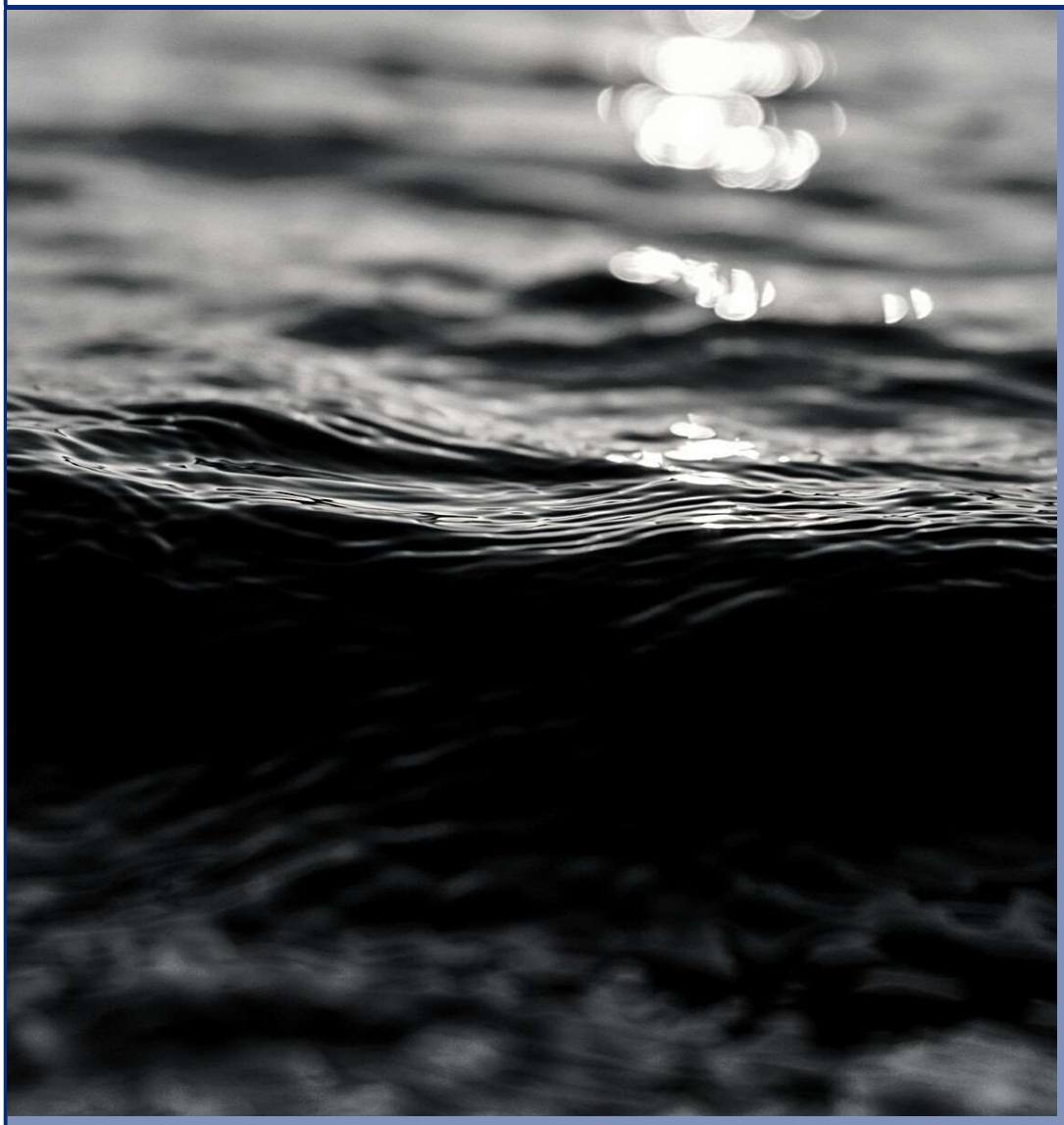
WATER CONSERVATION PLAN UPDATE



2023

KANE COUNTY WATER CONSERVANCY DISTRICT

Message from Executive Director Michael Noel

When I started as the Executive Director and General Manager of the Kane County Water Conservancy District, I could have never predicted what we would have accomplished over the next 25 years and as an organization, we are just getting started!

In our beautiful desert, conserving water is essential. When we do it responsibly, conserving water ensures that Kane County can maintain its rural way of life. A life that promotes strong families, healthy communities, and vibrant economies.

We work hard at KCWCD to make sure that Kane County's water needs are met today and long into the future. With these water-conserving measures, Kane County will have water for many, many years to come.

Our hope, which our goals and plans reflect, is that each citizen of Kane County can enjoy fruitful, responsible water use and that each visitor can be enriched because of that responsible use.

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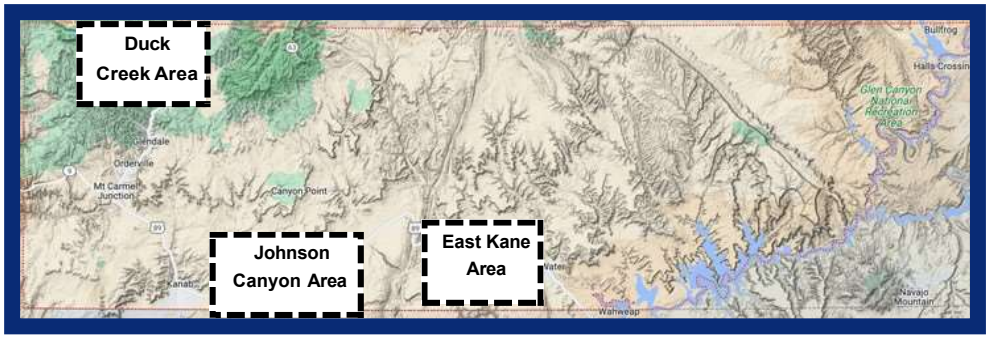
Introduction and History

The Kane County Water Conservancy District (KCWCD) was organized in 1992 as a voter-approved political subdivision of the State of Utah under the Water Conservancy Act. KCWCD has been actively engaged in water conservation and development since 1997. As of 2022, KCWCD maintains nearly $50 Million in water system infrastructure and owns over 40,000 acre feet of water rights. It distributes water to over 3,600 retail culinary connections over 100 miles of pipeline.

KCWCD was organized for the purpose of conserving and developing water for multiple uses including: domestic, municipal, agricultural, commercial, industrial, wildlife and stock watering. A seven member board appointed by the Kane County Commission provides oversight.

To ensure that the future culinary water needs of Kane County are met, and to address the issues with current water systems being designed and constructed, KCWCD created this water management and conservation plan. This report will outline KCWCD's current water resources, current water needs and uses, projected water needs, and future plans for projected needs.

KCWCD Service Areas



Explanation of System

The Kane County Water Conservancy District serves Kane County, located in Southern Utah along the Utah-Arizona border. KCWCD's current service area can be broken into three service areas: Duck Creek, Johnson Canyon, and East Kane. The three areas are fed by several separate culinary water systems. Due to the different conditions between the systems, each will be presented separately.

Duck Creek	Johnson Canyon	East Kane*
2,986 culinary connections	524 culinary connections	65 culinary connections
5 active wells	3 active wells	2 active wells
1,400,000 gallons of storage capacity	750,000 gallons of storage capacity	350,000 gallons of storage capacity
8,000 total potential connections	3,700 total potential connections	Anticipated 200 total potential connections

Duck Creek Area

The Duck Creek Water System covers Swains Creek, Harris Flat, Duck Creek South, Duck Creek MVWA, Strawberry Valley, Meadow View Heights, Zion View, Long Valley, and Lost Creek. Since 2006, the Conservancy District has taken over seventeen water systems in the Duck Creek area that were out of compliance with Utah State standards. The new KCWCD-operated systems meet state standards, provides fire protection, and allows for year-round water use. The Duck Creek area consists of almost 3,000 connections.

Within Duck Creek, water connections that currently serve residences can be divided into five areas separated by Forest Service land: Duck Creek Village, Strawberry Valley, Swains Creek, Long Valley and Harris Flat. Many of the connected users in the Duck Creek area are not primary residences. Most residences are used during the summer season, holidays, and weekends. However, with the introduction of year-round water service and fire protection, more residences are becoming primary homes.

In 2020 and 2021, the COVID Pandemic brought many new full-time residents to the rural Duck Creek Area. With social distancing practices during the pandemic, the outdoor activities the Duck Creek Area is known to have brought even more travelers and short-term renters. Also, throughout those two years, new connections onto the water systems far exceeded annual expectations. These reasons were the primary reasons for the increase in gallons billed in the service area.

Duck Creek Area

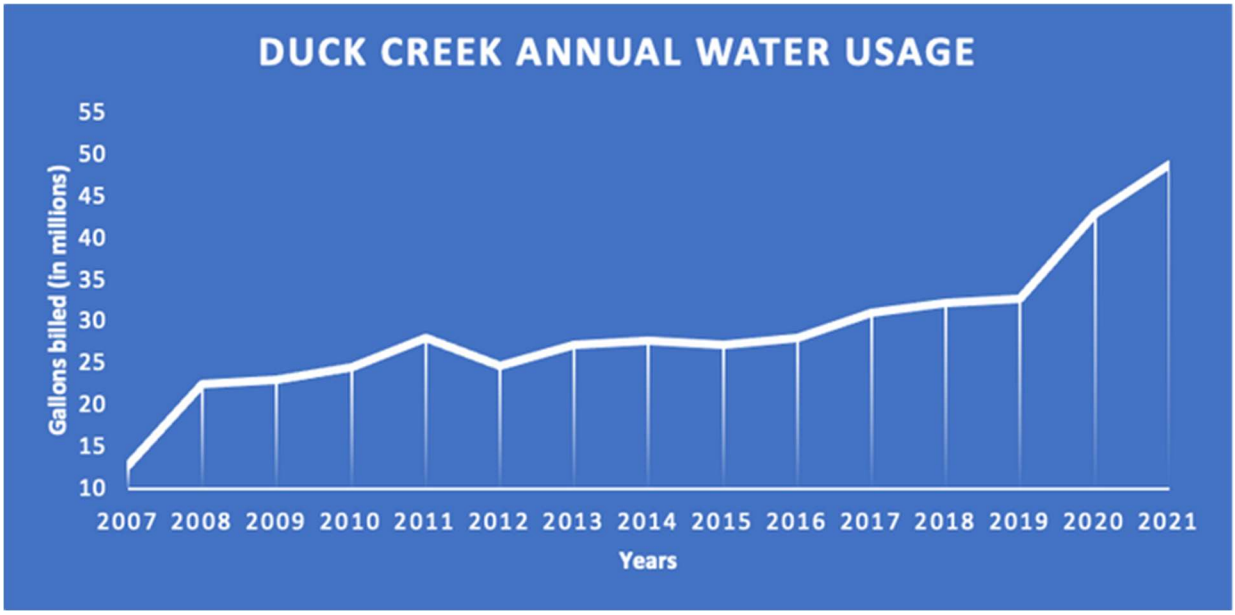


Figure DC 1

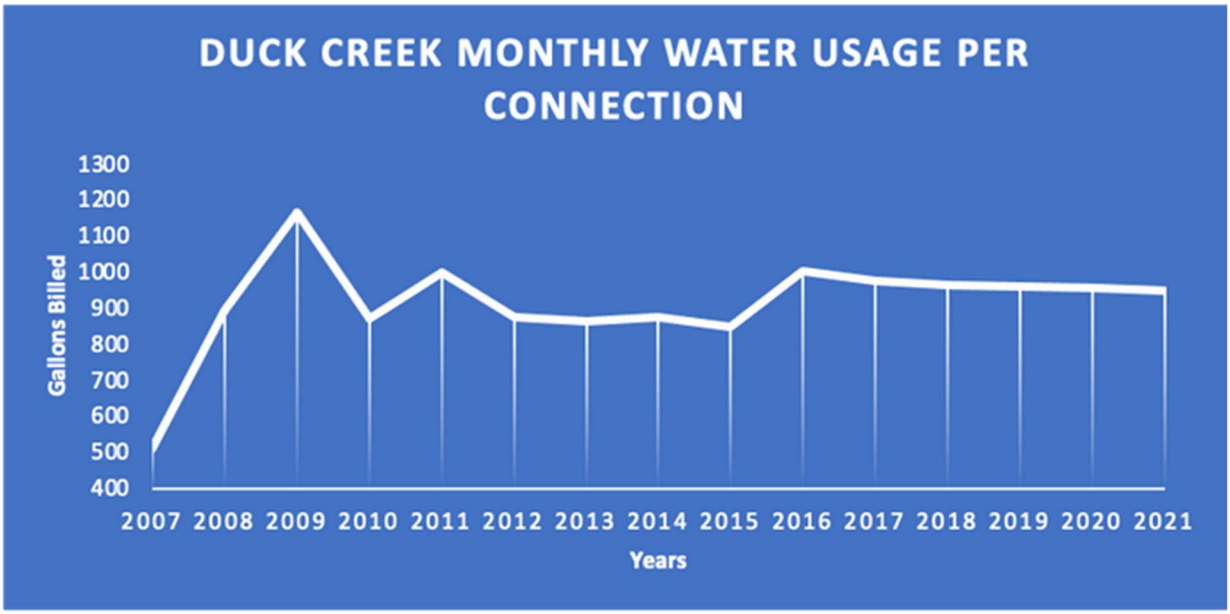


Figure DC 2

Johnson Canyon Area

Johnson Canyon Area covers Johnson Canyon and parts of east Kanab, also known as Vermillion Cliffs. The Johnson Canyon Area is a residential area with year-round usage. KCWCD began servicing culinary water to the area in 2001 with a total of 35 connections, which has increased through the regionalization of other private systems and natural growth to the area and has added other systems such as the East Kanab Water Company. Currently, the system feeds 524 connections.

Like other areas within KCWCD, the COVID-19 Pandemic brought many permanent residents to the Johnson Canyon Area. Because of the proximity of this service area to Kanab, this became a prime spot for growth and development. KCWCD installed over 100 connections just in the past two years, with over 600 possible connections coming online in the next five years. While the anticipated growth has yet to occur, the Johnson Canyon Area has already seen significant growth.

Johnson Canyon Area

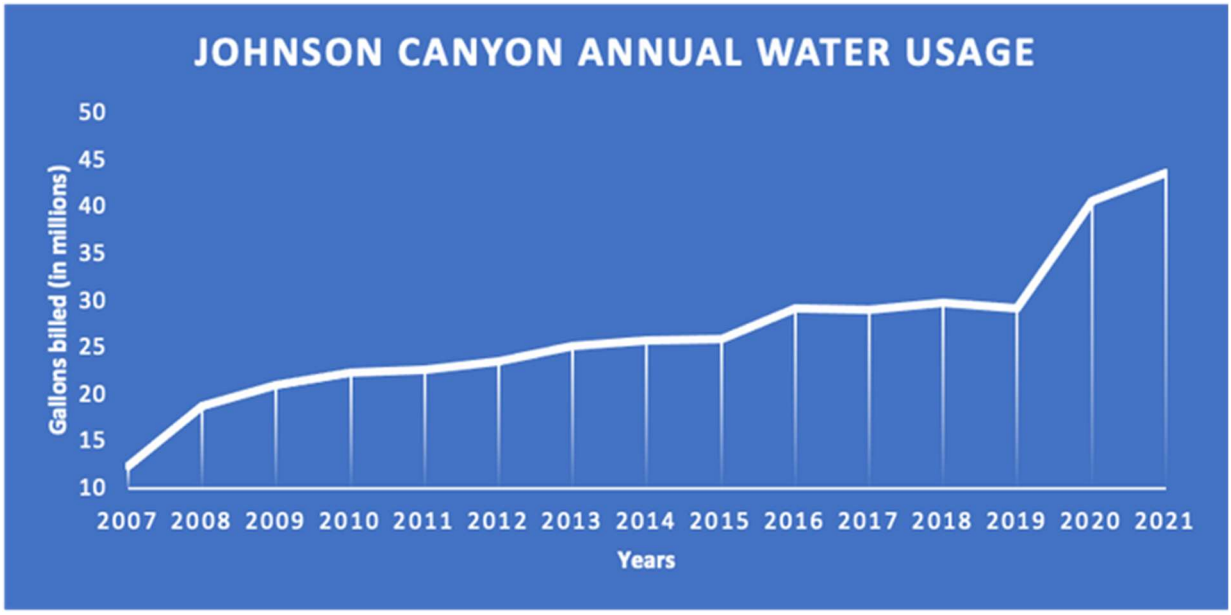


Figure JC 1

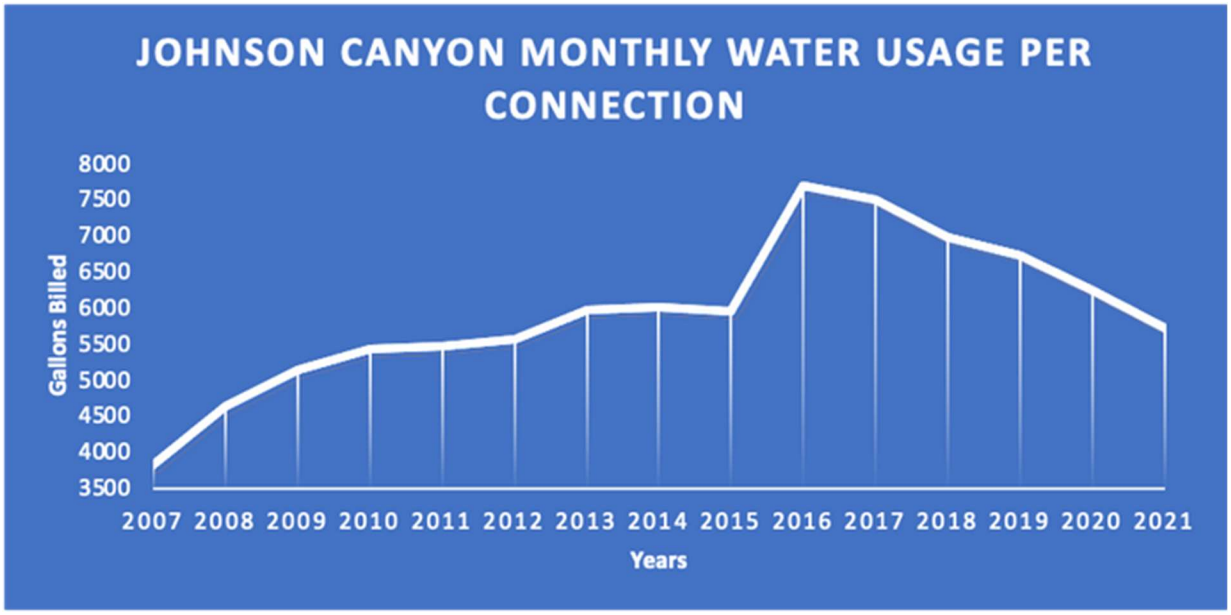


Figure JC 2

East Kane Area

In 2022, KCWCD adopted two private water systems in an unincorporated area of Kane County. The New Paria Water Company and Clark Bench Water Company approached KCWCD years ago as maintenance and management needs exceeded local shareholders' abilities. Because of a generous grant from the Utah Division of Drinking Water, both systems are in the process of being updated to modern Utah State standards. Together, these systems make the East Kane Area of service for KCWCD, an area poised for growth. While the service area has yet to collect usage data, the water conserving measures KCWCD implements will directly affect this drier area of Kane County.

KCWCD Source Capacity

WATER WELL SUMMARY				
Well #	Location	Status	Depth (feet)	Pump (GPM
Duck Creek				
Well #1	Movie Ranch Rd.-Sec 07 T38S R7W SL S.	Inactive	800	50
Well #2	Movie Ranch Rd.-Sec 07 T38S R7W SL N.	Active	900	350
Well #3	Ranch Dr.-Sec 04 T38S R7W SL	Active	1100	450
Well #4	Duck Cr. Pines-Sec 07 T38S R7W SL	Inactive	800	120
Well #5	Swains Cr.-Sec 27 T38S R7W SL	Inactive	1000	400
Well #6	Long V.-Sec 12 T38S R6W SL	Inactive	1000	250
Well #7	Bryce S. Sec 2 T38S R6W SL	Active	750	60
Well #8	Color Country	Inactive	800	60
Johnson Canyon				
Well #1	JC-LDS Ranch-Sec 02 T41S R5W SL	Active	260	350
Well #1b	JC-Sec 26 T41S R5W SL	Inactive	410	75
Well #2	JC-Sec 27 T42S R5W SL	Active	350	200
Well #3	JC–Sec 26 T41S R5W SL	Active	800	400
Irrigation Well	N. of Kanab, W. of Hwy 89	Active	280	350

Water Development

KCWCD continues to pursue development projects to ensure all culinary systems will serve current connections and the needed future connections. KCWCD Board of Directors have approved the drilling of two wells, one for culinary use and the other for irrigation.

While pursuing consistent water sources is vital to our growing area, KCWCD is also pursuing several different storage projects to furnish irrigation water and replenish aquifers near sources. In the Summer of 2022, after severe rain storms, KCWCD needed to repair a washout near Well #1 in Johnson Canyon. With that water line repair, an opportunity to improve the area for aquifer recharge presented itself. A dike was built near the well source to capture seasonal water flows.

For nearly 20 years, KCWCD has been working to build the Cove-East Fork of the Virgin River Reservoir, a 6,000 acre foot storage reservoir for three irrigation companies in Long Valley (Mount Carmel, Orderville, and Glendale.) The NEPA process is nearly complete and construction should begin in the near future. Recently, the town of Alton approached KCWCD to help build a 500 acre foot reservoir in their area.

KCWCD is continually looking for opportunities to improve the county's source, storage, and distribution of water to ensure meeting the area's needs today and well into the future.

Aquifer Recharge

In 2022, KCWCD received a grant from the Utah Division of Drinking Water for a hydrogeological study for the southern side of Kane County. The study focused on Water Rights Area 85, the Kanab Creek Drainage and the Johnson Canyon Drainage systems. The three aquifers tapped in the two drainages are the Navajo, Lamb Point, and Shinarump aquifers, with the Navajo aquifer being the main source. The study estimated the three aquifer's annual recharge. This study also estimated the level of increase in use, that expected growth would cause, on the KCWCD culinary water systems.

Item	Kanab Creek	Johnson Canyon	Total
Recharge from Precipitation	24,700 to 32,000	19,700 to 23,700	44,400 to 55,700
Recharge from Streams	1,250	50	1,300
Recharge from Unconsumed Irrigation Water	600	700	1,300
Total Recharge	**26,550 to 33,850**	**20,450 to 24,450**	**47,000 to 58,300**
Well Withdrawal[a]	≤1,100	≤4,360	≤5,460
Discharge by Springs and Seeps	2,880	2,220	5,100
Seepage to Streams	4,240	460	4,700
Evapotranspiration Loss from Shallow Groundwater	750	750	1,500
Total Discharge	**≤8,970**	**≤7,790**	**≤16,760**
Outflow from Southern Study Area Boundary and Other Well Discharges[b]	≥17,580 to ≥24,880	≥12,660 to ≥16,660	≥30,240 to ≥41,540

Population Projections

Year	Population
2020	7,667
2025	8,721
2030	9,920
2035	11,284
2040	12,836
2045	14,601
2050	16,609
2055	18,892
2060	21,490

Conservation Goals

The State of Utah has proposed a goal to reduce the per capita water demand throughout specific regions. The KCWCD service boundary is within the Lower Colorado River South region. The goals of that region, proposed by the state, are to decrease per capita usage from the 2015 baseline by 14% by 2030, 19% by 2040, and 22% by 2065. The 2015 baseline gallons per capita per day (gpcd) for the Lower Colorado River South region is 305, and more specifically for Kane County it is 358.

As is shown in figure DC 2 on page 04 and figure JC 2 on page 06, the average monthly usage per connection is currently 1,000 gallons for Duck Creek Area, and 6000 gallons for Johnson Canyon Area. It can then be deduced that that equates ~33 gallons/day and 200 gallons/day for a total of 233 gallons per day per connection. The average household in Kane County, according to the US Census Bureau, between the year of 2017-202, had 2.45 persons. Rounding that number down to 2, you can further deduce that that 233 gallons per day per connection is only 116.5 gpcd.

Based on that information, KCWCD has already exceeded the regional goals for 2030. Therefore, KCWCD proposes their goal be to continue to work towards the 19% reduction by 2040 22% reduction by 2065 goal. To achieve this, KCWCD proposes to maintain current consumption as overall water use increases as more residents connect to the system.

The KCWCD has already implemented processes to achieve the state's consumption reduction goals, such as Educating Water Users, Leak Repair and Mitigation, and Water Metering and Graduated Rates. Continuing these current conservation measures and education will ensure the KCWCD will continue to meet the state goals in the future.

Conservation Goals

KCWCD has implemented several policies to encourage water conservation, but like all good stewards, vigilance is required to continue to educate our users on best practices and help them save water where and when they can.

GOAL 1: Educating Water Users

Water users will affect more of the waste in the water system than any other entity. Ensuring they are educated in proper water usage and conservation will prove extremely effective in conserving water.

GOAL 2: Leak Repair and Mitigation

Over 25 years, KCWCD adopted a number of private systems that were built according to private standards. At times, maintenance and repairs are required in a timely manner to save on water loss.

GOAL 3: Water Metering and Graduated Rates

Water metering is the first step in minimizing use and conserving water. Charging users more as they use more water is the next step in accomplishing the same goal.

Goal #1: Educating Water Users

There are several ways in which KCWCD educates its users to practice water conservation. The first and most important way KCWCD educates users is through the individual billing statements. The billing statements contain information on individual usage, broken down on a monthly basis for a 13-month period, showing users their year-over-year usage. Also, on the bottom of every billing statement, KCWCD encourages each user to visit our own conservation page on our District website and nationally recognized www.slowtheflow.org. Both websites offer numerous ways for individuals to conserve water, put it to best-use, and help make goals a reality.

Along with monthly bills, each quarter KCWCD sends a newsletter to all customers with water conservation tips. These newsletters highlight much of what is happening within the District, water development projects, increases in growth, and most importantly, conservation tips. For instance, the Duck Creek Area is seasonal. The newsletter before the season closes teaches people how to properly close up and winterize their cabins so that freezing breaks do not occur.

Former Governor of Utah, Gary Herbert, instituted the water initiative and goal to reduce per capita water use by 25% by the year 2025. This initiative was in response to drought conditions and to bring individual use in line with need instead of want. The 20-Gallon Challenge helps educate the public on how they can contribute to the goal by the year 2025. All it takes is a few small changes to a daily routine and it can make a big difference in the monthly water bill. There are some tips in the 20-Gallon Challenge that are easy to do and are low cost practices. Others require more effort and are higher cost.

Goal #2: Leak Repair and Mitigation

When Kane County voters approved the creation of the Kane County Water Conservancy District in 1994, it had no assets or water systems to maintain. Over the next 28 years, KCWCD took on over twenty private water systems and expand them to over 3,500 connections. Engineers attempted to assess the quality of the private water systems KCWCD adopted and many times, improvements were made to the systems to bring them up to state standards. Yet some of the those adoptions happened over 20 years ago and many things that occur require maintenance and repair.

KCWCD monitors for leaks and mitigates loss two different ways. First, water masters monitor all storage tanks through supervisory control and data acquisition (SCADA) systems for significant movement. The systems contain alarms that alert water masters when tanks get too low or lose significant amounts of water too quickly. Valves are controlled through the SCADA system so quick shut offs can occur and inspections can be made to quickly repair the leaks.

While this systemwide monitoring ensures quick rectification of any problems, there are often individual connection leaks that KCWCD monitors for as well. Every month, as all connection meters are read, the billing system warns the KCWCD billing coordinator of "high reads." Many times those "high reads" are caused by leaks past KCWCD meters.

Goal #3: Water Metering and Graduated Rates

Much of this report has focused on the culinary water systems KCWCD manages. All culinary connections have meters with radio transmitters for fast and easy reading. Those meters are installed on every culinary connection within all KCWCD systems and tracks all usage, though the meters are only checked monthly for billing purposes.

The large majority of KCWCD connections are in the Duck Creek Area, which because of the mountainous terrain precludes the area from having constant metering. Johnson Canyon is a much better suited system to utilize such a tool, though, even the canyon walls hinder some of the constant-reading technologies.

KCWCD's first experiment with constant meter monitoring will be in the newly adopted New Paria and Clark Bench water systems in the East Kane Area. As those systems are improved to state standards, the meters will also utilize a radio tower that will feed near constant monitoring of both of those separate systems.

KCWCD also maintains a strong relationship with area irrigation companies. The State of Utah recently passed bill HB 242, requiring all secondary water systems to meter each individual meter by 2030. At the request of the Kanab Irrigation Company, KCWCD pursued and received a grant to meter all secondary users within the irrigation company's system. This metering will greatly improve usages in that irrigation system as the company will be able to detect abusers and help shareholders better understand their usage.

Goal #3: Water Metering and Graduated Rates

The discussion on metering coincides with the discussion on graduated rates because of the connected nature of the activities. As a system measures usage through metered connections, it can better regulate and incentivize users to conserve water.

The following page shows current examples of the graduated rates the KCWCD Board of Directors has instituted for the smallest meters (largest portion of the meters) on the system. Because of the varying nature of each system, the rates required by them differ slightly, though the principle to hold high water users accountable for their usage is maintained.

These rates are looked at every year to make sure that connections are being responsible in their usage while also paying their share of the costs. Rates increased as recently as fiscal year 2023 and will most likely be raised again in fiscal year 2024.

Graduated rates incentivize users to minimize their use. The tiered prices for the higher gallons used creates a behavior in users to be more cautious in their use. If the first 1,000 gallons cost the same amount as the 50,000th gallon, there is little to keep users from turning off the faucet. When a user uses that 50,000th gallon, it costs 50% more than the first 1,000 gallons. Users will be more aware of that higher usage and attempt to limit it.

Goal #3: Water Metering and Graduated Rates

Duck Creek Area	
Base Rate	$ 38.75
1000 gal (<10k gal)	$ 3.00
1000 gal (>10k to <15k gal)	$ 3.25
1000 gal (>15k gal)	$ 3.50

Johnson Canyon Area	
Base Rate (<10k gal)	$ 40.00
1000 gal (>10k to <15k gal)	$ 2.00
1000 gal (>15k to <20kgal)	$ 2.25
1000 gal (>20k to <25kgal)	$ 2.50
1000 gal (>25k to <30kgal)	$ 2.75
1000 gal (>30k gal)	$ 3.00

Measures, Initiatives, and Incentives

1	**MEASURE 1: HIGH READ ALERTS** Concerted effort to minimize loss from leaks
2	**MEASURE 2: ANNUAL WATER AUDITS** Ensuring our system and our connections are free of leaks or problems
3	**MEASURE 3: INCENTIVE PROGRAMS** Instituted efforts to save water
4	**MEASURE 4: PUBLIC EDUCATION** Maintaining clear communication lines between KCWCD and users

Measure 1: High Read Alerts

After each billing cycle, the KCWCD billing coordinator analyzes customer meter reads for high usage that indicate customer or company water leaks and makes a personal phone call to all users with "high reads." At times, KCWCD water masters will close meter valves to stop leaks for customers. Because the Johnson Canyon Area and Duck Creek Area vary in their use so widely, each area has different thresholds for what is considered a "high read."

In 2021, the Johnson Canyon Area average water use per connection per month was 5,718 gallons. This average is substantially lower than state averages per connection. If a meter in the Johnson Canyon Area reads over 50,000 gallons of usage, it is considered a "high read" and protocols for mitigation are utilized. While KCWCD maintains the "high read" threshold of 50,000 gallons, the billing coordinator is well acquainted enough with the different user accounts that significant spikes in individual usage below the 50,000 gallon usage will prompt a phone call.

In 2021, the Duck Creek Area average water use per connection per month was only 950 gallons which is also substantially lower than state averages per connection. Because of the seasonal nature of the Duck Creek Area, averages throughout the year vary greatly. In the winter season, if a meter in the Duck Creek Area reads over 10,000 gallons of usage, it is considered a "high read." In the summer season, if a Duck Creek Area meter reads 15,000 gallons of usage, it is considered a "high read."

High reads are inspected at the meter barrel and the surrounding property to determine whether there is a possible leak. If a leak is discovered, the valve is turned off and the customer is notified. The meters that do not read are inspected and repaired or replaced immediately. Over time, meters or their electronic read transmitter (ERT) may begin to falter and need replacement.

Measure 2: Annual Water Audits

Each year, KCWCD selects a different subdivision and holds a water audit to investigate possible problems that may lead to water loss. With each audit, the water meter barrel is opened and inspected to see if there are any problems. When issues are found, the problem is documented and repairs are planned. The cord that connects the meter to the electronic read transmitter (ERT) will often get cut by the lid slamming down on the cord. The inside electronic components of the meter are checked to see they are operating correctly. Visual checks at times will reveal customer tampering. While meter audits generally yield smaller improvements per incident, on the aggregate, they are essential to the running of an efficient water distribution system.

Measure 3: Incentive Programs

Customers with abnormally high-water usage in 2014 were automatically entered into a contest to encourage water conservation in 2015. They could win an iPad if they were able to reduce their annual water consumption in 2015 by 10%. They were asked to take the 20-gallon challenge, which is a helpful tool to save 20 gallons of water each day. There was a total of 275 customers eligible to participate in the contest, of which, 166 of them saved at least 10%. The total amount of water saved was 8 million gallons in 2015.

Another contest rewarded the top 10 customers with a Sawyer Mini Water Filter for the highest percentage of water saved during the summer months (July, August, September) of 2016 compared with 2015. Customers typically use more water during these months than any other time of the year. The water filter serves as another way to conserve water by recycling contaminated water into a reliable culinary water source. The district doesn't have any published plumbing standards. Customers are instructed to meet industry standards. The district encourages high-efficiency plumbing fixtures and does recognize the benefit of such programs.

Measure 4: Public Education

There are various ways in which KCWCD educates its customers to practice water conservation. Each quarter a newsletter is sent out to all customers with water conservation tips. The website at www.kcwcd.com has many different resources for the public to learn about. One such resource is the link to slowtheflow.org. Whether you own your own home, you rent an apartment, or you are a business owner, saving water is a lot easier than most people think. All it takes is a few small changes to a daily routine and it can make a big difference in the monthly water bill. There are some tips on the slow the flow website that are easy to do and are low-cost practices. Others require more effort and are higher cost.

The District has plans to create a conservation garden at its Jackson Flat Reservoir to showcase and educate the public on efficient ways to set up landscaping and watering schedules. The District wants to preserve the heritage of beautiful yards and gardens but through efficient water distribution. A conservation garden will be one of the many public attractions at the Jackson Flat Reservoir.

Kane County Water Conservancy District has already implemented several water conservation measures and will continue efforts in this direction moving forward. The District is dedicated to wise use of water and the prevention of water waste.

Implementation and Evaluation Process

IMPLEMENTATION:

Plans will be implemented upon adoption by the KCWCD Board of Directors, anticipated July 2023. The public will be invited to the Board meeting that the Water Conservation Plan will be discussed and have an opportunity for input.

EVALUATION:

Evaluation will be assessed annually at the turn of the calendar year and will compare year-end usage totals with the previous year-end usage totals. Those figures will be compared to all previous years, accounting for growth, projects, system updates, and other factors that will affect usage. The implemented plan may change if circumstances require substantial variation.

Implementation and Evaluation Process

The Water Conservation Plan has been reviewed by the KCWCD board of directors and adopted it to be implemented as of January 1, 2023.The board is comprised of:

-David Schmucker (Paria River, East Kane County)
-McKay Chamberlain (Kanab Creek, Kanab)
-Clay Hansen (Virgin River, Glendale, Long Valley, Mt. Carmel, Orderville)
-Jon Lee (Sevier & Virgin River, Cedar Mountain)
-Ferril Heaton (Upper Kanab Creek, Alton)
-Michael East (Kanab Creek, Kanab)
-Benjamin Clarkson (Johnson Canyon, Kanab)

Any pertinent information concerning water conservation is reported to Mike Noel, Executive Director, and the Board of Directors. KCWCD is committed to continuing its conservation efforts and will implement its plans as warranted.

Summary

The Kane County Water Conservancy District prides itself in being well below the average water usage per connection in the State of Utah. The Board of Directors have guided KCWCD with policies that have contributed to this reality.

In the State of Utah, water conservation is of paramount importance. The State Legislature continues to write laws and attach funding to great water conservation measures that help the entire state save this precious resource. Their continued efforts will prove to be vital for the water future of the State of Utah.

With the help of the State, KCWCD's Board of Directors and Staff, and all the KCWCD water users, Kane County will continue to succeed in its efforts to use water for the most important parts of life.