps and fire hydrants that required replacement were due to highly corrosive soils. On site assessment of devices revealed that one of every five saddle taps exhibited a leakage rate of 15 GPD. Similarly, one in every three fire hydrants exhibited a 10 GPD loss. Collectively, this replacement project saved 815,000 gallons over a six year period. Since 2017, the program has become reactive, only replacing fixtures following routine leak detection. In 2017, three tap saddles and zero fire hydrants required replacement. Field technicians estimate an annual savings of 16,425 gallons based on an average leak rate of 15 gallons per day.

**Lessons Learned:** Program participation depends greatly on constant and effective outreach which caters to the City's diverse community. The resources and incentive programs have continued to receive recognition from the community but require constant reminders due to the high percentage of rental properties and self-renewing population.

## 2.4 Demand Forecast

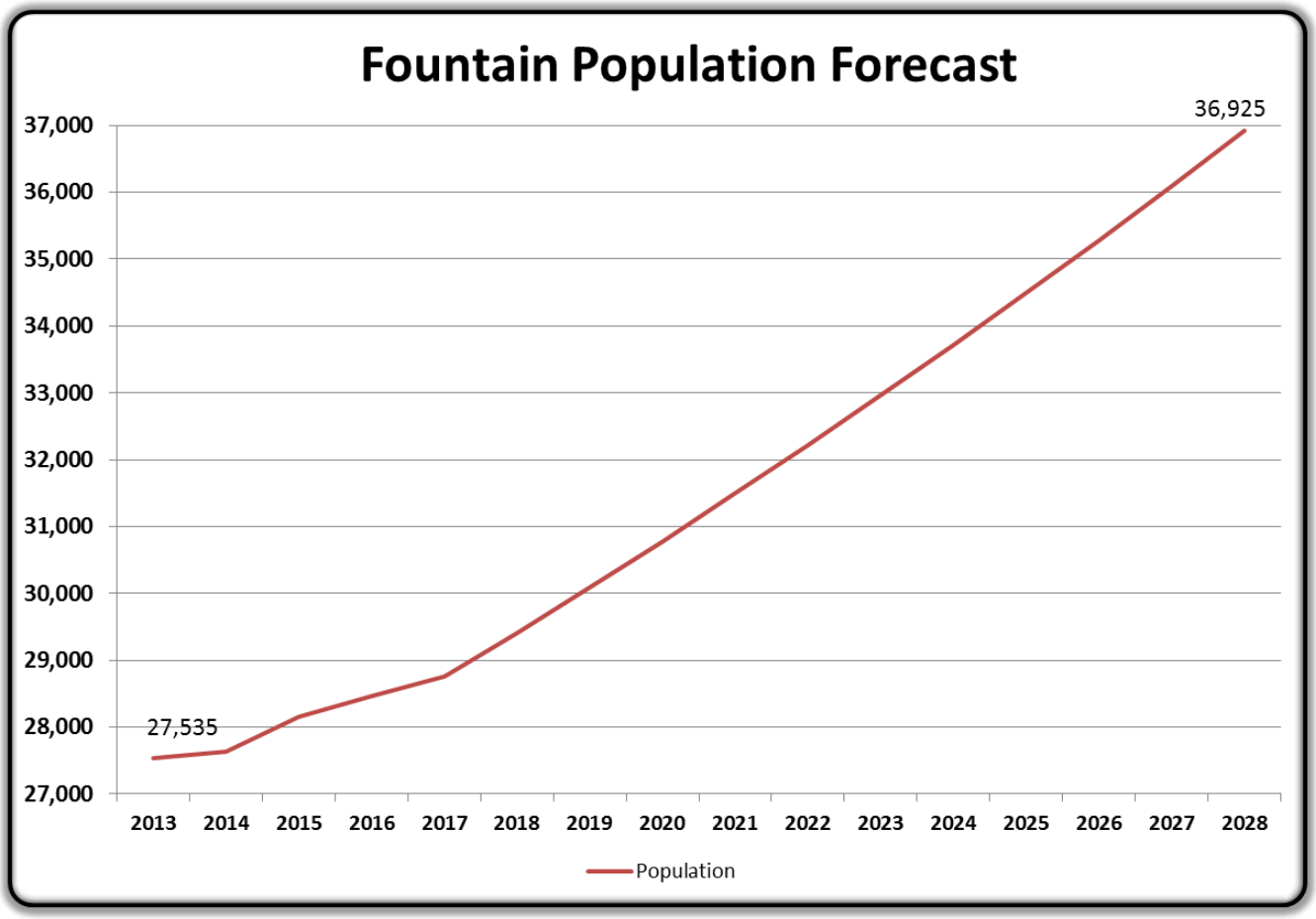
Appendix E includes two tables that summarize the annual water demand projections from the 2006 Master Plan. As shown on the tables, demands were projected without and with water conservation. The demands without water conservation do not include savings realized under the City's existing water conservation measures and programs. In other words, these projections do not account for the demand reductions observed under Fountain's 2009 Water Conservation Plan.

The projected demands with water conservation were developed by assuming the City would continue its existing water conservation activities and implement additional measures and programs to reduce its projected demands by approximately 20 percent. This percentage is cumulative and includes savings that have already been realized through the City's existing water conservation activities. It was assumed that this level of savings would be maintained throughout the entire study period.

As shown in Appendix E, Fountain's year 2046 water demand would be approximately 16,488 acre-feet per year without any existing or future water conservation measures. This demand would represent a 595% increase from the City's present demand of approximately 2,771 acre-feet per year. By reducing its demands 20 percent through water conservation, the City's 2046 water demand would decrease to approximately 13,191 acre-feet per year. This projected demand is still a 476% increase from the City's annual demand at the present time.

Figure 6 below displays the City's historical population and predicted growth of 2.30% annually.

**Figure 6: Ten Year Population Forecast**




2.30% Population increase (ESRI Business Analyst Population Growth Rate Prediction for 2017-2022)

# 3.0 Integrated Planning and Water Efficiency Benefits & Goals

## 3.1 Water Efficiency & Water Supply Planning

Water efficiency plays a major role in water supply planning. The following information examines the City's water supply planning efforts, future capital improvements and how these plans complement our water efficiency goals.

Black and Veatch identified three water supply alternatives and their associated capital improvements plan in the City's 2006 Water Master Plan. This information can be found in Appendix E beginning on page 8-1 of the Water Master Plan. Aside from water supply alternatives, the City has identified the following capital improvement projects which would result in significant demand reductions.

### Legacy System Repair

The City recognizes five high usage legacy systems, over which the City currently has no control beyond the master meter. These five properties demonstrate substantial metered water loss throughout their distribution systems. As special districts these properties qualify for various funding opportunities. Achieved primarily through outside funding, the City will assist in upgrading the infrastructure and thus assume control of these legacy systems. These upgrades will 1. Significantly reduce demand; 2. Reduce cost to the customers residing within these communities; and 3. Enable the City to maintain proactive control over future distribution concerns within these areas. Beginning in 2019, the City aims to replace one of these legacy systems every three years. The five properties include Chancellors Mobile Home Park, Credit Mobile Estates, Mountain Shadows Mobile Home Park, Fountain Ridge Apartments and Riverside Mobile Home Park. In assuming at least a 20% reduction in annual water consumption, completion of all five property upgrades will result in an annual water savings of 17,526,670 gallons or 54 AF. This plan includes savings estimates for a single legacy system in recognizing that only one will be completed within this planning period. This savings equates to 10.8 AF annually beginning in 2023.

### Promote Raw Water for Irrigation

The City currently sells potable water for non-potable uses, including construction water for soil compaction and as a dust palliative. The water is conveyed through temporary meters mounted on fire hydrants. This is not an efficient use of a costly commodity. In 2016, the City sold 2,673,200 gallons of water for construction purposes. While this demonstrates drastic savings in comparison to 2006 which sold over 50,000,000 gallons of water for construction purposes, the City recognizes that this will be on ongoing effort to promote raw water as appropriate.

By substituting non-potable water, the high quality water can be used more efficiently for domestic, commercial and industrial uses that require potable water, while construction water application can use a lower water quality commodity.

The Cumberland Green Metro District recently concluded an IGA with the City to augment the depletions of the Pullara Well, replacing the water tap with raw water. This system will be completed before irrigation season begins in 2018. Maps of the irrigated area can be found in Appendix A. The same offer to covert potable irrigation to a raw source was provided to Ventana developers but was declined. This conversion will remain an option should they choose to pursue this option.

### Construction Water

The City shall continually track the non-potable water sold for construction uses and estimate the annual reduction in potable demand under this goal. A non-potable rate structure should also be considered during Fountain's annual reviews of its water rates and tap fees. All non-potable water shall be metered sales.

## Revised Demand Forecast

Figure 8 demonstrates the City's baseline demand and anticipated demand with the additional conservation measures detailed in this plan. Again, this assumes that Fountain maintains a 2.30% growth rate while averaging 71 AF saved annually. The 71 AF annual savings was calculated by averaging savings from the following quantifiable programs. This assumes that collectively, educational activities equate an average savings of 5 AF each year.

Baseline demand was calculated based on the City's annual distribution totals during 2013-2017. During this five year period, the City's distribution total averaged 2,825 AF while its population averaged 28,295. This implies an 89 gpcd without further conservation measures. Demand with conservation considered the City's current 89 gpcd, anticipated growth rate and cumulative savings averaging a reduction of 71 AF annually.

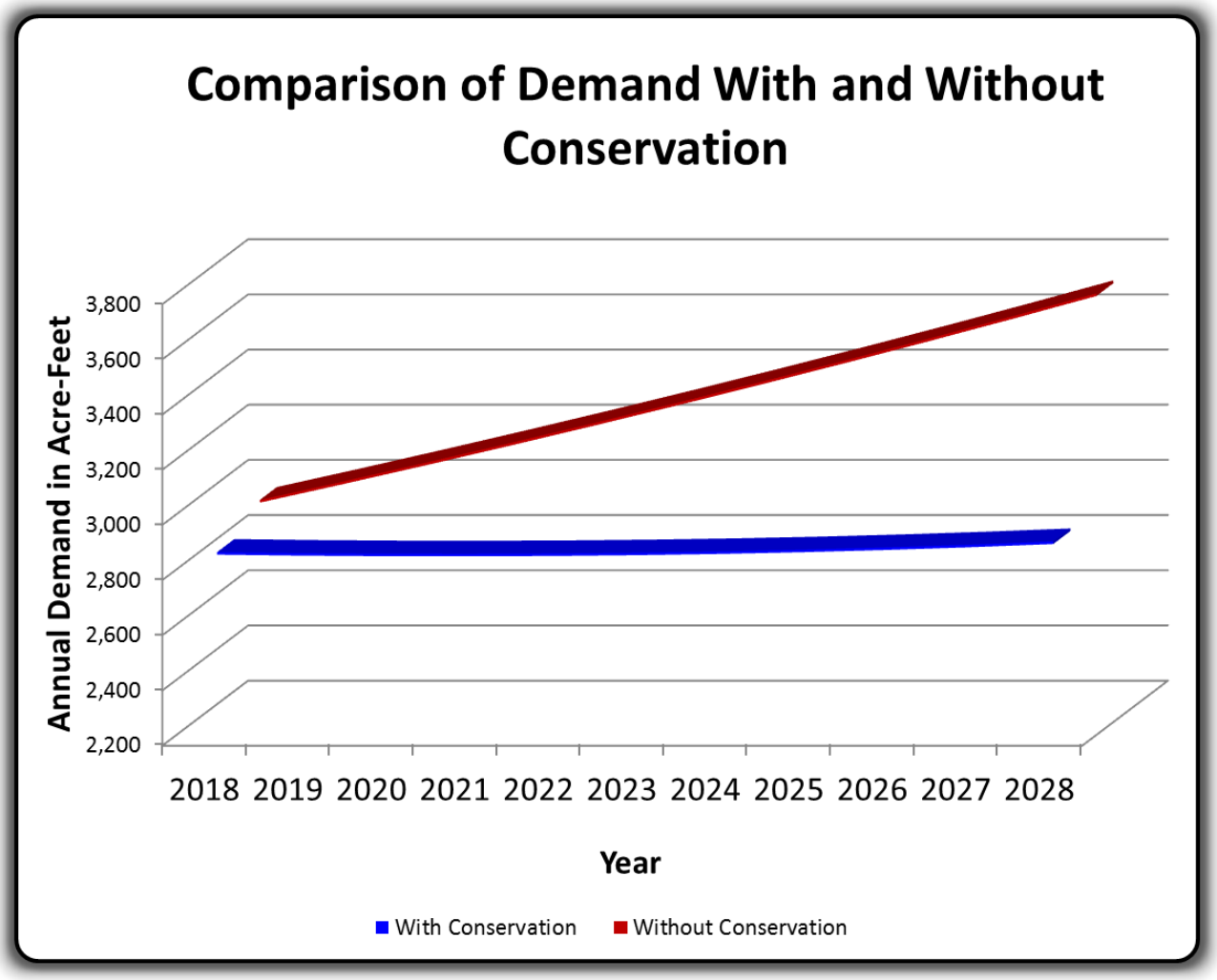



**Figure 8: Projected Water Demand With and Without Conservation**

## 3.2 Water Efficiency Goals

The City aims to reduce its baseline forecast by 71 AF annually over the next ten years through the methods detailed within this plan. This equates 781 cumulative AF saved from 2018-2028. While the overall demand reduction is substantial, it is useful to also recognize these savings at the utility customer level.

The amount of water that the City has saved since adopting the initial Water Conservation Plan has been estimated by comparing its present water use with its use prior to implementation of water conservation activities. Prior to the City's adoption of its first Water Efficiency Plan in 2001, the average gpcd was 172. The City's present water conservation measures have reduced its average gross demand to approximately 90 gpcd (2013 through 2017), a savings of 82 gpcd or 47%. This also represents a 38 gpcd reduction (29% savings) when compared to the 128 gpcd identified in the 2009 Water Efficiency

Plan. These statistics display steady success resulting from the methods detailed throughout the City's progressive efficiency plans.

As described under each program selected for implementation, the savings attributable to each goal associated with the updated plan's measures and programs was estimated. Savings estimates were performed for a 5-year planning horizon, which includes years 2018 through 2023. The annual estimates do not include savings that have already been achieved in prior years.

Educational activities selected for implementation will undoubtedly result in savings, but are difficult to estimate. These goals are important to the overall effectiveness of the Water Conservation Plan, but the associated savings cannot be separated from savings under other measures and programs. For example, it would be impossible to estimate the savings attributable to the City's goals for dissemination of information because there are several other water conservation elements that contribute the reductions in use. Additionally, the City will rely on customer satisfaction surveys to determine if behavior changes or equipment upgrades have occurred as a result of information received.

**Table 11: Water Efficiency Goals**

| Water Efficiency Goals | | |
|---|---|---|
| **Goal** | **Method** | **Metric** |
| **Reduce indoor water use among CII and Single Family Residential users** | • **Rebates for water saving retrofits**<br>• **Improved educational handouts and social media campaigns**<br>• **Offer online and in person classes which promote conservation, empower and educate clients on water use reduction.**<br>• **Offer indoor water assessments** | • **Number of rebate participants**<br>• **Monitor water consumption through billing data**<br>• **Measure water use per capita**<br>• **Reduce High Bill Investigations**<br>• **Lower Winter Quarterly Average**<br>• **Number of class attendees** |
| **Reduce outdoor water use among CII and Single Family Residential users** | • **Rebates for rain sensors and/or smart controllers**<br>• **Classes promoting low water landscapes**<br>• **Low Water Landscape demonstration gardens**<br>• **Offer outdoor water assessments**<br>• **Reassess landscape requirements to promote low water use** | • **Number of rebate participants**<br>• **Number of class attendees**<br>• **Number of visitors to demonstration areas**<br>• **Square footage of xeric landscape compared to turf water use.** |
| **Reduce potable water use** | • **Transition to non-** | • **Identify square footage** |

| | | |
|---|---|---|
| **where non potable may be supplemented** | **potable water use for large property irrigation**<br>• **Encourage non-potable water be used for construction purposes.** | **of irrigated turf within the city.**<br>• **Measure potable and non-potable use for irrigated areas.**<br>• **Track conversions**<br>• **List converted city parks** |
| **Promote awareness of programs & the city's role in conservation** | • **Scheduled educational social media campaigns with participant incentives**<br>• **Improved presence at community events – host booth**<br>• **Install highly visibly low water landscape demonstration gardens**<br>• **Establish a Sustainability Center with community resources.** | • **Number of website visitors**<br>• **Number of campaign participants/comments** |
| **Public involvement** | • **Create surveys to determine community interests, response to conservation programs and resource needs**<br>• **Improve educational literature regarding opportunities and methods of lowering water use and saving money.**<br>• **Improved presence at community events.**<br>• **Implement interactive incentive programs** | • **Gather qualitative and quantitative feedback**<br>• **Track number of participants and visitors.** |
| **Target high water users** | • **Contact high water users and provide resources for resolution.** | • **Analyze billing data to identify high users by customer category.** |
| **Improve Monitoring** | • **Use newly implemented CIS to improve tracking success of programs and incentives** | • **Monitor before and after consumption of program participants**<br>• **Quantify all conservation related participant activity.** |
| **Foster supporting relationships** | • **Improve presence as a leader in water efficiency methods** | • **Serve as board member on a relatable, regional board.** |

| | | |
|---|---|---|
| | **throughout the region.** | • **List attended trainings, workshops and conferences which assist in water efficiency goals.** |
| **Implement innovative means of achieving water efficiency goals** | • **Determine new means of providing resources, information and inspiring change in the community** | • **Attain CWCB grant funding to implement goals.** |

**Development & Comparability:** The programming, incentives and initiatives explored below, pursue water efficiency. Moving forward, the City will expand its water conserving programs and incentives to encourage efficiency among single family residential, multi-family residential, and CII users. While in the past, CII users were considered on a case-by-case basis, they were not targeted to participate in various programs. Additionally the City will continue to promote water efficiency equally among new build and pre-existing properties. Other objectives include promotion of non-potable water for irrigation among CII users. These goals are comparable to the City's previous goals as they continue to develop a more robust campaign for indoor water savings but recognize that outdoor water use requires more attention to produce long term, substantial savings. Comparably the City's CII users manage a sizeable portion of outdoor landscaping and their water use reduction will be essential in achieving future conservation goals.

# 4.0 Selection of Water Efficiency Activities

## 4.1 Summary of the Selection Process

The City analyzed a variety of previously implemented conservation programs state wide before finalizing of its own efficiency activities. Specific providers investigated included Colorado Springs Utilities, Denver Water, Aurora Water, City of Fort Collins, City of Westminster, City of Greeley, City of Brighton and the Southeastern Colorado Water Conservancy District.

The City utilized the Guidance Documents created by the CWCB to ensure a well-informed conclusion of activities is implemented into the Efficiency Plan. Additionally, a team of Fountain City Staff assessed the proposed efficiency activities utilizing the following metrics:

- Probable interest within the Fountain community
- Cost-benefit analysis
- Staff and resource feasibility
- Likelihood of significant success
- Anticipated water savings

A summary of the evaluation of these activities is located in Appendix C among Tables D, E, F, G and H.

## 4.2 Demand Management Activities

As a result of this analysis, the City decided to pursue the proposals that follow. Savings projected in Table 11 take into account the data demonstrated within the Demographic section of this plan. It considers property age, past participation rates, population growth, dedicated funds and success rates of other Colorado based utilities.

## 4.2.1 Foundational Activities

## Metering

### Past & Planned Metering Programs

The City continues to test meters as needed when inaccuracy is suspected. Since 2014 the City has replaced approximately 1,500 Circa 1993-5 meters with improved AMR data logging meters. Although the enhanced AMR meters do not directly result in water savings, the technology is vital to tracking the success of other conservation related programming. For example, the new AMR meters hold 96 days of hourly interval data, which is especially valuable during high bill investigations. The City continues to replace malfunctioning meters upon discovery with the improved AMR data logging meters. In spring of 2018, the City will begin a full scale meter replacement, exchanging the remaining 5,500 meters with the updated technology. Discussion is in place to determine the strategy and length of time to complete the project. If we perform the project with internal staffing, the anticipated completion date will be the end of 2021. If we outsource with a temporary workforce, the project could be completed within a year's timeframe.

Random meter testing was performed during the initial replacement of the 1,500 Circa 1993-5 meters. This assessment did not reveal any inaccuracies in metering at the customer location outside of their normal precision.

Although not implemented as a result of the efficiency planning process, the upcoming city wide meter replacement and its corresponding improved technology will undoubtedly result in substantial water savings. These data logging meters will allow the City to more efficiency communicate abnormal spikes in consumption among users. Upon identification of high consumption, high bill investigations will be carried out to communicate resources and solutions to property owners in hopes of education and resolution. Data logging gives the consumer a visual representation, down the hour to help identify dates and times that leaks or high consumption occurred. The City estimates a 25% reduced in outdoor water use as a result of this newly installed technology.

### Sub metering

The City has on occasion recommended and installed sub meters to larger properties on a case by case basis. This has been useful for potable CII accounts that use significant water towards irrigation. The City will continue to reach out to these clients as needed.

### Unmetered Water Use & Loss

In the past the City has not metered fire connections to buildings. Over the next five years, it plans to install meters on the remaining 200 unmetered fire connections. This project is scheduled for completion in 2023. Once all devices are metered, an accurate estimate of annual losses and savings moving forward will be calculated.

### Area of Irrigated Lands in Service Area

The City's GIS Department is currently working on mapping out the amount of irrigated land within its service area. This project will begin in 2019 and scheduled for completion at the end of 2020. While this does not immediately result in water savings, it provides data that is invaluable to the City's conservation efforts. Upon completion, this information will improve our water use analysis moving forward.

## Demand Data Collection & Billing Systems

In summer of 2018, The City is transitioning between Customer Information Systems. While it has used BillMaster for over 20 years to fulfill its billing needs, the City is excited to transition to NorthStar. This decision was largely based off of ease of access for the customer. With NorthStar, the client will be able to start, stop and transfer services independently. Northstar provides historical usage graphs that are more aesthetically appealing and easily interpreted by the client. These graphs will promote water conservation through improved delivery of information. Water savings associated with this program are difficult to estimate.

### Data Analysis

Northstar allows the operator to target specific customer categories with messages or announcements relevant to their use and needs. This could include rebates, classes, water restrictions or tips for savings. This new software is field accessible, allowing representatives to analyze historical consumption and activity participation remotely. Lastly, this system will drastically improve means for tracking rebates and estimating water savings following participation.

## Water Efficiency Oriented Rates

In June of 2001, the City implemented its inclining block arrangement designed to promote water conservation. Prior to this, the city had a flat rate structure based on meter size. In accordance with C.R.S. 37-60-126 (4), our water rate structure encourages efficient use of water and were last fully evaluated in 2012 when a 7$^{th}$ tier was added. Prior to the change, Block 1 held a minimum charge for 0-3000 gallons of use. In an effort to award and promote water conservation, this block was separated into two. The new rate structure changed Block 1 to include 0-1500 gallons while lowering the minimum charge. The current Water Rates are demonstrated below. Information regarding other associated fees can be found in Appendix B. Water savings for this program are not measureable although historically, the city continues to steadily reduce its water demand each year.

The City's water rates are broken down into blocks based on the size of the tap at each building's location and based on the amount of water being used (in gallons), which is reflected below in each block section. The principle of usage is based on the more water used after the initial 1,500 gallons (which includes fixed costs to cover water operations), is charged at a higher price for total water usage. This method or principle is based on the tier factor as a means of water conservation; residents who use less water receive a lower price on the gallons used below 1,500 per month. The higher the use of water, the higher the cost for water used. These water rates are based on ***City Ordinance No. 1692:***

**Table 12: Water Rates**

| **Water Rates – ¾" Residential Tap** | | |
|---|---|---|
| Block 1 | 0 – 1,500 gallons | $36.57 minimum charge |
| Block 2 | 1,501 – 3,000 gallons | $5.87 per 1,000 gallons |
| Block 3 | 3,001 – 6,000 gallons | $6.08 per 1,000 gallons |
| Block 4 | 6,001 – 10,000 gallons | $7.43 per 1,000 gallons |
| Block 5 | 10,001 – 15,000 gallons | $8.20 per 1,000 gallons |
| Block 6 | 15,001 – 21,000 gallons | $9.32 per 1,000 gallons |
| Block 7 | ➢ 21,000 gallons | $10.35 per 1,000 gallons |
| **Water Rates – 3/4" Commercial Tap** | | |
| Block 1 | 0 – 3,000 gallons | $45.41 |
| Block 2 | 3,001 – 6,000 gallons | 6.08 per 1,000 gallons |
| Block 3 | 6,001 – 10,000 gallons | $7.43 per 1,000 gallons |
| Block 4 | 10,001 – 15,000 gallons | $8.20 per 1,000 gallons |
| Block 5 | 15,001 – 21,000 gallons | $9.32 per 1,000 gallons |
| Block 6 | ➢ 21,000 gallons | $10.35 per 1,000 gallons |

**Table 13: Water Rates for Taps Greater than ¾”**

| Greater than ¾” Tap Water Rate Block Volume Definitions (gallons) | | | | | | |
|---|---|---|---|---|---|---|
| Tap Size | First Block<br><br>Minimum Charge | Second Block<br><br>$7.26 per 1k gallons | Third Block<br><br>$8.66 per 1k gallons | Fourth Block<br><br>$9.54 per 1k gallons | Fifth Block<br><br>$10.89 per 1k gallons | Sixth Block<br><br>$11.99 per 1k gallons |
| 1” | 0 – 6,000<br>$94.59 | 6,000 – 12,000 | 12,001 – 20,000 | 20,001 – 30,000 | 30,001 – 42,000 | >42,000 |
| 1.5” | 0 – 13,500<br>$210.87 | 13,501 – 27,000 | 27,001 – 45,000 | 45,001 – 67,500 | 67,501 – 94,500 | >94,500 |
| 2” | 0 – 24,000<br>$379.55 | 24,001 – 48,000 | 48,001 – 80,000 | 80,001 – 120,000 | 120,001 – 168,000 | >168,000 |
| 3” | 0 – 52,500<br>831.37 | 52-501 – 105,000 | 105,001 – 175,500 | 175,001 – 262,500 | 262,501 – 367,500 | >367,500 |
| 4” | 0 – 90,000<br>$1,418.74 | 90,001 – 180,000 | 180,001 – 300,000 | 300,001 – 450,000 | 450,001 – 630,000 | >630,000 |
| Above 4” For any tap larger than 4” the water rates are to be established by the contract between the user and the City of Fountain. | | | | | | |

**Review and Revision:** The City routinely reviews water rates and tap fees, implementing rate changes when required. It utilizes the following six principles to assess the water rate structure:

1. Water System should be financially self-supporting
2. Water rates and tap fees should be fair and equitable
3. Water rates should promote conservation
4. Water quality must meet health standards
5. System investment needed to properly plan for growth
6. New customers should pay for costs they generate

Yearly budget workshops and hearings are conducted at the senior staff level and are presented as recommendations from the Utilities Management to the City Council for adoption. Utilities Management conducts a bi-annual review of the water rates, tap fees and any recommended revisions to the current tap fee schedule. This is then presented to City Council for adoption.

# Water Efficiency Oriented Tap Fees

The tap fee and rate structures detailed below satisfy the requirement C.R.S 37-60-126 (4.5). The City annually performs a review of its water rates and tap fees, implementing rate changes when required.

The City charges a one-time water tap fee to all contractors/builders, property owners or annexed entities (residential or commercial) wanting to tap into the water infrastructure system. This tap fee charge is based on the size of the meter to be used. Most residential users have a ¾" meter, which

is considered the standard size. The chart listed below reflects the current water tap fee rates based on the size of meter installation:

**Table 14: Water Tap Fees**

| Water Tap Fees | | | |
|---|---|---|---|
| Tap Size | Infrastructure Fee | Water Acquisition | Total Connection Fee |
| ¾" | $10,824 | $6,500 | $17,324 |
| 1" | $19,279 | $11,577 | $30,856 |
| 1.5" | $42,530 | $25,539 | $68,070 |
| 2" | $47,433 | $28,483 | $75,916 |
| 3" | $110,819 | $66,545 | $177,364 |
| 4" | $193,740 | $116,341 | $310,081 |
| ¾" Each Unit Multifamily | $6,173 | $3,640 | $9,813 |
| **Above 4"** For larger than 4" water rates are to be via contract between user and City of Fountain. | | | |

**Water Conserving Tap Fee Incentive:** The City has issued a water conservation incentive for ¾" metered residential lots reflecting ***City Ordinance No. 1626.*** Introduced in 2013, this program awards new build properties a lowered tap fee in exchange for their commitment to water conservation through a low water use landscape. In order to receive a lowered tap fee, builders were provided the option to limit the amount of turf installed at a property to either 30% or 50% of the pervious area. Traditional homes typically install turf throughout the entirety of their pervious surface. In considering that 40% of household water is used towards irrigation, this incentive provides substantial savings to the customer, while reducing demand. The savings resulting from the lowered tap fee are then passed along to the home buyer in the purchase of their new home, as well as all occupants thereafter. Incentive levels vary dependent upon lot size but every lot size is eligible.

**Table 15: Lowered Tap Fee Incentive**

| Lowered Tap Fee Incentive | | | |
|---|---|---|---|
| Lot Size Square Footage | Water Acquisition Fee | Water Acquisition Fee with Conservation Incentive: 50% or Less Irrigated Area | Water Acquisition Fee with Conservation Incentive 30% or Less Irrigated Area |
| < 9,000 sq. ft. | $4,875 | $2,438 | $1,024 |
| 9,001 – 13,000 sq. ft. | $5,688 | $2,844 | $1,706 |
| Greater than 13,001 sq. ft. or larger | $6,500 | $3,250 | $1,950 |

The estimated savings below assume that 1,750 square footage of turf was otherwise avoided at each new build property. This metric was determined following analysis of pervious square footage on single family residential homes constructed after 2009. The savings also assume that these properties water a minimum of 1.5" (1 gallon) per square foot, once a week, for 20 weeks a year.

*Recommended water consumption for Kentucky Blue Grass as demonstrated in the Lawn Watering Guide for Southeastern Colorado.*

*Square Footage X 1 gallon X 20 weeks = annual gallons saved by incentive per property*

*1,750 X 1 X 20 = 35,000 annual gallons saved per single family residence*

**Table 16: Historical Participation in Tap Fee Incentive**

| Historical Participation - Tap Fee Conservation Incentive | | | |
|---|---|---|---|
| **Year** | **Number of New Builds** | **Number of Participants** | **Savings assuming 50% incentive** |
| 2013 | 176 | 5 (3%) | 175,000 gallons |
| 2014 | 134 | 9 (7%) | 490,000 gallons |
| 2015 | 115 | 43 (38%) | 1,995,000 gallons |
| 2016 | 128 | 72 (57%) | 4,515,000 gallons |
| 2017 | 163 | 127 (78%) | 8,960,000 gallons |
| **Five Year Total** | **716** | **256** | 49.5 Acre Feet |

The table above demonstrates that since program implementation, 36% of new build properties participated in the lowered tap fee incentive for water conserving landscapes. In 2017 alone, 78% of new builds received a discounted tap fee for committing to a low turf option.

Assuming that new build properties continue at a rate of 143 a year based on the five year average from 2013-2017, and maintain a 78% participation rate (based on 2017), it is estimated that 112 properties will participate annually. This implies an average annual savings of 3,920,000 gallons.

## Water Efficiency and Land Use Planning

The City of Fountain 2005 Comprehensive Development Plan address several means for managing land use in ways that promote the efficient use of water. These measures ensure the growth and development of Fountain while enhancing quality of life for present and future citizens. The Comprehensive Plan supports best management practices for water demand management and water efficiency through the following methods:

- Requirement that new residential development include low water use landscaping. This is achieved through the lowered acquisition fee incentive.

- Encourages clustered residential development to more efficiently utilize land and public services, create additional useable open space, and to mitigate adverse environmental effects. Clustering residential development reduces turf areas.
- The City encourages the use of non-potable water for irrigation of lawns, parks and open spaces.
- The City encourages that all newly developed parking lots be installed with drought tolerant vegetation – both trees and shrubs within the islands.
- New developments result in a sustainable land development pattern meaning that it can be maintained in the long term, without consuming or destroying finite resources.
- Avoids unnecessary damage to the natural environment evidenced by minimizing cut and fill and vegetation removal
- Celebrate Fountain Creek and Jimmy Camp Creek Corridors as unique resources and provide for site conservation and enhancement.

Source: Comprehensive City Development Plan 2005, 21-41.

### Reuse System

The City does not have a water reuse system and does not plan to incorporate one within the timeline of this plan due to financial and staffing feasibility.

## System Water Loss Management & Control

#### Distribution System Leak Identification

From 2007 – 2012, the City performed system wide auditory leak detection during which repairs were made as needed. As most of the City's distribution system is less than 30 years old, its water losses are primarily attributed to water theft and unmetered losses from the supply line to the meter. The City continues to investigate and repair system breaks as needed. Additionally, some areas in need of repair function under a private main followed by sub meters. The water counts towards revenue but is ultimately unused. System maintenance and estimated losses prior to repair is recorded by the Water Department following each leak detection analysis.

#### Tracking Water Use of High Users

The City continues to track and compile a report of its CII water users. The information is collected and assembled by the Utilities Department Data Analyst.

#### Water Conservation Coordinator

The City has had a full time Conservation and Sustainability Program Manager since 2009.

## 4.2.2 Targeted Technical Assistance and Incentives

This section explores the targeted technical assistance and incentive programs that will be offered to customers as well as performed internally in an effort to improve water efficiency. Such programs

include install of high efficiency retrofits, appliance replacement and promotion of low water landscaping. These programs are extended to single family residential and CII customers.

## Level 1 Utility/Municipal Facility Water Efficiency

The following water efficiency activities are under direct control of the City and have been selected for implementation.

### Smart Irrigation Controllers

In 2016 the City installed one WeatherTrak smart controller at Fairview Cemetery which encompasses three acres of turf. This smart controller notifies City staff of unusual spikes in consumption which allows issues concerning irrigation breaks or stuck zones to be addressed in a timely manner. Additionally, watering schedules may be adjusted remotely while rain sensors prevent over watering during times that substantial precipitation has been received. In 2018, three additional controllers will be installed at Fountain Mesa Park (2) and Conley Park (1). Fountain Mesa Park contains approximately 43 acres of open space, 15 of which are irrigated. Conley Park contains one acre of irrigated space. The City anticipates a 25-30% reduction in water use as a result of this upgrade. Average annual water savings will be assessed approximately three years following each date of install.

Funding permitted, the City plans to install WeatherTrak controllers at its entire City maintained parks system and common areas by the end of 2019. Each controller cost varies dependent upon supply line size and number of zones. It is estimated that each WeatherTrak Controller will cost between $1,000 and $3,100. The project encompasses the following parks:

| WeatherTrak Sites | | | |
|---|---|---|---|
| **Site** | **Acreage** | **2016 Annual Water Use** | **Projected Savings assuming 25% reduction** |
| Fairview Cemetery | 3 | 2,438,900 gallons | 609,725 gallons |
| Fountain Mesa Park | 15 | 4,452,700 gallons | 1,113,175 gallons |
| Conley Park | 1 | 288,630 gallons | 72,158 gallons |
| Metcalfe Park (non-potable) | 41.44 | 8,065,000 gallons | 2,016,250 gallons |
| Aga Park | 11.83 | 648,639 gallons | 162,160 gallons |
| Heritage Park | 2.63 | 37,100 gallons | 9,275 gallons |
| Hibbard Park | 4.80 | 1,080,400 gallons | 1,080,400 gallons |
| Mayor / Veterans | .38 | 171,089 gallons | 42,772 gallons |
| **Total** | **80.08** | **17,182,458 gallons** | **5,105,915 gallons** |

**Table 17: WeatherTrak Use and Projected Savings**

These installments will demonstrate the City's commitment to efficient outdoor water use and as a result, promote participation in the rain sensor rebate program among customers. Water usage to these areas will be monitored and evaluated for savings for the first five years following install. This data will be tracked by the Utilities Analyst and savings identified by the Parks Superintendent. This will occur within the first quarter of the following year for five years.

### Irrigation Assessments

Fountain's entire City maintained irrigation system is audited monthly. Internal staff performs this evaluation which encompasses backflow compliance, line breaks, malfunctioning heads and agreeable soil moisture content. Updates to watering schedules and repair are performed as needed.

## Level 2 & 3 Management of Largest and Remaining Customer Demands

The City is expanding the scope of its rebate incentive program to encompass a broader variety of water and energy saving devices. Estimated participation rates and predicted savings are explored in the table and figures below. The number of program participants, demand data, estimated savings, relevant public feedback and program costs will be monitored by the Conservation Program Manager on a monthly basis and evaluated during the first quarter of each following year.

**Projected Incentive Participation Rates & Savings**

| Year | Washing Machines Replaced / Gallons saved | EnergyStar Dishwashers Replaced/ Gallons saved | Showerheads Replaced / Gallons saved | Toilets Replaced / Gallons saved | Weather-Based Irrigation Controller/ Gallons saved |
|---|---|---|---|---|---|
| 2018 | 60<br>240,000 | 50<br>52,250 | 50<br>897,900 | 50<br>1,389,920 | 50<br>700,000 |
| 2019 | 50<br>440,000 | 50<br>104,500 | 50<br>1,795,800 | 50<br>2,779,840 | 50<br>1,400,000 |
| 2020 | 40<br>600,000 | 50<br>156,750 | 50<br>2,693,700 | 40<br>3,891,776 | 50<br>2,100,000 |
| 2021 | 30<br>720,000 | 45<br>203,775 | 50<br>3,591,600 | 30<br>4,725,728 | 45<br>2,730,000 |
| 2022 | 20<br>800,000 | 40<br>245,575 | 50<br>4,489,500 | 30<br>5,559,680 | 40<br>3,290,000 |
| **Total savings over 5 years** | **200 appliances 2,800,000 gallons saved** | **235 appliances 762,850 gallons saved** | **375 fixtures 13,468,500 gallons saved** | **200 devices 18,346,944 gallons saved** | **235 sensors 10,220,000 gallons saved** |

**Table 18: Projected Incentive Participation Rates and Savings**

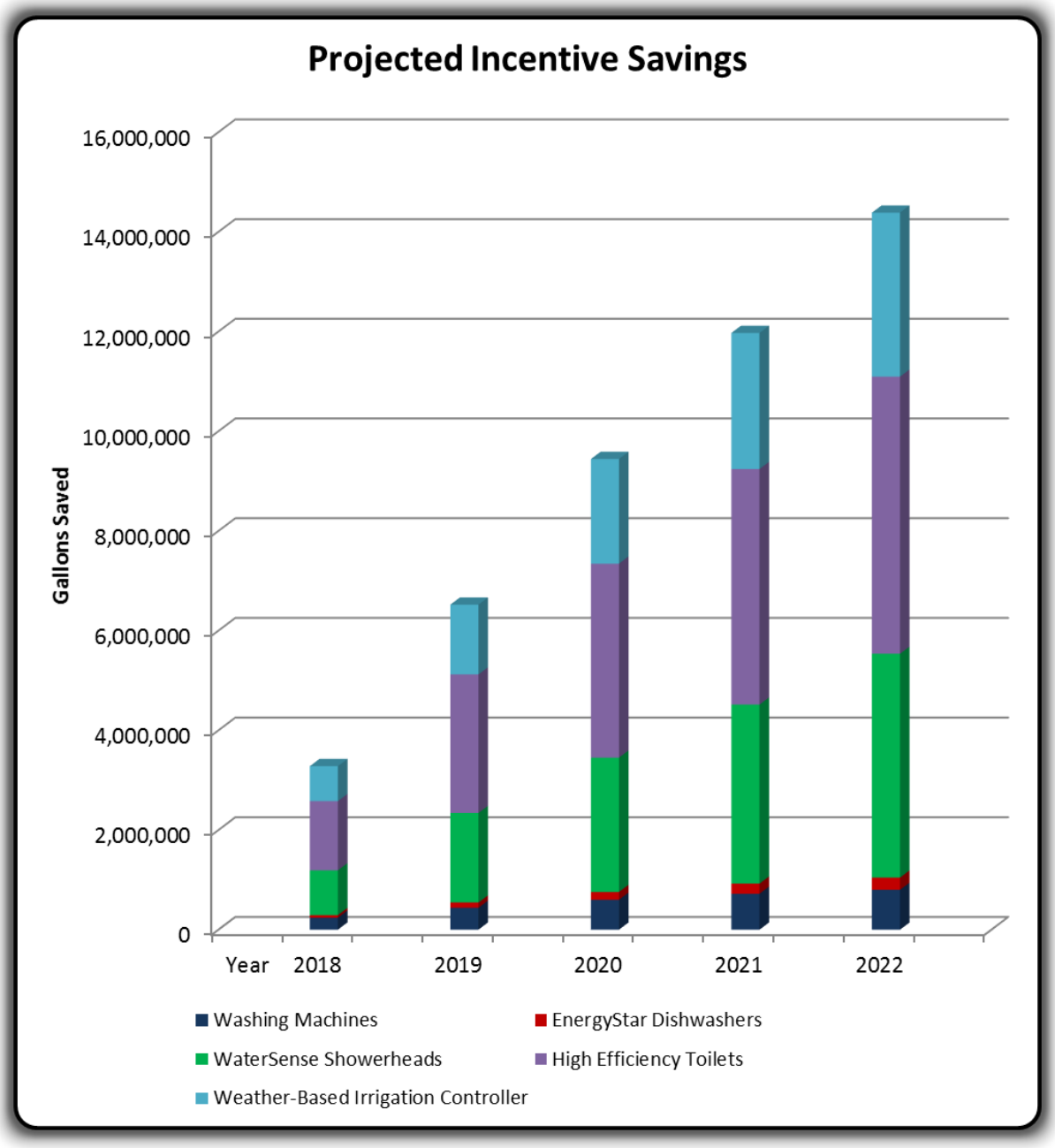



**Figure 9: Projected Savings per Incentive Category**

### WaterSense Toilets

This program began in 2009 and is currently offered to residential customers and commercial customers on a case-by-case basis. By replacing a toilet that was manufactured in 1994 or earlier with a 1.28 GPF WaterSense certified toilet, customers are eligible for up to a $100.00 rebate per fixture. Maximum

rebate is for no more than two toilets per household. The calculations demonstrated in the Table 18 and Figure 9 assume that two 1.28 GPF or less toilets are replacing two 4.0 GPF toilet in a four person household. According to the table located under the Demographics section of this report, 40.81% of residential properties were built prior to 1994. This data combined with our rebates issued to date, demonstrates that there is still significant savings opportunities associated with this incentive. Similar to other incentive programs, participation has steadily declined since 2012. The Conservation Manager will continue to test new means of promoting this incentive and gaining participation. Specifically it will expand outreach to commercial property owners. The projected savings in the table below assumes that the average four person household is flushing 28 times a day.

*Number of flushes a day X Water savings of retrofit X days in a year = Annual savings*

*28 X 2.72 X 365 = 27,798.4 gallons saved annually.*

### Showerheads

This program began in 2014 and as of November of 2017 has had 1,042 retrofits exchanged and approximately 51,267 gallons saved. In October of 2017, the Conservation Manager executed an aggressive showerhead exchange program promoting via newsletter, social media, flier and monitors in City Hall and the Customer Service Lobby. In an effort to improve program participation, both the Fountain Recycling Center and the Customer Service Lobby were established as exchange locations. This approach encouraged visits to both locations and face to face customer interaction with clients that typically do not visit these locations. Moving forward, CII customers will be targeted. The calculations demonstrated in the table 18 above assume that three, 1.5 GPM or less showerheads are replacing three, 3.0 GPM showerheads in a four person household with the average shower lasting 8.2 minutes.

*Savings of retrofit X household size X average shower length X days in a year = annual gallons saved per household*

*1.5 X 4 X 8.2 X 365 = 17,958 annual gallons saved per household.*

### EnergyStar Washing Machines

This program began in 2009 and is offered to residential customers and commercial customers on a case-by-case basis. By purchasing a brand new EnergyStar washing machine, utility customers are eligible for up to a $100.00 rebate per residence in a lifetime. The savings predicted in the table below assume that an EnergyStar certified washing machine which uses 13 GPL or less is replacing a 23 GPL device and approximately 400 loads of laundry per household each year. In consideration of age of housing stock, the GPL of the fixture being replaced could be higher. This was adjusted to 23 GPL assuming that this appliance is less likely to stay with the property in comparison to refrigerators or automatic dishwashers. Due to fluctuating outreach efforts, participation in this program has steadily declined since 2012, losing approximately 10 participants annually. In consideration of census data and age of housing, it is unlikely that we have saturated the market and therefore will continue to offer this program until 2023 with an improved outreach campaign. The program will be reevaluated at this time.

### Energy Star Clothes Dryers

This program's implementation is scheduled to occur in 2018. Program details and eligibility requirements will be similar to those required for the EnergyStar washing machines. Although this device is specific to energy savings, the incentive will encourage a holistic approach to sustainability while promoting the connections between water and energy conservation.

### WaterSense Automatic Dishwasher

The Conservation Manager will determine program eligibility requirements, establish dedicated funds, and finalize the rebate application and process by the end of 2018. According to the Alliance for Water Efficiency, the average US household averages 110 dish loads annually (Alliance for Water Efficiency, 2017). Dishwashers manufactured prior to 1994 average 10-15 gallons per load while current EnergyStar certified dishwashers use 5.5 GPL or less (Alliance for Water Efficiency, 2017).

Assuming that an EnergyStar certified dishwasher using 5.5 GPL is replacing a standard machine using 15 GPL at 110 cycles per year, average household savings equates 1,045 GPY. The housing stock information detailed in the demographics section of this report identifies 41% of Fountain properties as having been built prior to 1994. This presents a significant water and energy savings opportunity among residential and CII customers.

Additionally, the energy and water savings associated with this appliance demonstrates the City's holistic approach to sustainable initiatives. The promotion of automatic dishwashers will encourage a behavioral shift away from inefficient hand washing. The Conservation Manager will be responsible for tracking number of participants and water savings.

### Weather-Based Irrigation Controller

This program's implementation is anticipated to occur in 2018. Program details and eligibility requirements are yet to be determined. In Fountain, 40% of our potable water is used for irrigation. As a primary use for the City's water supply, this incentive will achieve substantial savings for its customer base. In considering that smart controllers are not required for new build properties; it is predicted that less than 5% of our single family residences have this device. For this reason, the City anticipates a high participation rate in this incentive program. It is likely to exhaust its allotted funding for the first three years following its introduction.

Assuming that single family residential homes 1. Average 3,500 square feet of irrigated turf; 2. Water a minimum of 1.5" (1 gallon) per square foot, once a week, for 20 weeks a year and 3. Fountain maintains 15" of annual precipitation.

*Recommended water consumption for Kentucky Blue Grass as demonstrated in the Lawn Watering Guide for Southeastern Colorado.*

*Square Footage X 1 gallon X 20 weeks = annual gallons used towards irrigation per single family residence.*

*3,500 X 1 X 20 = 70,000 annual gallons used towards irrigation per single family residence*

Consider that Fountain receives an average of 15" of precipitation each year. In recognizing that precipitation will not always be received in an amount adequate enough to override a scheduled watering event, the data detailed below assumes a 20% (14,000 gallons per single family residence) savings as a result of smart controller/rain sensor install. Assuming program funds are exhausted in their entirety for the first three years of program implementation and steadily decline in the years to follow, it is predicted that 235 smart controllers will be installed by the end of 2022, saving 10,220,000 gallons over five years. There is some variability within this estimate as customers may install new irrigation systems where they did not have a preexisting one. This implies that although the client is now watering smarter, they could be using more water that before.

Cost estimates for this program are yet to be determined. For this reason, the number of potential annual rebates may be limited to less than the amount predicted in this plan.

## 4.2.3 Ordinances & Regulations

This section describes the City's ordinances and regulations regarding local policies which support the efficient use of water. Worksheet F from the CWCBs guidance documents was used to evaluate and present the City's regulatory activities in accordance with C.R.S. 37-60-126 (4). This is demonstrated as Table F in Appendix C.

### Level 1: Existing Service Area

The following ordinance and regulation goals are monitored by the Conservation Program Manager on an annual basis and evaluated during the first quarter of the following year. This includes demand data, estimated savings, public feedback and implementation costs.

**Voluntary Water Restrictions**

In 2009 Fountain City Council adopted resolution encouraging voluntary water restrictions between June and September each year thereafter. In a further effort to control demand, occupants are encouraged to limit outdoor watering to three days a week. Similarly, all community members are encouraged to limit outdoor watering to between 10:00 pm and 7:00 am to reduce water lost to evaporation and maintain healthy lawns. These water saving practices apply to all customer category types. They are promoted through the monthly water bill newsletter, LED signs throughout the city, the city website, social media and hard copy handouts.

By recommending limited watering schedules, property owners are promoting deep root growth of their plant material and therefore its resiliency. This effort promotes beautification of the Fountain Community, efficient water use and steadies demand. Moving forward, the City aims to improve its educational efforts by incorporating water waste reduction into this campaign as well as overspray limitations. Estimated savings of this goal is difficult to quantify.

### Water Waste Ordinance

The City does not have a specific rule, regulation or ordinance that prohibits or punishes water waste. The City assembled all of the ordinances and rules for the Water Utility in the area of the City Code known as the Utility Code, which consists of Chapter 3.16 in the Municipal Code. There are measures regulating and prohibiting theft or tampering with meters, but there is no specific prohibition or definition of waste. Preparation and introduction of a Water Waste Ordinance to be presented to the City Council for consideration will be included as part of the Goals and Objectives of the Water Department in calendar year 2019. Adoption requires the consent and approval of a majority of the City Council. Implementation of a Water Waste Ordinance presupposes approval by the City Council. If this Ordinance is not approved by Council, it will not be implemented or enacted.

Unless and until such an Ordinance is approved and implemented, there will be no water savings quantified as a result of this Goal. Even when such an Ordinance is in place the consistent and repeatable savings is difficult, to predict. While it is recognized that incident-related water curtailments are occasionally necessary (and that these instances are direct response to timely supply constraints), a consistent savings is not predicted as a result of implementing such a regulation.

Upon implementation of such a regulation, the Conservation and Sustainability Program Manager will review the effectiveness of the water waste rule on a regular basis (not to exceed once every two years) to assess the viability and the actual water savings of the ordinance.

## Level 2: New Construction Regulations

### Landscape Requirements

The City enforces minimum standards for landscaping and site design. The City encourages developers and landowners to exceed minimum standards whenever possible. All lots in all zoning districts not covered by impervious materials shall be landscaped to prevent land erosion, improper drainage, and damage to properties and unsightliness. All undeveloped building areas within partially developed commercial or industrial uses shall be landscaped with a ground cover to control dust and erosion.

- **Approved Landscape Materials:** Selection of plant materials shall be based upon Fountain's climate and soils. Native vegetation or low water usage vegetation on water conserving design concepts shall be used whenever possible. Minimum sizes and other requirements for plant material shall be as follows:
    1. Deciduous trees: Two and one half inch (2 ½") caliper.
    2. Evergreen trees: Six feet (6'). Shrubs: Five (5) gallon containers.
    3. Ground cover/perennial sizes shall be selected according to growth rate, spacing and the area to be covered,
    4. Thorne plant material shall not be located adjacent to public walks.
    5. Clear space above public walks shall be nine feet (9') or greater.
    6. Artificial plants shall not be used to comply with the requirements of this section.
    7. No more than fifty percent (50%) of an area can be covered by non-living landscaping material.
    8. The planting of any trees of the Ulmus genus (elm) is prohibited.

The review process for CII properties is codified but the use of low water requiring plants is not mandatory for single family dwellings by City Code. The City strongly encourages the installation of low water plants among all customer categories. By changing the type of plants used in landscaping, the City can eventually realize substantial water savings over typically landscape scenarios. The City aims to further promote low water landscape conversion through classes and demonstration beds. Classes will allow community members to attend seminars addressing water saving landscape design methods.

Currently, the City Code Title 17, Chapter 17.37 (Landscaping, Fencing and Screening), Section 17.370 (Landscaping Requirements) requires an intense level of site landscaping. In commercial and industrial settings, this has required development to install a water service for land uses that otherwise have no reason to use municipal water. Although these regulations are stated to be a minimum requirement and even though some language in this section addresses low water use plantings, the preamble to this section states, "The City encourages developers and landowners to exceed these minimums whenever possible." This goal is to adopt a zoning regulation for site landscaping that respects the water conservation goals of the City while maintaining the visual, aesthetic and screening aspects of the spirit of the land use regulations.

The measure of effectiveness in attaining this goal will be the City adopting a change in the City Code that addresses sustainable landscaping as a land use regulation. Initiation of this Goal is anticipated to occur in calendar 2018, with completion of the adoption of revised developmental regulations in the various City of Fountain land use codes to address required water use reduction to be adopted in late 2019 or early 2020.

The effect of accomplishing this goal will not immediately be seen, since this addresses development and construction projects from the adoption of the appropriate regulations forward. The projected water savings realized by implementing a mandatory sustainable landscaping ordinance or regulation will be estimated by first determining the number of new CII sites and residential lots in subdivisions that incorporate low water demand landscaping. Pending approval and specifications demonstrated through the ordinance, projected new builds and their corresponding square footage will be used to determine savings at the time of incorporation.

After adoption of the revised City Code, the City shall continue to assess the effectiveness of the water conservation provisions under the revised City Code. This assessment shall include a comparison of Fountain's total per capita use rates before and after the City Code change. This review shall be performed every year.

### Low Water Turf

For applications that require turf grass, the City encourages the use of fine-bladed, turf type, tall fescue, fine fescue, or other similar type of turf grass for general and lawn use. By using the turf grasses mentioned above, the irrigation requirement for the lawn will be reduced. Both the tall and fine fescues are more drought resistant than Kentucky bluegrass cultivars. This is not a codified standard or ordinance but a voluntary standard. The City will continue to encourage this aspect of landscaping, which can include upwards of 12 CII sites annually.

Moving forward, we will work with City Council and the HBA towards establishing improved landscape standards for new build properties to promote low water landscapes that beautify the community as well as reduce demand through efficient irrigation. These conversations will begin in 2018. Once standards are determined, estimated water savings will be calculated.

**Irrigation Requirements**

As mentioned previously, approximately 40% of Fountain's potable water is used towards irrigation. For this reason is it vital to establish irrigation standards for new building stock to promote efficient water use. The City will work with the HBA to determine appropriate standards. Together they will assess needs and requirements of items such as but not limited to irrigation heads, check valves and smart controllers/rain sensors. These conversations will begin in 2018. Once standards are established, projected water savings will be assessed.

### Level 3: Point of Sales Ordinances on Existing Building Stock

Regulations covering existing building stock were not carried through to evaluation. See Table F in Appendix C for details.

## 4.2.4 Education Activities

This section explores the education and outreach programs used to promote water efficient habits throughout the community. It includes classes, informational handouts, interactive resources and activities which empower the community with the tools and knowledge to improve water efficiency at home or at their business. In accordance with C.R.S 37-60-126 (4) the proposed education activities were fully evaluated. These activities were evaluated using Worksheet G, provided by the CWCB guidance document. This can be found as Table G in Appendix C. Activities selected for implementation are detailed below.

For a majority of the education activities selected it is difficult to quantify savings. Those participating in an online class or in person workshop will be requested to complete a survey. Included in this will be specific questions inquiring if 1. The participant changed their water use habits as a result of the course; 2. Observed water savings through their bill; 3. Completed fixture or equipment upgrades as a result of the class.

### Level 1 One-Way Education Activities

The City will use a variety of outreach methods to promote its programs and participation rates.

**Conservation & Sustainability Website**

The City has maintained a page dedicated to Conservation and Sustainability prior to last Water Efficiency Plan Revision in 2009. In October 2017, the City completed a website revision which improved navigability, aesthetics and overall content.

This page contains:

- Rebate applications for water saving appliances and retrofits
- Water and Energy saving tips
- Links to online tools used to assess indoor and outdoor water use
- Recommended outdoor watering schedule
- The Water Efficiency Plan
- Websites visits will be tracked by the City's Community Engagement Manager on an annual basis.

### Educational Materials

Promotional conservation handouts such as pamphlets, brochures and guides will be made available to the public through the Customer Service Center, events, newsletters, mailers and by request. These publications will include facts, tools and program details that will empower recipients to conserve water and save money. In 2017, The City became a WaterSense partner, gaining access to their pre-generated educational materials. With limited Conservation staff, these resources will prove invaluable to the utility provider in promoting water efficiency. These materials will encourage efficient indoor and outdoor use, targeting all customer types. Newsletter topics and mailer themes will be tracked, while deliveries are quantified. The Conservation Manager will perform update tracking on a monthly basis.

## Level 2 One-Way Education with Feedback

### Social Media

In an effort to expand participant base - events, promotional campaigns and all incentive programs will continue to be promoted via the City's shared social media outlets including Facebook, Twitter and YouTube. Fountain Utilities has a page dedicated to sustainability, energy and water conservation programs. These campaigns will target all customer types. The Conservation Program Manager will track views, comments and clicks as a measure of success.

### Events

The Conservation & Sustainability Program Manager will participate in at least 6 outreach events a year. During these events, she will distribute resources, promote programs and answer questions regarding conservation efforts and otherwise. The audience attending events will likely consist of residential and CII customer types. Materials provided for these events will cater to these customer categories. The Conservation Manager will track events attended, number of booth visitors and giveaways awarded at each activity as a measurement of success.

### Online Classes

The City will incorporate an educational page to its website. This page will exhibit a variety of online classes and activities for both youth and adult audiences. The classes will be targeted towards residential and CII customers. Classes relevant to water conservation will cover topics such as:

- Perform your own home indoor water assessment
- Low Water Landscapes
- Rain Harvesting
- Composting to promote soil health

By offering online classes, the City will broaden its participation rates in conservation related programming as well as expand its efforts to a customer base not previously reached due to limited accessibility. The Conservation and Sustainability Program Manager will research software and applications suitable in meeting this need. A public survey will determine primary topics of interest among the community. From here, research and course development will be carried out. Success will be measured by survey following class participation and number of website visits. Additional metrics may be available once a software program is selected. Software assessment will begin in 2019. Assuming that suitable software has been identified and agreed upon, an interest survey will be issued during spring of 2020.

### Water Returns Class

In previous years, the City partnered with the Water Returns Project. Through this partnership, a series of classes were provided at no cost to the community. These classes addressed water-saving landscape design methods, recommended plant material and irrigation revisions. Attendees received expert assistance in planning and implementing a water-saving landscape project at their homes. Clients may be asked to participate in water use monitoring following landscape changes, but are not required. Savings cannot be predicted due to varying project goals and lots sizes. Historically two classes are hosted each year, totaling 20 annual participants. This metric will continue to be tracked by the Conservation Manager.

## Level 3 Two-Way Education

### Housing and Building Association Meetings

Each month, senior staff of the city meets with the housing and Building Association of Colorado Springs, the utilities committee, builders, developers and design professionals whom are active in the Fountain area. These meetings are utilized to discuss regulatory affairs, upcoming city initiatives, conflict resolution and general topics between stakeholders. These conversations will continue as successful demand reduction relies heavily on structural conservation methodologies in new build properties.

### Conservation & Sustainability Center

The successes of the programs detailed within this plan require a high level of customer service and improved accessibility of information. The City recognizes the growing importance of water conservation and sustainability as a whole as its community continues to grow. For these reasons, it is the goal of the City to have an office dedicated to promoting sustainability within its community. Ideally this center will exhibit various water saving methods and tools in addition to routinely hosting conservation related classes and events. Completion of this project will be highly dependent upon sufficient grant and other funding. For this reason a timeline has not been generated. If achieved, this center may promote conservation through the following methods:

**Low Water Landscape**

- Showcase a variety of low water landscape demonstration gardens and themes.
- Display low water irrigation options, irrigation head types, recommended clock schedules and rain sensors.

This landscape will be maintained by the Conservation & Sustainability Program Manager, interns, volunteers and community service workers. It will be accessible by the public for scheduled or self-guided tours. It will include educational signage that will identify the various plant and irrigation related installments.

Incorporating this outdoor experience will encourage community participation in the following water efficiency programs:

- Low Water Landscape conversion
- Irrigation conversion
- Smart Controller Rebates

**Water Conserving Fixtures & Appliances**

The center may showcase the following WaterSense and/or EnergyStar appliances and devices

- Clothes washing machine and dryer
- Dishwashing machine
- Toilet
- Faucet aerators and spray nozzles
- Showerheads
- Refrigerator

If achieved, this center will be highly interactive for visitors, allowing them to observe the benefits of installing WaterSense certified devices. It will include educational signage which quantifies water, energy and dollar savings as well as estimated return on investment.

This demonstration of indoor water and energy savings will encourage participation in the following water efficiency programs and habits:

- High Efficiency Toilet Rebate
- Showerhead Exchange Program
- Dish Washer Rebate
- Fix-a-Leak week
- Retrofitting fixtures with HE spray nozzles and aerators

If implemented, number of visitors, number of classes and quantitative feedback will be collected and evaluated by the Conservation Manager on an annual basis.

### Water Use Assessments

The City plans to offer indoor and outdoor water use assessments. This will be achieved by either partnering with a local agency that provides such services or by implementing an internship program. These services will be utilized as an opportunity to promote other conservation programs and initiatives such as rebates or classes. A Water Use Assessment will be provided following customer request or recommendation by a utility representative. High bill investigations will be prioritized.

The Conservation Manager will identify potential service providers and assess feasibility of hiring and training additional staff to administer the program by spring of 2018. Following identification of estimated cost per assessment, the Conservation Program Manager will determine budgeting for this program. This will also identify how many assessments may be offered within one year. The City hopes to provide the indoor service by summer of 2018 and outdoor use assessments by summer of 2019. Depending on program implementation costs and level of interest, the City may rely on outside grant funding opportunities to satisfy this need.

Participation rates, participant feedback and water savings will be tracked and evaluated by the Conservation Program Manager on an annual basis.

### Indoor Water Assessment

During an indoor assessment a representative will measure all water using fixtures in the property, while checking for leaks and rate of water loss if applicable. The representative will also record water use habits as described by the occupant. Following the assessment, the client will receive a detailed water report which identifies how much water is typically used per fixture, opportunities for savings following repair or upgrade and estimated return on investment. Participants will also be awarded water saving retrofits such as showerheads, kitchen and bath aerators based on need. Other water saving resources such as dish scrapers or leak detection dye tabs will also be provided in exchange for program participation.

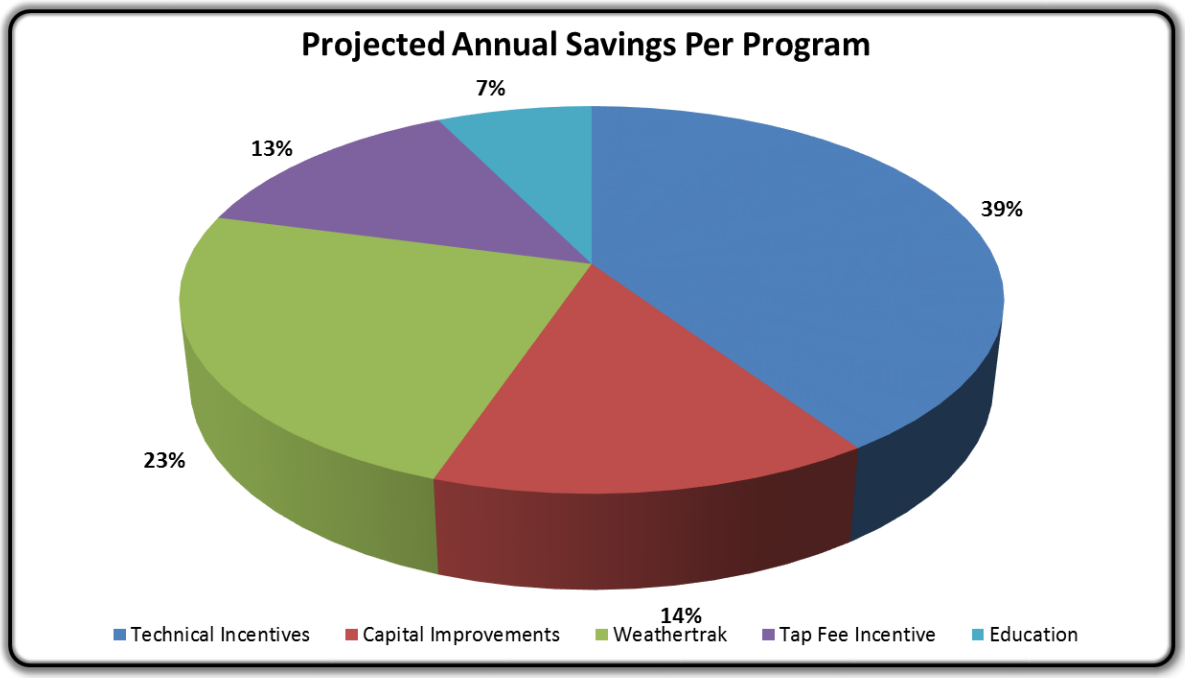
### Outdoor Water Assessment

This service will allow a representative to test run the irrigation zones of a property while assessing the system for leaks, breaks or inefficiencies. The customer will receive a detailed report including recommendations for repair or upgrade to reduce water consumption.

## Projected Annual Savings per Measure

The following chart and table display anticipated water savings attributed to each program category of those selected for implementation.

**Figure 7: Projected Annual Savings per Measure**




**Projected Annual Savings per Measure**

| Projected Annual Savings | |
|---|---|
| **Method** | **Annual Savings (Acre-Feet)** |
| **Technical Incentives** | **28** |
| **Capital Improvements** | **10** |
| **WeatherTrak** | **16** |
| **Tap Fee Incentive** | **12** |
| **Education** | **5** |
| **Total** | **71** |

# 5.0 Implementation & Monitoring Plan

## 5.1 Implementation Plan

As required by C.R.S. 37-60-126(4), each selected activity above has been assigned a period of implementation, actions required, milestone deadlines and staff responsible for program implementation which is detailed in its description.

The City strives to promote the efficient use of water. It aims to do so through methods such as educational outreach, incentive programs, repair/replacement programs, and equipment, landscape and building standards. These methods are not necessarily meant to limit water use but promote smart use, maintain sufficient water supplies and stable revenue. In an effort to maintain revenue stability, these programs will continue to be assessed annually with limited dedicated funds to each activity.

## 5.2 Monitoring Plan

In order to measure the achievements of the of the water efficiency plan, data collection and analysis must occur regularly. Templates provided in the CWCB Municipal Water Efficiency Guidance Document were used to collect and present the information required to satisfy C.R.S. 37-60-126 (4.5). Table K located in Appendix C details the list of demand data to be collected during the monitoring process and the same data that will be reported to the CWCB on an annual basis.

The Conservation and Sustainability Program Manager will compile an annual report in January of each year, summarizing the previous year's results and accomplishments. The Program Manager will meet with the Utilities Director, Water Superintendent and Customer Service Manager to review, evaluate and reassess programs at this time.

# 6.0 Adoption, Public Review, and Approval of Water Efficiency Plan

## 6.1 Adoption of New Policy

No new policies have been adopted as a result of this plan revision.

## 6.2 Public Review Process

A public review process is required for all State approved plans per C.R.S. 37-60-126 (5). The updated plan was made available for public review and comment via the city website over a 60 day period. This period began February 14th 2018 and ended on April 14th 2018. Two open houses were held in the Community Room at the Fountain Library on February 15th and March 14th. The open houses along with promotion of the public review and comment period were advertised through public ad in the Fountain Valley Newspaper, bill insert in the February Utilinews letter, social media posts on Facebook and flyers

provided through the Customer Service Lobby. These ads can be found in section D of the Appendix. A total of 14 visitors attended the open house events. While no comments were received during the review period, visitors at the open house events expressed interest and excitement over the programs and changes proposed within this plan.

## 6.3 Local Adoption and State Approval Process

### Local Approval

The Plan Draft was presented to the Mayor and City Council on February 13th 2018. The plan was approved by Council on May 8th 2018. A copy of the City Council Resolution can be found in Appendix D.

### CWCB Approval

The Water Efficiency Plan was submitted to the Colorado Water Conservation Board for review and approval on May 9th 2018.

## 6.4 Periodic Plan Review and Update

### Review and Revision

The City will review and update the Water Efficiency Plan every 7 years. The next review date will begin in January of 2024. All goals detailed within this plan will be monitored, reviewed and revised as appropriate as circumstances, feasibly, need and public interests continue to evolve. These periodic evaluations along with annual monitoring of the City's water demand will facilitate development of future plan updates. These goals may be discontinued or made more robust as a result of these variables as well as data monitoring and other relevant methods of measurement. If savings prove insignificant, the program will be reevaluated. The Conservation and Sustainability Program Manager is responsible for initiating and carrying out all plan updates as well as annual reporting of all previously mentioned data collection to the CWCB.

### Monitoring

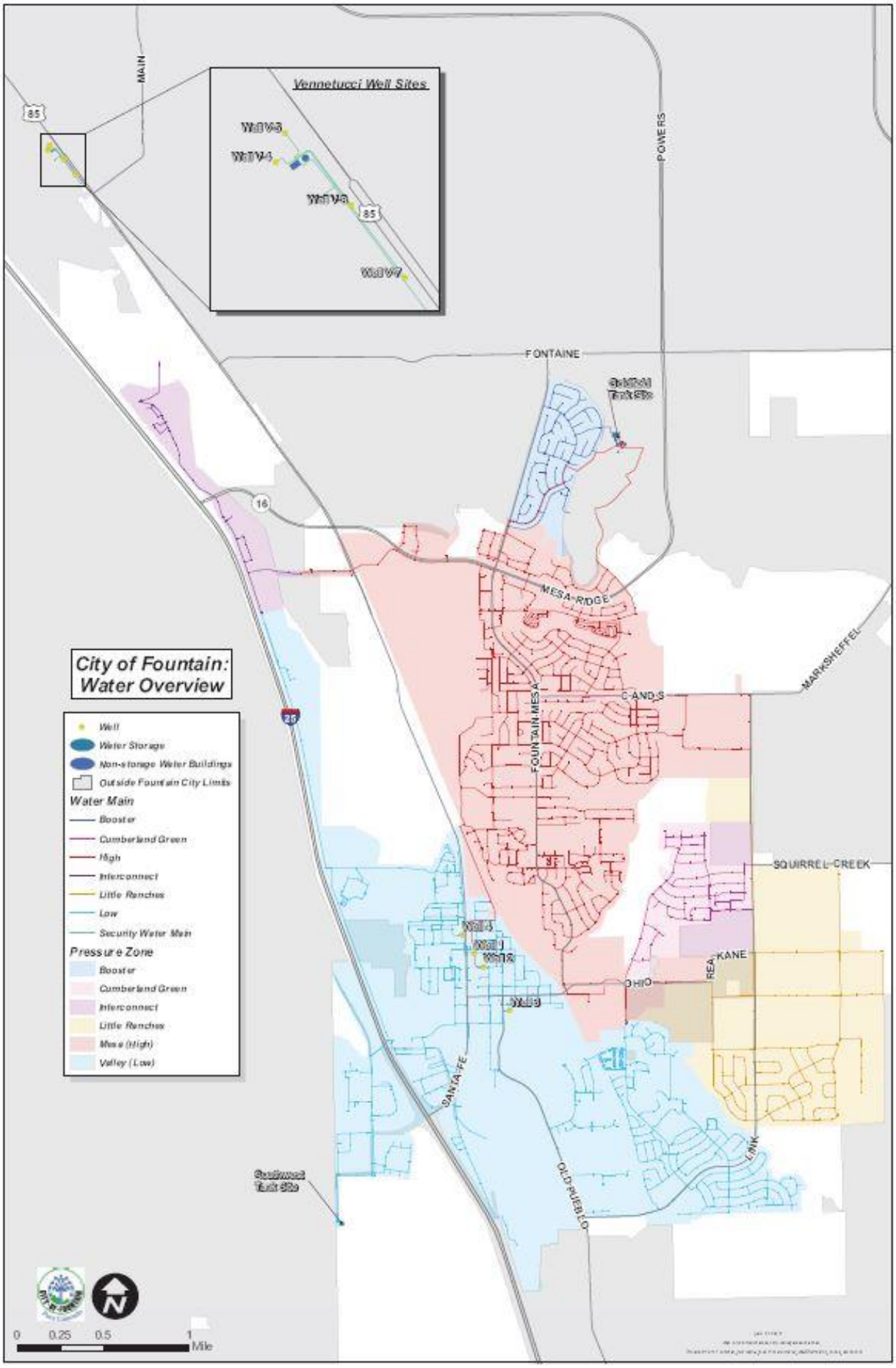
Water demands, losses and per capita use in each customer category are tracked and monitored on a quarterly basis. This overall evaluation shall be conducted on an annual basis, which will allow comparisons between years and months of similar climatic conditions. All reviews and updates of the Water Conservation Plan will be a primary assignment of the City's Conservation and Sustainability Manager with assistance from the Utilities Analyst, GIS Department and Community Engagement Specialist. Assignments and a detailed monitoring schedule can be found in Appendix C on Table K.

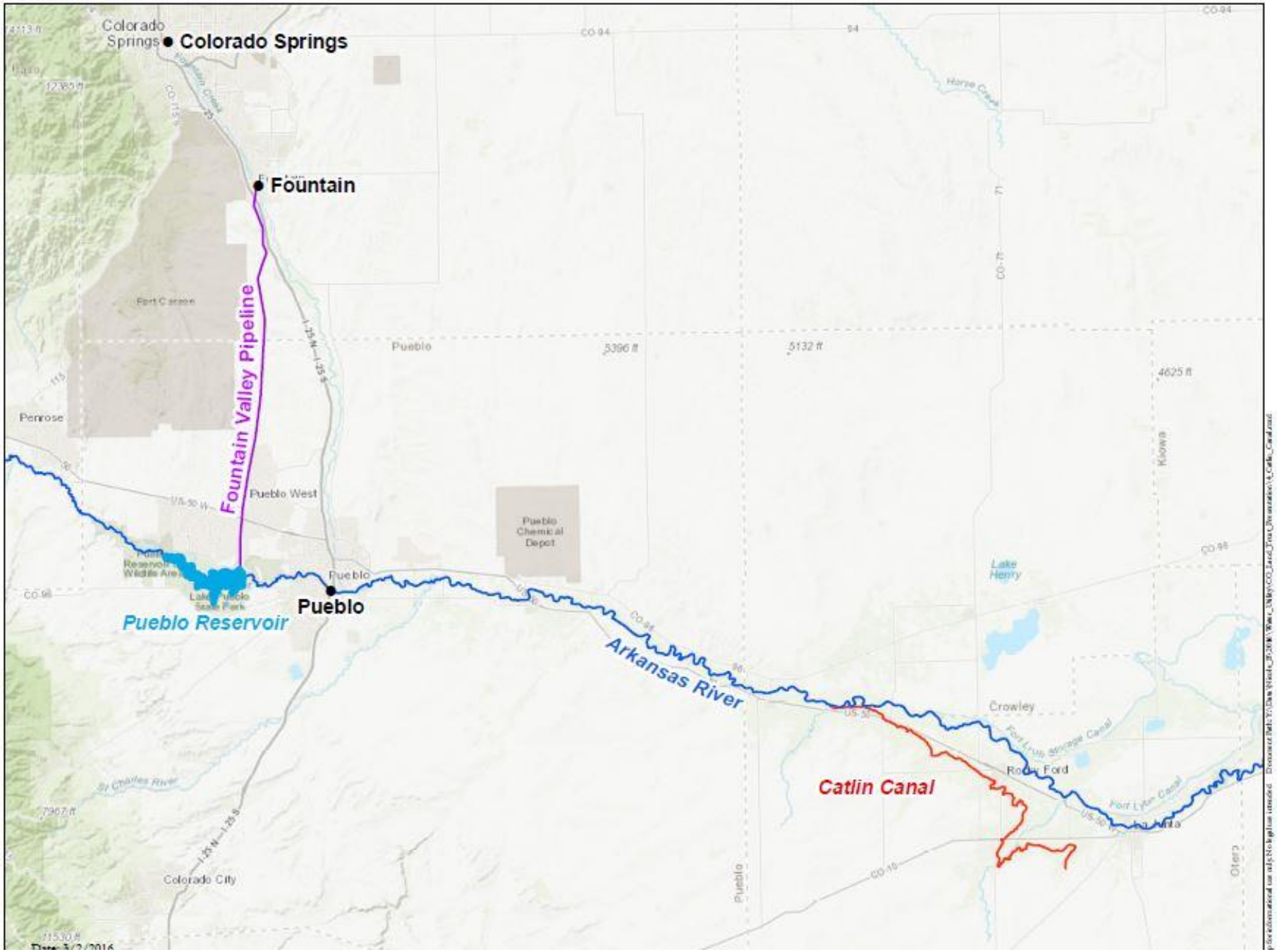
# Appendix A

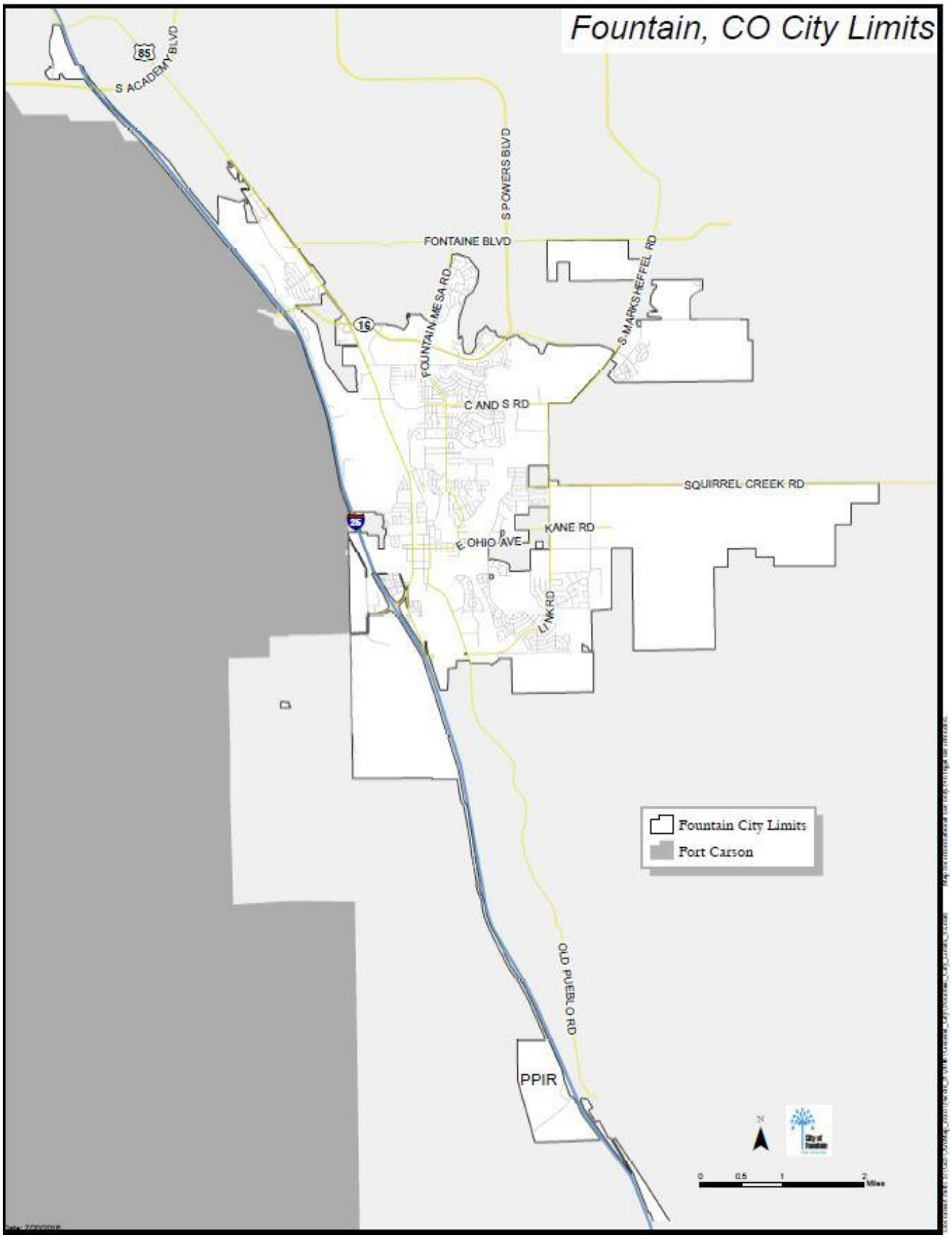
## Maps

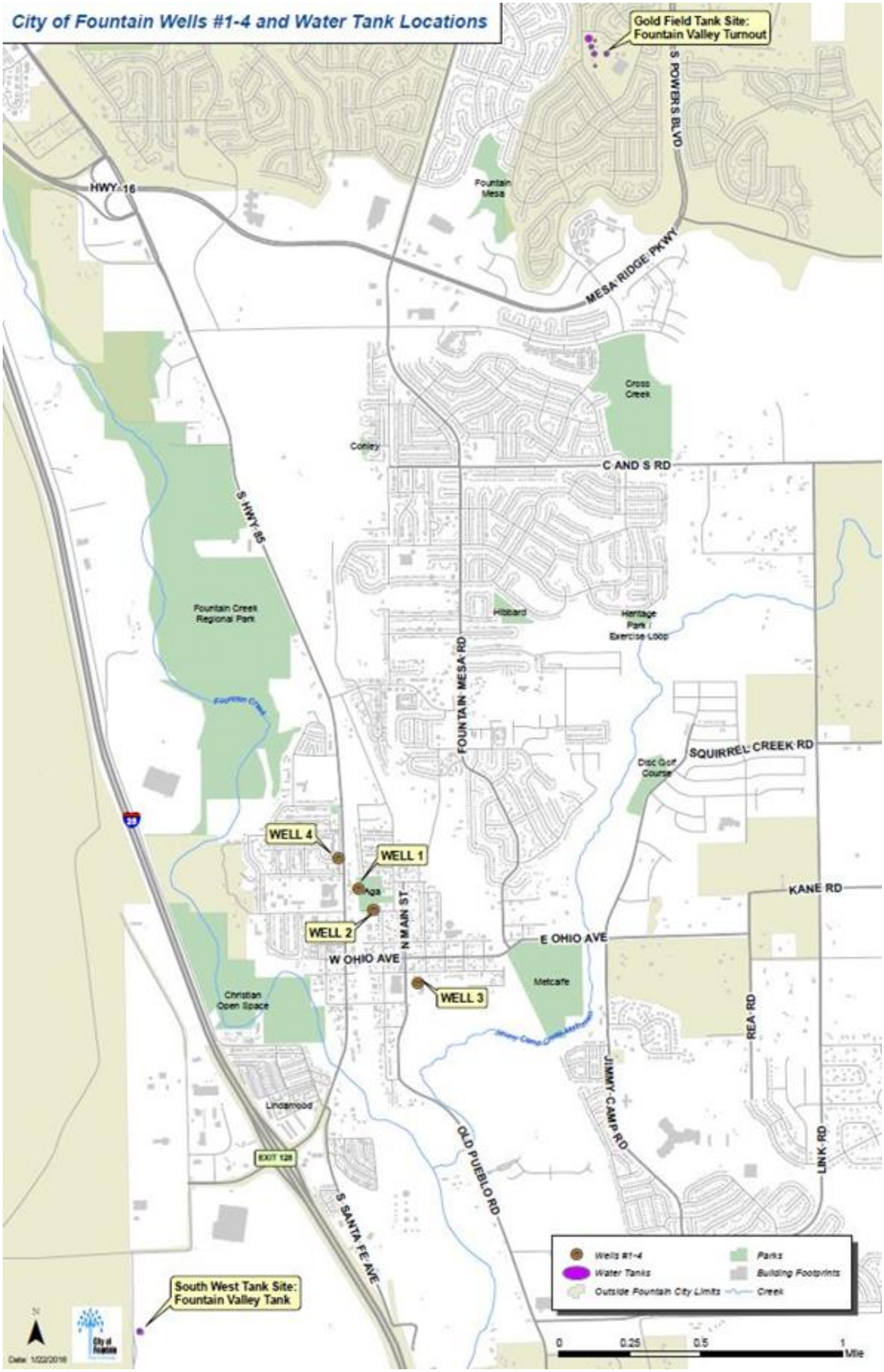

# City of Fountain: Xeriscape Gardens

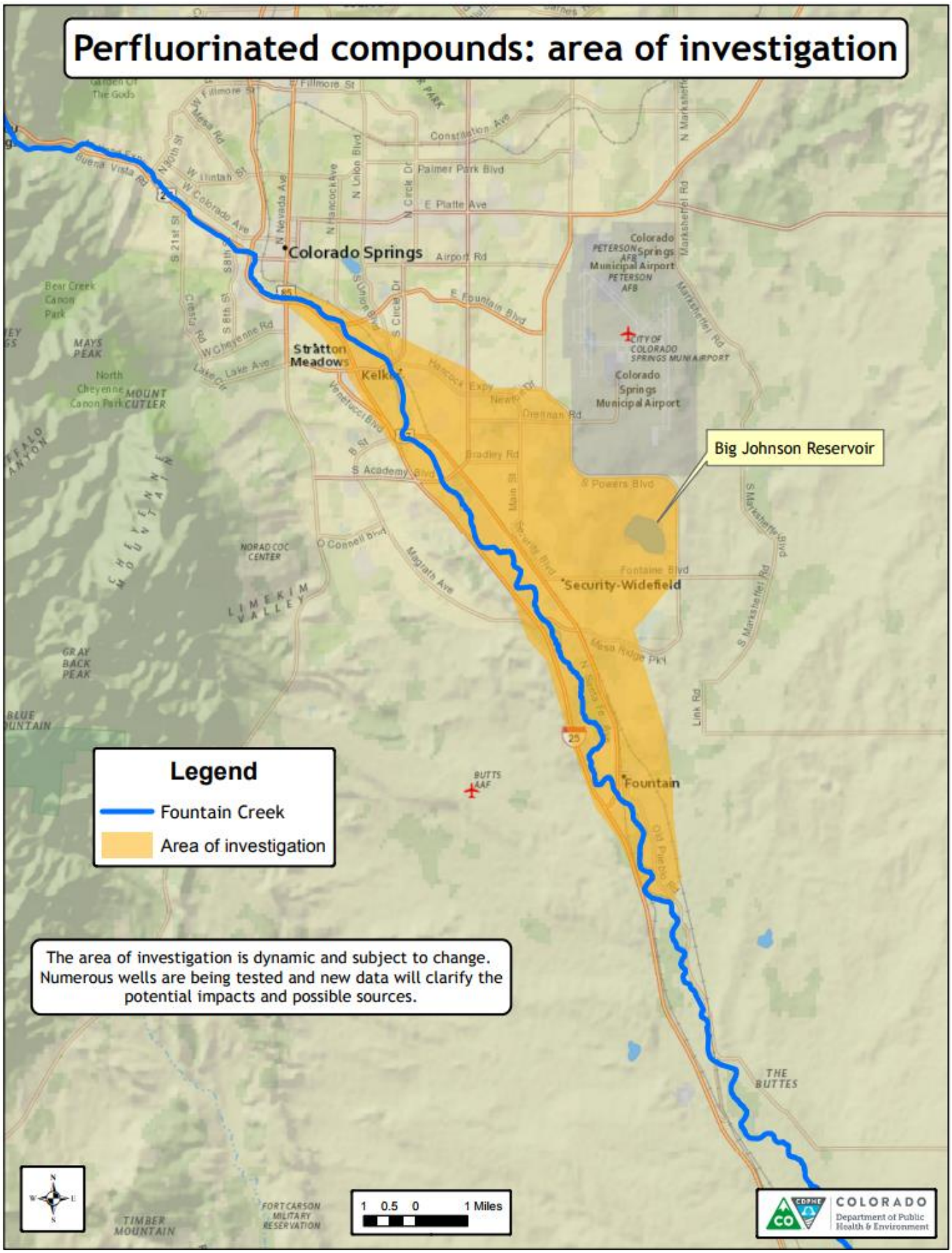
Map for informational purpose only. No legal use intended.


Vennetucci Well Sites
WellV-3
WellV-4
WellV-5
WellV-7
MAIN
POWERS
FONTAINE
MESA RIDGE
MARKSHEFFEL
C AND S
FOUNTAIN MESA
SQUIRREL CREEK
KANE
OHIO
SANTA FE
OLD PUEBLO
LINK
Southwest Tank Site
City of Fountain:
Water Overview
Well
Water Storage
Non-storage Water Buildings
Outside Fountain City Limits
Water Main
Booster
Cumberland Green
High
Interconnect
Little Ranches
Low
Security Water Main
Pressure Zone
Booster
Cumberland Green
Interconnect
Little Ranches
Mesa (High)
Valley (Low)
0
0.25
0.5
1
Mile


Colorado Springs
Colorado Springs
Fountain
Fountain Valley Pipeline
Pueblo
Penrose
Pueblo West
Pueblo Chemical Depot
Pueblo Reservoir
Pueblo
Arkansas River
Lake Henry
Crowley
Catlin Canal
Rocky Ford
Colorado City
5396 ft
5132 ft
4625 ft


Fountain, CO City Limits
S ACADEMY BLVD
85
S POWERS BLVD
FONTAINE BLVD
FOUNTAIN MESA RD
16
S MARKSHEFFEL RD
C AND S RD
SQUIRREL CREEK RD
25
KANE RD
E OHIO AVE
LINK RD
OLD PUEBLO RD
PPIR
Fountain City Limits
Fort Carson
N
0 0.5 1 2 Miles


City of Fountain Wells #1-4 and Water Tank Locations
Gold Field Tank Site: Fountain Valley Turnout
S POWERS BLVD
HWY 16
Fountain Mesa
MESA RIDGE PKWY
Cross Creek
Conley
C AND S RD
S HWY 85
Fountain Creek Regional Park
Hibbard
Heritage Park / Exercise Loop
FOUNTAIN MESA RD
SQUIRREL CREEK RD
Disc Golf Course
WELL 4
WELL 1
Aga
WELL 2
N MAIN ST
KANE RD
E OHIO AVE
W OHIO AVE
WELL 3
Metcalfe
Christian Open Space
REA RD
JIMMY CAMP RD
Lindamood
EXIT 128
OLD PUEBLO RD
LINK RD
S SANTA FE AVE
South West Tank Site: Fountain Valley Tank
Wells #1-4
Water Tanks
Outside Fountain City Limits
Parks
Building Footprints
Creek
0
0.25
0.5
1
Mile




Colorado Department of Public Health & the Environment. *Area of Investigation,* 2017. Accessed November 15, 2017. https://www.colorado.gov/pacific/cdphe/PFCs/maps-and-data


N

# Exhibit B – Irrigated Park and Open Space Areas

Feet

Map for informational purpose only. No legal use intended.

# Appendix B

## Water Rates, Fees and Schedules

## WATER TAP FEES & WATER RATES
## May 1, 2017 thru March 31, 2018

The City charges a one-time water tap fee to all contractors/builders, property owners or annexed entities (residential or commercial) wanting to tap into the City's water infrastructure system. This tap fee charge is based on the size of the meter to be used. Most residential users have a ¾" meter, which is considered the standard size. The chart listed below reflects the current water tap fee rates based on the size of meter installation:

| Water Tap Fees & Water Rates | | | |
|---|---|---|---|
| Tap Size | Infrastructure Fee | Water Acquisition | Total Connection Fee |
| ¾" | $10,824 | $6,500 | $17,324 |
| 1" | $19,279 | $11,577 | $30,856 |
| 1.5" | $42,530 | $25,539 | $68,070 |
| 2" | $47,433 | $28,483 | $75,916 |
| 3" | $110,819 | $66,545 | $177,364 |
| 4" | $193,740 | $116,341 | $310,081 |
| ¾" Each Unit Multifamily | $6,173 | $3,640 | $9,813 |
| **Above 4"** For larger than 4" water rates are to be via contract between user and City of Fountain. | | | |

The City has issued a water conservation incentive for ¾" metered residential lots reflecting ***City Ordinance No. 1626*** for the following lot sizes:

| Lowered Tap Fee Incentive | | | |
|---|---|---|---|
| Lot Size Square Footage | Water Acquisition Fee | Water Acquisition Fee with Conservation Incentive: 50% or Less Irrigated Area | Water Acquisition Fee with Conservation Incentive 30% or Less Irrigated Area |
| < 9,000 sq. ft. | $4,875 | $2,438 | $1,024 |
| 9,001 – 13,000 sq. ft. | $5,688 | $2,844 | $1,706 |
| Greater than 13,001 sq. ft. or larger | $6,500 | $3,250 | $1,950 |

The City's water rates are broken down into blocks based on the size of the tap at each building's location and based on the amount of water being used (in gallons), which is reflected below in each block section. The principle of usage is based on the more water used after the initial 1,500 gallons, is charged at a higher price for total water usage. This method or principle is based on the tier factor as a means of water conservation; residents who use less water receive a lower price on the gallons used below 1,500 per month. The higher the use of water, the higher the cost for water used. These water rates are based on ***City Ordinance No. 1692:***

| **Water Rates – ¾" Residential Tap** | | |
|---|---|---|
| Block 1 | 0 – 1,500 gallons | $36.57 minimum charge |
| Block 2 | 1,501 – 3,000 gallons | $5.87 per 1,000 gallons |
| Block 3 | 3,001 – 6,000 gallons | $6.08 per 1,000 gallons |
| Block 4 | 6,001 – 10,000 gallons | $7.43 per 1,000 gallons |
| Block 5 | 10,001 – 15,000 gallons | $8.20 per 1,000 gallons |
| Block 6 | 15,001 – 21,000 gallons | $9.32 per 1,000 gallons |
| Block 7 | ➢ 21,000 gallons | $10.35 per 1,000 gallons |
| **Water Rates – 3/4" Commercial Tap** | | |
| Block 1 | 0 – 3,000 gallons | $45.41 |
| Block 2 | 3,001 – 6,000 gallons | 6.08 per 1,000 gallons |
| Block 3 | 6,001 – 10,000 gallons | $7.43 per 1,000 gallons |
| Block 4 | 10,001 – 15,000 gallons | $8.20 per 1,000 gallons |
| Block 5 | 15,001 – 21,000 gallons | $9.32 per 1,000 gallons |
| Block 6 | ➢ 21,000 gallons | $10.35 per 1,000 gallons |

| **Greater than ¾" Tap Water Rate Block Volume Definitions (gallons)** | | | | | | |
|---|---|---|---|---|---|---|
| Tap Size | First Block<br><br>Minimum Charge | Second Block<br><br>$7.26 per 1k gallons | Third Block<br><br>$8.66 per 1k gallons | Fourth Block<br><br>$9.54 per 1k gallons | Fifth Block<br><br>$10.89 per 1k gallons | Sixth Block<br><br>$11.99 per 1k gallons |
| 1" | 0 – 6,000<br>$94.59 | 6,000 – 12,000 | 12,001 – 20,000 | 20,001 – 30,000 | 30,001 – 42,000 | >42,000 |
| 1.5" | 0 – 13,500<br>$210.87 | 13,501 – 27,000 | 27,001 – 45,000 | 45,001 – 67,500 | 67,501 – 94,500 | >94,500 |
| 2" | 0 – 24,000<br>$379.55 | 24,001 – 48,000 | 48,001 – 80,000 | 80,001 – 120,000 | 120,001 – 168,000 | >168,000 |
| 3" | 0 – 52,500<br>831.37 | 52-501 – 105,000 | 105,001 – 175,500 | 175,001 – 262,500 | 262,501 – 367,500 | >367,500 |
| 4" | 0 – 90,000<br>$1,418.74 | 90,001 – 180,000 | 180,001 – 300,000 | 300,001 – 450,000 | 450,001 – 630,000 | >630,000 |
| Above 4" For any tap larger than 4" the water rates are to be established by the contract between the user and the City of Fountain. | | | | | | |

# Fee Schedule

The following charges shall apply to all rate classes receiving electric, water or administrative services from Fountain Utilities.

After Hours Non-Emergency Service Charge $ 50.00

Customer Requested Meter Test
Certified Water Meter Test $ 100.00
Electric Meter Test $ 100.00

Customer Requested Water Meter Removal and Installation
Meter Removed $ 75.00
Meter Installed $ 75.00

**Deposits**

**A. Residential**

Initial Deposits
Electric $ 150.00
Water $ 50.00
Waste Water $ 50.00

**Additional Deposits**

An additional deposit at a level of double the initial deposit will be required if the credit evaluation received by Utilities from its third party credit vendor recommends a double deposit.

**Supplemental Deposits**

If required (as provided in Customer Service Regulations), an amount equal to an actual 90 days' bills of the customer within the immediately preceding calendar quarter, or an amount based on an estimate of 90 days' bills, whichever is greater. If the customer does not have 90 day history with Utilities, a minimum supplemental deposit of $350 is required.

**B. Non-Residential**

Initial Deposits
An amount equal to an estimated ninety days' bills for such customer or $300, whichever is greater.

Additional Deposits
The dollar amount equal to the customer's highest actual consumption for 90 consecutive days in the immediately preceding six months.
Supplemental Deposits

If required (as provided in Customer Service Regulations), an amount equal to an actual 90 days' bills of such customer within the immediately preceding calendar quarter, or an amount based on an estimate of 90 days' bills, whichever is greater.

Diversion Fee $500.00+ repair, administrative & investigative costs, and unbilled consumption

Water Inactive Account Customer Charge, per month $ 12.50

Missed Appointment Fee (24 hour notice not given) $ 35.00

Lien

Electronic Lien Processing $ 2.00
Per Page $ 11.00

Payment

Dishonored Payment $ 40.00
Late Payment $ 10.00

Collection Fee 20% of bill

Reconnection

Regular Hours $ 40.00
After Hours $ 95.00

Trip Fee $ 35.00

Water Hydrant Deposit and Fees – Inside City Use Only

Hydrant Water Usage and Meter Deposit $ 1,300.00
Per Day Service Charge on the Meter $ 10.00
For the First 3,000 Gallons per 30 day period $ 80.00
Each Additional 1,000 Gallons $ 7.00
Non Returned Water Meter Fee (10 business days) $ 1,500.00

# Appendix C

## Tables

# TABLE D: IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

| Water Efficiency Activities for Screening | State Statute Requirement | Identification | | Qualitative Screening | | | | | Carry to Evaluation | Reason for Elimination |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Potential Activity | Targeted Customer Category | *Public Acceptance* | *Staff & Resource Feasibility* | *Cost Effective* | *Likelihood of Success* | Notes | | |
| **Metering (BP1)** | V, VII | | | | | | | | | |
| Automatic Meter Reading Installation and Operations | | E | Res, CII, Muni, | X | X | X | X | | | |
| Submetering for Large Users (Indoor and Outdoor) | | E | CII | X | X | X | X | | | |
| Meter Testing and Replacement | | E | Res, CII, Muni, | X | X | X | X | | | |
| Meter Upgrades | | E | Res, CII, Muni, | X | X | X | X | | | |
| Identify Unmetered/Unbilled Treated Water Uses | | E | All | X | X | X | X | | | |
| **Data Collection - Monitoring and Verification (BP2)** | | | | | | | | | | |
| Frequency of Meter Reading | | E | All | X | X | X | X | | | |
| Tracking Water Use by Customer Type | | E | All | X | X | X | X | | | |
| Upgrade Billing System to Track Use by Customer Types | | E | All | X | X | X | X | | | |
| Tracking Water Use for Large Customers | | E | CII | X | X | X | X | | | |
| Area of Irrigated Lands in Service Area (e.g. acres) | | E | All | X | X | X | X | | | |
| **Water Use Efficiency Oriented Rates & Tap Fees (BP1)** | VII, VIII | | | | | | | | | |
| Volumetric Billing | | E | All | X | X | X | X | | | |
| Water Rate Adjustments | | E | All | X | X | X | X | | | |
| Frequency of Billing | | E | All | X | X | X | X | | | |
| Inclining/Tiered Rates | | E | All | X | X | X | X | | | |
| Tap Fees with Water Use Efficiency Incentives | | E | Res | X | X | X | X | | | |
| **System Water Loss Management & Control (BP3)** | V | | | | | | | | | |
| System Wide Water Audits | | E | All | X | X | X | X | | | |
| Control of Apparent Losses (with Metering) | | P | All | X | | | X | | | Staffing feasibility |
| Leak Detection and Repair | | E | All | X | X | X | X | | | |
| Water Line Replacement Program | | E | All | X | X | X | X | | | |
| **Planning (BP2)** | | | | | | | | | | |
| Master Plans/Water Supply Plans | | E | All | X | X | X | X | | | |
| Capital Improvement Plans | | E | All | X | X | X | X | | | |
| **Staff (BP4)** | | | | | | | | | | |

# Table E: Identification and Screening of Targeted Technical Assistance Incentives

| Water Efficiency Activities for Screening | State Statute Requirement | Identification | | | | | Qualitative Screening | | | | | Carry to Evaluation | Reason for Elimination |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Potential Activity | SWSI Framework Levels: Level 1 Municipal Uses | Level 2 Customers with the Largest Water Use | Level 3 Customer Type(s) in Service Area | Targeted Customer Category | Public Acceptance | Staff and Resource Feasibility | Cost effective | Likelihood of Success | Notes on Additional Pros/Cons to Consider | | |
| **Installation of Water Efficient Fixtures and** | I | | | | | | | | | | | | |
| Indoor Assessments | | P | | X | X | CII, Res | X | | X | X | | X | |
| Toilet Retrofits | | E | X | X | X | CII, Res | X | X | X | X | | | |
| Urinal Retrofits | | P | X | X | X | CII | X | X | | X | | | Not a significant amount of savings due to low participation |
| Showerhead Retrofits | | E | X | X | X | Res, CII | X | X | X | X | | | |
| Faucet Retrofits (e.g. aerator installation) | | E | X | X | X | CII, Res | X | X | X | X | | | |
| Water Efficient Washing Machines | | E | | X | X | CII, Res | X | X | X | X | | | |
| Water Efficient Dishwashers | | P | X | X | X | CII, Res | X | X | X | X | | X | |
| **Low Water Use Landscapes** | II | | | | | | | | | | | | |
| Drought Resistant Vegetation Demonstration Garden | | E/P | X | X | X | CII, Res | X | X | X | | | X | |
| Removal of Phreatophytes | | E | X | X | X | CII, Res | | | | | | | |
| Irrigation Assessments | | P | X | X | X | CII, Res | X | | X | X | | X | |
| Outdoor Irrigation Smart Controllers | | P | X | X | X | CII, Res | X | X | X | X | | X | |
| Residential Outdoor Meter Installations | | P | | X | | CII, Res | | | X | | | | Staffing and resource feasability |
| Low Water Use Landscape Demonstration Gardens | | E/P | X | X | X | CII, Res, Muni | X | | X | | | X | |
| Irrigation Equipment Retrofits | | P | | X | X | CII, Res | X | X | X | | | X | Feasible to campaign and provide demo only, will reevaluate following community interest survey |
| **Water- Efficient Industrial & Commercial** | III | | | | | | | | | | | | |
| Specialized Nonresidential Surveys, Audits and Equipment Efficiency Improvements | | P | | X | | CII | X | | X | | | | Staffing and resource feasibility |
| Commercial Indoor Fixture and Appliance Rebates/Retrofits | | E | | X | | CII | X | X | X | | | | |
| Restaurant equipment | | P | | X | | CII | X | | | | | | Staff and resource feasibility, small audience |
| **Incentives** | X | | | | | | | | | | | | |
| Toilet Rebates | | E | | X | X | CII, Res | X | X | X | X | | | |
| Urinal Rebates | | P | | X | | CII | | X | X | | | | Not a significant savings opportunity due to low participation |
| Showerhead Exchange | | E | | X | X | CII, Res | X | X | X | X | | | |
| Water Efficient Faucet or Aerator Rebates | | E | | X | X | CII, Res | X | X | X | | | | Will be provided as a give away for high bill concerns, not a rebate |
| Water Efficient Washing Machine Rebates | | E | | X | X | CII, Res | X | X | X | X | | | |
| Water Efficient Dishwasher Rebates | | P | | X | X | CII, Res | X | X | X | X | | X | |
| Efficient Irrigation Equipment Rebates | | P | | X | X | CII, Res | X | | X | X | | | Irrigation rebates should not be awarded without first completing an outdoor water use assessment if property has prexisting system. This will be reevaluated once outdoor assessments are in place. |
| Landscape Water Budgets Information and Customer Feedback | | P | | X | X | CII, Res | X | | X | X | | | This program will be far more successful in regards to participation and cost/benefit if offered alongside low water landscape rebates. It will be reevaluated if landscape rebates become available. |
| Turf Replacement Programs/Xeriscape Incentives | | P | | X | X | CII, Res | X | | X | X | | | Xeriscape incentives will require pre and post inspections, precise guidelines and approved landscape design. It is not feasible at this time. |
| Give-aways | | E | | | | Res | X | X | X | X | | | |

# Table F: Identification & Screening of Ordinances & Regulations

| Water Efficiency Activities for Screening | State Statute Requirement | Identification | | | | | Qualitative Screening | | | | | | Carry to Evaluation | Reason for Elimination |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Potential Activity | SWSI Framework Levels: Level 1: Customer Type(s) within the Existing | Level 2: New Development | Level 3: Point of Sales on Existing | Targeted Customer Category | Community Acceptance | Staff & Resource Feasibility | Cost Effective | Likelihood of Success | Notes | | | |
| **General Water Use Regulations** | IX | | | | | | | | | | | | | |
| Water Waste Ordinance (BP 5) | | P | X | | | All | X | | X | | | X | | |
| Time of Day Watering Restriction | | E | X | | | All | | | X | | | | | |
| Day of Week Watering Restriction | | E | X | | | All | | | X | | | | | |
| Water Overspray Limitations | | P | X | | | All | X | | X | | | X | | |
| **Landscape Design/Installation Rules and Regulations** | IX | | | | | | | | | | | | | |
| Rules and Regulations for Landscape Design/Installation (BP 9) | | E | | X | | Res, CII | | X | X | X | | | | |
| Landscaper Training and Certification (BP 8) | | P | | X | | Res, CII | X | | | X | | | | This will not be cost effective until additional landscape requirements are in place. This will be reevaluated following success of landscape requirements |
| Irrigation System Installer Training and Certification (BP 8) | | P | | X | | Res, CII | X | | | X | | | | This will not be relevant until irrigation requirements, outdoor assessments an rebates are in place and evaluated |
| Soil Amendment Requirements (BP 9) | | P | | X | | Res, CII | | X | X | X | | | | Will be reevaluated once standard landscape requirements are improved. |
| Turf Restrictions (BP 9) | | E | X | X | | Res,CII | | | X | | | | | |
| Irrigation Equipment Requirements | | P | | X | | Res, CII | | X | X | X | | X | | |
| Irrigation Efficiency Regulations (BP 10) | | P | X | | | Res, CII | X | | X | X | | X | | |
| Outdoor Green Building Construction (BP 8,9) | | P | | X | | Res, CII | | | | | | | | This initiative should begin following adaptation and assessment of improved irrigation requirements, outdoor assessments and evaluation of these programs. This will be reevaluated at that time. |
| **Indoor and Commercial Regulations** | IX | | | | | | | | | | | | | |
| High Efficiency Fixture and Appliance Replacement (BP 12) | | P | X | | | Res, CII | X | X | X | X | | | | Staff feasibility |
| Commercial Cooling and Process Water Requirements (BP 14) | | P | X | | | CII | X | | | X | | | | Staff and resource feasibility |
| Green Building Construction (BP 12) | | P | | X | | | X | | X | | | | | Staff and resource feasibility |
| Indoor Plumbing Requirements (BP 12) | | E | | X | | All | X | X | X | X | | | | |
| City Facility Requirements (BP 12) | | E | X | | | Muni | X | X | X | X | | | | |
| Indoor Residential Audits (BP 13) | | P | X | | | Res, CII | X | | | | | X | | |
| Indoor Commercial Water Assessments (BP 14) | | P | X | | | Res, CII | | | | | | X | | |
| Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.) | | P | X | | | CII | | | | | | | | Staff and resource feasibility |

# Table G: Identification & Screening of Education Activities

| Water Efficiency Activities for Screening | State Statute Requirement | Identification | | | | | Qualitative Screening | | | | | Carry to Evaluation | Reason for Elimination |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing/ Potential Activity | SWSI Framework Levels: Level 1 One-Way | Level 2 One-Way with Feedback | Level 3 Two-way communication | Targeted Customer Category | *Community Acceptance* | *Staff/Resource Feasibility* | *Cost Effective* | *Likelihood of Success* | Notes on Additional Pros/Cons to Consider | | |
| **Customer Education (BP6)** | VI | | | | | | | | | | | | |
| Bill Stuffers | | E | X | | | All | X | X | X | X | | | |
| Newsletter | | E | X | | | All | X | X | X | X | | | |
| Newspaper Articles | | E | X | | | All | X | X | X | X | | | |
| Mass Mailings | | P | X | | | Res, CII | X | X | X | X | | X | |
| Web Pages | | E | | X | | All | X | X | X | X | | | |
| Water Fairs | | P | | | X | Res, CII | X | | | | | | Staff/resource feasibility |
| K-12 Teacher and Classroom Education Programs | | E | | | X | CII | X | X | X | | | | |
| Message Development/Campaign | | E | | X | | Res, CII | X | X | X | | | | |
| Interactive Websites | | E | | X | | Res, CII | X | X | X | | | | |
| Social Networking (e.g Facebook) | | E | | X | | Res, CII | X | X | X | | | | |
| Customer Surveys | | P | | X | | Res, CII | X | X | X | | | X | |
| **Technical Assistance** | VI | | | | | | | | | | | | |
| Customer Water Use Workshops (Water Returns) | | E | | | X | Res, CII | **X** | | **X** | | | | |
| Landscape Design and Maintenance Workshops | | E | | | X | Res, CII | **X** | | **X** | **X** | Must partner with local landscaper | | |
| Xeriscape Demonstration Garden | | E | X | | X | Res, CII | **X** | | **X** | | Requires dedicated volunteers to maintain | | |
| Water Conservation Expert Available | | E | | | X | All | **X** | **X** | **X** | **X** | | | |

# Table K: Selection of Monitoring Demand Data for Monitoring Plan

| Monitoring Data | Annual | Monthly | Entity/Staff Responsible for Data Collection and Evaluation | Schedule/Timing of Monitoring | Comments |
|---|---|---|---|---|---|
| **Total Water Use** | | | | | |
| Total treated water produced (metered at WTP discharge) | X | | Utilities Analyst; Conservation Mgr | First quarter of the year | |
| Total treated water delivered (sum of customer meters) | **X** | | Utilities Analyst; Conservation Mgr | First quarter of the year | |
| Raw non-potable deliveries | X | X | Watre Foreman; Conservation Mgr | First quarter of the year | |
| Per capita water use | X | | Utilities Analyst; Conservation Mgr | First quarter of the year | Calculated based on total treated water deliveries and estimated population |
| Indoor and outdoor treated water deliveries | | X | Utilities Analyst; Conservation Mgr | First quarter of the year | Indoor calculated based on winter month average treated deliveries |
| Treated water peak day produced | X | | Water Foreman; Conservation Mgr | First quarter of the year | |
| Raw water peak day produced/delivered | | | Water Foreman; Conservation Mgr | First quarter of the year | |
| Non-revenue water | **X** | | Water Foreman; Conservation Mgr | First quarter of the year | |
| **Water Use by Customer Type** | | | | | |
| Treated water delivered | | **X** | Utilities Analyst; Conservation Mgr | Completed first quarter of following year | |
| Residential per capita water use | X | | Utilities Analyst; Conservation Mgr | Completed first quarter of following year | Calculated based on number of residential accounts and corressponding total annual treated water delivery. |
| **Other Demand Related Data** | | | | | |
| Irrigated landscape (By acre foot) | X | | GIS Department; Conservation Mgr | Collection is ongoing, evaluation to occur during first quarter of the following year. | Calculations based on total irrigaiton land within the service area. |
| Population | X | | Conservation Mgr | Completed first quarter of following year | Data provided by ESRI |
| New taps | X | | Utilities Analyst; Conservation Mgr | Completed first quarter of following year | |
| Lowered Tap Fee Incentive Participants | X | | Deputy City Clerk; Conservation Mgr | Completed first quarter of following year | |

# Appendix D

## Public Review, Comment and Approval

**Bill Insert: Front**


**Bill Insert: Back**

## Water Efficiency Plan Open for Public Comment

The City of Fountain has updated its Water Efficiency Plan. This document details a seven-year strategic plan, including enhanced programming in an effort to promote water efficiency throughout the Fountain community.

To view the draft plan and provide feedback, please visit FountainColorado.org or attend an Open House event located at the Fountain Library (230 South Main Street):

**Thursday, February 15, 2018** **5:00pm - 7:00pm** **or** **Wednesday, March 14, 2018** **4:00pm - 7:00pm**

The draft plan will be available for public comment beginning February 14, 2018 through April 14, 2018. Please submit comments to conserve@fountainutilities.org, or in writing to 101 North Main Street, Fountain, CO 80817.

**Ad in Fountain Valley Newspaper**

## Water Efficiency Plan
## Open for Public Comment

The City of Fountain has updated its Water Efficiency Plan. This document details a seven-year strategic plan, including enhanced programming in an effort to promote water efficiency throughout the Fountain community.

To view the draft plan and provide feedback, please visit FountainColorado.org or attend an Open House event located at the Fountain Library (230 South Main Street):

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Please submit comments to conserve@fountainutilities.org, or in writing to 101 North Main Street, Fountain, CO 80817.

**Proof of Publication**

THE EL PASO COUNTY ADVERTISER AND NEWS,
FOUNTAIN, COLORADO 80817
STATE OF COLORADO

ss.

COUNTY OF EL PASO

I, Karen M. Johnson, do solemnly swear that I am General Manager of the El Paso County Advertiser and News, that the same is a weekly newspaper printed, in whole or in part, and published in the County of El Paso, state of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of El Paso for a period of more than 52 weeks next prior to the first publication of the annexed notice and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That copies of each number of said paper in which said notice and list were published were delivered by carriers or transmitted by mail to each of the subscribers of said paper for a period of **1** consecutive insertions, once each week, and on the same day of each week; and that first publication of said notice was in the issue of said newspaper dated **Feb. 7**, A.D. **2018** and that the last publication of said notice was in the issue of said newspaper dated **Feb. 7**, A.D. **2018**.

Karen M. Johnson
General Manager

Subscribed and sworn to before me, a notary public in and for the County of El Paso, State of Colorado, this **7th** day of **Feb.** A.D. **2018.**

Marianne McBride
Notary Public

MARIANNE MCBRIDE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084034113
MY COMMISSION EXPIRES SEPTEMBER 30, 2020

THE EL PASO COUNTY ADVERTISER AND NEWS,
FOUNTAIN, COLORADO 80817
STATE OF COLORADO

ss.

COUNTY OF EL PASO

I, Karen M. Johnson, do solemnly swear that I am General Manager of the El Paso County Advertiser and News, that the same is a weekly newspaper printed, in whole or in part, and published in the County of El Paso, state of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of El Paso for a period of more than 52 weeks next prior to the first publication of the annexed notice and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That copies of each number of said paper in which said notice and list were published were delivered by carriers or transmitted by mail to each of the subscribers of said paper for a period of **1** consecutive insertions, once each week, and on the same day of each week; and that first publication of said notice was in the issue of said newspaper dated **March 7**, A.D. **2018** and that the last publication of said notice was in the issue of said newspaper dated **March. 7**, A.D. **2018**.

Karen M. Johnson
General Manager

Subscribed and sworn to before me, a notary public in and for the County of El Paso, State of Colorado, this **7th** day of **March** A.D. **2018.**

Marianne McBride
Notary Public

MARIANNE MCBRIDE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20084034113
MY COMMISSION EXPIRES SEPTEMBER 30, 2020

**RESOLUTON 18-024**

**A RESOLUTION AUTHORIZING ADOPTION OF THE 2018 WATER EFFICIENCY PLAN.**

**WHEREAS**, the City of Fountain, Colorado, through its Electric, Water and Wastewater utility Enterprise (the "Utility Enterprise") adopted its initial Water Efficiency Plan on August 30, 2001, in accordance with the Water Conservation Act of 1991, and the plan was last updated in 2009; and

**WHEREAS**, the 2006 Water Master Plan confirmed the importance of water conservation to the City's future and identified the need to update the Water Efficiency Plan to achieve ongoing and additional water savings; and

**WHEREAS**, the City provided public notices and received public comment on the Water Efficiency Plan for sixty days; and

**WHEREAS**, the City and its utility enterprise has received and considered comments received by the public before submitting a final Water Efficiency Plan to the City Council for adoption; and

**WHEREAS**, the City Council of the City of Fountain desires to approve the 2018 Water Efficiency Plan.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Fountain, Colorado, as follows:

**1.** Approves and adopts the 2018 Water Efficiency Plan.

Done this 8th day of May 2018.

Gabriel P. Ortega, Mayor

ATTEST:

Silvia Huffman, City Clerk

CITY OF FOUNTAIN EL PASO SEAL COUNTY COLORADO

# Appendix E

## 2006 Water Master Plan