WATER CONSERVATION AND MANAGEMENT PLAN

OF ELK RIDGE CITY

Resolution Number 22-12-13-1R

WHEREAS, Elk Ridge City is required to complete a Water Conservation and Management Plan,

WHEREAS, Elk Ridge City has reviewed and approved the 2023 Water Conservation Management Plan,

NOW, THEREFORE, BE IT RESOLVED, by the city council of Elk Ridge City that the attached Water Conservation and Management Plan is hereby approved.

The Resolution, 22-12-13-1R, shall take effect immediately upon passage.

PASSED AND APPROVED this 13th day of December 2022.

By _____
Robert Haddock, Mayor

_____
Royce Swensen, Recorder

VOTING:
Councilmember Abbott ____
Councilmember Thomas ____
Councilmember Peterson ____
Councilmember Thompson ____
Councilmember Willis ____

Water Conservation and Management Plan for

Elk Ridge City, Utah

July 2022

Brandon Hundley

Public Works Director

801-423-2300.

TABLE OF CONTENTS

INTRODUCTION

In response to the rapid growth occurring throughout the state of Utah, Elk Ridge City citizens and leaders are becoming concerned for the future cost and availability of the water supply. A similar concern has been demonstrated by the state legislature in the Water Conservation Plan Act (House Bill 71) passed and revised in the 2004 legislative session (Section 73-10-32 Utah Code Annotated). This water conservation plan is written to address the concerns of leaders and citizens of both Elk Ridge City and the state of Utah.

DESCRIPTION OF ELK RIDGE CITY AND ITS WATER SYSTEM

Located in the southern end of Utah County, and in the second driest state in the nation, Elk Ridge's 2022 population was approximately 4,900. Our projected growth within five years will increase by 200 new homes and within the next twenty years we will be built out. Providing water to meet the needs of its citizens has always been a top priority of city leaders and planners. As a result, a well-maintained and operated water system provides the citizens of Elk Ridge City with water when and where needed. Currently, the water system provides water to 1229 residential, and 4 institutional (public) connections.

Elk Ridge City residents and their leaders place a high value on open space. Consequently, approximately 20 acres of land in the city have been set aside as a park. Landscaped areas around churches occupy approximately another 11 acres.

Elk Ridge City is presently receiving a significant interest in residential growth. This growth will cause changes in the way the land within the city limits is being utilized and straining the ability of the present water supply and delivery system to meet demands. Through careful planning and efficient utilization of future water supplies, these increased needs can and will be met.

The Goosenest Water Company, a fully private water system, services some 25 homes in the Goosenest neighborhood. Elk Ridge does not provide any water to that area.

Loafer Canyon Recreation Association, also a private water system, services 18 homes in Loafer Canyon. See Water Service Area Map in appendix.

Inventory of Water Resources

Elk Ridge City has been withdrawing approximately 842.41-acre feet of water annually from an underlying aquifer through wells. This has supplied all the total water required to meet demands on the culinary system which provides for both indoor and outdoor water uses.

Potable water for future city residents will, for the most part, will be from two existing wells and one future well which has already been test drilled.

Under current water rights, the city is entitled to withdraw 1467.32 acre-feet annually from wells shown below. The safe yield of these wells is about 1830 acre-feet.

Table 1
City-owned Wells

Well Name/No.	Approved Flow	GPM	Minimum CFS
Loafer Canyon Well	600	500	2.45
Cloward Well	1200	1200	2.67
Skyhawk Well	1200	800	1.87

Water Budgets

The following table shows the amount of water delivered into the water system and the metered outflows to end-users for the years 2017-2022.

Table 2
City Water Budget 2017-2022.

INFLOW (AF)			OUTFLOW (AF)				
Year	Ac.Ft.		Res	Com	Ind	Total	
2017	801.4		801.5			801.5	
2018	926.7		926.7			926.7	
2019	833		833			833	
2020	1010		1010			1010	
2021	842.4		842.4			842.4	

Present Water Use and Future Water Needs

When all uses of culinary grade water are compared with the number of people living in our city in 2022, residents use 154 gallons of water per capita per day (gpcd).

The extent of the city's expected future population growth through the year 2027 is estimated to be 5500. Many factors influence this projection, and the estimates shown may vary substantially from the actual population experienced.

The projected needed supply for the entire year 2050 is approximately 572 million gallons of water per year. At achieving 10% water conservation, the projected supply that can be delayed is 54 million gallons of water per year through conservation programs and practices.

WATER PROBLEMS, CONSERVATION MEASURES AND GOALS

Problems Identified

The city council identified and prioritized several problems during the investigative phase of their work.

- The current water pricing and billing system while adequate to cover expenses in the water enterprise account, lacks incentives and sufficient information for residents to use water more efficiently.
- Citizens lack information and understanding of landscaping water requirements and efficient water-use habits and practices. Very few residents know how much water is required to maintain healthy landscaped areas and how to consistently use water efficiently indoors. Most citizen's irrigation and indoor practices are based on convenience rather than plant needs and water supply considerations. We encourage xera-scaping and planting native plants to reduce water consumption.
- Aged meters that have been in service 10 years or more will need to be replaced ongoing. The newer meters installed have reader transmitters and is much more accurate than the older models. Replacements of aged meters are based on funding/budget availability.
- With the currently available methods for setting water rates, city council action is required for each adjustment. Raising rates often is deferred as long as possible because of political risks to members of the city council.

Each problem represents an opportunity. Aside from replacement of meters and high water-use landscaping, the opportunity exists to solve the above problems through a well-thought-out water pricing program.

In addition to a new pricing and billing system, the opportunity exists to prepare a new generation of wise-water users. This can be assisted with a strong sustained water education program in the public and private schools, as well as a conservation dialog through city newsletters and billing.

Additional opportunities can be found in.the remaining problem. Old meters provided an opportunity for the city to begin a program to replace them with modern remote-read meters that can create substantial savings through reduced labor.

Water Conservation Goals

In pursuit of solutions to the problems identified previously, and considering the variety of conservation measures available to solve these problems, the following goals have been identified:

- **GOAL #1 Reduce the city's per capita water use rate by at least 10 percent in five years.** The water use rate currently is 154 gallons per capita per day (gpcd). The goal is to bring this down to 138 gpcd. The state's average use is 167 gpcd per day.
- **GOAL #2 Maintain a financially viable water system.** The water pricing system should encourage customers to reduce use without creating a revenue shortfall.
- **GOAL #3 Make sure that existing code is in balance with water conservation.** This will take both the Council and Planning Commission working together with the public.

- **GOAL #4 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. The city is currently incorporating xeriscape landscaping with drip systems in city owned properties.

CURRENT CONSERVATION PRACTICES

In order to solve the problems identified above and take advantage of the many associated opportunities, specific water conservation measures must be identified and evaluated. Our city has already implemented several water conservation measures; these along with additional measures that will effectively solve our city's water problems, are discussed below. The city council designates a Water Conservation Coordinator from the city council to facilitate water conservation programs to be reappointed as vacancy occurs.

Our city's current water conservation program is directed primarily at managing water shortages and providing useful material to assist residents to use water more efficiently. Current measures include a water conservation ordinance sections 8-1-13, 8-1-14, 8-1-15, 8-1-16, water conservation contingency plan, water education program for outdoor and indoor water use and a conservation oriented water rate structure. These measures seem to be successful in conserving usage.

1. **Water Conservation Contingency Plan**

The city has a "Water Conservation" which spells out climate and political realities related to water use during drought or other water supply shortages. Also addressed in this report are the conservation measures that may be implemented during times of emergency. They are as follows:

Level 1 - Normal Years

- Eliminate water on city property from 10 a.m. to 6 p.m.
- Initiate voluntary public conservation measures.
- Issue information to all customers on conservation procedures each can accomplish around their own property and within their own homes.

Level 2- 75% of Normal

- Eliminate watering of city property.
- Educate the public on the water supply decreases.
- Initiate mandatory public conservation measures.
- Enforce outside watering restrictions including watering times and quantities.

Level 3 - 50% of Normal

- Strictly enforce all conservation policies with significant fines for non-compliance.
- Physically restrict water supplies to (in or of priority):

- All outside irrigation systems
- Park properties and other non-essential support facilities
- Restricting largest users first
- Residential areas
- Any other "non-life support" areas, insuring water supplies to hospitals, hospices, and all other health care facilities and controlled designated area water facilities.

Additional non-emergency water conservation measures are listed below.

2. Water Education Program

The following information on efficient outdoor and indoor water use is available to the citizens of Elk Ridge City through the Utah state "Slow the Flow" web site. We are working on a program for the city

Outdoor 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.
- Do not water on hot, sunny, and/or windy days. You may end up doing more harm than good to your landscape, as well as wasting a significant amount of water.
- Sweep sidewalks and driveways instead of using the hose to clean them off.
- Wash your car from a bucket of soapy (biodegradable) water and rinse while parked on or near the grass or landscape so that 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 your toilet as a wastebasket. 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.
- If you do not have 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 showerheads 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 your main shutoff valve is and make sure that 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.

CURRENT WATER RATES

Designing an appropriate rate schedule is a complex task. Rate design is a process of matching the costs of operating the water system to the unique economic political and social environments in which the city provides its service. The cost of delivering the service must be evaluated and understood. Each water system has unique assets and constraints. Based on the characteristics of the system, and past capital and operating costs, revenue requirements can be estimated.

City staff has estimated the cost of providing water service and proposed a rate schedule designed to cover such costs.

Table 3
Current Water Rates
Type: **Increasing Tier Rate**
Base Charge: **$47.00/month**

Amount of Water	Rate
0 to 10,000 kgal	$.75/kgal
11 to 25kgal	$1.50/kgal
26 to 40kgal	$2.25/kgal
41 to 70kgal	$2.75/kgal
71 to 100kgal	$3.00/kgal
101 to 130kgal	$3.25/kgal
131k up	$3.50/kgal

ADDITIONAL CONSERVATION MEASURES

In order to effectively meet Elk Ridge City's future water needs and solve all the water problems identified, additional and more specific water conservation measures will be required. These may include more stringent water rates, meter replacement and leak repair, improved efficiency of irrigation at city parks and other open spaces, education, and plumbing fixture replacement.

1. More Stringent Water Rate Structure

The Elk Ridge City Council, using revenue requirements estimated by the city staff, investigated a different rate schedule designed to meet those requirements, provide additional price incentives for efficient water use, show the customer how much water is needed each month and provide funding for water conservation assistance and education. This rate schedule is called "Target Billing".

Table 4
Possible Water Rates
Type: **Target Billing**
Base Charge: **$47.00/month**
Base Allocation: **0kgal/month**

Amount of Water	Rate
0 to 10k gal	$0.75/kgal
11k to 25k gal	$1.75/kgal
26k to 40k gal	$2.50/kgal
41k to ?Ok gal	$3.00/kgal
71k to 100k gal	$3.25/kgal
101k to 130k gal	$3.75/kgal
131kgal+	$4.00/kgal

This rate schedule is designed to meet revenue requirements while creating funding for the water conservation program from fees paid by those who waste water. The water user who uses water indiscriminately and falls into the most expensive tier experiences a volume charge of $3.50/kgal for the last block.

2. Meter Replacement and Leak Detection Program

Over time, all meters become less accurate in recording actual flows. This leads to lost revenue to the city and inaccurate data to citizens. We have implemented an auto-read meter system throughout the entire city that allows us to track water usage in a more efficient and accurate method. It is our goal to eliminate all meter related water loss. Meter replacement does not result directly in lower water use since the rate in this plan is based on total inflow of potable water. Once meters are upgraded however, leak detection programs that do reduce water purchases and the use rate, will be more effective.

3. Improved Efficiency in Irrigating City Parks and Other Open Spaces

Our city presently has approximately 20 acres in parks, and sports fields. Open grassy areas around churches bring the total acreage in open grassy areas to 31 acres.

A combination of water pricing incentives and education programs, including audits, will likely reduce potable water used for irrigating open spaces.

4. Education

Educating residents that irrigate landscapes to use water more efficiently will enhance the likelihood that our water use goals will be met. The city council is continuing an ongoing education program using the monthly newsletter as the medium to contact water users. Benefits and costs of a strong education program are difficult to enumerate but will be tracked and accounted for as it unfolds.

COST ANALYSIS

Problem 1: Many meters are aging and are not providing accurate measurement.

Goal: Replace meters on an "as failed" basis and on a scheduled basis.

Problem 2: Many homes have lots that range from 1/4 acre to 1+ acres. Border to border plants and lawn automatically create a larger than desired water consumption problem.

Goal: Make literature available on water use and conservation at both the city office and through the monthly newsletter. Put a water conservation booth in the city celebration to educate people.

Status: Literature is now available at the city office and on the city's website.

Problem 3: Citizens are not easily converted to the idea that water saving landscaping is an attractive thing.

Goal: Provide and promote a list of heat and dry tolerant plants that can be and are attractive and meet conservation goals.

Status: The monthly newsletter will periodically be used to provide conservation tips.

Problem 4: Sufficient water (wells) resources to meet near-term and future growth.

Goal: To keep in line with the current and future needs of the culinary and outside use of water. All of our water is culinary.

Status: Current needs are adequate for storage and source capacity. Future storage and source will be determined by growth. We have met the storage needs that are required to have sufficient supply to meet the demand.

Problem 5: Delivery of water to the Goosenest area of Elk Ridge.

Goal: Goosenest is an area that has its own water source. It presently is a marginal system that meets the needs of that isolated neighborhood. Fire suppression is a major concern and future growth in Goosenest is at a standstill until a qualified system can be delivered to them.

Status: Building codes and ordinances have been put into place that requires the Goosenest area to hook up to Elk Ridge City's water and sewer systems when those services are within 300 feet of any of the property lines in Goosenest.

Problem 6: An area known as Loafer Canyon Association also has its own water system. This is a summer use area and is generally isolated in the winter months because of elevation and snow depth.

Goal: Because of their remote location, it is improbable that water or sewer will ever be available to them. However, the same codes and ordinances will be applied if services are within 300 feet of their neighborhood.

Status: To keep them in a safe situation. Since one of our wells is located within that community, it may be possible to provide a back-up 'emergency only' metered connection to them if necessary for culinary use.

IMPLEMENTING AND UPDATING THE WATER CONSERVATION PLAN

To insure the goals outlined above are reached, appropriate tasks must be determined, responsibility fixed with the logical person or department, and a time line set for completion of each task. The city council is to supervise and lead the water conservation program. The city council will have responsibility for providing funding for the measures outlined in this plan. The mayor and staff will be responsible to carry out the necessary task within the appropriate time constraints.

The water conservation plan will be revised and updated as required to meet changing conditions and needs. This plan will also be updated and resubmitted by legislative House Bill 153. The ordaining ordinance for the water conservation plan is attached.

APPENDIX A - WORKSHEETS

1 - Water System Profile

The Water System Profile worksheet will help you describe key elements of your water system. Once the worksheet is completed, use it to help write the Water System Profile section of your Water Conservation Plan.

Population

Current population data and fut_ure growth projections are requested for your system. These projections can be based on internal agency analysis, or on state-projected numbers from the Governor's Office of Planning and Budget (*http://www. governor.utah.gov/gopbldefault.html*).

Current Population	4900
5-year Projection	5500
10-year Projection	5700
15-vear Projection	6000
30-year Projection	7500

Annual Water Supply and Purchases

Please list the sources of your water supply (name and type), along with any associated water right numbers. Total culinary and/or secondary water obtained from that source should be reported. Please indicate annual water purchases and price for the past water year.

Source Name	Type	Culinary (af)	Secondary (af)
Loafer Well	Deep Well	Yes	
Cloward Well	Deep Well	Yes	
Skyhawk	Deep Well	Yes	

2 - Additional Conservation Measures

Please list additional conservation measures your entity may consider, enhancing conservation efforts and results. The following is a list of Best Management Practices (BMPs) recommended to water providers by the Division of Water Resources. Once completed, use this information to write the Additional Conservation Measures section of your Water Conservation Plan (see Sample Plan, pages 11-14).

BMP 1 - Comprehensive Water Conservation Plans

Develop a water management and conservation plan as required by law. Plans are to be adopted by the water agency authority (city council, board of directors, etc.) and updated no less than every five years.

BMP 2 - Universal Metering

Install meters on all residential, commercial, institutional and industrial water connections. Meters should be read on a regular basis. Establish a maintenance and replacement program for existing meters.

BMP 3 - Incentive Water Conservation Pricing

Implement a water pricing policy that promotes water conservation and establish a new water rate schedule.

BMP 4 - Water Conservation Ordinances

Adopt an incentive water rate structure.
Adopt a time-of-day watering ordinance.
Adopt an ordinance requiring water-efficient landscaping in all new commercial development. This should include irrigation system efficiency standards and an acceptable plant materials lists.
Adopt an ordinance prohibiting the general waste of water.

BMP 5 - Water Conservation Coordinator

Designate a water conservation coordinator from the city council to facilitate water conservation programs to be reappointed as vacancy occurs.

BMP 6 - Public Information Program

Implement a public information program consistent with the recommendations of the Governor's Water Conservation Team. Such programs can be adapted to meet the specific needs of the local area and may use "Slow the Flow" logo with approval of the division.

BMP 7 - System Water Audits, Leak Detection and Repair

Set specific goals to reduce unaccounted for water to an acceptable level.
Set standards for annual water system accounting that will quantify system losses and trigger repair and replacement programs, using methods consistent with American Water Works Association's Water Audit and Leak Detection Guidebook.

BMP 8 - Large Landscape Conservation Programs and Incentives

Promote a specialized large landscape water conservation program for all schools, parks and businesses.
Encourage all large landscape facility managers and workers to attend specialized training in water conservation.
Provide outdoor water audits to customers with large amenity landscapes.

BMP 9 - Water Survey Programs for Residential Customers

Encourage residents to have the state perform an audit on their individual residential indoor and outdoor water usage to educate residents on how to save water.

BMP 10 - Plumbing Standards

Review existing plumbing codes and revise them as necessary to ensure water-conserving measures in all new construction.
Identify homes, office building and other structures built prior to 1992 and develop a strategy to distribute or install high-efficiency plumbing fixtures such as ultra low-flow toilets, showerheads, faucet aerators, etc.

BMP 11 - School Education Programs

Support state and local water education programs for the elementary school system.

BMP 12 - Conservation Programs for Commercial, Industrial and Institutional Customers

Change business license requirements to require water reuse and recycling in new commercial and industrial facilities where feasible.
Provide comprehensive site water audits to those customers known to be large water users.
Identify obstacles and benefits of installing separate meters for landscapes.

BMP 13 - Reclaimed Water Use

If the city gets to the point, we available reclaimed water we would use as much as possible.

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