

American Fork City – Public Works Department
275 East 200 North
Tel (801) 763 3060
Fax (801) 763 3005
www.afcity.org

WATER CONSERVATION AND MANAGEMENT PLAN UPDATE

NOVEMBER 2014

This plan updates the plan prepared in February 2010 and was prepared pursuant to the Utah Water Conservation Plan Act (73-10-32 UCA)

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EXECUTIVE SUMMARY

This plan updates the Water Conservation and Management Plan prepared on February 2010 and was prepared pursuant to the Utah Water Conservation Plan Act (73-10-32, UCA). The Act requires water conservancy districts and water retailers to file water management and conservation plans with the Utah Board of Water Resources.

These plans are intended to describe the extent to which a retail provider will use certain measures to achieve its water conservation goals. Plans must contain a clearly stated water use reduction goal and implementation plan for each conservation measure, including a timeline for action and evaluation process to measure progress. The Act also requires that plans be updated at least every five years.

According to the Utah State Governor's Office of Planning and Budget, American Fork has a current population of 28,175 people. Over the next ten years the projected growth rate is 1.30 percent. The City provides water to the growing population.

During the past twenty five years, two 5 million gallon (MG) tanks and one 4.5 MG tank have been constructed to provide adequate storage and pressure to the water system. The City has a culinary system and pressurized irrigation that serves all of its residents.

The City is implementing this water management and conservation plan to reduce demands on culinary water while providing high quality water to its growing population. American Fork has established goals that will help reduce the culinary water use. The goals of this plans are the following:

1. Reduce annual per capita culinary water use 10 percent.
2. Fully implement the pressurized irrigation system citywide.
3. Increase public conservation awareness.
4. Continue emergency planning for system failures and droughts.
5. Reduce the amount of water used for irrigation by at least 5% per year.

The conservation plan describes what actions the City is currently implementing and what actions may be taken in the future. Twenty conservation option have been identified which fall under the following general descriptions:

1. System Operation, Repair and Maintenance Options
2. User Conservation Options
3. Regulatory and Rate Options
4. Behavioral and Education Options

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Each of these options have been evaluated to determine which ones should be implemented based on conservation benefits, costs, public reaction, and required staff time and effort. These options are listed below by category and order of ranking. The lower totals indicate options that have the most potential to conserve water compared to cost.

ALTERNATIVE	Benefit	Cost	Public View	Time	Effort	TOTAL
System Operation, Repair and Maintenance Options						
Water Loss Budget	4	1	2	3	2	12
Leak Detection System	7	3	2	3	3	18
Large Meter Replacement	3	1	2	3	3	12
System Repairs	1	2	2	3	3	11
Full Implementation of PI System	1	1	2	2	2	8
Water Reuse	4	4	5	4	5	22
User Conservation Options						
Water Leak Detection and Repair	3	2	4	2	2	13
Voluntary Water Audits	4	1	3	3	3	14
Efficient Fixtures and Appliances	6	2	4	2	2	16
Regulatory and Rate Options						
Water Conservation Committee	3	1	1	3	2	10
Efficient Landscaping Practices	3	1	2	3	3	12
Enforcement of Ordinances	3	2	4	2	2	13
Conservation Water Rate Structure	2	1	4	4	3	14
Shortage and Emergency Planning	8	2	3	1	1	15
Conservation Building Codes	5	2	4	3	2	16
Incentive to Wholesale Users	7	3	4	2	2	19
Behavioral and Educational Options						
Public Conservation Education	4	2	1	2	2	11
Peak Use Reduction	6	2	1	2	2	13
Improved Commercial Processes	8	2	2	3	3	18
Water Rationing Policies	8	2	3	3	3	19

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Recommended water conservation programs have been selected based on highest ranked conservation options. With the completion of the pressurized irrigation system, most of the City's water conservation efforts will focus on its successful implementation.

Water users within the American Fork, whether commercial, industrial or residential customers, are invited to participate in city meetings and provide feedback in establishing priorities for conservation activities. Decisions made by the City regarding establishing conservation goals and priorities will attempt to reflect suggestions and comments offered by customers and interested parties.

The goals set on the 2010 Water Management and Conservation Plan resulted on a 48% reduction on water use. There is a high demand for irrigation water and the City is taking steps to reduce water waste and bring the amount of water per capita to a number that matches the state's average more closely.

Opportunities for public involvement and comment will be provided through public hearings as this plan is approved and as future updates to the plan are made.

SECTION 1 – INTRODUCTION

The purpose of this Water Management and Conservation Plan is to identify conservation programs and opportunities supporting the City of American Fork's water management objectives.

The Plan will describe how the City can implement these opportunities to more effectively conserve its culinary water. This will help American Fork and its residents increase their desire and capabilities to become responsible steward to its valuable natural resource and provide long-term financial solvency to the water system.

This report complies with requirements from the Utah Water Conservation Plan Act (73-10-32 UCA). The Utah Water Conservation Plan Act requires water conservancy districts and water retailers to prepare and adopt, or update, a water conservation plan, which must be filed with the Utah Board of Water Resources.

Water Conservation plans are identify recommendations for water saving practices. Some examples would include such measures as the following:

1. Installation and use of water efficient fixtures and appliances
2. Landscaping that require less water to maintain (xeriscaping)
3. Water reuse systems
4. Water rate structures designed to encourage more efficient use of water

Water Management and Conservation Plans must contain a clearly stated water use reduction goal and implementation plan for each conservation measure, including a timeline for action and an evaluation process to measure progress.

SECTION 2 – BACKGROUND INFORMATION

The first settlers located in American Fork Creek or what we now call American Fork River. As is stated in George Shelley's Early History of American Fork, early settlers located here "primarily for the purpose of establishing a big pasture and cattle ranch. But as more people came, it was necessary to raise crops for their sustenance" (page 31). Because of an inadequate rainfall, these early settler's developed methods for diverting water out of the creek to their farmlands.

The American Fork City water system, in Utah County, was established in the early 1900's. Since then, improvements have been made to the system to expand its service to its current size.

In 1981, the first 5 million gallon (MG) storage tank was built and the system was broken into two pressure zones. Additional storage was added to the system in 1991 and 2001 and the current water system provides pressurized culinary water to American Fork City residents.

American Fork's current population, estimated at 28,175, is served by culinary water system through nearly 8,500 connections.

Historically approximately 40 percent of the culinary water supply has been used indoors and 60 percent outdoors. However, in 2007 the Public Works Department began the implementation of a pressurized irrigation system that will deliver untreated water throughout the City. Construction of the pressurized irrigation was completed on 2010.

While connection to the pressurized irrigation system is not mandatory, the City has implemented a revised culinary water rate structure that is designed to motivate residents to connect to the PI system.

The City's current policy is to deliver safe water drinking water to all of its customers. Rates and fees are set to cover the cost of operation and expansion, while encouraging water conservation. The City has a drought emergency plan. The City believes that adequate water is available for use but not for waste.

SECTION 3 – WATER SYSTEM ANALYSIS AND PROJECTIONS

The current water system consists of the following elements:

1. **Water Sources:** Six wells and springs supplying up to 27,600 acre-feet of water per year to the American Fork City water system:
 - a. J.C. Park Well
 - b. Hospital Well
 - c. Golf Course Well
 - d. Race Track Well
 - e. Boley Well
 - f. Country Club Well
 - g. American Fork Canyon Springs.
 - h. Additional groundwater supply may be available from the Warnick Well.

Immediate needs include re-drilling the Warnick Well prior to production because it was not constructed to comply with the current drinking water standards. Additional wells may be sited at the golf course. In addition to the groundwater sources, American Fork has right to water from irrigation canals. However, this water is committed for use in the City's pressurized irrigation system.

2. **Water Rights:** Approximately 27,000 acre-feet of total water rights filed with the Utah State Division of Water Rights. This right includes ground water and springs that are available for the pressurized irrigation system.
3. **Storage Tanks:** Three storage tanks with the capacity of holding 14.5 MG of water. Two 5 MG tanks and one 4.5 MG tank
4. **Distribution network:** The distribution system includes about 203 miles of pipes that range in size from 4 inch to 24 inch diameter. The distribution system age ranges from 20 to 60 years old with an average age of 50 years old. The pipe's materials is primarily ductile and cast iron but there are some few pipes of steel and shot coat pipes. The City has adopted and it is implementing a pipe retrofitting plan with the intent to replace most of the older pipes.
5. **Connections:** Approximately 8,500 connections including 7,597 residential, 802 commercials, 30 institutional and 2 wholesale connections. The unmetered connections to the city owned parks were switched over to the pressurized irrigation system.
6. **Metering:** Water meters are installed at each residential, commercial, and institutional connection. The meters at the parks have been bypassed due to the connection to the

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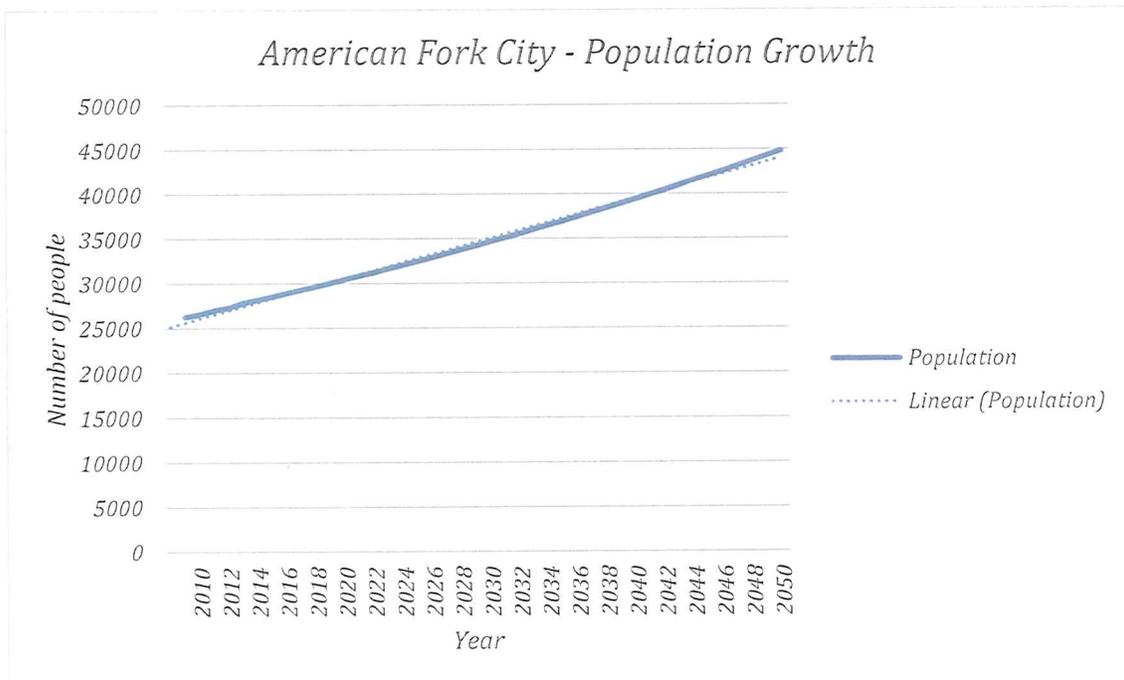
pressurized irrigation system. All of the 1 ½ inch and smaller meters have been replaced since 1991. Meter upgrades and replacement is an ongoing process throughout the City.

CURRENT POPULATION AND WATER USE

As the City of American Fork continues to grow, the demand on culinary water will increase.

The current population of American Fork is estimated at 28,175. American Fork City is projected to grow at a rate of 1.30% percent as shown on Table 1:

Year	Population
2014	28,175
2020	30,445
2030	34,642
2040	39,419
2050	44,854



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This growth will occur as existing farmlands and open spaces are developed into subdivisions and commercial developments. The projected numbers of connections in American Fork as shown in Table 2. These projections, taken from the City's General Plan, are based on Equivalent Residential Connections (ERCs). One ERC is a water user who uses the equivalent water of one average residential home.

Year	Residential	Institutional	Commercial	Total
2015	8,996	1,751	6,449	17,196
2020	10,687	2,080	7,662	20,429
2025	12,402	2,414	10,078	26,872
2030	18,503	3,602	13,265	35,370

In 2013, the City of American Fork distributed 5,113.90 acre-feet of water. Table 3 shows the monthly and annual usage by residential, commercial, industrial and public users. Residential users used 69 percent of the total usage. Outdoor usage is estimated to have been approximately 60 percent of the total usage.

The 2013 total per capita usage was 164 gpd compared to 315 gpd per capita as estimated for the year 2008. This is a 48% reduction compared to 2008 water usage. The maximum water use occurred during the month of August with 630.80 acre-feet.

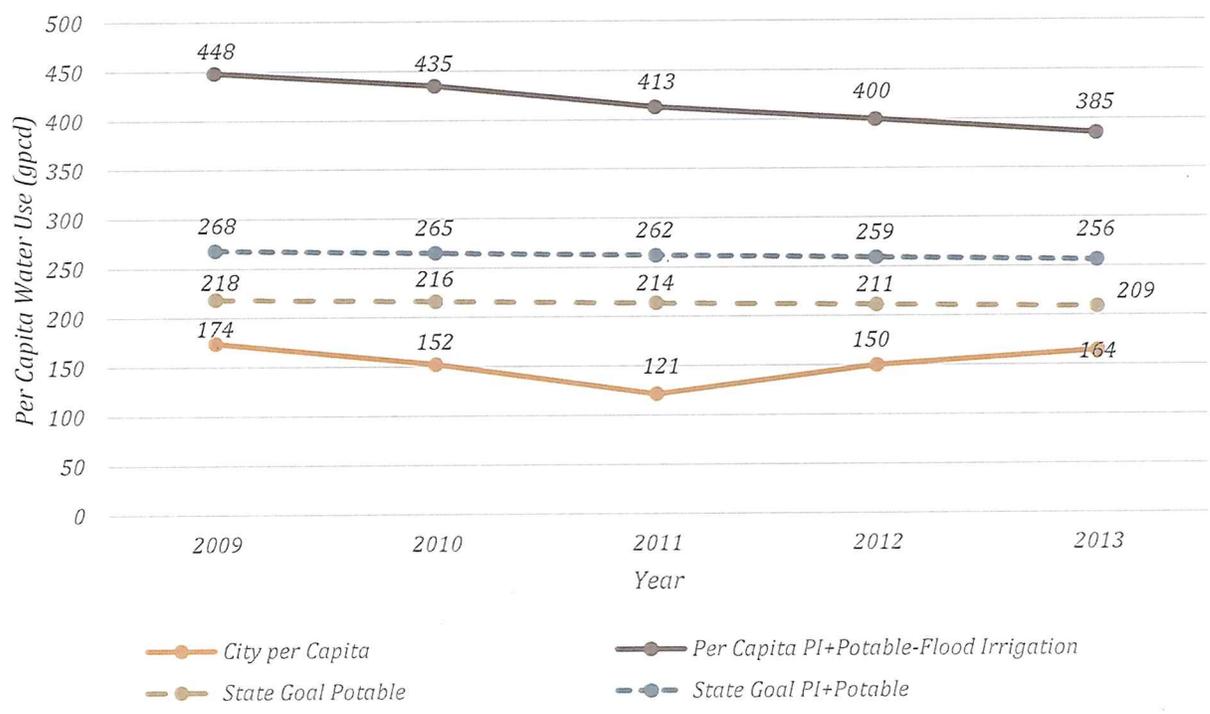
Month	Total Usage (acre-feet)
January	298.80
February	350.70
March	376.20
April	345.10
May	559.90
June	574.80
July	507.00
August	630.80
September	430.90
October	353.40
November	341.50
December	344.80
Yearly Total:	5,113.90

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Culinary Water Use per Month per Year



Water Conservation compared to State's Average



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CURRENT WATER SOURCE CAPACITY

The City's operating water sources have a capacity of 27,600 acre-feet per year (2,300 acre-feet per month). Table 4 shows the sources and their capacities:

Source	Capacity (gpm)	Capacity (acre-feet)
J.C. Well	2,100	3,390
Hospital Well	2,000	3,230
Golf Course Well	2,900	4,680
Race Track Well	3,100	5,000
Boley Well	2,600	4,200
Country Club Well	2,800	4,520
American Fork Canyon Springs	1,600	2,580
Total:	17,100	27,600

PROJECTED WATER USE AND WATER AVAILABILITY

Table 5 shows the projected annual and peak month water usage and the surplus water from existing sources. The surplus water source is the available water source in excess of demand. A water deficit results when the available source no longer exceeds demand. A deficit is indicated in Table 5 as a negative surplus.

Year	Annual Water Demand (acre-feet)	Surplus Source (acre-feet)
2015	17,196	13,461
2020	20,429	10,404
2025	23,707	3,893
Ultimate	35,370	-7,770

The projections shown on Table 5 indicate that American Fork's existing water sources will not meet peak month demand at ultimate City build out. By that time, additional water source capacity will have to be developed, demand will have to be slowed by conservation, or water peak demand will not be met. The City is collecting data with the intent of analyzing if the recently adopted water rate structure reduces the annual demand and consequently reduces the deficit projected to happen during build-out condition.

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An additional 7,770 acre-feet per year of capacity will be needed for build out. The City believes that the Warnick Well can supply 3,000 acre-feet per year once it is developed and upgraded.

STORAGE CAPACITY

The City currently has a 14.5 MG of storage in three tanks. The Utah State Division of Drinking Water requires the following:

1. 400 gallons per connection plus
2. 2,528 gallons per irrigated acre storage.

Table 6 shows the current and projected storage requirements for the City, as calculated by the General Plan.

The projected drinking water storage requirement are based on implementation of the pressurized irrigation system. Because the pressurized irrigation system has separate storage capacity for irrigation use, the demands are not included in the projected drinking water system requirements.

Year	Storage Requirement (MG)	Surplus Storage Capacity (MG)
2015	7.4	7.1
2020	8.7	5.8
2025	10.0	4.5
Ultimate	14.6	-0.1

The City will not require additional storage until after 2025 to meet projected storage requirements.

DISTRIBUTION SYSTEM CAPACITY

The City's General Plan identifies distribution system upsizing that would be necessary to distribute projected water demands and fire flows. The improvements include new trunk lines, upsizing main lines, and pressure reducing valves to improve pressures, water flow and velocities.

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CURRENT WATER RATES

The City's culinary water rates are shown in Table 7. These rates are designed to encourage use of the City's new pressurized irrigation system. The base rate is intended to provide for the indoor needs of an average family.

TABLE 7: AMERICAN FORK CULINARY WATER RATE SCHEDULE	
Residential Culinary Water Rates	
Gallons of Usage per Month	Rate
0,00 to 6,000	\$19.41
6,000 to 9,000	\$3.00
Above 9,000	\$4.20

Table 8 shows the culinary water rates for Commercial, Multi-Family, Industrial and Institutional land uses. Commercial, multi-family, industrial and institutional culinary water base rates and base allowances are assessed on a per a meter bases, not per unit.

TABLE 8: AMERICAN FORK CULINARY WATER RATE SCHEDULE	
Commercial, Multi-Family, Industrial and Institutional Water Rates	
Monthly Base Rate	Rate
¾ inch and smaller	\$22.53
1"	\$23.87
1 ½"	\$25.21
2"	\$28.90
3"	\$56.07
4"	\$66.13
6"	\$89.60
8"	\$116.43
10"	\$153.32
Block rates	
Base Allowance	
0 to 6,000 gallons per month	\$0.00
Block 2 Rate (\$/Kgal)	
6,000 to 9,000 gallons per month	\$2.65
Block 3 Rate (\$/Kgal)	
Above 9,000 gallons per month	\$3.07

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The water rates for the pressurized irrigation water system are shown on table 9.

TABLE 9: AMERICAN FORK P.I. WATER RATE SCHEDULE	
Unmetered	Rate
Base rate (\$/ month)	\$19.41
Overage (\$/ month)	\$0.00259
Metered	
Base Allowance (\$/ month)	
0 to 8,000 gallons/ month	\$19.41
Block 2 Rate (\$/ Kgal)	
8,000 to 16,000 gallons/ month	\$1.74
Block 3 Rate (\$/ Kgal)	
Above 16,000 gallons/ month	\$4.60

The water rates are designed to increase in a small percentage per year and will be revised again during the 2016 fiscal budget year.

The City has adopted Resolution No: 2012-10-27R for the purpose of establishing fees charges for water and secondary irrigation water use. The collected data shows that the increase on the culinary water rates is producing a reduction on water use per user.

The City has also adopted Resolution No: 2014-04-17R restricting the use of culinary and secondary water for outdoor activities. The Water Division has two staff members dedicated to the enforcement of this new restrictions. The collected data shows that the increase on the culinary water rates is producing a reduction on water use per user.

EXISTING WATER MANAGEMENT AND CONSERVATION PROGRAMS

American Fork City has consistently worked to improve the water system.

Recent improvements to the culinary water system have been made to source acquisition and protection, water rights, storage capacity, pressure zones, and metering.

The implementation of the pressurized irrigation system has reduced the demand on culinary water by up to 60 percent and conserve supplies of high quality drinking water for future uses.

The City of American Fork currently sends mailers with utility bills semiannually. The mailer inform water users about conservation measures and the importance of conservation.

SECTION 4 – CONSERVATION VALUES AND GOALS

THE VALUE OF CONSERVATION

Conservation provides value to a community by preserving water sources and reducing the size and number of system improvements, thus reducing system costs. However, the overall quality of life must also be maintained. American Fork has established vegetation throughout the community. The City has an unwritten conservation philosophy that “there is enough water to use, but not enough to waste.”

To set conservation levels, it is necessary to first identify reasonable water usage and compare it with actual or projected usage. Outdoor water use can provide the greatest conservation benefit. As previously stated, total culinary water system use is 5,114 gpd per capita.

SECONDARY WATER SYSTEM VALUE

The construction of a secondary water system will conserve culinary water by using untreated water from existing irrigation canals and ditches currently use for outdoor irrigation. This will result in nearly 16,500 acre-feet per year of projected outdoor culinary water being conserved.

Much of the cost to install a secondary system will be offset by reduced capital improvement costs for the culinary system. Instead of enlarging the existing culinary system, its use would be restricted to indoor use only.

CONSERVATION GOALS.

The City of American fork has set conservation goals based on the projected needs of the community and the system analysis. These goals will allow the City to deliver safe drinking water to all of its customers and help ensure long-term, low cost sustainability of the water system. The goals are the following:

1. Reduce annual per capita culinary use 50 percent by 2015
2. Fully implement the pressurized irrigation system and encourage residents to connect and efficiently use it.
3. Increase public’s awareness of water conservation.
4. Continue emergency planning for droughts and system failures such as broken mains, pump failure, or other losses of pressure or capacity.

SECTION 5 – POTENTIAL WATER MANAGEMENT AND CONSERVATION OPTIONS

The City of American Fork has many opportunities and challenges to face as it pursues its conservation goals continuing growth. The water system must be managed to keep pace with the community for stable growth.

Conservation can be an effective management tool to reduce the impact of growth. Conservation increases the available capacity of a system with little or no capital investment. Saved water can be reallocated to new users. Several conservation programs have been identified to help meet future water needs. The alternatives were classified into four main categories:

1. System Operations, Repair and Maintenance Options
2. User Conservation Options
3. Regulatory and Rate Options
4. Behavioral and Educational Options

SYSTEM OPERATION, REPAIR AND MAINTENANCE OPTIONS BMPs

Water Loss Budget BMP 1:

American Fork currently compares supply and use annually. However, the next system loss is not tracked down from year to year. The City could develop a water budget for the water system.

By tracking the difference between the water delivered and the water used on a quarterly basis, it is possible to identify increasing system leakage and where conservation programs are needed. The source meters measure the total water delivered. The connection meters shows the water used. The sum of the connection meters measures the total water used. The amount of water lost through the system could then be calculated on a quarterly basis to determine if leaks are developing within the system.

Leak Detection System BMP 2:

American Fork performs leak detection surveys with acoustical equipment periodically. Recent leaks detection surveys identified only small leaks that were difficult and costly to pinpoint and repair. Use methods consistent with American Water Works Association's *Water Audit and Leak Detection Guidebook*.

System Repairs BMP 3:

Several improvements have been made to the water system including securing supply and rights and increasing storage. However, much of the distribution piping is over 50 years old. Capital Improvement Plans include replacement of aging pipes. In most years, at least one well pump fails during peak demand. It is likely that the failure may be due to the prolonged use of the pumps. The pumps should be evaluated and fixed or be budgeted for replacement. The construction of the pressurized irrigation will reduce the usage of the pumps.

Pressurized Irrigation System BMP 4:

The construction of the pressurized irrigation has been completed and it is being implemented. Approximately 95% of the residents are connected to the PI system.

Water Reuse BMP 5:

The City could explore water reuse. A study of the City could be made to determine potential water sources and reuse sites, including City-wide use in the pressurized irrigation system. Possible reuse sources include groundwater drain water, treated municipal and industrial wastewater and storm drain runoff. Possible reuse sites include municipal parks, school yards, cemeteries and public building grounds. By reusing water, the City would be able to reduce the amount of water needed from springs and wells.

Prior to using recycled water, it is necessary to educate users. Many people are concerned about the possible health risks associated with previously used water. Reuse water must be restricted to irrigation so that drinking water or food contamination is not likely.

Large Water Meter Replacement BMP 6:

The large water meters are more than 10 years old (>1 ½ inch). It is likely that these meters are losing accuracy. Replacing these meters would improve the water budget and billing accuracy.

Water Meter Change-Out Program BMP 7:

A well develop method of keeping the water meters up-to-date would also keep water cost down. The typical meter age is 10 years. Over time, the meters wear out and their accuracy decreases. Systematic review and maintenance will reduce meter wear, increase meter life, and improve meter accuracy. When the meters eventually wear out, they should be replaced to keep the water measurements accurate. Also, advancements in meter technology

provide additional benefits such as automated alarms for apparent water leaks. In recent years, the City has replaced 7 percent of the meters per year.

USER CONSERVATION OPTIONS

Residential Leak Detection and Repair BMP 8:

Residential users may not know how to test for leaks in their home. Leak detection instructions could be distributed with educational literature. Assistance could be provided for those requesting some help. Use methods consistent with American Water Works Association's *Water Audit and Leak Detection Guidebook*.

Voluntary Water Audits BMP 9:

City staff would advertise and perform water audits with residents to quantify how much water is being used by various tasks including watering yards, household use, etc. Once residents know how much water they are using and how much is necessary, it would be easier for them to conserve water. Use methods consistent with American Water Works Association's *Water Audit and Leak Detection Guidebook*.

Water Efficient Fixtures and Appliances BMP 10:

Current building codes require that water efficient fixtures be installed in new building. However, older sections of American Fork were fixtures be installed in new buildings. However, older sections of American Fork were developed before these codes were in place. The City could develop a budget to assist with the replacement of wasteful fixtures. Assistance may include rebates for replacing shower heads and toilets, discounts on efficient appliances or other measures that would help to compensate for the replacement cost.

REGULATORY AND RATE OPTIONS

Water Conservation Committee BMP 11:

A Water Conservation Committee would likely be a five member committee with citizens and public officials including the Water Superintendent, Public Works Director, a Council Member and two more citizens. The committee would be responsible for distributing information to the public, receiving public comments, and making recommendations to the City Council regarding water conservation planning, regulations, and rates.

Conservation Oriented Rate Structure BMP 12:

A conservation oriented rate structure not only pays for the production and distribution of water, but also rewards users for reducing system demand and penalizes users for increasing demand. The City would need to study which rate would most fairly distribute the cost among the water users and promote conservation. Factors that may affect the rate structure include lot sizes, family size, land uses, housing density, water metering and economics.

Review Enforcement of Existing Ordinances BMP 13:

Prior to adopting new conservation ordinances, it is important to review existing ordinances and building codes and enforcement. The review will limit duplication and conflict with new ordinances. Regulation of multiple-family units, including accessory apartments, on single family parcels, may improve water use management.

Shortage Management and Emergency Planning BMP 14:

The City's shortage management and emergency plan limits public water use and restrict watering to week days during droughts. These measures are easy to enforce and can be very effective. The City also plans for system failures such as a main break, a pump failure, a well collapse, etc. with system improvements. The City's planned responses to these emergencies decrease water service interruptions.

Conservation Incentives to Wholesale Users BMP 15:

American Fork sells approximately 10 MG per month to Cedar Hills City. As with the residential users, it may be possible to provide incentive pricing to Cedar Hills City and other wholesale or large scale water users. It is also possible to limit the total of park supply to wholesale users.

Water Efficient Landscape Practices BMP 16:

Extensive research has been done in recent years to find ways to reduce landscape water use. The City could plant demonstration gardens around City buildings and prominent areas of parks so that citizens can see the beauty and effectiveness of water efficient landscape practices. These practices include selecting drought tolerant plants, shrubs, trees, efficient irrigation systems, and mulching.

The Division of Water Resources, in cooperation with USU Extension, Bureau of Reclamation, and numerous other water providers and interested agencies, has helped developed a water-wise plant tagging program to promote the use of native and other well-

adapted plans in Utah landscapes. The information can be downloaded from the following link: www.waterwiseplant.utah.gov.

Water Rationing Policies BMP 17:

The City uses water rationing for its drought emergency plan. As the City, and surrounding areas, continues to grow and become more crowded, the chances of implementing water rationing will rise. American Fork could strengthen its emergency response by developing inter-city agreements to share resources, materials, and personnel in emergencies.

BEHAVIORAL AND EDUCATIONAL OPTIONS

Public Conservation Education BMP 18:

American Fork send educational mailers to its users. Continued education through the mail, advertising, schools, civic meetings, and Water Conservation Committee meetings could improve conservation by involving the public in its water conservation efforts. The City needs to develop additional methods of providing the public with information on water conservation. The Utah State Division of Water Resources and other agencies have already developed various pamphlets on water conservation.

Basic conservation information can be issued by:

1. Providing a conservation hotline and water saving surveys.
2. Providing funding for a public information campaign and program.
3. Providing information on low water use plants and efficient irrigation systems.
4. Providing information on water pricing improvements to reduce water consumption.
5. Providing information on system improvements.

Improved Industrial and Commercial Processes BMP 19:

American Fork could explore or provide funding for companies to explore new methods that have been developed to reduce the amount of water used in industrial and commercial processes. If some of these methods could be implemented in the City, new ordinances could be created that would require new and existing companies to provide water conserving processes.

Peak use Reduction BMP 20:

The demand for water is greatest during summer months. Encouraging evening, night, and early morning watering can reduce peak demand and overall water usage.

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SECTION 6 – EVALUATION OF CONSERVATION OPTIONS

The conservation options are evaluated in Table 9.

TABLE 9: CONSERVATION OPTIONS EVALUATIONS						
Alternative	BENEFIT	COST	PUBLIC VIEW	TIME	EFFORT	Total
System O&M and Repair Options						
Water Loss Budget	4	1	2	3	2	12
Leak Detection System	7	3	2	3	3	18
Large Meter Replacement	3	1	2	3	3	12
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Cost, public view, staff time and effort are rated from 1 to 5, with 1 being inexpensive and 5 being expensive.

Benefits are rated from 1 to 10, with 1 being a large benefit and 10 being a minimal benefit. The benefit of each option was weighed so that the option with maximum benefit to culinary water conservation would rank better. The options with lower totals are preferred.

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SECTION 7 – RECOMMENDED CONSERVATION PROGRAMS

Recommended water conservation programs have been selected based on highest ranked conservation options.

With the completion of the pressurized irrigation system, most of the City’s water conservation efforts will focus on its successful implementation over the next five years when they will be evaluated and amended as needed. Other programs will provide additional water conservation and provide information needed for updating the conservation plan in five years.

Programs recommended to be implemented over the next five years are summarized in Table 10. The table also lists water use reduction goals, implementation schedules and evaluation processes to measure progress.

TABLE 10: RECOMMENDED WMCP 2014 TO 2019			
Description	Goal	Deadline	Evaluation
System Repairs	Upgrade the culinary system by replacing older. Reduce water use to 150 gpd per capita	December 31, 2019	Collect data and calculate the use per capita per month and annually.
Enforcement of Existing Ordinances	The City has recently adopted an ordinance restricting the use of pressurized irrigation to certain days of the week.	December 31, 2019	Collect data and calculate the use per capita per month and annually and compared with State’s average use.
Water Conservation Committee	Organize a Water Conservation Committee and implement water conservation options.	December 31, 2015	Organize meetings at least quarterly and evaluate the water use and reductions based on implemented options.
Public Conservation Education	Distribute two water conservation newsletters per year with utility bills.	2014 until 2019	Document by using work orders the number of newsletters distributed per year.
Water Meter Change – Out Program	Change out 300 residential water meters per year	2015 until 2019	Number of meters replaced. On going program

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SECTION 8 – PREVIOUS WMCP EVALUATION

Table 11 shows an evaluation of the Water Management and Conservation Plan adopted in February 2010.

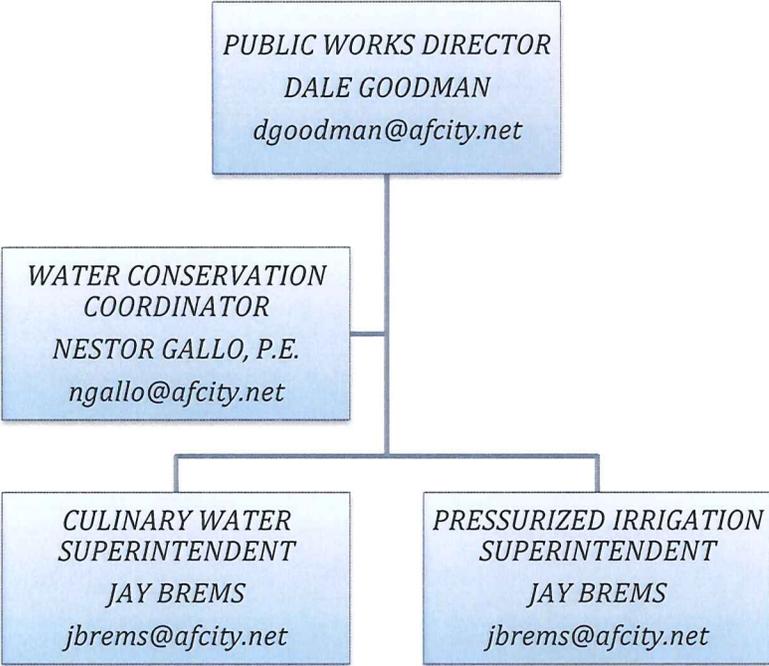
TABLE 11: EVALUATION OF THE WMCP 2010 TO 2014			
Description	Goal	Deadline	Evaluation
Full implementation of the pressurized irrigation system	Reduce per capita culinary water use by 50%. Current per capita use = 316 gpd, goal = 158 gpd	Achieve conservation goal by December 31, 2014.	Total annual culinary water use as measured by source meters, divided by 265, divided by current City population. COMPLETED. Water consumption per capita = 164 gpd compared to 316 gpd (a 48% reduction)
Water Loss Budget	N/A	December 31, 2014	N/A
Water Meter Change – Out Program	Change out 500 residential water meters per year	2010 – 2014	Number of meters replaced – 315 full meter/ transponder and 950 Orion transponder were replaced for a total of 1,265. On going program.
Public Conservation Education	Distribute two water conservation newsletters per year with utility bills.	2010 – 2014	Number of editions of newsletters distributed per year – On going program

Water users within the City of American Fork, whether commercial or residential customers, are invited to participate in city meetings and establishing priorities for conservation activities. Decisions made by the City regarding establishing conservation goals and priorities will attempt to reflect suggestions and comments offered by customers and interested parties.

Opportunities for public involvement and comment will be provided through public hearings as this plan is approved and as future updates to the plan are made.

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SECTION 9 – WATER MANAGEMENT AND CONSERVATION PLAN TEAM



SECTION 10 – CONCLUSIONS

The City of American Fork is documenting its updated Water Management and Conservation Plan (WMCP) with this report. With recent construction of the pressurized irrigation, the culinary water system has adequate source, right, storage and distribution for the foreseeable future. Some additional water source and conservation measures will be needed to meet demand at total built out. The distribution system is aging and needs some repair. The implementation of the pressurized irrigation represents the best option for conservation of culinary water supplies.

The goals set on the 2010 Water Management and Conservation Plan resulted on a 48% reduction on water use. There is a high demand for irrigation water and the City is taking steps to reduce water waste and bring the amount of water per capita to a number that matches the state's average more closely.

The WMCP identifies and prioritizes several conservation options based on benefits, cost, and other factors. The recommended programs will be implemented in phases over the next five years.

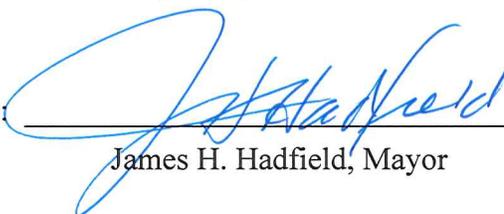
2014 WATER CONSERVATION AND MANAGEMENT PLAN

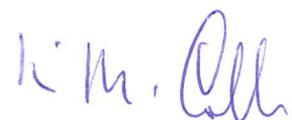
LIST OF CITY OFFICERS

Mayor	James H. Hadfield
Council Member	Carlton Bowen
Council Member	Brad Frost
Council Member	Robert Shelton
Council Member	Jeffrey Shorter
Council Member	Clark Taylor
Public Works Director	Dale Goodman
Water Division Superintendent	Jay Brems

CERTIFICATION OF ADOPTION

I hereby certify that the attached Water Management and Conservation Plan has been established and adopted by the American Fork City Council this 28 day of October, 2014.

Signed: 
James H. Hadfield, Mayor

Attest: 
Richard M. Colborn, City Recorder



REFERENCES

American Fork City General Plan, Public Facilities and Services Element, 2010 Water Systems Component and Impact Fee Facility Plan, Horrocks Engineers in conjunction with Franson Civil Engineers, May 2012.

George Shelley, *Early History of American Fork*.

Utah Division of Water Rights. Website: www.nrwrtl.nr.state.ut.us

Utah Water Conservation Plan Act, Utah Code Annotated, Section 73-10-32.

APPENDIX