



## CHAPTER 5

# WATER USE & PRESERVATION

Integrates Highland water use and land use planning with the goal to ensure that water is used and conserved wisely and sustainably for today's residents and future generations.

**ADOPTED 12/02/2025**

# INTRODUCTION

Water is a renewable, yet finite natural resource. This reality, coupled with years of severe drought, has made the use and preservation of water a priority for local governments, state leaders, water providers, and the public. Recognizing planning's critical role in water management, the state adopted *S.B. 110: Water as Part of the General Plan* in 2022. This new mandate requires most municipalities and all counties to amend their general plans to address how land use planning impacts water use.

This chapter describes Highland's water system and provides a snapshot of current and future municipal water use. It covers the relationship between land and water use in Highland and highlights the City's efforts to reduce and eliminate wasteful water practices. The chapter concludes with recommendations for additional goals and policies that will reduce water demand as part of current and future developments.

**“**Water-wise” refers to practices and strategies that emphasize the efficient and sustainable use of water.

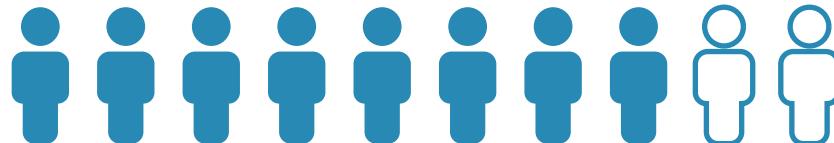


## RESIDENT PERSPECTIVES ON WATER USE & PRESERVATION

A 2022 survey, conducted by Utah State University under the Utah Wellbeing Project, revealed that **88% of Highland residents share a moderate to major concern for the future of the City's water supply (Figure 5.1)**. The 2024 Highland Resident Survey provided additional insight into how residents view water use and preservation, summarized below.

- **Water Metering:** Residents have mixed opinions on secondary water metering, with some viewing it as necessary for encouraging conservation, while others express frustration over higher costs.
- **Water Conservation Programs:** Many residents would like the option to participate in state-sponsored water-saving programs—especially landscape conversion rebates for removing turf.
- **Clearer Expectations:** Residents want to understand the effectiveness of conservation measures and express a desire for clearer policies, water use data, and more consistent reminders about watering days/times, etc.
- **System Efficiency & Maintenance:** Some residents are dissatisfied with the efficiency of the irrigation system, citing unreliable pressurized irrigation in certain areas leading to damaged sprinkler systems. Others express concerns about aging water lines and the need for improvements to the City's water infrastructure to ensure a clean and reliable water supply.
- **Lead by Example:** Residents want Highland City to set a clear example of water conservation, suggesting xeriscaping City-owned park strips and adjusting water-wasting sprinklers to demonstrate a commitment to water conservation.

FIGURE 5.1 – RESIDENT CONCERN FOR THE FUTURE WATER SUPPLY



8 out of 10 Highland residents are concerned for the future of the City's water supply.  
Source: 2022 Utah Wellbeing Project Highland Survey Report.

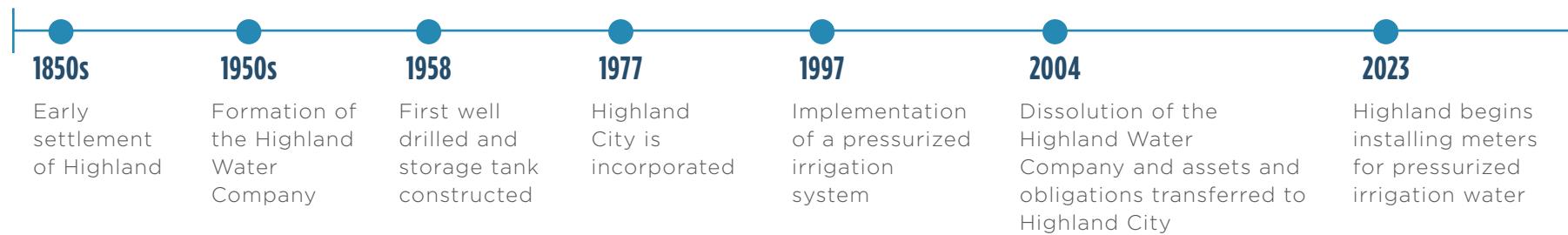
# HIGHLAND WATER SYSTEM SNAPSHOT

By law, water of the state belongs to the public and the right to divert water and decide how it is used is determined by the state. Annually, over five million acre-feet of water are diverted from Utah's natural water systems and supplied to agricultural, residential, commercial, institutional, and industrial customers. Approximately 82% of this water is utilized for agricultural purposes, with the remaining portion allocated to other uses through water delivery systems.<sup>1</sup>

A community water delivery system typically comprises one or more water sources, storage facilities, and a distribution system within a service area. To operate efficiently and effectively, each system component must be planned and designed to operate under the wide range of demands placed on the system by users. Water source capacity determines the system's ability to meet peak demand on the busiest days while also sustaining a consistent supply throughout the year. Typically, one water system delivers drinking water while another system delivers irrigation (secondary) water. Water system connections are the points where a water supply line connects to a building or home. To provide additional context, a historic snapshot of Highland's Water System is shown in **Figure 5.2**.

<sup>1</sup> Prepare60 Securing Utah's Economic Future. (2018). Understanding Utah's Water Municipal Manual 1st Edition. Retrieved from <http://prepare60.com/>.

**FIGURE 5.2 – HISTORIC SNAPSHOT OF HIGHLAND CITY'S WATER SYSTEM**



## DRINKING WATER

Highland City provides drinking (culinary) water to approximately 5,164 connections. Of those existing connections, 5,081 (98.4%) are residential, 48 (0.93%) are commercial, 1 (0.02%) is industrial, and 34 (0.66%) are institutional (**Figure 5.3**). The culinary water system comprises a network of pipes, four water storage tanks, and five groundwater wells (**Figure 5.4**). Existing culinary water demand can be met with two or three of the five wells at any given time, all of which are used on a rotating basis.



Highland City provides drinking (culinary) water to approximately 5,164 connections.

FIGURE 5.3 – DRINKING WATER SYSTEM CONNECTIONS BREAKDOWN

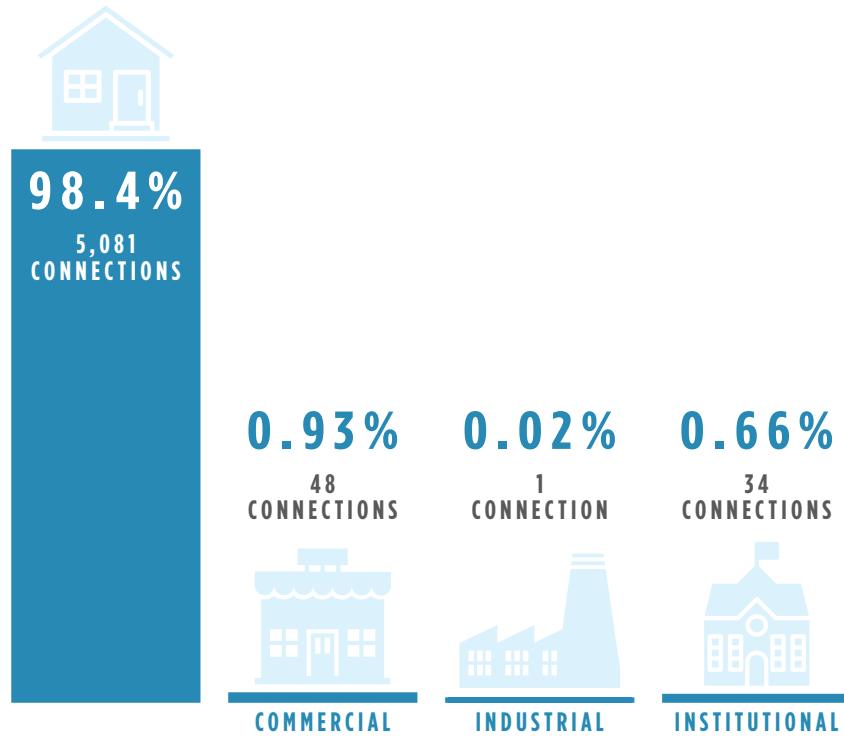


FIGURE 5.4 – DRINKING WATER SYSTEM COMPONENTS



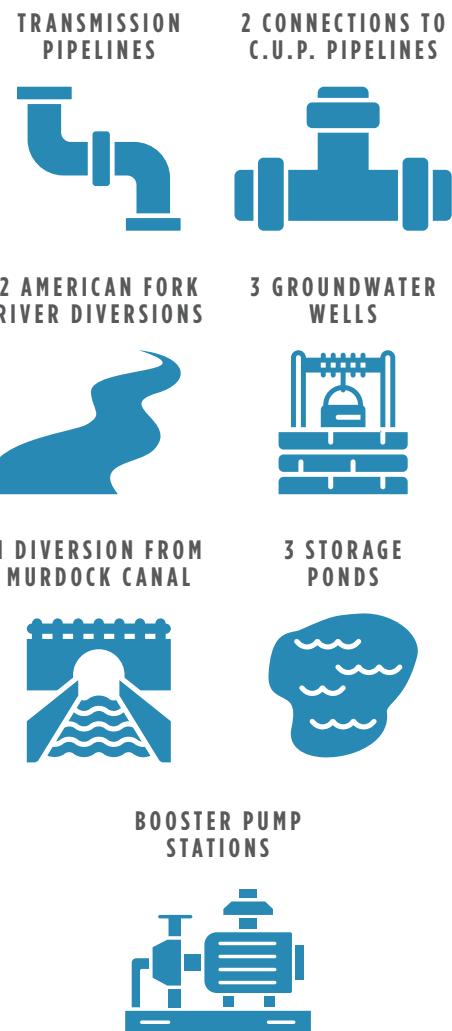
## IRRIGATION WATER

Between 1997-1998, Highland City installed a pressurized irrigation system that provides irrigation (secondary) water for residents. The system is comprised of transmission pipe lines, three storage ponds, three groundwater wells, two diversions from the American Fork River, two connections to Central Utah Project (CUP) pipelines, a diversion from the Murdock Canal, and booster pump stations (**Figure 5.5**). The three wells are pumped to supplement the surface water sources during late season demand periods, peak demand periods, and other periods when surface water sources are unable to meet demands. There are currently 4,800 connections on the pressurized irrigation system.

## SECONDARY METERING

In 2023, Highland City began the process of installing meters for pressurized irrigation water to comply with legislative requirements. Metering eases the data collection process and helps to identify opportunities to optimize water usage, policies, rates, and fees. Following the scheduled completion in 2025, the project will begin data gathering for a comprehensive rate study (2025-2026). The goal of the study will be to establish water rates that promote reasonable water usage, ensuring that rates align with the amount of water allocated to each property. This approach will help the City balance water conservation goals with fair and sustainable pricing. In the long term, consistency in water tracking will ensure that data-driven decisions shape future policies.

FIGURE 5.5 – PRESSURIZED IRRIGATION SYSTEM COMPONENTS





Pressurized irrigation meter installation began in Summer 2023.

## WATER RIGHTS & WATER SHARES

Highland City utilizes both water rights and water shares to supply water to residents and businesses. The City's acquired rights and shares include surface water, reservoir water, and groundwater. As the City has grown, developers have been and continue to be required to dedicate water to the City, typically in the form of water shares from irrigation companies. Efforts have been made to convert water rights into municipal use, granting Highland the flexibility to use water for either drinking or pressurized irrigation purposes (see **Tables A-1 & A-2** in the *Highland City Water Conservation Plan (2022)* for a full summary of City water rights).

### A NOTE ON IRRIGATION COMPANIES

Utah irrigation companies manage water resources by distributing water shares, maintaining canals and pipelines, and supporting efficient irrigation. Shareholders collectively decide water allocation and finances, making strong relationships with local irrigation companies essential for effective water management. Highland holds shares in the following companies:

- Highland Conservation
- Lehi Irrigation Company
- American Fork Irrigation Company
- Provo Reservoir Water Users Association:
- Winn Ditch Irrigation Company
- Central Utah Project
- Pleasant Grove Irrigation Company
- South Jordan Canal company
- East Jordan Irrigation Company
- Fort Field Little Creek Water Users Association

# WATER & LAND USE

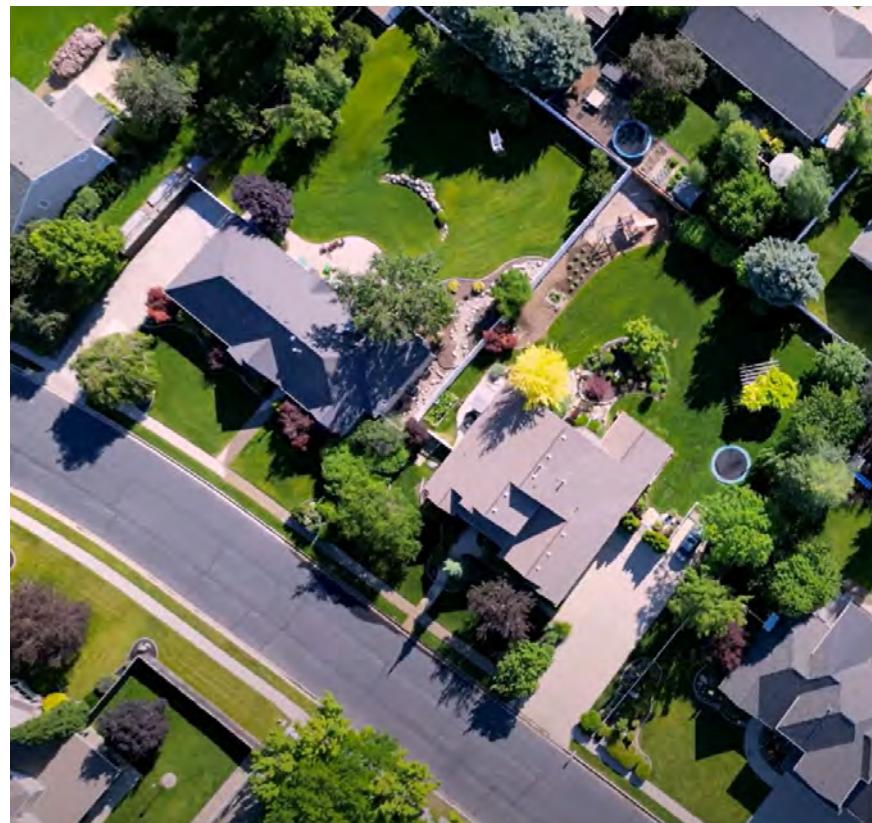
This section examines the link between land use and water conservation in Highland, outlining water-saving practices from *Utah Regional Municipal and Industrial (M&I) Water Conservation Goals Report (2019)*. While these strategies are detailed in the Residential section, they apply to all land use types. This section also highlights the City's efforts to reduce water waste and explores potential future conservation strategies. An inventory of Highland's current and developing water conservation strategies can be found at the end of the Chapter (see **Table 5.6**).

## RESIDENTIAL USES

Typically, the largest consumption of municipal water comes from large-lot, single-family homes. This is the reality in Highland, where low to medium-density residential uses make up over 57% of the City's land use and account for 98% of existing drinking water system connections. As Highland approaches build-out, residential uses are envisioned to remain the dominate use, accounting for over 60% of the City's future land use.

Residential water use is often the primary focus of water conservation policies, as it accounts for the majority of municipal water consumption and provides the most comprehensive dataset for estimating conservation potential.<sup>2</sup> Strategies that reduce wasteful residential water use can correspondingly be applied to all municipal and industrial user types.

<sup>2</sup> Utah's Regional M&I Water Conservation Goals. Retrieved from <https://conservewater.utah.gov/wp-content/uploads/2021/05/Regional-Water-Conservation-Goals-Report-Final.pdf>



Large-lot, single-family homes are the dominate land use type in Highland and will continue to be in the future.



## WATER-CONSERVING PRACTICES & STRATEGIES

The following water-conserving practices and strategies apply across all water and land use types.

1. Appliance Upgrades & Leak Repairs
2. Increased Irrigation Efficiency
3. Landscaping Changes
4. Water-Efficient Land Use Patterns
5. Water Conservation Pricing
6. Water Conservation Education & Outreach

### 1. APPLIANCE UPGRADES & LEAK REPAIRS

Newer appliances and plumbing fixtures are more efficient than older ones. Upgrading toilets, faucets, and shower heads to high-efficiency options has proven to be among the most cost-effective conservation measures. Apart from decreasing water usage per use, modern fixtures also minimize leaks. Appliance upgrades and leak repairs will not be a major focus for Highland, however the City does share relevant appliance information and recommendations on their website.

Inefficient irrigation practices result in a significant waste of water due to leaks, overwatering, watering outside of planting beds, and irrigating in the rain. Highland is increasing citywide irrigation efficiency through the installation of secondary meters and by collecting meter data to inform a comprehensive water rate study (see also ***Secondary Metering on pg. 55***). Highland is also installing smart irrigation controls in new City parks and will add them to existing parks where possible.

### 3. LANDSCAPING CHANGES

In Utah, approximately 65% of our culinary water is applied, often inefficiently, to landscapes.<sup>3</sup> The types of plants we grow, the density at which they are planted, and the type of system used to irrigate them have a major effect on the amount of water needed outdoors. For this reason, many communities are focused on promoting principles of water-wise landscaping—including Highland City (**Table 5.1**).

A water-wise landscape is functional, attractive, easily maintained in its natural surroundings, and helps to conserve water. Efficient use of water in community landscapes reduces water waste and enhances the community's environmental, economic, recreational, and aesthetic resources. Other benefits include better functionality, less maintenance, enhanced curb appeal, lower water bills, simpler irrigation, and the option for phased installation.

<sup>3</sup> Principles of Water Wise Landscaping. Utah State University. Retrieved from: <https://extension.usu.edu/cwel/principles>

#### WATER-WISE PARK STRIPS

In Highland, all park strip areas are required to be landscaped using xeriscape or water-wise methods without the use of lawn. The City defines xeriscape as landscaping in a manner that reduces the need for supplemental irrigation, conserves water, and enhances the beauty of the property. A xeriscape typically consists of an attractive mix of plantings, rocks, and other landscaping materials. Other best practices include:

- Adding pathways so guests who park in front of your home or business can easily access the sidewalk.
- Using plants, trees, and shrubs appropriate to the climate to minimize water loss from evaporation and runoff.
- Choosing trees from the City-approved Tree List.
- Keeping vegetation such as grasses, flowers, ground covers, and shrubs under 22 inches in height.

TABLE 5.1 – PRINCIPLES OF WATER-WISE LANDSCAPING

PRINCIPLE	DESCRIPTION
<b>Start with a plan</b> 	For a landscape design to be water-conserving, it needs to use water efficiently. The planning stage is the optimal time to decide which water efficiency strategies will be used.
<b>Practical turf-areas reduce over-irrigation</b> 	Water-efficient landscaping does not require the elimination of all turfgrass. In fact, turfgrass can be a practical and beneficial component of a water-wise landscape if best practices are followed. The use of turfgrass becomes problematic when it is over-irrigated, used in areas that are challenging to irrigate such as steep slopes or odd-shaped and narrow spaces, and when it is placed in areas where it isn't useful.
<b>Soil preparation is the foundation of a quality landscape</b> 	Soil is the most basic component of a quality landscape and will have an impact on the growth rate, health, and appearance of plants.
<b>Thoughtful plant selection &amp; placement</b> 	Selecting the right plant for the right space is critical to creating a water efficient landscape. Proper placement provides shade, privacy, beauty, efficiency, and can even decrease yard maintenance.
<b>Retain moisture with mulch</b> 	Mulch covers the soil and prevents crusting, compaction, and moisture loss. Mulching around trees, shrubs, and flower beds can result in a ten-fold reduction in evaporative water loss from soil.
<b>Efficient irrigation is critical for conserving water</b> 	Grouping plants with similar water needs (hydrozoning) is the first step in developing an efficient irrigation plan. Once plants are properly zoned, develop an irrigation schedule that will apply the appropriate amount of water based on the unique needs of each zone.
<b>Proper landscape maintenance keeps plants healthy and helps to conserve water</b> 	Landscape maintenance is one of the most important components of a beautiful and lasting landscape. The main activities required to maintain a water-wise landscape are irrigation and irrigation system maintenance, weed control, fertilization, pruning, and pest and disease control.

## 4. WATER-EFFICIENT LAND USE PATTERNS

Water-efficient land use patterns save water while supporting the effective use of existing infrastructure, protecting natural resources, promoting walkability, controlling flooding, and enhancing neighborhood vibrancy. Research shows that even small adjustments to development density can yield significant water savings. Strategies such as allowing smaller homes, reducing parking and setback requirements, and focusing development where infrastructure already exists can support water-wise land use. Highland's current code provides a foundation for these practices, as discussed in more detail below.

### INFILL & WATER-EFFICIENT DEVELOPMENT

Infill and cluster development, particularly where infrastructure already exists, can help preserve green space, reduce water demand, and improve water quality. In Highland, which is largely built out, opportunities for clustering are limited and likely to occur only in areas where preserving natural areas, wildlife habitat, or wetlands is a community priority. Future planned developments could incorporate water-efficient land use patterns, such as reviving cluster subdivisions with shared common spaces to reduce water demand and preserve open areas.



Well-regulated ADUs can take advantage of existing infrastructure and consume less water than a traditional home.

### EXTERNAL ADU CONSIDERATIONS

Smaller lot sizes can reduce the size and water needs of lawns, as smaller homes support the reduction of indoor water use. In Highland, smaller homes on smaller lots will be limited and likely take the form of regulated detached ADUs or senior-specific housing (see also **Chapter 4: Housing**). The City may consider the benefits of water-efficient land use patterns and practices while evaluating policies and regulatory mechanisms for future residential growth.

## 5. CONSERVATION PRICING

Water conservation pricing encourages reduced water use by applying financial incentives, such as tiered rates that increase with consumption. Highland's drinking water rate structure is designed to promote conservation of high-quality groundwater. The ongoing secondary water metering project will also be used to inform a future water rate study.

Providing water users with access to their meter data in the future will empower property owners to better understand their water usage, allowing them to compare the amount applied to their landscapes with the actual water requirements of those landscapes.



Access to secondary metering data can empower property owners to make more informed decisions when it comes to watering their landscapes.

## 6. WATER CONSERVATION EDUCATION & OUTREACH

The support of community members and organizations is a critical component of any water conservation strategy. Below are education and outreach strategies that Highland has implemented and may continue to use and refine:

- **Watering Requirements in Mailers:** Regular updates on watering schedules are included in monthly water bills.
- **Multi-Faceted Public Outreach:** Social media, emails, texts, flyers, videos, website updates, and billing inserts are used to promote conservation awareness.
- **Advertisement of Water Conservation Programs:** Links to programs, such as those offered by the *Central Utah Water Conservancy District*, can be found on the City website.
- **Time-of-Day & Watering Day Restrictions:** Highland educates residents on efficient watering by enforcing restrictions and communicating watering guidelines.

## OTHER LAND USE CONSIDERATIONS

### COMMERCIAL & OFFICE USES

Municipal development standards statewide typically impose stricter water efficiency requirements on commercial developments, which have more resources to invest in such measures. In Highland, commercial and office uses make up only 2% of land use and less than 1% of drinking water connections. While commercial development will remain minimal, Highland can enhance water conservation by applying the same water-saving strategies described in the residential section, including establishing water efficient landscaping standards for future commercial and office developments.

### INSTITUTIONAL USES

Institutional land uses, such as schools and religious facilities, make up about 3.5% of land and less than 1% of the City's drinking water connections. While small, they play a key role in water conservation. Much institutional water use occurs outdoors—parks, school fields, and government properties—which can serve as examples for the wider community. These spaces offer opportunities to showcase water-wise landscapes. One significant step Highland City has taken is requiring smart irrigation systems for all new public facilities.



City-owned park-strips and properties are opportunities to showcase water-wise landscapes, providing tangible and inspiring examples for the public

## PARKS & OPEN SPACE

Public parks account for approximately 2.5% of Highland's existing land use while open space contributes an additional 7.9%. Managing these areas requires a significant number of sprinkler controllers distributed across the City. Highland is in the process of upgrading the current park irrigation systems to smart systems.

In addition to the smart system upgrades, Highland's parkway landscape guidelines have been updated to require a 29-foot wide strip of land along the City's collector and arterial roadways to incorporate xeriscaping instead of turf. In the future, the City may also consider adopting official Park Standards or a Parks, Trails, and Recreation Plan with guidelines and recommendations for converting some underutilized park lawns to water-wise landscapes, selecting water-efficient plantings and features, and enhancing on-site stormwater management through green infrastructure and other low-impact design (see also **Chapters 6 & 7**).

## MIXED USES

Mixed-use spaces in Highland, particularly in areas like the Town Center, could support water-efficient growth by focusing development where infrastructure already exists, reducing the need for water-intensive landscaping, and encouraging shared water systems. Adjusting development standards such as parking requirements, lot sizes, and setbacks could help promote water-wise building practices and more efficient water use.

## GRAVEL PIT/CONSERVATION AREA

It should be noted that the Highland Gravel Pit area, now owned by the Central Utah Water Conservancy District, is one of two potential sites being considered for a future aquifer recharge project. Aquifer recharge refers to the process of replenishing underground water sources in order to provide stable, long-term water storage. More than a decade in the making, the project may soon come to fruition. As an important regional water resource, Highland may work with partner entities to determine big picture management strategies for the Gravel Pit/Conservation Area should it become an aquifer recharge site including future parks and open space.

## REVISITING LANDSCAPE STANDARDS

Highland has taken steps to provide landscaping options within a public street for current and future development that do not require the use of lawn or turf in a parkstrip. However, current landscaping standards for new commercial, industrial, institutional, and multifamily housing projects lack substantial low water use requirements. The City could consider adopting community-wide water efficiency standards that align with state recommendations and empower residents to participate in rebate programs, such as those administered by the Central Utah Water Conservancy District (**Figure 5.6**). In general, water-efficient landscaping standards include the following:

- Limitations on the use of turf
- Promotion of green infrastructure and Low Impact Development (LID) principles (see also **Chapter 7: Environment & Sustainability**)
- Restrictions on “zero-scapes” and artificial turf
- Recommendations for water-conserving landscape design
- Requirements for drip irrigation

### FIGURE 5.6 – CUWCD LANDSCAPING STANDARDS

Municipalities within the Central Utah Water Conservancy District (CUWCD) service area that have adopted specific water efficiency standards are able to access landscape rebate programs. Based on resident interest, Highland may choose to participate in the future. Standards required to participate in the CUWCD rebate programs include:

- Drip irrigation or bubblers everywhere except for lawn
- WaterSense labeled smart irrigation
- 3-4 inches of mulch in planting beds
- 50% living plant cover at maturity
- Lawn shall not be installed in park strips, paths, slopes greater than 25% (4:1 grade), or areas less than 8 feet wide.
- For commercial, institutional, and multi-family uses, lawn areas should not exceed 20% of the total landscape area, outside of active recreation areas.

## TRACKING WATER DEMAND

Water professionals typically use Gallons Per Capita Per Day (gpcd) to track water use, calculated by dividing total annual water use by the population, to represent water use for an area. It should be noted that while gpcd is a common metric, it can be calculated in different ways, making meaningful comparisons between cities difficult. Water demand can also be projected in terms of Equivalent Residential Connections (ERCs). An ERC represents the demand that a typical single family residential unit places on the water system. Water supply and use numbers are often reported in Acre Feet Per Year (AF/YR) where an acre foot is approximately 326,000 gallons—enough water to cover an acre of land in one foot of water.

Between 2016 and 2020, Highland's average gpcd was 502, with 15% (77 gpcd) for drinking water and 85% (425 gpcd) for pressurized irrigation (**Figure 5.7**).

Highland's high per capita irrigation use reflects its larger lot sizes—typically over 1/2 acre, compared with about 1/4 acre in most Utah cities. Lot size directly influences total water demand, primarily due to variations in irrigated area.

Indoor water use remains relatively consistent across lot sizes, averaging about 0.45 acre-feet per household per year. In contrast, outdoor irrigation demand increases substantially with lot size. Using the City's pressurized irrigation (PI) level of service of 5.17 acre-feet per irrigated acre, estimated total annual demand for various lot sizes is summarized in **Table 5.2**. Smaller lots, like those in developments such as Ridgeview, have much lower irrigation demand, supporting Highland's long-term conservation goals.

FIGURE 5.7 – AVERAGE 2016-2020 GPCD

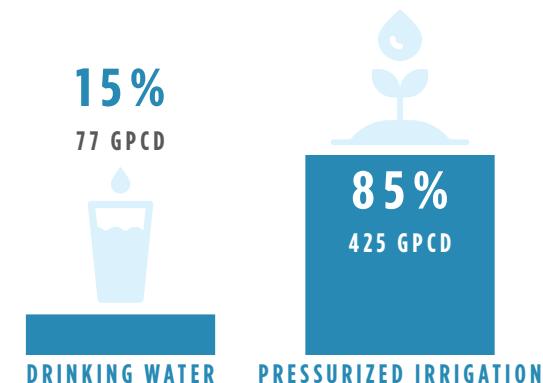


TABLE 5.2 – ESTIMATED TOTAL ANNUAL DEMAND FOR VARIOUS LOT SIZES

LOT SIZE	% IRRIGATED	IRRIGATION DEMAND (AF/YR)	TOTAL DEMAND (AF/YR)	GPCD
0.25 acre	39%	1.3	1.75	392
0.33 acre	45%	1.7	2.15	481
0.50 acre	50%	2.6	3.05	682
0.75 acre	50%	3.9	4.35	973
1.00 acre	50%	5.2	5.65	1,264

## WATER BUDGET

A water budget compares the amount of water a community will need in the future with the amount it can reliably provide, ensuring an adequate supply as the city grows. Highland's population is projected to increase from approximately 21,000 today to about 24,400 by build-out. With these conditions expected within the next 20 years, the drinking water system is projected to serve approximately 7,326 Equivalent Residential Connections (ERCs). The irrigated acreage at build-out is estimated to reach 1,865 acres, and if current water use trends continue, total annual demand could exceed 15,000 acre-feet.

**The City can support development through build-out provided it continues to require 3 acre-feet of water rights per acre of developed property.** According to the City's 40-year water plan, build-out water rights demand is estimated at 13,177 acre-feet per year. Currently, the City holds 16,698 acre-feet of water rights. Under drought conditions, reliable water rights reduce to approximately 11,404 acre-feet, but with additional water rights acquired through development, reliable supply is expected to increase to about 14,000 acre-feet per year—sufficient to meet build-out demands. This forecast assumes development occurs primarily under the R-1-40 zoning designation, with some flexibility, and accounts for anticipated annexation areas. While larger lots typical of R-1-40 drive higher irrigation demand, smaller lots—such as those in developments like Ridgeview (see also **Table 5.2**)—use less outdoor water per household, supporting conservation goals and potentially lowering overall demand. Water rights availability should be sufficient, provided current extraction requirements are followed (**Table 5.3**).

TABLE 5.3 – WATER DEMAND PROJECTIONS

METRIC	CURRENT	BUILD-OUT PROJECTION	BUILD-OUT PROJECTION (w/ Regional Reduction Goals)
Population Estimate	21,000	24,400 (TAZ)	24,400 (TAZ)
Water Rights	16,698 AF/YR* (currently held)	13,177 AF/YR (required for build-out conditions)	2030: ~10,542 AF/YR (20% reduction) 2040: ~9,622 AF/YR (27% reduction) 2065: ~8,956 AF/YR (32% reduction)

**\*Source Capacity: 16,698 AF/YR, during drought conditions the water rights would be reduced to 11,404 AF of reliable water rights. Additional water rights acquired through development will increase the reliable supply.**

# REGIONAL CONSERVATION

In 2019, the Utah Division of Water Resources released the *Utah Regional Municipal and Industrial (M&I) Water Conservation Goals Report*, outlining regional targets and best practices for residential, commercial, institutional, and industrial water use. While not a detailed conservation plan for every region, the report serves as a framework for future infrastructure, policies, and programs that align with Utah's semiarid climate and growing water demands. Utah is divided into nine water conservation regions, with the Provo River Region—including Highland—targeting a 20% reduction in outdoor water use by 2030, which as noted, is a goal Highland is currently pursuing (**Table 5.4 & Figure 5.8**). The City may consider adopting the reduction goals suggested for 2040 and 2065.

TABLE 5.4 – REGIONAL M&I 2030 WATER CONSERVATION GOALS & FUTURE GOAL PROJECTIONS

REGION	REDUCTION FROM BASELINE		
	2030	2040	2065
Bear River	18%	24%	28%
Green River	18%	21%	21%
Lower Colorado River North	19%	24%	28%
Lower Colorado River South	14%	19%	22%
<b>Provo River</b>	<b>20%</b>	<b>27%</b>	<b>32%</b>
Salt Lake	11%	15%	19%
Sevier River	20%	25%	25%
Upper Colorado River	20%	25%	25%
Weber River	20%	26%	30%
Statewide	16%	22%	26%

FIGURE 5.8 – WATER CONSERVATION REGIONS



## WATERSHED RESILIENCE

A healthy watershed is essential for maintaining quality of life, public health, water quality, and economic sustainability. Watershed planning for resilience focuses on minimizing the negative impacts of new development through strategies such as mapping sensitive areas, adopting stormwater management plans, establishing development standards for stream buffers, and participating in collaborative efforts. These actions help protect natural and man-made environments and support outdoor recreation opportunities.

As part of the Utah Lake Watershed (Provo River Region), Highland plays a key role in enhancing watershed health and resilience. The City has adopted a sensitive lands ordinance to protect and mitigate sensitive areas, safeguarding residents from natural hazards and minimizing the degradation of resources. Additionally, Highland's Stormwater Management Program (SWMP) addresses runoff pollution, such as soil, animal waste, and oil, by implementing pollution reduction measures to protect water quality and support overall watershed resilience by implementing pollution reduction programs.<sup>4</sup>

<sup>4</sup> Stormwater. Highland City. Retrieved from: <https://www.hIGHLANDUT.GOV/185/Stormwater>

## THE GREAT SALT LAKE

The Utah Lake Watershed, one of five watersheds draining into the Great Salt Lake, plays a crucial role in maintaining the lake's ecosystem, air quality, and economy, which are threatened by declining water levels. Highland's water conservation efforts are part of a broader regional strategy that helps save water for the lake.



The Utah Lake Watershed is one of five watershed draining into the Great Salt Lake



## WATERSHED NEIGHBORS & PARTNERS

While some conservation goals can be achieved locally, others require collaboration across jurisdictions, including regional neighbors, partners, agencies, the private sector, and non-profits. By working together, these collective efforts can align shared interests, expand resources, and enhance the overall success of protecting and preserving the watershed — including the Great Salt Lake

Building and maintaining lasting relationships with the following entities is recommended:

- Department of Agriculture and Food
- Utah Division of Water Resources
- Central Utah Water Conservancy District
- Timpanogos Special Service District
- Utah Lake Watershed Council
- The Great Salt Lake Watershed Council
- Local Irrigation Companies (see **pg. 70**)
- Utah County
- Neighboring Communities
- See also Gravel Pit/Conservation Area Aquifer Recharge Project on **pg. 78**

# LOOKING FORWARD

Communities are increasingly prioritizing demand-side water management to reduce pressure on water resources and promote sustainable usage for the future.

A key aspect of this strategy is integrating water conservation, efficiency, and reuse into land use planning.<sup>5</sup> **Table 5.5** outlines potential points of intervention to enhance land-water integration. Deciding how and where to intervene will depend on a community's local values and needs, political motivations, staff capacity, the demand-side management initiatives already implemented, and the community's water-saving goals.

<sup>5</sup> Utah Growing Water Smart. The Water-Land Use Integration Guidebook for Northern Utah. May 2024. Retrieved from: <https://extension.usu.edu/cwel/utah-growing-water-smart/files/GWS-SWUT-Guidebook-Jan2024.pdf>

TABLE 5.5 – INTERVENTION POINTS, TOOLS, AND PURPOSE FOR STRENGTHENING WATER & LAND USE INTEGRATION

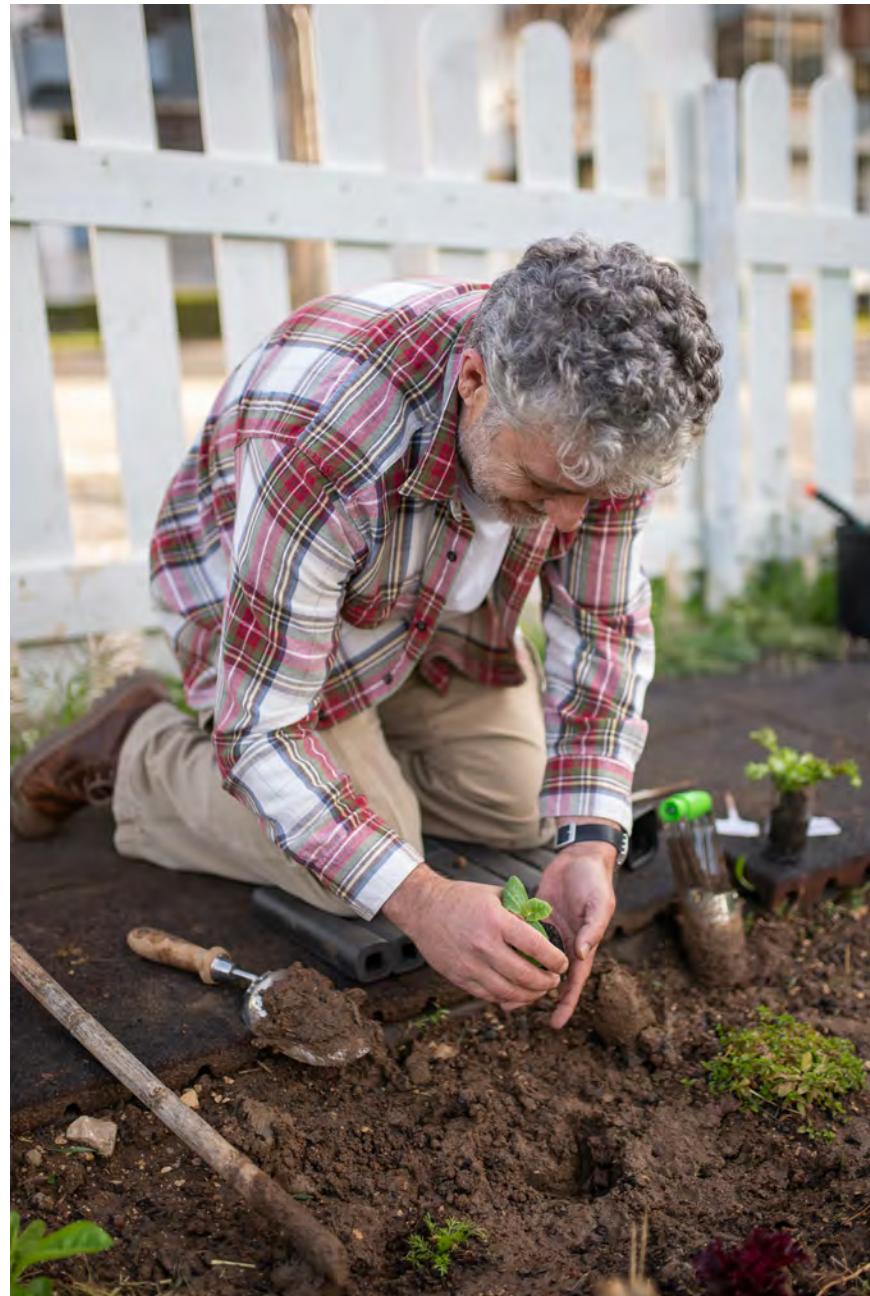
POINT OF INTERVENTION	TOOL/MEASURE	PURPOSE
<b>Planning &amp; Goal Setting</b> 	General Plans Conservation Plans Stormwater Management Plans Capital Improvement Plans Hazard Mitigation, Response, and Recovery Plans	Evaluates local water supplies, current and future demands, and related community economic values. Establishes goals and objectives for managing the intersection of natural resources and the built environment.
<b>Water Smart Land Use &amp; Development Policies</b> 	Zoning Ordinances, Subdivision Regulations, and Planned Development Policies Water Budgets Demand Offset Programs Building and Design Codes Water Efficient Landscaping Ordinances	Links new development to water supply planning. Determines the requirements applied to new development for water resource management, conservation, and efficiency.
<b>Watershed Resilience &amp; Water Smart Infrastructure</b> 	Watershed Planning for Resilience Green Infrastructure and Low Impact Development	An integrated water resource management approach helps mitigate the factors that can degrade ground and surface water quality and quantity. Green infrastructure can support these efforts.
<b>Water Conservation &amp; Efficiency Tools</b> 	Conservation Rate Structuring Post-Occupancy Incentives and Educational Programs	Empowers and incentivizes landowners and renters to reduce water consumption. Links community-wide programs to water supply planning.

Source: Utah Growing Water Smart. The Water-Land Use Integration Guidebook for Northern Utah. May 2024.

## IN CONCLUSION

By continuing to adopt and refine water-wise practices—such as appliance upgrades, efficient irrigation systems, xeriscaping, and water-conscious development patterns—Highland is taking meaningful steps toward sustainable water management. The City's policies, incentives, and collaborations with regional partners will further strengthen Highland's ability to address water challenges while preparing for future growth.

As Highland continues to balance growth with water-wise practices, it is essential to prioritize strategies that reduce water waste, promote efficient land use, and ensure the long-term health of local and regional water resources. By integrating water-saving measures across all land use types, Highland is not only safeguarding its water supply but also setting an example for responsible water management in Utah's semiarid climate.



# GOALS & IMPLEMENTATION STRATEGIES

## Goal 1: Explore opportunities to develop and implement citywide policies and ordinances that encourage water conservation and efficient use in new and existing developments.

- **Implementation 1.1:** Enhance the definition of xeriscaping specifically in the Development Code by clearly distinguishing it from zeroscaping. Provide detailed recommendations for xeriscape design, emphasizing water-efficient, aesthetically pleasing, and environmentally beneficial landscaping practices. Incorporate inspiring examples, images, and guidelines where appropriate.
- **Implementation 1.2:** Explore further opportunities to integrate water-wise principles and language into City Ordinances, Standards, and Development Policies (e.g. Highland City Design Standards).
- **Implementation 1.3:** Consider developing and incorporating appropriate water efficient landscaping standards into the City Code for new and reconstructed commercial, industrial, institutional, and master-planned housing projects (see also *Implementation 4.1*).
- **Implementation 1.4:** Consider developing and incorporating appropriate water efficient landscaping standards into the City Code for new residential projects.

## Goal 2: Explore opportunities to provide the community with inspiring, actionable, and useful educational resources and programs that promote a culture of water conservation and efficient use.

- **Implementation 2.1:** Explore funding opportunities, including partnerships with entities such as the Central Utah Water Conservancy District, to transition the existing parkway details and other city-maintained park strips from turfgrass to xeriscape.
- **Implementation 2.2:** Provide new Highland residents and/or homeowners with recommendations and resources for using both indoor and outdoor water more efficiently.
- **Implementation 2.3:** Consider opportunities to support youth education about water conservation at local schools.

### **Goal 3: Explore opportunities to maintain a coordinated planning process that aligns water supply, conservation, and demand across all City policies and plans.**

- **Implementation 3.1:** Consider developing a drought response or water shortage plan to help protect public health, safety, and welfare during periods of drought, temporary water shortage, and supply interruption.
- **Implementation 3.2:** As City plans and policies are updated or amended, incorporate clear connections between water supply and demand, conservation, recharge, and reuse priorities, ensuring alignment in both policy and language.
- **Implementation 3.3:** Adopt or update regulations to ensure that creation or expansion of public and private water systems and facilities within the City are planned and coordinated with the City's system to avoid negative impacts to the City's system. Limit new or expanded systems as appropriate to prevent interference with the City's water supply and unnecessary use of water.

### **Goal 4: Explore opportunities to support water conservation by promoting or offering accessible and effective rebate, incentive, and reward programs that encourage the adoption of water-efficient practices.**

- **Implementation 4.1:** Revisit the water efficiency standards required by the Central Utah Water Conservancy District (CUWCD) for participation in sponsored rebate programs and evaluate whether the City should adopt them. (see also *Implementation 1.3*).
- **Implementation 4.2:** Explore potential incentives from Highland City to encourage water conservation, such as rebates linked to the Pressurized Irrigation System, incentives for water-efficient appliances and fixtures in new construction, reduced impact fees for developments that meet high-efficiency water use standards, and programs to encourage residents and businesses to adopt smart irrigation controllers for private properties.

### **Goal 5: Strengthen the City's water conservation efforts through dedicated leadership, support, and collaboration.**

- **Implementation 5.1:** Explore the formation of a Water Conservation Team to support the Conservation Coordinator in coordinating public education campaigns, developing water conservation incentives, developing regional relationships and addressing other related water use and preservation goals.

## Goal 6: Regularly review and evaluate current and developing strategies to meet the community's needs.

- **Implementation 6.1:** Regularly review the list of current and developing strategies to ensure they remain relevant and effective over time (*Table 5.6*).

TABLE 5.6 – INVENTORY OF CURRENT & DEVELOPING WATER USE & PRESERVATION STRATEGIES		
STRATEGY	DESCRIPTION	STATUS
A. Continue to require all new developments to connect to the pressurized irrigation system.	Highland City requires all new developments to provide pressurized irrigation pipelines and to connect into the pressurized irrigation system.	Current
B. Continue to require developers to provide water rights to the City.	Highland City requires all new developments to provide irrigation water shares and rights, which must include reservoir/stored water or ground water, to adequately serve the development.	Current
C. Continue enforcing the time-of-day watering requirement.	Highland City currently requires residents to refrain from outdoor watering between the hours of 10 a.m. to 6 p.m.	Current
D. Continue enforcing maximum number of watering days.	Highland City currently requires its residents to water a maximum of three days a week.	Current
E. Continue to require all park strips to be landscaped using xeriscape or water-wise methods.	The City adopted this policy in 2020.	Current
F. Continue to permit the use of xeriscaping in all zones.	In 2020, the City's "Landscaping" definition was updated to mean the use and integration of traditional landscape design methods including xeriscape. The definition for "xeriscape" was also added.	Current
G. Continue to apply the City's sensitive lands ordinance to protect environmentally sensitive areas including watershed recharge zones, wetlands, streams, river corridors, etc.	The ordinance aims to identify and manage the protection and mitigation of such areas.	Current
H. Continue to require all new parkway details to be xeriscaped.	The City adopted this policy in 2023. The City also worked with developers to provide at least partial xeriscaping between 2019-2023.	Current
I. Continue to mail water requirements to residents.	Watering requirements are periodically provided to residents through mailers included in monthly water bills.	Current
J. Continue to maintain a webpage dedicated to water conservation information and resources.	Highland City maintains a webpage dedicated to water conservation information and resources.	Current
K. Continue to utilize of a multi-faceted public outreach program.	The City utilizes social media, emails, texts, flyers, website and mailers to provide conservation awareness.	Current
L. Continue to maintain, repair, and upgrade the pressurized irrigation system.	In 1997-1998, Highland City installed a pressurized irrigation system that provides outdoor water for most residents.	Current

TABLE 5.6 – INVENTORY OF CURRENT &amp; DEVELOPING WATER USE &amp; PRESERVATION STRATEGIES

STRATEGY	DESCRIPTION	STATUS
M. Continue to install smart irrigation systems at new public parks and facilities.	Highland City has implemented a policy that landscaped areas for all new public parks and facilities will be irrigated using a smart irrigation system.	Current
N. Continue to maintain the weir near the mouth of the Canyon.	A Weir helps to control the flow of water for outlets of lakes, ponds, and reservoirs.	Current
O. Continue to update the Highland Water Conservation Plan every 5 years.	The State requires communities with a certain number of water connections to create a Water Conservation Plan and update it every 5 years.	Current
P. Continue supporting the Assistant Public Works Director in their role as Water Conservation Coordinator by providing clear direction, necessary training, and essential resources.	The Assistant Public Works Director is the designated Conservation Coordinator.	Current
Q. Continue to task the Conservation Coordinator to conduct an annual water conservation review at the end of each year.	The Conservation Coordinator evaluates water use and conservation programs each year to ensure goals are being met and to identify opportunities for improvement.	Current
R. Continue to decentivize high culinary water use.	City ordinances define penalties for water waste and are paired with tiered rate structures that charge higher rates as usage increases.	Current
S. Continue utilizing a tiered rate structure to bill for drinking water usage. Regularly assess and adjust the drinking water rate structure to encourage efficient water use as needed.	Highland's drinking water rate structure is designed to promote conservation of high-quality groundwater for future growth.	Current
T. Continue utilizing hydrant meters to meter and charge contractors for water use.	Hydrant meters allow the City to accurately track water used by contractors, ensuring fair billing and promoting responsible water use during construction and other temporary activities.	Current
U. Trade reused water with American Fork through the Timpanogos Special Service District (TSSD) Water Reuse Agreement.	The is an agreement which will allow Highland City to trade reused water with American Fork.	Developing
V. Adopt an aquifer recharge program (gravel pit area).	ASR injects an aquifer with culinary water during low-demand winter months in order to extract water during higher demand months of June through September.	Developing
W. Continue the City's Secondary Metering project to install meters all private pressurized irrigation connections.	The City is in the process of installing pressurized irrigation meters on all connections.	Developing
X. Conduct a future water rate study based on secondary water system metering data.	Data collected from the pressurized irrigation meters will be used to conduct a comprehensive water rate study.	Developing