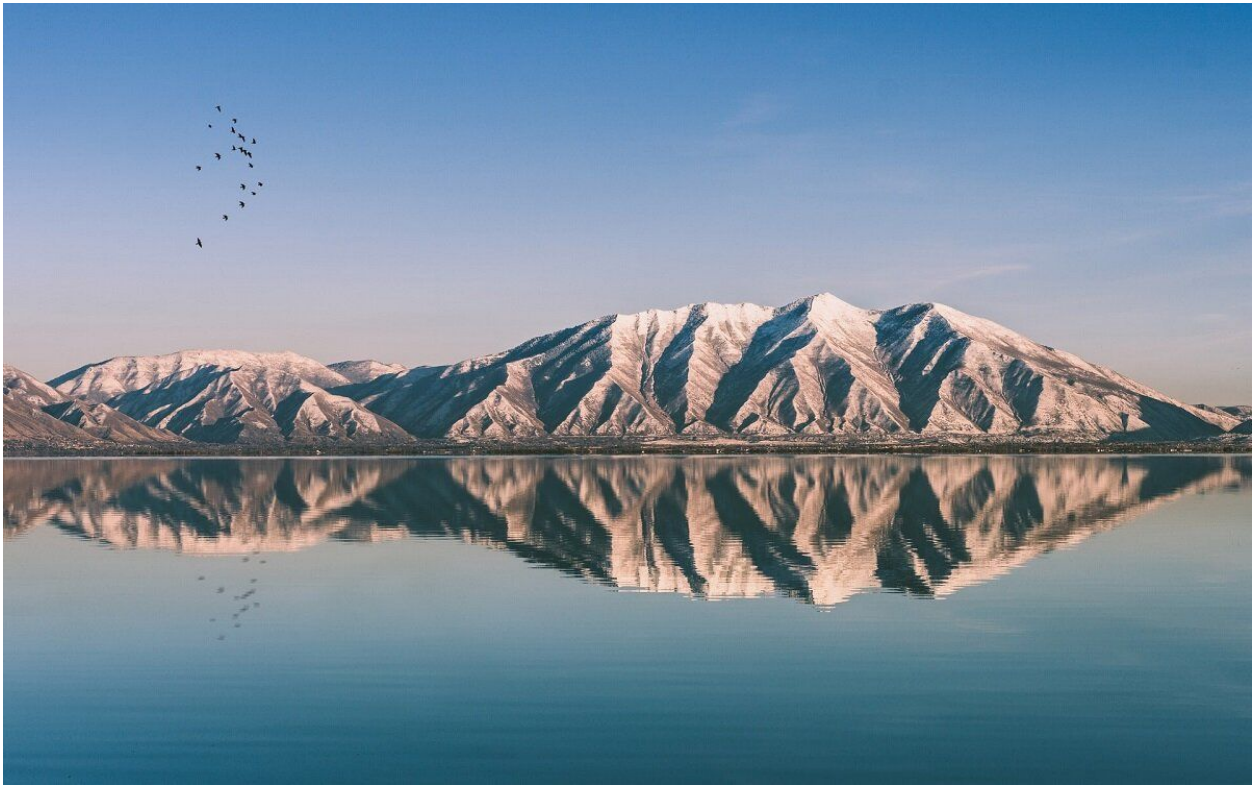




# 2019 WATER CONSERVATION PLAN



**WATER CONSERVATION PLAN**

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## Chapter 1 - Introduction

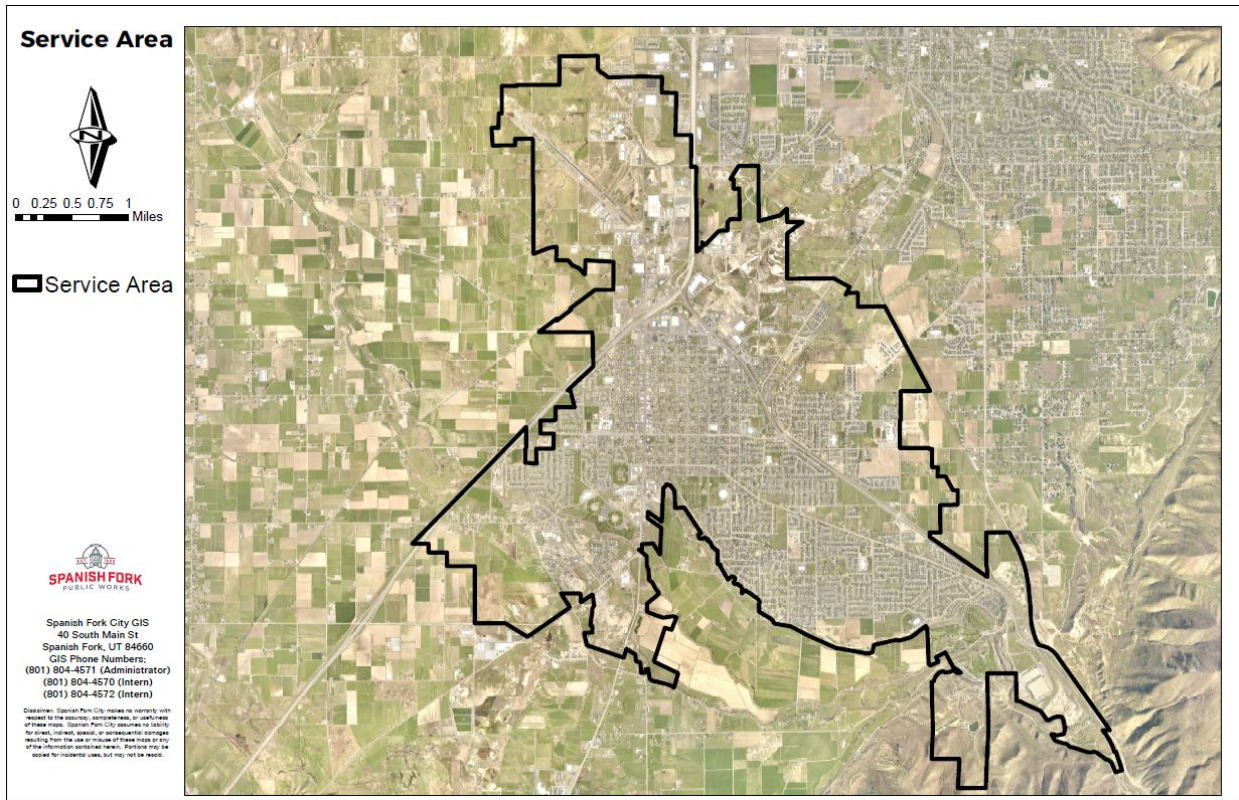
In response to projected future growth along the Wasatch Front, citizens and leaders of Spanish Fork City are concerned about the future water supply in the region. The Utah State Legislature has passed legislation requiring public water suppliers to prepare a Water Conservation Plan and to update the plan periodically. The City prepared the original water conservation plan in 2004. This report is the update of the City's water conservation plan.

This report assesses the water conservation alternatives available to the City, sets goals to conserve water, and identifies existing and proposed water conservation measures to be implemented by the City.

This Plan is submitted to the Division of Water Resources under the requirements of [Section 73-10-32 of the Utah Code](#).

## Chapter 2 - Water System Profile

Spanish Fork City, located in the south central portion of Utah County, has an estimated [population of about 43,330 people \(2019\)](#) according to the Mountainland Association of Governments and the 2010 U.S. Census. Providing water to meet the needs of its citizens has always been a top priority of City leaders and planners. A pressurized irrigation system was installed in 2002 to conserve drinking water quality and to provide customers with water at a lower cost. Currently, the Spanish Fork Municipal Water System serves the entire City with some additional homes on the periphery of the City (Figure 1).



**Figure 1**  
**Map of Current Service Area**

The distribution of City connections is shown in Table 1.

**Table 1**  
**Current Water System Connections**

<b>Connection Type</b>	<b>Drinking Water System</b>	<b>Pressurized Irrigation System</b>
Residential/Domestic	10,995	9,020
Commercial	466	392
Industrial	47	
Institutional	153	
Unmetered	6	
<b>TOTAL</b>	<b>11,667</b>	<b>9,412</b>

Spanish Fork City residents and their leaders place a high value on open space. Spanish Fork City presently has about 347 acres of open space in parks, the golf course, the cemetery, stormwater detention/retention basins and sports fields.<sup>1</sup> Open space around schools and churches was calculated as 184 and 112, respectively; this was found by taking the total boundary of schools and churches minus the buildings. Adding together open space for parks, cemetery, stormwater detention/retention, sports fields, schools and churches, the total acreage of open grassed areas is approximately 643 acres.

Spanish Fork City is presently receiving an above-average portion of the county's residential, commercial, and industrial growth. This growth is causing changes in the way the land within the City limits is being utilized and eventually will strain the ability of the present water supply and delivery system to meet demands. Through careful planning and efficient utilization of available water supplies, these increased needs can and will be met.

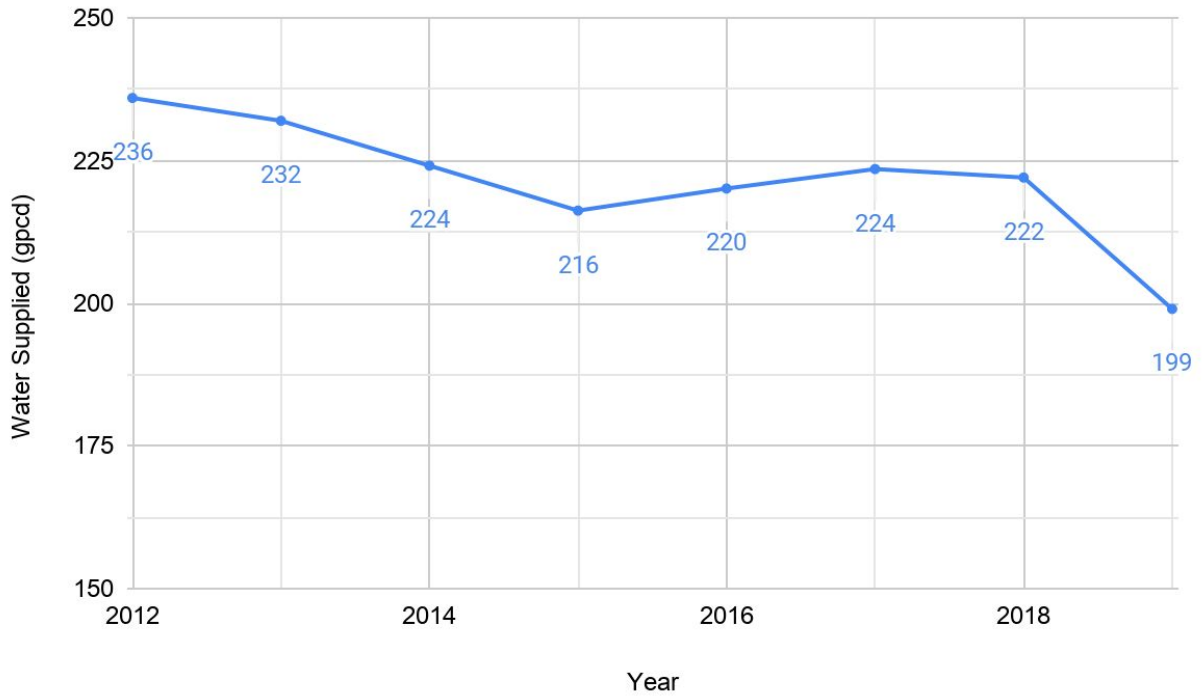
## **2.01 Supply - Inventory of Water Resources**

Prior to 2002, Spanish Fork City was withdrawing approximately 9,000 acre-feet of water annually from four springs located in the Spanish Fork River drainage and wells located throughout the City. This supplied the total water required to meet demands on the drinking water system which at the time provided for both indoor and outdoor water uses. Spanish Fork City installed a city-wide pressurized irrigation system in 2002 which reduced the demand on the drinking water supply. Since 2009, a downward trend in water supplied can be observed.

Figure 2 shows that water supplied (gallons per capita per day) has trended downward over the past few years. This evidence should be seen as a success of current water conservation measures and reinforces the importance of the effort to continue existing conservation measures while implementing additional practices to reach conservation goals.

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<sup>1</sup> Found by subtracting the area of asphalt and buildings from the total parks area, which total area is 465 acres.



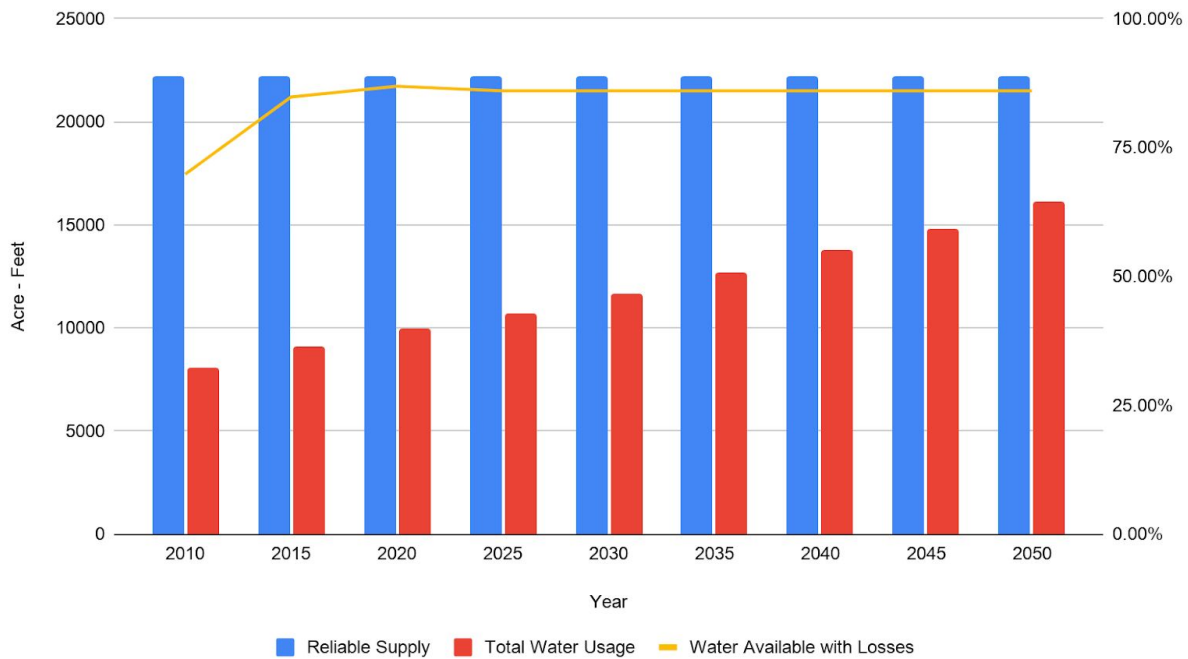
**Figure 2**  
**Water Supplied (gpcpd), 2012–2019**

The City holds shares of stock in several local canal companies. The City also holds several water rights in the Spanish Fork River, Dry Creek and in underground wells. Table 2 summarizes the City’s water sources with usage and capacity.

**Table 2  
Existing Water Sources Summary**

<b>Drinking Water System</b>			
<b>Source</b>	<b>2018 Water Supplied (gpm)</b> Figured with 365 days	<b>2018 Water Supplied (acre-feet)</b>	<b>Source Supply Capacity (gpm)</b>
Crab Creek	808	1,304	1,400
Cold Springs	637	1028	4,000
Malcomb Springs	1,072	1,730	2,500
Canyon Elementary Well 1700 East (Part Time)	23	37	1,700
Canyon Road 2550 Well	0	0	1,000
<b>DW SUBTOTAL</b>	<b>2,540</b>	<b>4,099</b>	<b>10,600</b>
<b>Pressurized Irrigation System</b>			
<b>Source</b>	<b>2018 Water Supplied (gpm)</b> Figured with 194 days	<b>2018 Water Supplied (acre-feet)</b>	<b>Source Supply Capacity (gpm)</b>
Ensign-Bickford Well	261	224	450
Cemetery #1 Well	383	329	500
Cemetery #2 Well	199	171	1,000
Canyon Road 2550 Well	701	601	1,000
Canyon Elementary Well 1700 East	1286	1103	1,700
Memorial Well	320	275	1,000
Fairgrounds Shop Well	42	36	1,300
2550 East Reservoir	53	45	500
Darger Springs	500	428	1,000
Golf Course Pond	1982	1,699	4,000
Lower Cold Springs	1697	1,455	2,200
<b>PI SUBTOTAL</b>	<b>7,424</b>	<b>6,366</b>	<b>14,650</b>
<b>TOTAL</b>	<b>9,964</b>	<b>10,465</b>	<b>22,550</b>

Figure 3 shows the reliable supply of water sources up until 2050, along with current water use projections and a projection of efficient use. Usage does not exceed supply according to these projections.



**Figure 3**  
**Comparison Graph of Supply and Usage**

**2.02 Future Water Source**

Future water sources are planned that will continue to provide for demand. Future increases in water demand are expected to be the result of development, redevelopment, and population growth rather than increased per capita consumption. According to the Mountainland Association of Governments, Spanish Fork City is projected to reach a population of 72,300 by the year 2050. Future per capita water use is expected to be similar to recent years and continued conservation efforts will reduce per capita water demands. Outdoor water demands tend to follow precipitation patterns from year to year, with more outdoor water use during dry years. It is assumed that water for future water use will come from the transfer of irrigation water to municipal use as farmland is developed.

The Dry Creek Reclamation Pump House may be used to reclaim wastewater from the treatment plant to be used as a secondary source or groundwater/aquifer recharge and would cost approximately \$1.5 million. This



will depend on the Wastewater Treatment Plant meeting current EPA rules for MCLs.

## **Chapter 3 - Water Measurement and Billing**

### **3.01 Measurement Methods and Practices**

Spanish Fork City currently meters water use at all known connections and records data on a monthly basis. A modern meter reading system is being implemented that is capable of monitoring usage at a 1 gallon resolution. With such accuracy, alarms can be enabled to better alert consumers of spontaneous leaks before they reach a critical point in both the drinking water and pressurized irrigation system.

Spanish Fork City has a current program to replace and/or upsize old or undersized water pipelines along streets that need to be reconstructed. The City also replaces meters and laterals that are found to be leaking or defective. These projects are implemented as the City budget allows. The city currently maintains master plans for both water systems; these documents are updated and maintained on a regular basis to help alleviate deficiencies and inefficiencies.

Spanish Fork City maintains two independent water systems, a drinking water and secondary water, or pressurized irrigation, system. Both systems have been metered since 2001. All of our five drinking water and eleven secondary water sources are metered as well. The 11,661 drinking water and 9,020 pressurized irrigation customer connections are all metered. Sources are monitored via SCADA system and customer connections are monitored with an AMI (Advanced Metering Infrastructure) system, maintained by Sensus Analytics. The AMI system collects an hourly usage sample then transmits the meter data every 4 to 6 hours to one of our local towers and then to a cloud database for analysis and storage.

We have an active detection program to locate existing water main and service line leaks. When there is a leak on the customer side of a water meter, the city notifies the utility account holder by mail.

Through meter equipment improvements and grants, we have a customer portal with many functions to aid in a customer's water conservation habits. These functions include giving residents the ability to monitor their usage daily or setting up alerts that would trigger an automated notification via email or text.

All utility water connections in Spanish Fork (drinking water and secondary water) are required to be metered per the city Municipal Code 13.04.030 Utility Service, stated below:

“Except as otherwise expressly permitted by this Title, all structures, dwelling units, and establishments using metered utilities from City systems must have such number and type of meters connected to the utility systems as are necessary, in the judgment of the City Engineer, to adequately measure use to the respective users.

“Meters will be furnished by the City at the expense of the applicant, developer, or user, who shall be required to pay for the number of meters to be installed on the premises to cover the cost of the meters and their installation.”

Because our maintenance program for meters is ongoing, we run malfunction reports monthly and repair or replace damaged meter equipment. We also track zero usage meters, testing their operational status and replacing them when they show a significant usage reduction or failure. Our current customer connection meters are the Sensus iPerl for all 3/4" and 1" connections and the Sensus Omni meter for 1.5 to 8" connections. We also have a goal of testing and recalibrating source meters and large customer meters, in house, on a regular basis starting in the next 1 to 2 years.

### **3.02 System Water Loss Control**

A comparison of supplied and metered water is shown in Table 3. The table shows data for both the drinking water and pressurized irrigation systems for years 2007 through 2018. Note that supplied water always exceeds metered water, indicating unaccounted water (losses) in each system. Unaccounted water decreased during the past ten years. In 2018, the percentage of unaccounted drinking water was 25%, much lower than 41% in 2008 and

2009. This suggests that the City’s pipe replacement program has been effective in reducing water loss in the drinking water system. For both systems, possible explanations for the unaccounted water use include leaks in the distribution system, meter inaccuracies, and miscellaneous unmetered water use (such as pipe line flushing, construction activities, etc.).

**Table 3**  
**Comparison of Water Supplied to Metered Water Use**

Drinking Water System							
Type	2012	2013	2014	2015	2016	2017	2018
Water Supplied (acre-feet)	4,042	4,151	4,389	3,853	3,984	4,037	4,099
Water Metered (acre-feet)	2,833	2,797	2,833	2,913	2,924	3,122	3,087
Accounted for Unmetered Water (acre-feet)	1,209	1,354	1,556	940	1,060	915	1,012
% Unaccounted for Waste	30%	33%	35%	24%	27%	23%	25%
Pressurized Irrigation System							
Water Supplied (acre-feet)	5,479	5,291	5,405	5,480	5,799	6,194	6,367
Water Metered (acre-feet)	4,696	4,504	4,672	5,003	5,322	5,381	5,618
Accounted for Unmetered Water (acre-feet)	783	787	733	477	477	813	749
% Unaccounted for Waste	14%	15%	14%	9%	8%	13%	12%

**3.03 Increasing Rate Structure**

Spanish Fork City’s pressurized irrigation system rate structure is summarized in Table 4. The drinking water system rate structure is summarized in Table 5.

**Table 4  
Pressurized Irrigation Rate Structure**

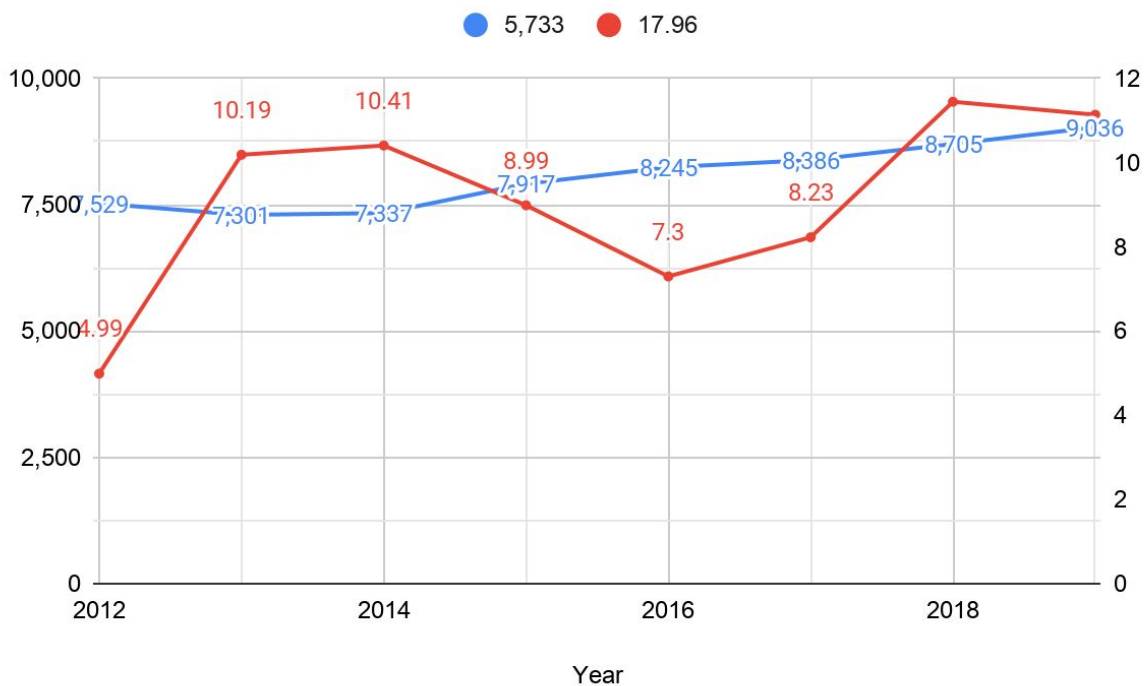
<b>Pressurized Water Rates</b>	<b>FY2019</b>
Base Rate - 1 Inch or less Water Meter	\$11.34
Base Rate - 1.5 Inch or less Water Meter	\$25.52
Base Rate - 2 Inch or less Water Meter	\$45.36
Base Rate - 4 Inch or less Water Meter	\$138.92
Tier 1 Usage Rate (per 1,000 gal)	\$0.82
Tier 2 Usage Rate - 25,000+ (per 1,000 gal)	\$0.97

**Table 5  
Drinking Water Rate Structure**

<b>Drinking Water Rates</b>	<b>FY2019</b>
Base Rate - 1 Inch or less Water Meter	\$10.00
Base Rate - 1.5 Inch or less Water Meter	\$22.50
Base Rate - 2 Inch or less Water Meter	\$40.00
Base Rate - 4 Inch or less Water Meter	\$122.50
Tier 1 Usage Rate (per 1,000 gal)	\$1.14
Tier 2 Usage Rate - 6,000+ (per 1,000 gal)	\$1.39
Tier 3 Usage Rate - 18,000+ (per 1,000 gal)	\$2.14

### Chapter 4 Water Usage

Precipitation influences water usage and needed supply. A comparison of metered water use and precipitation (Figure 4) shows the expected trend that water use decreased in above-average precipitation years (the trend is not as apparent for supplied water, which includes wasted and unaccounted water).



**Figure 4**  
**Metered Water Use and Precipitation, 2012–2019**

Table 6 shows the total water deliveries by type (residential, commercial, industrial, institutional, and unmetered) for 2018 in acre-feet. Based on the 2018 service area population estimate of 42,077, the drinking water use is 65 gallons per capita per day (gpcd) and the pressurized irrigation use is 119 gpcd (note that a portion of the City is still irrigated by the drinking water system). Together, the combined per capita water use for Spanish Fork City is 185 gpcd (Table 7). Spanish Fork City’s water use is considerably lower than Utah’s state average of 240 gpcd in 2015, especially since water systems with separate irrigation systems use more water.

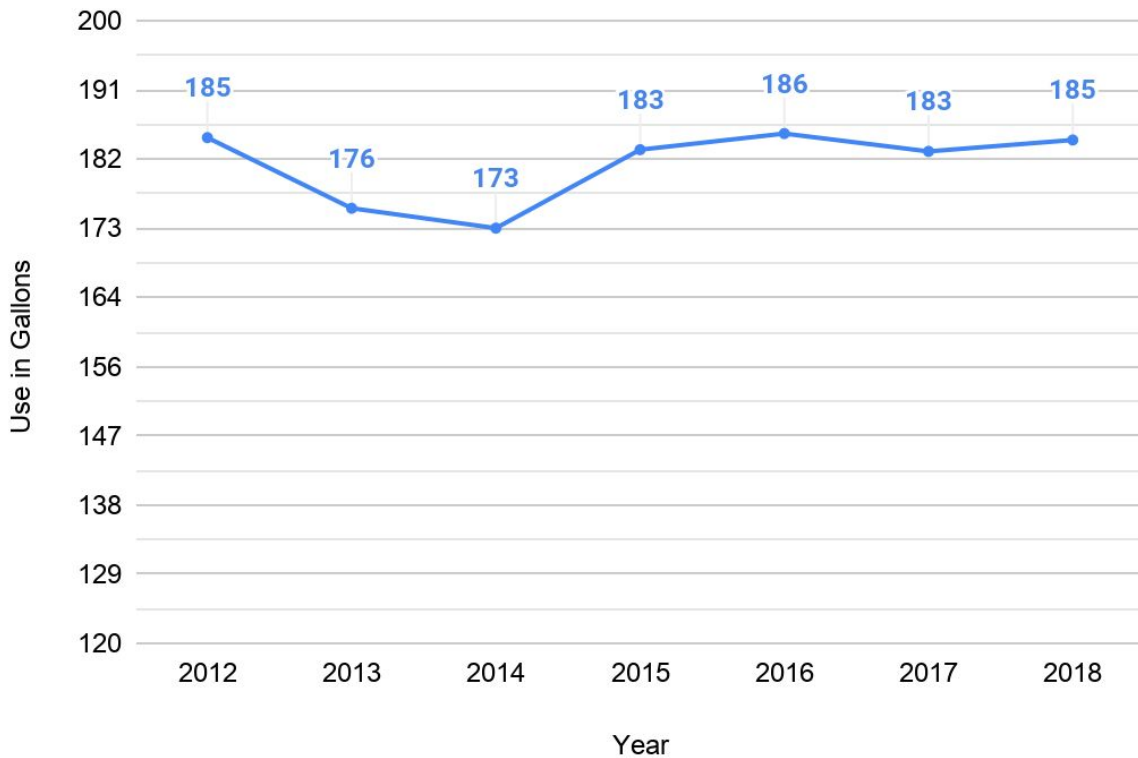
**Table 6**  
**2018 Total Water Deliveries by Type**

<b>Connection Type</b>	<b>Drinking Water System (acft)</b>	<b>Pressurized Irrigation System (acft)</b>
Residential (acre-feet)	2,202	5,618
Commercial (acre-feet)	423	
Industrial (acre-feet)	252	
Institutional (acre-feet)	210	
Unmetered (acre-feet)	77	230
TOTAL	3,164	5,848

**Table 7**  
**Water Use (gpcpd)**

	<b>Indoor (Potable)</b>	<b>Non-Potable (Secondary)</b>	<b>Total</b>
Residential	47	84	131
Commercial	9	0	9
Institutional	4	0	4
Industrial	5	0	5
Non- Residential (PI)	0	35	35
Total	65	119	185

A trend of water use in gallons per capita per day from 2012 - 2018 is shown in Figure 5. Because water usage increased from 2017 to 2018, from 183 to 185 gpcpd, there were no revenue losses due to conservation. Inconsistencies in the City metered water use data before 2012 make data pre-2012 less reliable.



**Figure 5**  
**Water Use Historical Trend (gpcpd)**

## **Chapter 5 Conservation Practices**

### **5.01 Identified Problems**

Spanish Fork City is concerned with the potential waste of water from inefficient indoor and outdoor water use and from system-wide losses. The following specific concerns have been identified by the City:

- A. Many pipes in the drinking water distribution system are old, undersized, and may be leaking.
- B. Comparison of supplied and metered water indicated that 25% of drinking water is unaccounted for.

Spanish Fork City has set goals to address the identified problems and to promote conservation. The City is currently promoting water conservation measures similar to the State of Utah water conservation campaign that was instituted in 2001. Utah's M&I Water Conservation Plan, released in July 2003, sets a statewide goal to reduce per capita water use by 25% from the 1995 usage by the year 2050. Inconsistencies in the Spanish Fork City metered water use data before 2012 makes it impossible to estimate an accurate base use in 2001. Also, the City did not have a pressurized irrigation system in 2001. Water use of 265 gpcd in 2009 will therefore be used as the base water use.

The estimated 2018 water use is 185 gpcd. This represents a 30% decrease from 2009 usage. Precipitation in 2009 was 113% of normal compared to 113% of normal in 2018, suggesting that the decrease in water use was not related to climatic differences. Water use would be expected to be lower in a wet year with all other variables the same. According to the metered water use data, the higher use in 2009 can be attributed to the higher unaccounted for waste in 2009. The City will continue to promote water conservation and reduce unaccounted for waste to achieve the statewide goal of 25% reduction by 2050.

## **5.02 Goals**

Spanish Fork City desires to reduce per capita water use to the goal of 165 gpcd by 2050, representing a 37% reduction from the 2009 value. Per capita water use will be reevaluated every five years to determine if this goal has been reached. The following specific water conservation goals have been identified by the City:

- A. Continue public education efforts including encouraging customers to limit outside watering during high wind and the heat of the day.
- B. Continue to support the water conservation measures currently in effect as defined in Chapter 4.
- C. Determine potential causes for unaccounted water and attempt to reduce this loss.
- D. Consider adoption of conservation-focused landscaping ordinances.
- E. Replace leaking pipelines as they are discovered and as budget will allow.



### 5.03 Existing Conservation Measures

Table 8 identifies water conservation measures the City currently implements. The City will continue these practices. It is not known if existing conservation measures have been effective given the increase in per capita water use since 2001 and the uncertainties regarding the high loss rates included in those figures.

**Table 8**  
**Existing Conservation Measures**

Ongoing Conservation Projects	Practice Implementation
WATER CONSERVATION COORDINATOR:	Responsible for managing the Water Conservation Program i.e. water conservation plan, staying up to date on current Water Conservation practices, submit recommendations on how the City can improve its conservation efforts and updating the City informational content for public education for use on the City website and social media.
WATER CONSERVATION OUTREACH CAMPAIGN:	Promote water conservation measures, like local landscapers that utilize water-wise training, conservation tips, educational content via links to our water conservation partners through: The City's website/The City newsletter. The City's Facebook/Instagram/Twitter page.
BENEFITS OF WATER-EFFICIENT TECHNOLOGY:	By educating residents about the potential benefits of water saving technology, such as weather based smart timers and water-efficient plumbing fixtures, the City, through their public outreach will promote tips and rebates that will aid residents in conserving water, which in turn will save residents money and prolong the life of our water infrastructure.
SMART CONTROLLER PROJECT:	By obtaining a grant Spanish Fork City was able to supply a Rachio Smart Controller for residential application, with installation included to residents free of charge. The goal of the Smart Controller Project is to educate residents about water conservation and reduce daily peak demands to the Pressurized Irrigation system.
METER CONSERVATION GRANT	The City received a grant from CUWCD of \$50,000, to be completed by October 2020, for the replacement of water meters that are incapable of being reconfigured to a 1 gallon resolution. Because these are some of the oldest meters in our system, we hope to bring some accuracy to our water loss, as well as increase our accuracy of detection on customers lines.
DRINKING WATER TIERED RATES:	Spanish Fork City currently has a utility rate structure composed of 3 progressive tiers, charging more for each 1,000 gallons used per tier, as well as a based rate that is dependent on the diameter of the service installed and

	the expected average usage.
PRESSURIZED IRRIGATION SYSTEM TIERED RATES:	Spanish Fork City adopted a 2 tier system for our Pressurized Irrigation system effective January 1, 2020. It has a utility rate structure composed of 2 progressive tiers, charging more for each 1,000 gallons used per tier, as well as a base rate that is dependent on the diameter of the service installed.
CUSTOMER AND HIGH USAGE NOTIFICATION:	Our Utility Billing department sends out a notification letter to customers that have a noticeable increase in their usage that may be an indication of a leak. Because of the METER RESOLUTION RECONFIGURATION, we hope to see greater accuracy with customer notifications.
WATER USE FOR CITY OWNED LANDSCAPED AREAS:	In practicing water-wise irrigation at City-owned properties, sprinkler irrigation systems on public landscaped areas will adjusted to operate: based on the season, during the coolest, least windy parts of the day, implementing water-wise methods whenever possible.
WATER LOSS IDENTIFICATION:	Our ongoing daily detection program and annual water loss reporting will aid the City in identifying water loss origins to update the Drinking Water and Pressurized Irrigation Master Plans. Our Capital Improvement plan will focus on mitigating water loss and leaks. Spanish Fork City has a goal to reduce drinking water loss below 20%.
LEAK DETECTION PROGRAM:	Spanish Fork City purchased Gutermann detection and correlation equipment that was implemented in the spring of 2019 on the Drinking Water system, with plans to utilize the equipment on the Pressurized Irrigation system upon completion of the Drinking Water system.
REPLACEMENT OF AGING WATER MAINS:	The City will replace old/undersized water mains according to the Water Master Plan and Capital Improvement Program of the Water Division, as part of the regular maintenance program to ensure the water systems are well maintained, s are located and repaired in an effort to reduce costly repairs associated with catastrophic failures of water mains.
METER MAINTENANCE PROGRAM:	We have an ongoing meter maintenance program in which we track meter malfunctions regularly, diagnosing meters for repair and replacing meters that are failing. By replacing large customer meters with a more maintenance friendly meter, it gives us the ability to test and reconfigure them for greater accuracy.
AMI METER TECHNICIAN:	Responsible for managing the AMI meter system by troubleshooting and replacing malfunctioning meter equipment and software, tracking and testing zero usage meters, staying up to date on latest manufacturer information and technologies, and training support staff.
SECONDARY PRESSURIZED SYSTEM FOR IRRIGATION:	By providing an independent secondary/pressurized irrigation system the City hopes to help conserve our drinking water supply. Through maintaining the

	pressurized irrigation system and metering we are promoting water conservation as customers pay for actual usage versus a flat rate.
WATER METERS ON THE DW & PI SYSTEM:	Because both the Drinking Water and Pressurized Irrigation systems in Spanish Fork are metered, any existing unmetered service lines located, will be addressed in a reasonable time and a meter will be added.
METER RESOLUTION RECONFIGURATION:	The City began reconfiguring currently installed meters to a 1 gallon resolution for better water usage analytics in customer water use and detection.
UPGRADED METER READING SYSTEM:	The city purchased a software and hardware upgrade(Sensus 4.x AMI System) to streamline usage data storage and analyzation via Sensus Analytics.
ULS-STRAWBERRY CONNECTION:	In the summer of 2019 Spanish Fork City established a direct pipeline connection to the Central Utah Water Conservation District via Strawberry Reservoir for use in the Secondary/Pressurized Irrigation system. A second connection is planned for 2021.

The following Ordinances and Standards are currently being implemented in Spanish Fork City:

- A. Water Waste Prohibition - Spanish Fork City prohibits wasteful use of water in our Municipal Code [13.28.020 General](#).
- B. Model Landscape Ordinance - [15.4.16.130 Landscaping, Buffering Walls, And Fences](#)
- C. Water Shortage Plan - Any water restrictions or limitations are implemented by proclamation of the Mayor, this is found in our Municipal Code [13.28.020 General](#) in paragraph “D. Scarcity”.
- D. Climate Resiliency Plan - Through the City’s active Emergency Response Plan in an informative [video](#).

An update to City Policy (Construction Standards - Policy 4.39.55) regarding conservation requires all new development and redevelopment projects to install low impact development (LID) infrastructure that will retain and infiltrate a 25-year minimum storm which exceeds the 90th percentile storm minimum required. This policy meets our MS4 permit from the State and EPA. LID recharges the groundwater while reducing volume and pollutants from entering surface waters.

#### **5.04 Contact Information**

Spanish Fork City, (801) 804-4500

Public Works Director, Chris Thomson- [cthompson@spanishfork.org](mailto:cthompson@spanishfork.org)

Water Division Manager, John Waters- [jwaters@spanishfork.org](mailto:jwaters@spanishfork.org)

Assistant Water Division Manager, Paul Taylor- [ptaylor@spanishfork.org](mailto:ptaylor@spanishfork.org)

Water Conservation Coordinator, Jed Ottesen- [jedottesen@spanishfork.org](mailto:jedottesen@spanishfork.org)

## **Chapter 6 - Adoption of Plan**

Pursuant to Subsection 73-10-32(2)(a) of the Utah Code

- A. (a) Each water conservation plan shall contain:
- B. (i) a clearly stated overall water use reduction goal and an implementation plan for each of the water conservation measures it chooses to use, including a timeline for action and an evaluation process to measure progress;
- C. (ii) a requirement that each water conservancy district and retail water provider devote part of at least one regular meeting every five years of its governing body to a discussion and formal adoption of the water conservation plan, and allow public comment on it;
- D. (iii) a requirement that a notification procedure be implemented that includes the delivery of the water conservation plan to the media and to the governing body of each municipality and county served by the water conservancy district or retail water provider; and
- E. (iv) a copy of the minutes of the meeting and the notification procedure required in Subsections (2)(a)(ii) and (iii) which shall be added as an appendix to the plan.

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