

Water Conservation Plan



July 2022

Update

Contents

1.0 Introduction.....	3
1.1 Utah and Water Conservation.....	3
1.2 Background Information	3
Figure 1-1 Culinary Water Service Area	4
2.0 Existing Water Resources	5
2.1 Existing Water Rights and Sources	5
2.2 Existing Infrastructure	5
2.3 Culinary Water Connections.....	5
3.0 Current and Future Water Use.....	6
3.1 Current Water Use.....	6
Table 3-1 2021 Monthly Water Pumped from all sources	6
Table 3-2 Historical Water Use in AF Categorized by Type of Connection	7
Table 3-3 Water Use Per Capita	8
Table 3-4 Indoor use compared to Outdoor Use	9
3.2 Future Water Requirements.....	9
Table 3-4 Projected Population and Water Use Per Capita	9
Figure 3-2 Projected Water Supply and Demand.....	10
4.0 Water Measurement and Billing	10
4.1 Water Measurement Practices.....	10
4.2 System Water Loss Control.....	10
4.3 Culinary Water Rate Structure	11
Table 4-1 Culinary Water Rate Structure	11
5.0 Water Conservation Practices	11
5.1 Water Conservation Deficiencies and Goals	11
5.2 Public Education	12
5.3 Water Conservation Ordinances and Standards	13
5.4 Water Pricing	14
5.5 Physical System	14

1.0 Introduction

1.1 Utah and Water Conservation

Information for the River Heights City Water Conservation Plan was gathered and compiled by:

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In response to the rapid growth occurring throughout Utah, the state legislature passed a Water Conservation Plan Act (House Bill 71) and revised it in the 2004 legislative session (Section 73-10-32 Utah Code Annotated). In response to those bills, River Heights City is reviewing the existing and future supply and capacity of their community water supply system. This water conservation plan summarizes the cities' approach to encouraging water conservation and ensuring an adequate and uninterrupted water supply to River Heights' citizens through the year 2060 at high quality and at reasonable cost.

The Utah Division of Water Resources (DWRe) currently leads statewide efforts for municipal and industrial water conservation. Utah's previous statewide goal for water conservation was to achieve 25% water conservation from 2000 to 2025. Since significant progress has been made toward that goal, DWRe has identified the need for regional conservation goals based on the various climates, population, and water use practices in different parts of the state. DWRe's draft, Utah's Regional M&I Water Conservation Goals updated the Bear River Region's (including Cache County) conservation goal to 18% from 2015 to 2030, which equates to an average use of 249 gallons per capita per day (gpcd)

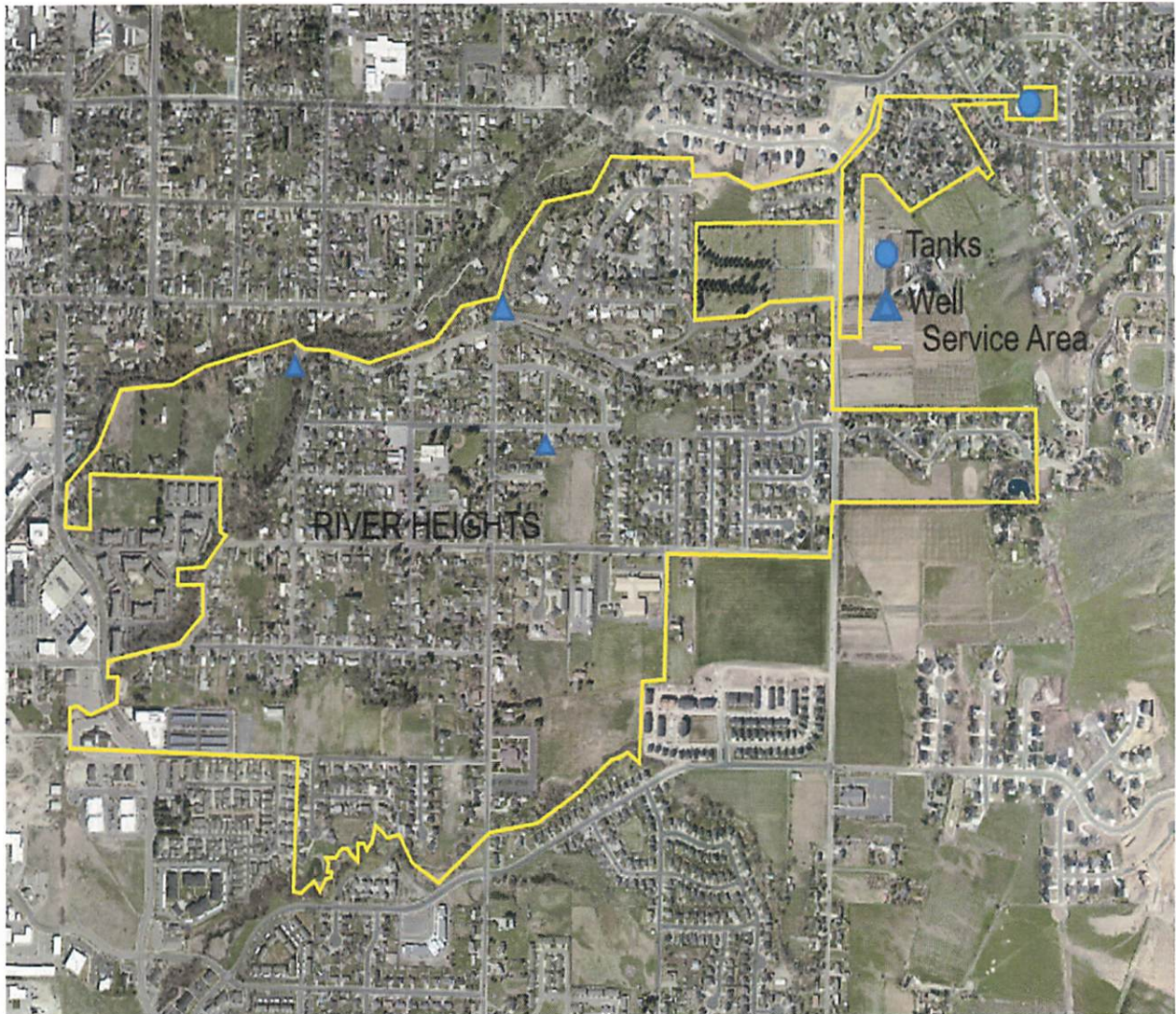
1.2 Background Information

Located in Cache County, and in the second driest state in the nation, River Heights City's 2021 population was approximately 2,230. Providing water to meet our citizens' needs has always been a top priority of city leaders and planners. A well-maintained and efficiently operated water system provides the citizens of River Heights with water when and where needed.

The incorporated city contains 419 acres. Of this, 350 are residential, 11 in open space, 11 commercial lands, and the rest is irrigated agriculture land. There is county land to the east which could be annexed. Consequently, future growth will be primarily single-family residential units. Residential lot sizes vary from 8000 sq-ft to several acres. There are approximately 75 additional acres that could be annexed into River Heights.

River Heights is presently undergoing a slow increase in growth. Recent improvements to the water system in storage and transmission have enabled the city to adequately meet the increased needs associated with growth in the community.

Figure 1-1 Culinary Water Service Area



2.0 Existing Water Resources

2.1 Existing Water Rights and Sources

All culinary water comes from three deep wells located within the city limits. Under current water rights (Priority dates Sept. and Oct. 1934, Jan. 1964, and Jan. 1980), River Heights City is entitled to withdraw 8.5 cfs from the three wells (General Plan). The City has been typically withdrawing approximately 180-210 million gallons of water annually from the underlying aquifer. The City has the capability to pump 6.5 cfs (2900 gpm).

The City also owns 40 shares of stock in the Providence Logan Irrigation Company, which is equivalent to about 0.8 cfs. This water has a priority date of 1860. Water provided under these shares historically has been used for irrigation of city-owned parks. The City is presently trying to purchase additional shares. The City understands the importance of the secondary irrigation system as it has been used for over 100 years to sub-irrigate the city by watering its many trees and providing relief to culinary supplies by its secondary use on fields, gardens and lawns.

2.2 Existing Infrastructure

The water delivery system consists of a piping distribution network connecting the three wells to the City reservoirs and to each individual consumer. The 500,000 and 1,000,000 gallon reservoirs are located north-east of the city and connected to the distribution system with a 14 inch ductile iron pipeline. There is only one pressure zone within the city, so pressures vary from about 35 psi to about 125 psi. All customers, except a few houses at high elevation have adequate pressure and water supply.

The main pump has a pumping capacity of 2000 gpm. The other two pumps have capacities of 550 gpm and 350 gpm, making a total potential pumping capacity of 2,900 gpm. The only treatment required for the ground water is the addition of chlorine at each well.

The current 1,500,000 gallons of storage is adequate for growth in the community at projected growth rates through the year 2060, if the city continues its current conservation practices. The future potential for high density housing may affect the water supply system making conservation a prudent choice.

2.3 Culinary Water Connections

Based on the year 2021 River Heights City had the following culinary water connections: 711 residential, 16 institutional, and 4 commercial.

3.0 Current and Future Water Use

3.1 Current Water Use

Culinary Water System

In 2021, River Heights City withdrew 206,624,000 gallons of culinary water from the underlying aquifer. Table 3-1 illustrates the gallons of water pumped per month in 2021.

Table 3-1 2021 Monthly Water Pumped from all sources

Month	Thousand Gallons
January	7,343.00
February	6,002.00
March	5,765.00
April	6,816.00
May	21,613.00
June	36,638.00
July	37,157.00
August	31,218.00
September	25,396.00
October	10,990.00
November	8,641.00
December	9,045.00
Total	206,624.00

In 2021, River Heights City's total culinary water use was 468.74 AF (acre feet). Additional water use records for River Heights City's culinary water connections can be found in Table 3-2. The River Heights City water system consists of residential, institutional, and commercial culinary connections. These records are representative of end use data that has been previously submitted to Water Rights.

Table 3-2 Historical Water Use in AF Categorized by Type of Connection

Year	Residential	Institutional	Commercial	Total
2021	417.48	43.55	7.72	468.74
2020	481.01	56.80	10.75	548.56
2019	401.95	24.35	10.21	436.51
2018	467.74	27.74	10.80	506.28
2017	414.91	19.78	8.38	443.07
2016	398.08	25.38	2.54	426.00
2015	368.27	52.17	0.0	420.44
2014	364.35	58.06	0.0	422.41
2013	425.79	8.00	0.0	433.79
2012	468.41	24.93	0.0	493.34
2011	553.61	21.73	0.0	575.34
2010	494.45	21.62	0.0	516.08
2009	345.26	27.10	0.0	372.36
2008	418.31	38.84	0.0	457.15
2007	305.66	38.84	0.0	344.50
2006	304.80	39.07	0.0	343.87
2005	291.52	36.00	0.0	327.52

Irrigation Water

Within the incorporated area there is a secondary irrigation system (open ditches) in part of the city which provides lower quality water for landscaped areas and gardens. Because it is an open ditch system and not pressurized many residents choose to irrigate lawns and gardens with culinary water. At the current time it is unknown how much secondary water is used for outdoor watering.

Per Capita Water Use

Table 3-3 and Figure 3-1 represent the calculated gallons per capita per day (gpcd) for River Heights City. The total community culinary water use in 2021 was 188 gpcd, and the average since 2005 has been 212 gpcd.

Table 3-3 Water Use Per Capita

Year	Population	Residential Use (AF)	Non-Residential Use (AF)	Total Use (AF)	Total Use (gpd)	Total Community Use Per Capita (gpcd)	Total Residential Use Per Capita (gpcd)
2021	2230	417.48	51.27	468.74	418,464	188	167
2020	2345*	481.01	67.55	548.56	488,777	208	183
2019	2330*	401.95	34.56	436.51	391,022	168	154
2018	2170	467.74	38.54	506.28	449,675	207	192
2017	2130	414.91	28.16	443.07	394,280	185	174
2016	2130	398.08	27.92	426.00	377,988	177	167
2015	2130	368.27	52.17	420.44	374,729	176	154
2014	1852	364.35	58.06	422.41	377,010	203	174
2013	1735	425.79	8.00	433.79	387,111	223	219
2012	1685	468.41	24.93	493.34	439,899	261	247
2011	1670	553.61	21.73	575.34	514,845	308	294
2010	1670	494.45	21.62	516.08	459,450	275	263
2009	1665*	345.26	27.10	372.36	332,368	199	186
2008	1665	418.31	38.84	457.15	407,314	244	224
2007	1577	305.66	38.84	344.50	307,278	195	173
2006	1565	304.80	39.07	343.87	306,952	196	174
2005	1525	291.52	36.00	327.52	292,289	192	171
Average						212	195

*Possible error in reporting

Figure 3-1 River Heights City Gallons Per Capita Per Day

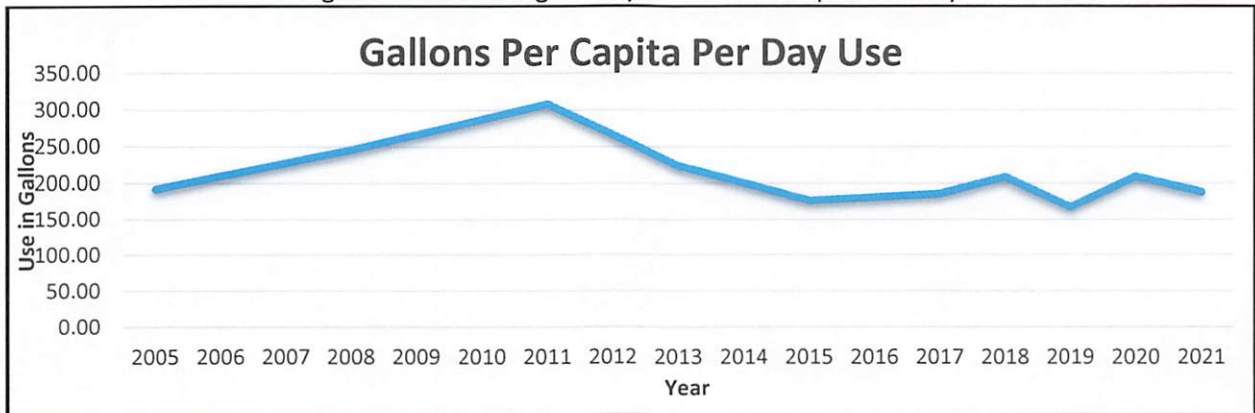


Table 3-4 below shows the average winter months use to the average summer months use in the year 2021. As you can see outdoor watering comprises a major portion of the total water use.

Table 3-4 Indoor use compared to Outdoor Use

	Indoor Use (Winter Months)	Outdoor Use (Summer Months)	Difference	Outdoor Use Per Capita Annually
Water Use (thousand gallons)	7,964.00	26,469.00	18,505.00	8.00

3.2 Future Water Requirements

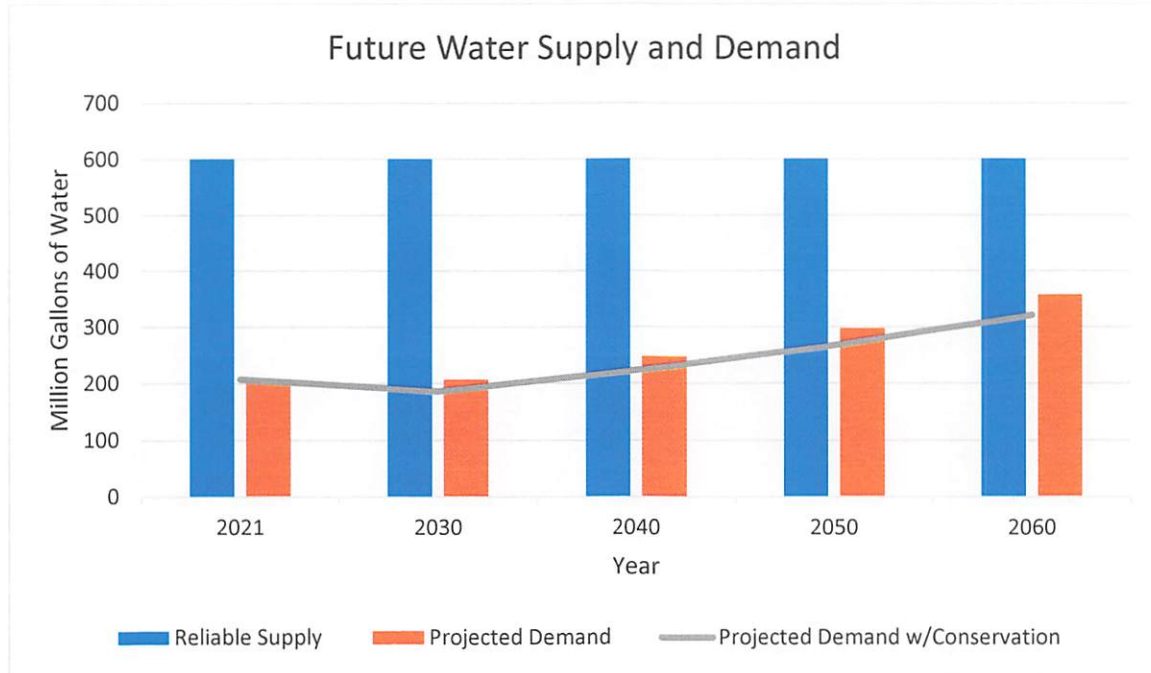
The extent of the City's expected future population growth through the year 2060 is shown below. Many factors influence this projection and the estimates shown may vary substantially from the actual population experienced. Since future growth is difficult to predict, the city has chosen to plan for a higher estimated growth.

Table 3-4 Projected Population and Water Use Per Capita

Year	Population	Projected Water Use based on 212 gpcd (Million Gallons)
2021	2,230	206.6
2030	2,676	207.1
2040	3,211	248.5
2050	3,853	298.1
2060	4,624	357.8

As previously mentioned, River Heights City has three sources of water with capacities of 2,000 gpm, 550 gpm, and 350 gpm. This equates to a total, reliable supply (pumps running no longer than 10 hours in a 24 hour period) of over 600 million gallons of water per year. Therefore, River Heights City has a sufficiently reliable supply to meet the projected demand of 357.8 million gallons of water in 2060, as shown in figure 3-2. Note that figure 3-2 also depicts the projected water demand, assuming 10% water conservation (190 gpcd).

Figure 3-2 Projected Water Supply and Demand



As previously mentioned, DWRe has established a draft goal of 249 gpcd for Cache County. River Heights City’s recent 10-year average of 212 gpcd is less than the state goal. However, the state goal represents a reduction of 18% system-wide including both indoor and outdoor use. Since River Heights City does not have accurate data for the secondary irrigation (ditch) use, a target goal of 190 gpcd by 2030 will be used (10% water conservation from the average 212 gpcd).

Although River Heights City already has a sufficient water supply to the year 2060, storage capacity could become a concern at some point. At the current time there is no plan in place for a future storage tank but the city will watch growth closely and make plans as necessary.

4.0 Water Measurement and Billing

4.1 Water Measurement Practices

River Heights City meters 100% of the culinary water connections, and they are read monthly. Approximately 10% of meters are replaced annually. There is a Master Meter at every source and read a minimum of three times a week while the source is in operation.

4.2 System Water Loss Control

River Heights City’s water system experiences approximately 20% of unaccounted-for water annually. Potential reasons for unaccounted-for water may include leaks from various infrastructure (pipes, valves, hydrants, etc.) water theft, and water meter inaccuracies. Water leaks rarely surface due to the granular soil conditions throughout much of the city, therefore, the city

has undertaken an aggressive leak detection and repair schedule in which most of the water system is evaluated annually. When a source for water loss is made known, actions are taken to correct the problem as soon as possible.

4.3 Culinary Water Rate Structure

River Heights City's culinary water rate structure is shown in Table 4-1. This rate structure is designed to encourage conservation by raising the price of water after 10,000 gallons used and again after 30,000 gallons used for residential users. River Heights City reads meters monthly and are able to charge our higher water users an overage on a monthly basis.

Table 4-1 Culinary Water Rate Structure

Water Rates				
<u>Single Family Units</u>				
Base Rate		Includes 10,000 gallons		\$29.75
Overage Rates		10,001-30,000 gallons		\$0.75/k
		30,001 + gallons		\$1.00/k
<u>Multi-Family Units</u>				
Base Rate		Includes 10,000 gallons		\$28.00/unit
Overage Rate		Same as single family		
<u>Commercial/2" meter</u>				
Base Rate				\$44.00
Overage Rate		0 + gallons		\$1.00/k

5.0 Water Conservation Practices

The water conservation practices described in this section will continue to be implemented within River Heights City.

5.1 Water Conservation Deficiencies and Goals

Deficiencies

Citizens lack information and understanding of landscaping water requirements and efficient water-use habits and practices: Few residents know how much water is required to maintain healthy landscaped areas and how to consistently use water efficiently indoors. Most citizens' irrigation and indoor practices are based on convenience rather than plant needs and water supply considerations.

River Heights City families have always shown a propensity to plant and care for large areas of grass and other water intensive landscaping. This irrigation need usually creates a water use

peak in July and August. System improvements to pipelines have allowed the supply system to adequately meet the summertime demands on the system.

Older, deteriorating, smaller diameter pipes in the distribution system continue to fail, allowing water to leak into the ground. Water leaks rarely surface due to the granular soil conditions throughout much of the City. It is important to continue the leak detection monitoring while replacing old and deteriorating pipes as budgets will allow.

Many trees and shrubs in the city are high water users. The city does not have suggested types of trees on an acceptable list.

Goals

Goal #1- Maintain a financially viable water system. The water pricing system should encourage customers to reduce use without creating a revenue shortfall.

Goal #2- Maintain or improve the appearance of street landscapes, open spaces and yards. Improved irrigation practices and water efficient landscapes can enhance the beauty of the city.

Goal #3- Maintain an up to date metering system. River Heights City will continue to maintain an up to date metering system by replacing ten percent every year after ten years. Having an up to date meter reading system will allow the city to read meters monthly at a low cost to improve conservation through a water rate structure.

5.2 Public Education

The following information on efficient outdoor and indoor water will be made available to the citizens on the River Heights website (www.riverheights.org).

Outside Water Use:

- Water landscape only as much as required by the type of landscape, and the specific weather patterns of your area, including cutting back on watering times in the spring and fall. We encourage our customers to utilize the weekly lawn watering guide located at (www.conservewater.utah.gov).
- Do not water on hot, sunny, and/or windy days. You may actually end up doing more harm than good to your landscape, as well as wasting a significant amount of water.
- Group plants in terms of water need, and zone sprinkler systems accordingly.
- Alter parking strips by allowing more water-wise plantings.
- Sweep sidewalks and driveways instead of using the hose to clean them off.
- Wash cars from a bucket of soapy (biodegradable) water and rinse while parked on or near the grass or landscape so all the water running off goes to beneficial use instead of running down the gutter to waste.
- Check for and repair leaks in all pipes, hoses, faucets, couplings, valves, etc. Verify there are no leaks by turning everything off and checking your water meter to see if it is still running. Some underground leaks may not be visible due to draining off into storm drains, ditches, or traveling outside your property.

- Use mulch around trees and shrubs, as well as in your garden to retain as much moisture as possible. Areas with drip systems will use much less water, particularly during hot, dry and windy conditions.
- Keep your lawn well trimmed and all other landscaped areas free of weeds to reduce overall water needs of your yard.

Indoor Water Use:

About two-thirds of the total water used in a household is used in the bathroom. Concentrate on reducing your bathroom use. Following are suggestions for this specific area:

- Do not use toilets as a waste basket. Put all tissues, wrappers, diapers, cigarette butts, etc. in the trash can.
- Check the toilet for leaks. Is the water level too high? Put a few drops of food coloring in the tank. If the bowl water becomes colored without flushing, there is a leak.
- To create a low volume flush toilet, put a plastic bottle full of sand and water to reduce the amount of water used per flush. However, be careful not to over conserve to the point of having to flush twice to make the toilet work. Also, be sure the containers used do not interfere with the flushing mechanism.
- Take short showers with the water turned up only as much as necessary. Turn the shower off while soaping up or shampooing. Install low flow shower heads and/or other flow restriction devices.
- Do not let the water run while shaving or brushing your teeth. Fill the sink or a glass instead.
- When doing laundry, make sure you always wash a full load or adjust the water level appropriately if your machine will do that. Most machines use 40 gallons or more for each load, whether it is two socks or a week's worth of clothes.
- Repair any leak within the household. Even a minor slow drip can waste up to 15 to 20 gallons of water a day.
- Know where the main shutoff valve is and make sure it works. Shutting the water off yourself when a pipe breaks or a leak occurs will not only save water, but also eliminate or minimize damage to your personal property.
- Keep a jar of water in the refrigerator for a cold drink instead of running water from the tap until it gets cold. You are putting several glasses of water down the drain for one cold drink.
- Plug the sink when rinsing vegetables, dishes, or anything else; use only a sink full of water instead of continually running water down the drain.

5.3 Water Conservation Ordinances and Standards

There are no ongoing or proposed ordinances at this time.

Current Conservation Standards

To solve the problems identified above and take advantage of the many associated opportunities, specific water conservation measures must be identified and evaluated. River Heights City has already implemented several water conservation measures, along with additional strategies which will effectively solve the City's water problems.

The City's current water conservation program is directed primarily at managing water shortages and providing useful materials to assist residents to use water more efficiently. Current measures include a water conservation contingency plan, water education program for outdoor and indoor water use, and a conservation oriented water rate structure.

Water Conservation Contingency Plan

The City enacted a "Water Conservation Contingency Plan" in April 1994 which was directed primarily at managing water shortages caused by emergency conditions and providing useful material to assist residents to use water more efficiently. It established water use guidelines during drought or other water supply shortages emergencies. The essentials of the plan are as follows:

- Eliminate watering on city property from 10 a.m. to 7 p.m.
- Eliminate watering of city property in cases of severe shortages.
- Notify the public of the water supply situation.
- Establish a voluntary water conservation program by educating the citizens on indoor and outdoor water conservation principles and requesting a reduction in water consumption.
- If the voluntary measures are not sufficient, the city will instigate mandatory public conservation measures. These include:
 1. Eliminate watering of city parks.
 2. Notify all users of the seriousness of the water situation.
 3. Establish outside watering restrictions including watering times and quantities.
 4. Monitor water consumption daily to determine if the conservation program is bringing the needed reduction in water use.
 5. Strictly enforce the policy with fines for non-compliance.

5.4 Water Pricing

River Heights City currently has a tiered rate structure that is evaluated on a regular basis. Notification of high-water use: River Heights City has the ability to send notifications to their high-water users. This is done on a monthly basis along with the utility bill.

5.5 Physical System

River Heights City will continue to implement repair and replacement of water infrastructure and replace 10% of culinary water meters annually.