JORDAN VALLEY WATER
CONSERVANCY DISTRICT

Conservation Plan

ADOPTED NOVEMBER 2024

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1. Background

Jordan Valley Water Conservancy District's (JVWCD) 2024 Conservation Plan update comes at a critical time when population growth and climate variability have combined to create unprecedented strain on water resources in the Great Salt Lake and the Colorado River Basins. As a result, conservation serves a more and more critical role for JVWCD to achieve its mission of providing clean and reliable water to our community.

The level of water conservation needed to meet these challenges requires the public to have a conscious connection to water and its value in providing their desired quality of life. As reflected in JVWCD's Strategic Plan, success will require a community informed of water's essential role in our economy, community, and ecosystem with a profound sense of shared stewardship for our water resources.

JVWCD was created in 1951 to provide water to residents of a growing Salt Lake County. Primarily a wholesaler of water to cities and improvement districts, JVWCD also has a retail service area in parts of Salt Lake County, including unincorporated areas.

In 1998 the Utah State legislature passed the "Water Conservation Plan Act," which requires culinary water providers and conservancy districts to submit water conservation plan updates to the Utah Division of Water Resources (UDWRe) every five years. JVWCD submitted its first water conservation plan in 1999 with updates in 2004, 2009, 2014, and 2019. JVWCD has demonstrated a history of executing each updated plan and achieving the targeted results.

This 2024 Water Conservation Plan Update satisfies the requirements of the Water Conservation Plan Act. Moreover, it is intended to guide JVWCD's actions to establish that shared stewardship with the community and partner with them in maintaining a secure water future.

A copy of this plan has been sent to each of JVWCD's Member Agencies (wholesale customers), each county served by JVWCD, and to the media. It has also been posted on JVWCD's website and social media outlets.

1.1 Resolution Adopting the Plan Update

JVWCD's Board of Trustees passed Resolution 24-16 adopting the 2024 Water Conservation Plan Update on November 13, 2024. The resolution is included as Appendix A.

1.2 Meeting the Requirements of the Act

Utah Code Section 73-10-32-2(a) requires that the following be included in each water conservation plan:

(i) (A) a clearly stated overall water use reduction goal (Section 7),

(B) an implementation plan for each water conservation measure, including a timeline for action and an evaluation process to measure progress (Section 8).

(ii) a requirement that a notification procedure be implemented that includes the delivery of the water conservation plan to the media and to the governing body of each municipality and county served by the water provider (Section 1)

(iii) a copy of the minutes of the meeting regarding a water conservation plan and the notification procedure required (Appendix A)

(iv) the retail water supplier's rate structure that is:

(A) adopted by the retail water supplier's governing body in accordance with Section 73-10-32.5; and

(B) current as of the day the retail water supplier files a water conservation plan (Section 3).

This plan is intended to guide JVWCD's actions to establish that shared stewardship with the community and partner with them in maintaining a secure water future.

1.3 Definitions for Measuring Water Use

Acre-feet (AF) – the volume of one acre of surface area to a depth of one foot (approximately 325,851 gallons). It is used for measuring large-scale water resources and deliveries.

Consumptive Use – The portion of the water used and not returned to natural water ways due to evaporation, incorporation into products, or other processes that make it unavailable within the watershed.

Gallons Per Capita Per Day (GPCD) – the unit of measure for per capita water use expressed in gallons. It approximates the average amount of gallons used per day, per person, in one year.

Municipal and Industrial Water (M&I) - Potable (drinking) and non-potable (secondary) water supplies and uses, excluding agricultural water. All references to water in this plan refer to M&I water.

Per Capita Water Use – the total water delivered in a calendar year divided by the permanent population within a defined geographic boundary or water service area.

Total Water Delivered (end use) – the total volume of metered and unmetered water that is delivered to residential, commercial, industrial, and institutional users. It is billed and revenue producing and excludes water that is lost before it makes it to the end user.

Total Water Supplied (gross use) – the total volume of treated and untreated water supply entering the distribution systems of an urban retail water supplier.

2. System Profile and Supply Information

2.1 System Profile

Currently, JVWCD serves 17 Member Agencies (cities, improvement districts, and wholesale customers) and 8,592 retail service connections. Exhibit 1 shows a map of JVWCD's service area. A population breakdown of JVWCD's service area is listed by member agency in Exhibit 2, and Exhibit 3 shows the individual member agency service areas. Exhibit 4 shows the total number of service connections in JVWCD's service area, categorized by type.

Exhibit 1. Map of Service Area and Infrastructure

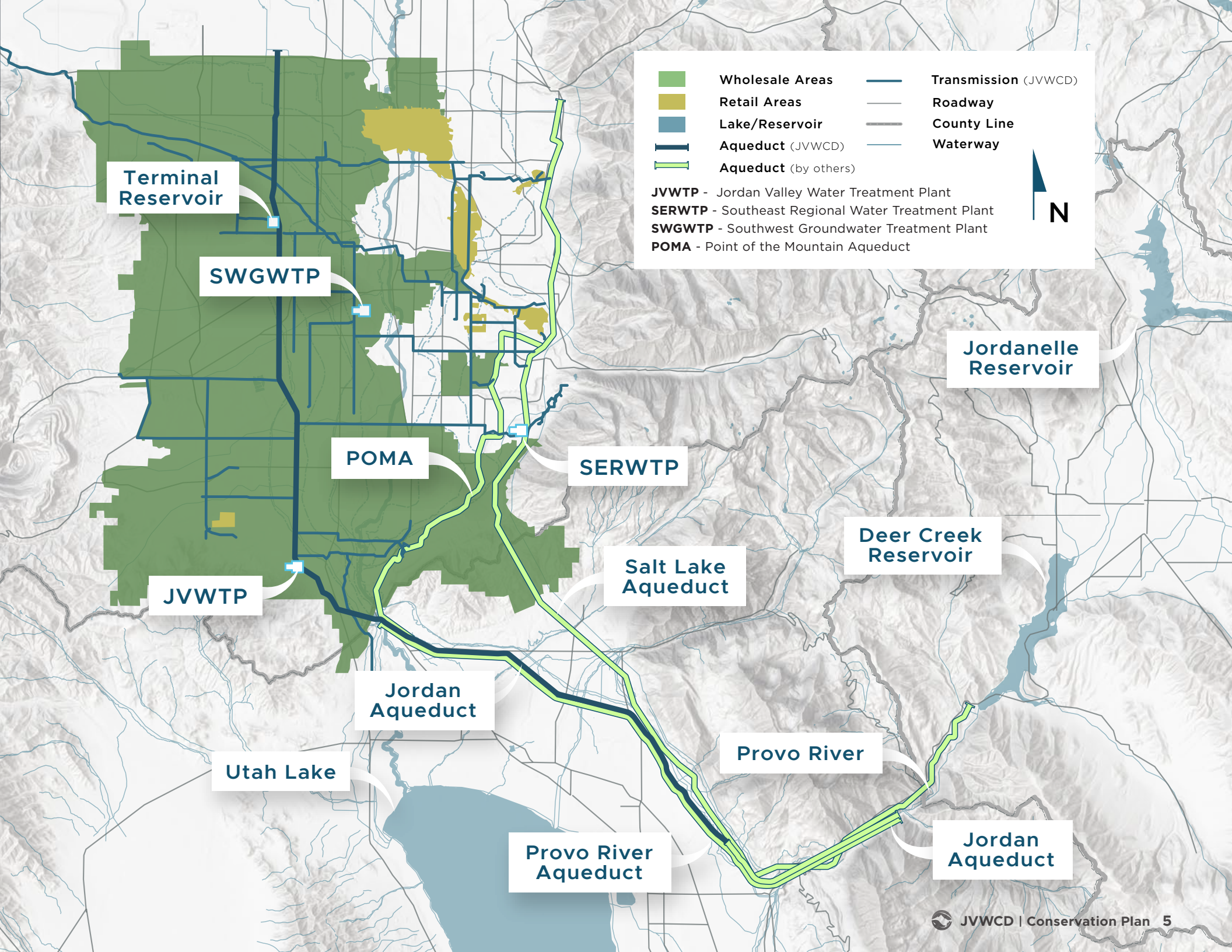

Wholesale Areas
Retail Areas
Lake/Reservoir
Aqueduct (JVWCD)
Aqueduct (by others)
Transmission (JVWCD)
Roadway
County Line
Waterway
JVWTP - Jordan Valley Water Treatment Plant
SERWTP - Southeast Regional Water Treatment Plant
SWGWTP - Southwest Groundwater Treatment Plant
POMA - Point of the Mountain Aqueduct
N
Terminal Reservoir
SWGWTP
POMA
SERWTP
JVWTP
Jordanelle Reservoir
Deer Creek Reservoir
Salt Lake Aqueduct
Jordan Aqueduct
Utah Lake
Provo River
Provo River Aqueduct
Jordan Aqueduct

Exhibit 2. Member Agencies and Service Area Population[1]

Agency Name	2020	2021	2022	2023
Bluffdale City	19,818	17,014	19,840	19,000
Draper City	19,329	20,024	20,330	20,613
Granger-Hunter Improvement District	132,887	130,990	129,225	129,270
Herriman City	63,623	58,858	69,000	63,654
JVWCD Retail	45,069	45,506	45,627	45,694
Kearns Improvement District	53,396	54,926	55,304	56,277
Magna Water District	34,000	32,874	33,408	33,942
Midvale City	34,260	36,028	36,500	35,567
Riverton City	45,949	45,285	45,285	45,600
South Jordan City	79,200	83,135	86,712	87,801
City of South Salt Lake	13,985	12,490	14,345	13,175
Taylorsville-Bennion Improvement District	69,805	70,448	69,242	67,879
WaterPro, Draper Irrigation Co.	30,058	30,060	30,070	30,080
City of West Jordan	103,762	105,000	106,000	106,930
White City Water Improvement District	14,991	13,095	13,100	13,015
Total	760,132	755,733	773,988	768,497

1. Three member agencies, Hexcel Corporation, Utah Department of Facilities Construction and Management, and Willow Creek Country Club do not have permanent residents and are not included on the chart.

Exhibit 3. Member Agencies and Service Area

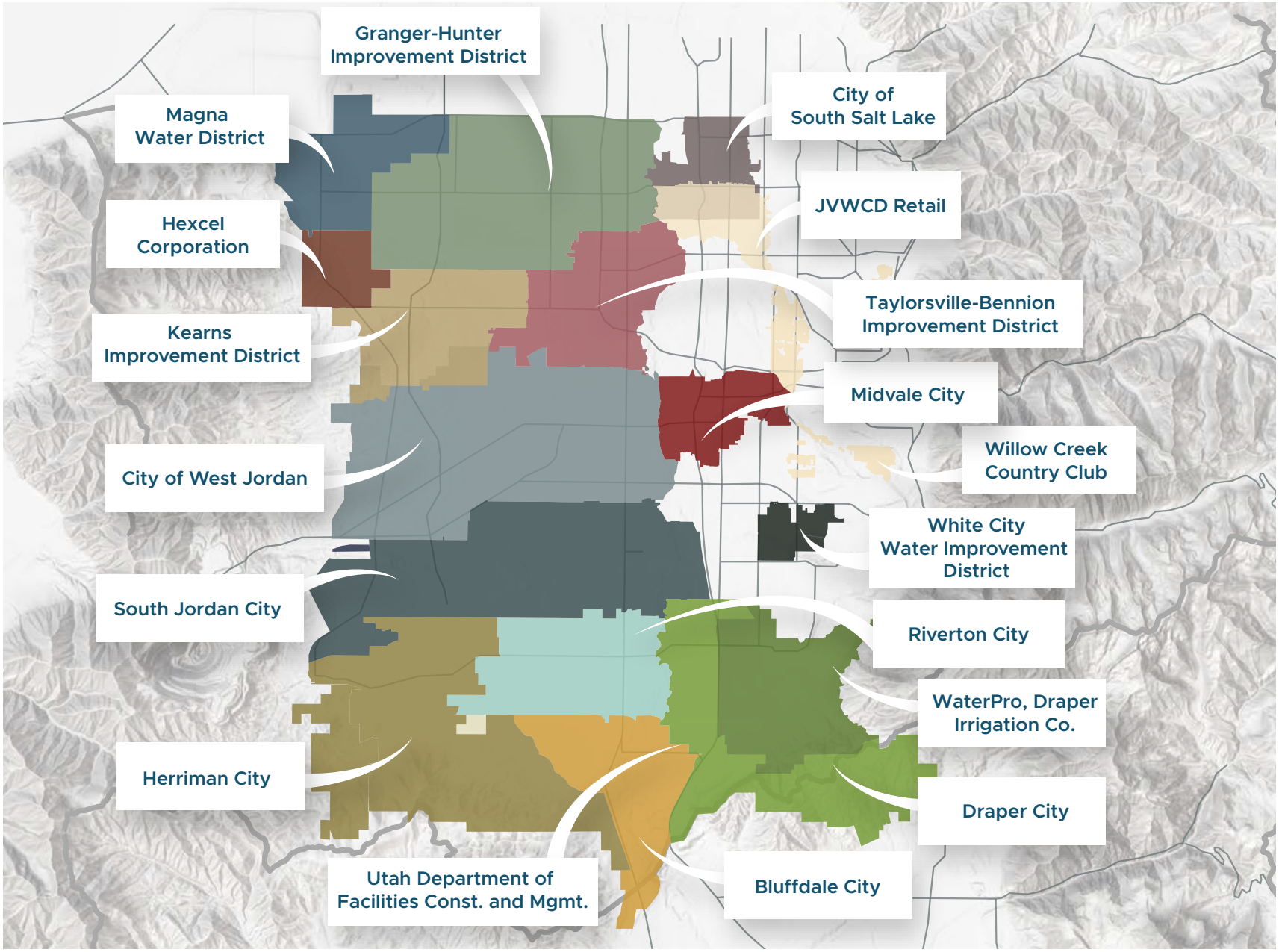


Exhibit 4. Total Service Connections by Type

Agency Name	Residential Connections	Commercial, Industrial, Institutional Connections
Bluffdale City	7,107	268
Draper City	4,226	372
Granger-Hunter Improvement District	26,254	1,526
Herriman City	16,566	439
Hexcel Corporation	0	0
JVWCD Retail	7,515	1,051
Kearns Improvement District	14,119	418
Magna Water District	9,959	452
Midvale City	7,073	940
Riverton City	20,418	612
South Jordan City	27,790	1,795
City of South Salt Lake	2,426	928
Taylorsville-Bennion Improvement District	16,703	735
Utah Department of Facilities Const. and Mgmt.	0	0
WaterPro, Draper Irrigation Co.	10,834	723
City of West Jordan	28,670	2,068
White City Water Improvement District	4,127	94
Willow Creek Country Club	0	0
Total	203,787	12,421

2.2 Existing Water Supply

JVWCD's water comes from the Provo, Weber, and Duchesne rivers; local Wasatch streams; and groundwater in the Salt Lake Valley. A breakdown of JVWCD's water supplies can be found in Exhibit 5.

Exhibit 5. JVWCD's Existing Water Supply

Source	Average Year Yield (AF)	Reliable Drought Year Yield (AF)
Jordanelle Reservoir (Central Utah Project)	50,000	47,360
Provo Reservoir Water Users Company Shares	40,000	27,142
Deer Creek Reservoir (Provo River Project)	*11,300*	*8,881*
Upper Provo River Reservoirs	*3,000*	*2,400*
Provo River Direct Flow	*22,200*	*11,455*
Weber River Direct Flow and Echo Reservoir Storage	*3,500*	*4,406*
Central Water Project (CWP)	11,680	10,024
West Union and West Smith Direct Flow	5,000	4,420
High Quality Groundwater	8,000	20,000
Salt Lake County Mountain Streams	2,500	1,500
Bingham Canyon Water Treatment Plant	3,500	3,500
Southwest Groundwater Plant	4,200	4,200
Total	124,880	118,146

Exhibit 5 informs JVWCD's planning activities and is not a statement of beneficial use. JVWCD's water rights and shares allow the diversion of greater capacity from many of these sources, and JVWCD makes use of that capacity when it is available through conjunctive use strategies.

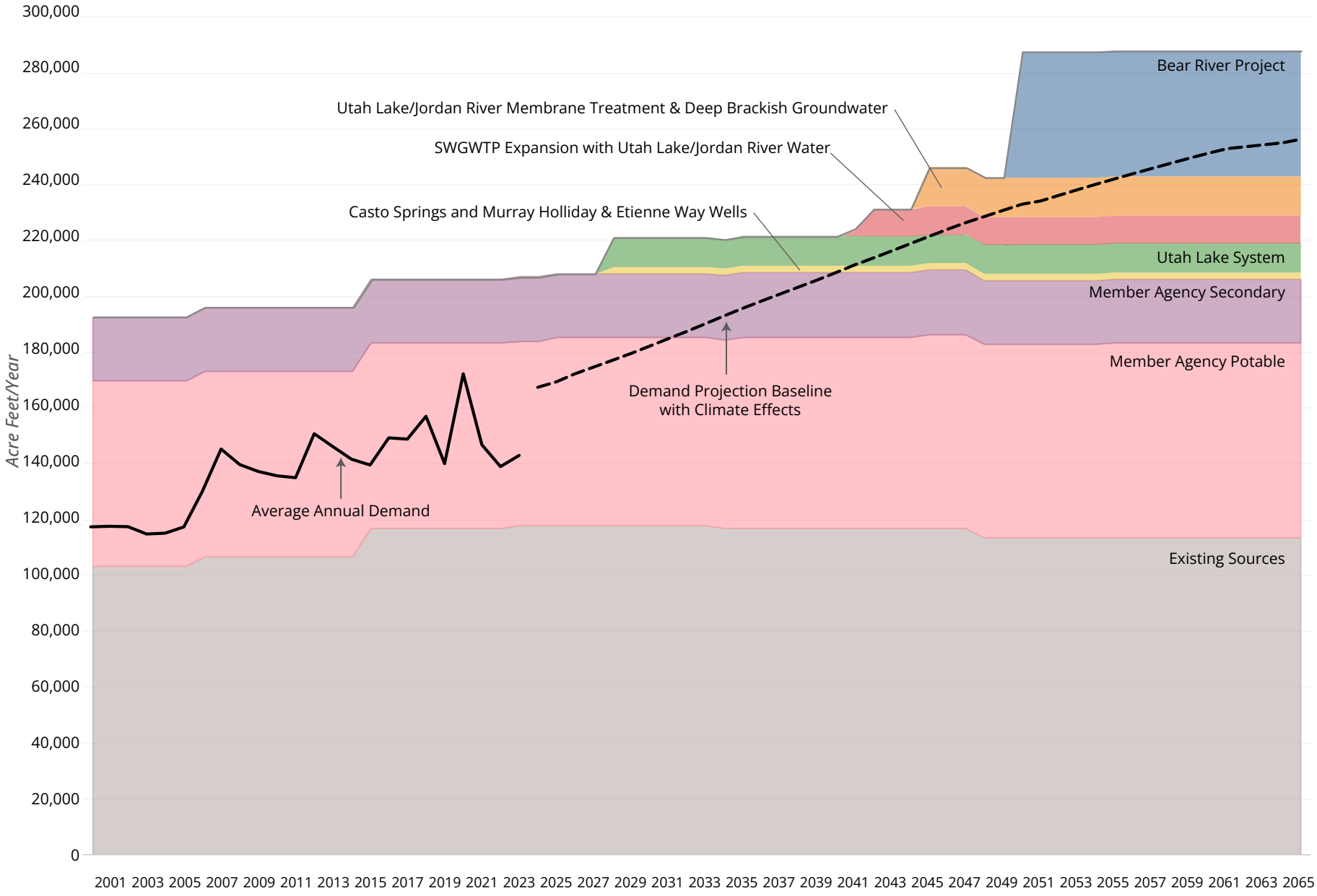
2.3 Reliable Supply and Current Water Use Projections

Population, Demand Projections, and Timeline

The 2024 Conservation Plan Update uses population estimates and projections made by the Wasatch Front Regional Council and Kem C. Gardner Institute to calculate the population growth in JVWCD's existing and expected future service area through 2065.

Water demand projections apply the existing per capita water use to that population growth over time. The existing per capita use rate was determined from the best fit trend line for per capita use from 2018 to 2023 (the range for which end use estimates are available, see Exhibit 14). The water demand projections also include gradual increase of 10% by year 2060 from projected climate change impacts. The result is a baseline demand projection representing no change in current land development practices and no further investment in conservation. See Exhibit 6, which charts existing and projected reliable supply compared to the baseline water demand projections. Appendix B details the demand projection calculations.

Exhibit 6. Population, Water Demand Projections, and Timeline



Potential Water Conservation Impacts on Future Water Supply

Water supply development requires decades of advanced planning and preparations to secure the needed water rights, lands, and funding. The Casto Springs, Murray Holliday & Etienne Way Wells, and ULS supply development projects shown in Exhibit 6 are in progress. As they are completed over the next 5 years they will provide valuable resiliency to the JVWCD system and accommodate some population growth. The remaining water supply development projects have been planned for many years to enhance system resiliency and meet the needs of our rapidly growing community. The timing for those projects is contingent on the success of our conservation efforts and rate of economic and population growth in our service area.

Exhibit 7 shows the estimated timing of when those projects would be needed if additional reduction in existing water usage rates are not achieved. If the District continues to invest in conservation to further reduce water usage it can extend the supply development timeline and defer the need for costly supply development projects. A discussion on how our conservation goal may reduce these demands is included in Section 7.

Exhibit 7. Potential Future Water Supply Sources and Timing Without Water Usage Rate Reductions

Project Name	Normal Year Yield (AF)	Reliable Drought Year Yield (AF)	Total Project Costs ($)	Total Project Costs ($/AF)	Timing
SWGWTP expansion with Utah Lake/Jordan River water	2,800	2,800	$61,000,000	$6,224	2041
Membrane Treatment of Utah Lake/Jordan River and deep brackish groundwater	14,000	14,000	$207,000,000	$14,786	2045
Bear River Project	50,000	45,000	$869,000,000	$21,725	2050

If JVWCD continues to invest in conservation to further reduce water usage it can extend the supply development timeline and defer the need for costly projects.

2.4 Groundwater Storage and Recovery

In 2001, JVWCD completed construction of facilities for an artificial groundwater recharge project in the southeast area of Salt Lake valley. These facilities allow JVWCD to inject surplus supply from its distribution system into a deep principal aquifer (typically from March-May). Injected water can then be recovered by pumping wells later in the summer or in subsequent years when it is needed. While JVWCD typically injects less than 1,000 AF per year, its facilities are capable of injecting around 5,000 AF if needed.

3. Billing

JVWCD monitors and meters its wholesale connections in real time using a Supervisory Control and Data Acquisition (SCADA) system. The meters are regularly maintained and calibrated to ensure accurate operations and billing data. JVWCD's retail service area meters transmit hourly water consumption data through an Advanced Metering Infrastructure (AMI) system. In conjunction with the AMI system, customers have access to an online web portal and receive enhanced bills and semi-annual reports showing exactly how and when water is used.

3.1 Retail Rate Structure

JVWCD fully implemented a tiered water rate structure for its retail system in July 2018. The most effective way to ensure relevant rates and pricing signals for customers would be to create personalized water budgets and rate tiers for each account. However, this approach would introduce significant complexity and administrative challenges. Instead, JVWCD groups accounts based on similar water use patterns, specifically by meter size. This method also promotes greater equity, as meter size determines impact fees, base charges, and the customer's consumption capacity. In JVWCD's model, the cost per thousand gallons of water increases with usage, and each meter size is divided into four pricing tiers, as illustrated in Exhibit 8 and Exhibit 9.

The tiered rates are updated each year as part of JVWCD's annual budgeting process. The update follows the cost-of-service methodology specified in AWWA's M1, Principles of Water Rates, Feeds, and Charges (7th Edition). In 2024, JVWCD increased water rates primarily for the top tiers in the rate structure to further discourage excessive water use. The listed rates were adopted by JVWCD's Board of Trustees in June 2024 in accordance with Section 73-10-32.5.

Exhibit 8. Retail Water Rates (per 1,000 gallons)

Rate Area	Tier 1	Tier 2	Tier 3	Tier 4
Zone A Non-Pumped	$1.70	$2.58	$4.20	$5.19
Zone C South - Riverton*	$1.87	$2.75	$4.37	$5.36
Pumped - Casto/Upper Willow Creek*	$2.45	$3.33	$4.95	$5.94

*Rates for the Zone C South - Riverton area and the Pumped - Casto/Upper Willow Creek area are more expensive because water delivery to these areas requires pumping.

Exhibit 9. Tier Thresholds By Meter Size (x 1,000 gallons)

Meter Size	Tier 1	Tier 2	Tier 3	Tier 4
5/8"	1-6	7-16	17-37	38+
3/4"	1-9	10-23	24-53	54+
1"	1-18	19-46	47-106	107+
1-1/2"	1-36	37-92	93-212	213+
2"	1-58	59-147	148-339	340+
3"	1-140	141-359	360-827	828+
4"	1-257	258-658	659-1516	1517+
6"	1-515	516-1316	1317-3032	3033+
8"	1-1024	1025-2617	2618-6031	6032+

Example

If you are in a non-pumped rate area and have a 3/4-inch meter, you will pay **$1.70/1Kga** up to 10,000 gallons of water used, **$2.58/1Kga** for additional water used, up to 23,000 gallons, and **$4.20/1Kga** for additional water used, up to 53,000 gallons. Any water used over 53,000 gallons will be charged at a rate of **$5.19/1Kga**.

1Kga = 1,000 gallons

4. System Water Loss

JVWCD has implemented several practices designed to audit its water supplies and implement controls to minimize system losses. Each wholesale meter receives a monthly diagnostic check and is calibrated twice a year. In addition, JVWCD staff validates meter data on a daily to weekly basis through its water accounting system. Any problems related to these meters are considered a high priority by JVWCD staff and are expected to be addressed immediately. For fiscal year 2024, JVWCD's non-revenue water was 5,778 acre feet or 4.2% of deliveries. The average 2024 wholesale rate for an acre foot of Zone A (non-pumped) water was $538.54. Using this rate, the estimated value of the non-revenue water is $3,111,684.

JVWCD staff is currently updating standard operating procedures to better document the sources of water losses such as when lines are drained for maintenance or due to mainline water breaks. JVWCD also uses leak detection equipment to help identify leaks in pipelines, valves, and fire hydrants.

In fiscal year 2024, JVWCD's non-revenue water was 4.2% of deliveries.


80
120
psi
40
160
200

5. Water Use and Measurement

5.1 Water Deliveries

JVWCD's water primarily supports residential and commercial potable use within Salt Lake County. A breakdown of its water deliveries, categorized by usage type can be found in Exhibit 10.

5.2 Water Efficiency and Conservation Progress

History of JVWCD's Water Conservation Goals

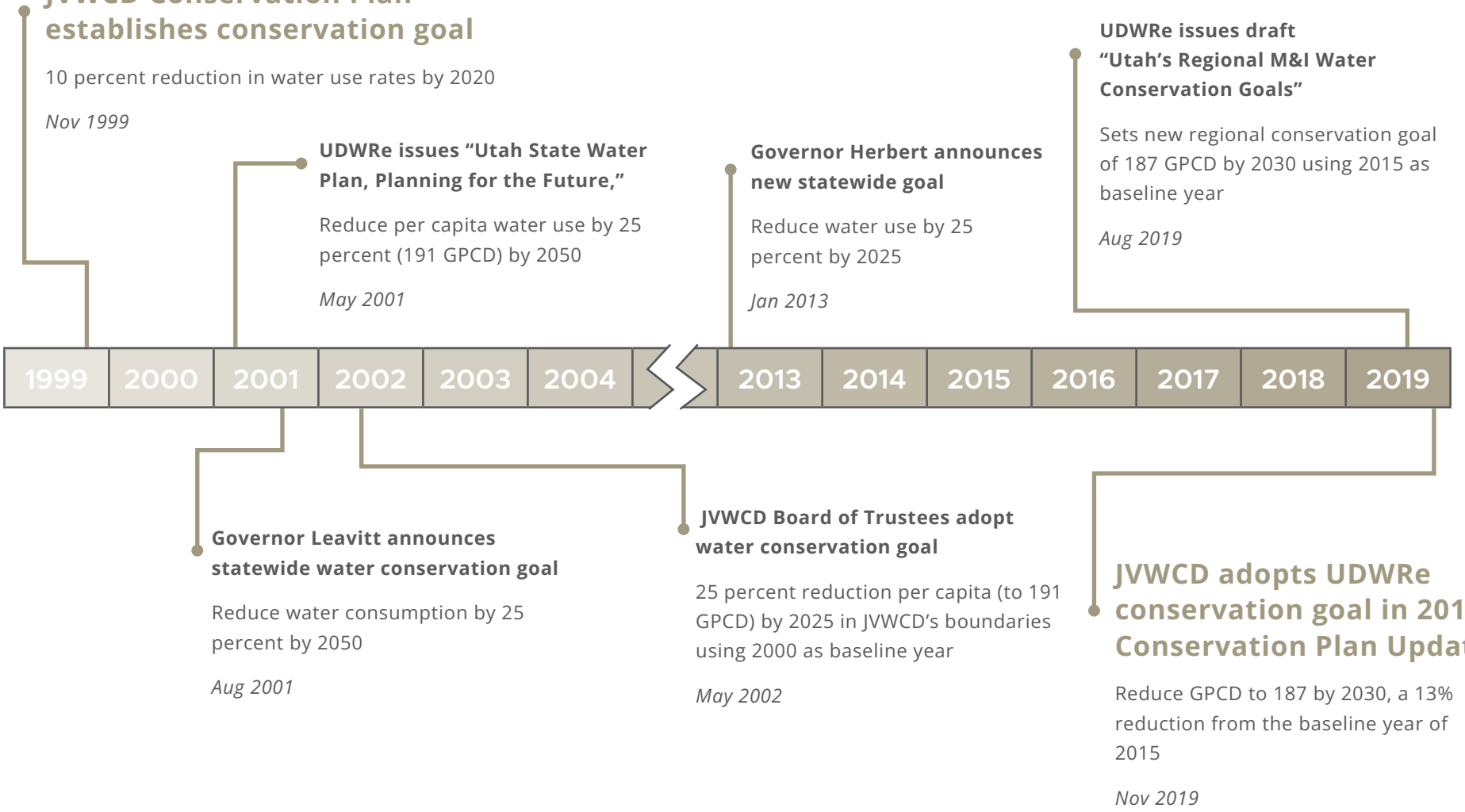
JVWCD's conservation goals have evolved over time to better align with the changing needs of the community since the District's original conservation plan was established in 1999. As Utah has faced prolonged droughts, dry years, and rapid population growth, the need to reduce water consumption has become increasingly urgent. JVWCD has consistently led the charge in water conservation efforts, setting forward-thinking targets to ensure a sustainable and water-secure future. For an overview of these milestones and important events, see Exhibit 11.

Historically, JVWCD used total gross water supplied as the basis for determining GPCD and previous conservation goals. Using 2018 as the baseline year, JVWCD began using total water delivered to end uses for two reasons: 1) the regional goals are derived from total water delivered to end uses, and 2) JVWCD's water conservation programs primarily focus on end use demand management.

Exhibit 10. Total Potable and Non-Potable M&I Water Deliveries

Member Agency	Population	Residential (AF)	CII (AF)	Total (AF)
Bluffdale City	19,000	4,155	1,844	5,999
Draper City	20,613	2,280	1,627	3,907
Granger-Hunter Improvement District	129,270	13,605	5,878	19,483
Herriman City	63,654	7,702	2,008	9,711
Hexcel Corporation	0	0	1,012	1,012
JVWCD Retail	45,694	5,242	2,243	7,485
Kearns Improvement District	56,277	4,880	2,505	7,385
Magna Water Distract	33,942	3,564	1,022	4,586
Midvale City	35,567	3,186	2,036	5,222
Riverton City	45,600	10,605	1,771	12,375
South Jordan City	87,801	17,564	4,808	22,372
City Of South Salt Lake	13,175	932	1,200	2,132
Taylorsville-Bennion Improvement District	67,879	8,143	2,303	10,447
Utah Department of Facilities Const. and Mgmt.	0	0	186	186
Waterpro, Draper Irrigation Co.	30,080	7,073	2,476	9,550
City Of West Jordan	106,930	12,653	7,270	19,923
White City Water Improvement District	13,015	1,959	439	2,397
Willow Creek Country Club	0	0	275	275
Total	768,497	5,752	2,272	8,025

Exhibit 11. Timeline of Conservation Goal Updates



Water Efficiency Progress

The JVWCD service area has achieved significant reductions in water usage rates since the District created its first conservation plan in 1999. Exhibit 12 shows our annual gross usage per capita and that we are on track to achieve our original goal of 25% reduction in 2000 use.

JVWCD's 2019 Conservation Plan Update included a series of recommendations intended to help meet the conservation goal of reducing per capita water use to 187 GPCD by 2030. These recommendations, and subsequent outcomes, are described in Exhibit 13. Exhibit 14 illustrates that we have been successful at achieving the UDWRe's goal.

Exhibits 12 and 14 illustrate the high variability in per capita use rates from year to year. This is due to the significant number of factors that influence usage rates. The District's and its member agencies' conservation efforts are one of those factors. Others include average temperatures and precipitation during the irrigation season, media messaging on drought issues, density of new development, and the cyclical nature of human behaviors. Conservation efforts have a gradual influence on water use rates over time, where the other factors have more immediate and significant impacts from one year to the next.

As a result, the District uses the best fit trend line of per capita use shown in Exhibit 14 to estimate hardened reduction in water usage rates. This estimate shows a hardened reduction of nearly 5%, or reduction from 188 GPCD in 2018 to 179 GPCD in 2023.

Exhibit 12. Gross Use Since 2000

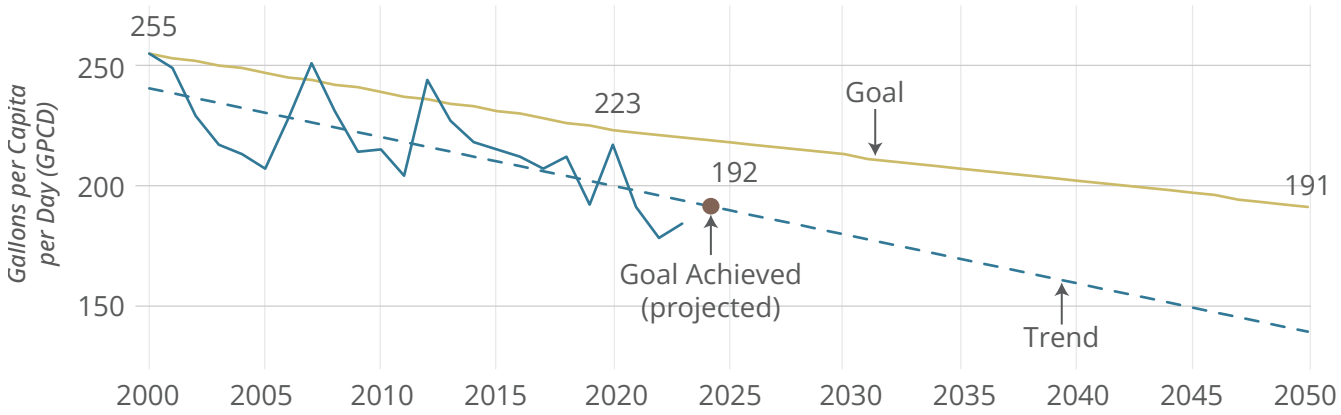
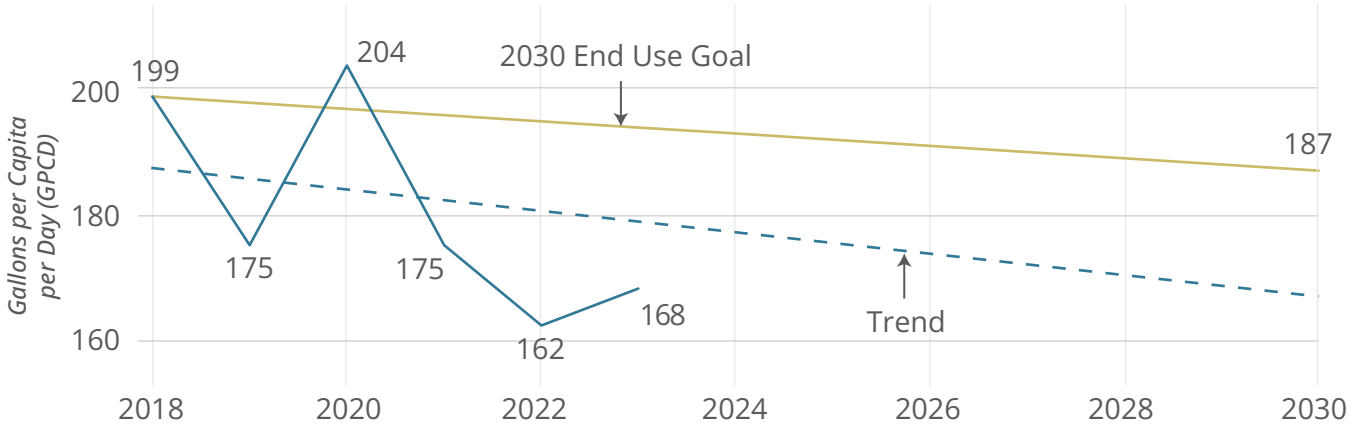


Exhibit 13. 2019 WCP Recommendations and Outcomes

Recommendations	Outcomes
Create leak mitigation program training, procedures, and materials.	• Created leak mitigation resources for retail service area. • Began monitoring retail area for continuous flow events, and sending notices.
Create strategic water management program training, procedures, and materials.	• Worked with two different consultants to train staff on commercial water use assessments. • Purchased materials for commercial water use assessments. • Completed 15 water use assessments for CII properties. • Created reports and marketing materials.
Require water efficiency standards for annexation petitions and tax increment financing requests.	• Notified member agencies and required water efficiency standards.
Target the year 2023 for service area wide adoption of the water efficiency standards for new construction.	• Water efficiency standards were substantially adopted by 2023, and 100% adopted in 2024.
Hire 3 new full-time and 2 new seasonal positions through the planning period.	• Hired 3 new full-time Conservation Coordinators by 2023. • Added 2 to 4 new seasonal Conservation Technician positions (depending on year).
Increase participation levels and budgets of conservation programs to the stated levels necessary to achieve the goal.	• Conservation Programs budget increased from $821,200 in 2020 to $3,337,330 in 2025. • Program applications increased from 388 in 2019 to 1,141 in 2022, and have stayed high in subsequent years.

Exhibit 14. Annual End Usage Per Capita

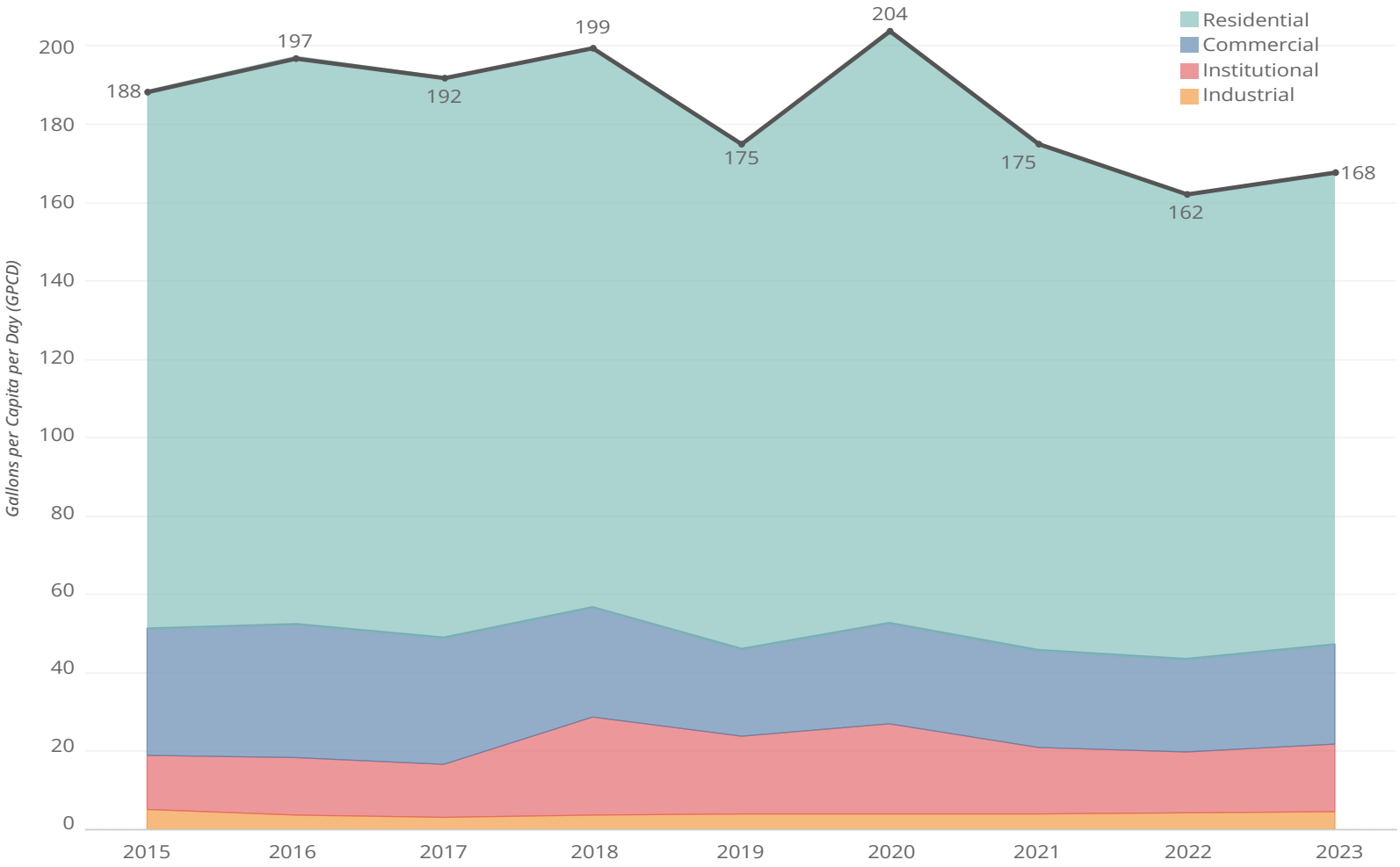


Exhibits 15 and 16 show the breakdown of water usage rates by customer category. They illustrate that the majority of water use in the JVWCD service area is residential. This indicates that water conservation programs focused on residential users will drive the most significant reductions in water use.

Exhibit 15. Daily Per Capita Water Use By Type

	Winter Use	Summer Use	Secondary (all seasons)	Total
Residential	28.0	68.9	23.4	120.3
Commercial	7.3	17.4	0.9	25.6
Institutional	2.6	11.5	3.2	17.3
Industrial	1.8	2.8	0.0	4.6
Total	39.6	100.7	27.5	167.8

Exhibit 16. Water Efficiency - Service Area System Demand 2015 to 2024



6. Best Management Practices and Programs

An extensive assessment of the District's conservation programs was conducted to determine which programs should be added, enhanced, or discontinued. This section summarizes that assessment and the recommended changes.

6.1 Current Practices and Programs Assessment

The assessment began with a review of the District's current practices and programs to determine if any had surpassed their usefulness and needed to be eliminated. This review indicated that all current programs continue to provide positive results, so no programs are recommended for elimination at this time. Current District practices were then reviewed against UDWRe's recommended best management practices (BMPs) and an analysis of conservation measures being implemented by other water providers across the country.

UDWRe's BMPs focus on two main strategies to reduce water use: encouraging users to change their habits for better conservation (water conservation) and implementing structural changes to use less water for tasks (water efficiency). Appendix C compares UDWRe's BMPs with JVWCD's efforts to apply them.

To analyze effective programs nationwide, the District's consultant conducted a thorough literature review to compile a list of measures for consideration. They also scored these measures based on specific criteria. District staff then used their local knowledge and industry trends to further assess, score, and rank the measures, identifying potential enhancements and new programs. Details of the analysis can be found in Appendix D, with a summary in Section 6.2.

6.2 Current and Recommended Programs

The District's strategy for effective water conservation is built on three pillars: Education, Incentives, and Regulations. The following sections describe our current and recommended actions under each of the three pillars.

Pillar 1: Education

Effective education and outreach help the community gain an understanding of our valuable shared water resource and why it is important to conserve. Additionally, successful education and outreach campaigns drive more people to conservation programs while achieving a better result.

Existing Education and Outreach Programs:

1. Slow the Flow:

"Slow the Flow: Save H2O" is a community information and education campaign launched by JVWCD in 1999. In 2001, it was adopted by the Governor's Water Conservation Team (a team which consisted of five of Utah's largest water districts and the UDWRe) as a statewide initiative to raise awareness and connect Utahns to water conservation tips, tools, and resources. The campaign has continued to evolve over the years. In 2024, management of the campaign transferred from UDWRe to Utah Water Ways. Future adjustments to the campaign may be appropriate to emphasize new water conservation opportunities for Utahns. JVWCD will continue to provide financial support and input to keep the campaign relevant.

2. Localscapes

JVWCD created Localscapes® in 2019, a simplified, sustainable, and balanced approach to landscaping for Utah. Localscapes can use 66 percent less water than typical landscapes while reducing maintenance, increasing curb appeal, and providing better landscape functionality. What sets Localscapes apart from previous approaches to water-efficient landscaping is that it offers a comprehensive solution to major landscape challenges faced by homeowners while also saving water. Educational efforts include community outreach, online and in-person classes, a learning exhibit at JVWCD's demonstration garden, and partnerships with industry professionals.

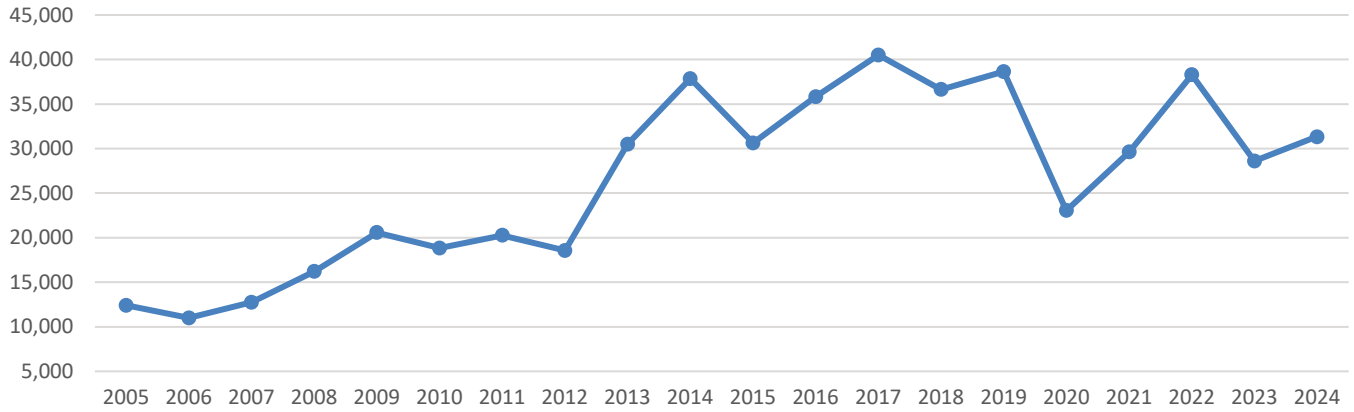
Enhancement: Localscapes Certification

As Localscapes gain popularity with the community, there is an increasing need to provide education and resources for the installation and maintenance of landscapes dominated by plants rather than lawn. Working in conjunction with other founding partners, JVWCD plans to develop a certification program focused on installing and maintaining waterwise landscapes for contractors and other landscape professionals. Landscape plans can also be reviewed and certified, or stamped, as officially approved Localscape designs.

3. Conservation Garden Park

With more than nine acres of exhibits, pathways and Utah-friendly plants, Conservation Garden Park (Garden) is Salt Lake County's premier destination for information about water-efficient landscaping. Owned and operated by JVWCD, the Garden is open year-round with free admission, classes, and events to all patrons. The Garden sees between 30,000 and 40,000 visitors each year, see Exhibit 17.

Exhibit 17. Conservation Garden Park Visitation



A list of the Garden's primary activities and programs include:

Community Classes: Garden classes teach Utahns how to design, install, and maintain Utah-friendly landscapes. During 2023, over 50 community classes were taught virtually or in-person at the garden, and 12 classes were taught at Member Agency facilities throughout Salt Lake Valley.

Tours: Garden staff regularly conduct free tours of the Garden for school groups, VIPs, church groups, class attendees, and plant enthusiasts.

Educational Exhibits: Over 40 educational exhibits teach and reinforce principles of water-efficient landscaping.

Field Trips: Thousands of school children visit the Garden each year. A bus transportation assistance program enables wide-spread participation in this program—providing the opportunity for a younger generation of Utahns to learn about water efficiency. Tours are provided for elementary and high school students.

Work and Learn Workshops: Participants work alongside staff to help maintain the Garden while learning important skills hands-on.

Immersive Learning: These sessions turn the Garden into an interactive learning environment to replicate common scenarios participants may face when installing or maintaining their landscapes. Some of the techniques taught include pruning, planting, lawn maintenance, and irrigation system repairs.

Garden Events: Events range from fewer than 100 people to several hundred participants. Types of events include an Open House, where attendees can engage with sustainable landscape experts and ask questions, as well as holiday-themed events that offer a fun atmosphere in the garden while still focusing on water-centric education.

Plant Database: JVWCD maintains a searchable database of Utah-friendly plants on the Garden's website. Visitors can find plants, view their watering requirements, and see pictures of each from various seasons.

Online Education: JVWCD has produced online versions of some of its most popular courses that the community can watch at home including: Localscapes University, Flip Your Strip, Basic Irrigation Repairs, and Common Utah Weeds. Anyone can access them online and on-demand. In 2023, recorded and virtual class received a total of 24,311 views.

Enhancement: Garden Expansion

For JVWCD to reach its conservation goal it must connect with a larger audience and foster a conscious connection between people and water. The Garden can play a significant role in achieving this by enhancing existing garden space and expanding the garden to educate the community on where their water comes from and why it's important to conserve it.

The garden expansion west of the stream will include facilities that provide more hands-on learning experiences for guests and exhibits that focus on our local water cycle and built systems, a holistic approach to community-involved water stewardship, the infrastructure and expertise required to treat and convey water from sources to customer tap, and the value derived from the range of water uses. The new exhibits will support the water curriculum being developed for schools by Utah Water Ways. In addition to the expansion, JVWCD has conducted focus groups, and

will increase outreach and advertising campaigns to drive more visitors to the Garden in the future.

4. Social Media and Community Outreach

JVWCD operates four different "brand" accounts across major social media platforms. The brands include Jordan Valley Water Conservancy District, Utah Water Savers, Localscapes, and Conservation Garden Park. Though each of these brands have different target audiences and brand voices, they all promote water conservation best practices and advertise JVWCD's community programs and education opportunities.

Additionally, JVWCD's Community Engagement Department attends events hosted by member agencies and other community partners to promote water conservation.

5. Customer Feedback Tools

Most Utahns are unaware of how much water they use. Direct feedback about water consumption coupled with suggested actions has been shown to decrease water use. JVWCD uses enhanced water bills, semi-annual reports, and a personalized web portal in its retail service area to provide this type of feedback and encourages its Member Agencies to adopt similar programs. These feedback tools are enhanced further by JVWCD's advanced metering infrastructure (AMI) which allows for leak detection alerts and water use notifications.

Enhancement: Direct, targeted messaging

JVWCD will contract a customer messaging system that will enhance our ability to communicate important information directly to our retail customers. This system will allow us to send leak notifications, usage reports, conservation tips, and other relevant updates in real-time.

6. Leak Mitigation

Household leaks are responsible for an average of 8% of the total water used indoors annually. JVWCD is currently developing a leak mitigation program to help homeowners in its retail area locate and stop leaks. JVWCD has produced a leak mitigation guide that can help customers identify and fix leaks. This guide is distributed and used by field and customer service staff to address issues. JVWCD uses meter data to proactively identify accounts with potential leaks. Those customers are notified and provided with information and materials.

Enhancement: Plumber Vouchers

The programs assessment identified proven success in enhancing this education program with incentives. JVWCD will determine an effective approach to partner with pre-approved plumbers to repair leaks. Homeowners with verified leaks would be eligible for vouchers to cover the cost of repairing leaks when using a participating plumber.

Recommended Additions to Education Programs:

Homebuilder Certification

JVWCD supports the UDWRe "Homes Elevated – Water Conservation Framework" initiative. This state-led initiative is designed to encourage homebuilders and developers across Utah to implement water-efficient practices in their projects. This program will offer a tiered incentive structure (Gold, Silver, Bronze) that rewards homebuilders based on the extent of water efficiency measures incorporated into their designs, such as WaterSense labeled fixtures, smart irrigation controllers, and Localscape landscaping. In addition to financial incentives, participating homebuilders will receive public recognition, with their contributions highlighted on a dedicated webpage.

The program will roll out in two phases: first targeting single-family homes and then expanding to multi-family and high-density housing. By aligning with this state initiative, JVWCD will effectively contribute to broader water conservation goals without duplicating efforts.

District Site Landscape Conversions

JVWCD owns and maintains dozens of properties throughout Salt Lake County. Historically these properties were landscaped with turf grass. As outlined in its capital improvements plan, the District will replace the turf at these sites with waterwise landscaping. While this will save water, the projects also play the important role of showing the community alternatives to an all-grass landscape. Many of these sites are located in residential neighborhoods or along busy arterial streets and JVWCD will showcase these projects as examples of waterwise landscapes.

Accessible Educational Materials

To make conservation information more accessible to all residents within our service area, JVWCD will enhance its educational materials by translating key resources into Spanish. In partnership with member agencies, we will also offer classes taught in Spanish and other languages to reach more diverse communities. By expanding our multilingual offerings, we aim to ensure that water conservation practices are inclusive and accessible to all residents.

Mobile Water Conservation Exhibit

To reach residents where they live, work, and gather, JVWCD will develop a mobile exhibit focused on water conservation and waterwise landscaping practices. This traveling exhibit will visit schools, community centers, and public events across Salt Lake County, offering residents an interactive experience in water education. Our newly appointed outreach coordinator will work closely with member agencies and local partners to maximize the exhibit's reach and engagement across the community.

Pillar 2: Incentives

Effective incentive programs can influence water users to make structural changes that reduce water demand. JVWCD has created or currently participates in four incentive programs including:

1. Utah Water Savers

In 2017, JVWCD developed UtahWaterSavers.com to host several turnkey water conservation programs for its service area. In 2018, the website was expanded in partnership with UDWRe to host additional statewide rebate programs. Since then, the website has been regularly improved to accommodate the individual needs of additional water districts and cities. This project is beneficial to agencies because it allows them to share promotional, hosting, and development costs and provides a single resource for the community to use. Currently the following programs are managed through the Utah Water Savers website: Landscape Incentive Program, Toilet Replacement Rebates, and Smart Controller Rebates. Wide-scale public recognition and use of Utah Water Savers will be essential to escalate the programs to the levels described in this plan.

Landscape Incentive Program

The Landscape Incentive Program pays residents and commercial businesses within JVWCD's service area to replace their lawn with water-efficient landscaping. Applicants apply through UtahWaterSavers.com and payment provided is based on the actual square footage of lawn replaced. The program does not incentivize areas replaced with artificial turf or other hardscape materials.

In addition to the turf replacement program, JVWCD also offers incentives for converting overhead spray within planting areas to drip irrigation (Switch2Drip) and for planting trees (Treebate).

The Landscape Incentive Program requires at least 50% plant coverage within the project, ensuring landscapes participating in the program do not contribute to urban heat island effects. Incentivizing tree planting also helps to maintain cooler temperatures throughout the valley.

Toilet Rebates

Toilets use more water than any other indoor fixture and because toilets manufactured before 1994 use more gallons of water per flush, replacing them is an easy way to conserve water. A statewide toilet rebate program funded by UDWRe allows homeowners to receive up to $150 per toilet when they replace a pre-1994 toilet with a WaterSense labeled toilet (limit two toilets per property). Applications are submitted through Utahwatersavers.com and routed to the appropriate water district to be reviewed for eligibility and accuracy before payments are processed and distributed by UDWRe.

Smart Controller Rebates

Smart controllers can turn irrigation systems on and off based on local weather and landscape conditions. A statewide smart controller rebate program, funded by the UDWRe, rebates homeowners the cost of a new smart controller, or $100, whichever is smaller. Applications are submitted through Utahwatersavers.com and routed to the appropriate water district to be reviewed for eligibility and accuracy before payments are processed and distributed by UDWRe.

Enhancements:

To encourage broader participation in our programs, JVWCD is committed to significantly increasing its outreach efforts and marketing budget to attract new applicants. With today's highly fragmented media landscape, where news and information are delivered through a vast array of channels, JVWCD recognizes the need to enhance its visibility across both traditional outlets and emerging digital platforms. In tandem with these expanded outreach efforts, JVWCD will also introduce new residential incentive programs, as outlined below, to further boost engagement and program effectiveness.

Water Bill Analysis – This initiative will require participants to provide their water bills before and after their landscape conversion project. Staff will log the information in a central database for future analysis to determine cost effectiveness.

Rain Gardens – A potential rebate for installing bioswales, or storm water detention areas within the landscape. The incentive would be based on gallons of water captured and returned to the aquifer determined by square footage of impervious runoff area diverted to the rain garden.

Rain Barrel Rebates – Rainwater collected from downspouts in barrels can be used to supplement irrigation. Rain barrel programs also provide community relations value and help people focus on water conservation.

Irrigation Device Rebates – Water-saving devices include soil moisture sensors, pressure reducing valves, rain shut-off sensors, and pressure compensating spray heads. Any irrigation device proven to save water would be considered for potential incentives through Utah Water Savers.

2. Strategic Water Management

The Strategic Water Management program offers commercial, institutional, and industrial water users an extensive evaluation of how they are using water and provides recommendations for improvement. Each evaluation consists of a water use audit, walkthrough, and follow up meeting with the property owners/managers. During a walkthrough, conservation technicians inspect every feature of the property that uses water, including landscaping, irrigation, cooling towers, kitchens, washers, bathrooms, indoor plumbing fixtures, etc. A report is prepared that outlines a list of recommendations, estimated water savings, and estimated implementation costs. Any applicable incentive or rebate opportunities are also included and discussed. Examples include replacing high-flow plumbing fixtures (toilets, showerheads, urinals, faucets, spray valves, etc.), high-flow appliances, irrigation improvements, and upgrading cooling towers. This program is designed to help offset the costs of improvements recommended in the report.

Enhancements:

Cost Efficiency Road Map – In addition to a report with water-saving recommendations, the road map will move participants to incentives such as turf removal and device rebates.

Water-saving Device Incentives – A fixed-rate incentive will be offered to replace or install approved devices such as toilets, urinals, showerheads, flow control valves, cooling tower conductivity controllers, cooling tower pH controllers, connectionless food steamers, air-cooled ice machines, dishwashers, washing machines, dry vacuum pumps, laminar flow restrictors, and steam sterilizers.

3. Member Agency Grants

The Member Agency Grant Program assists Member Agencies in funding and implementing water conservation measures, projects, and programs in their respective service areas. Funding matches are determined by the following tier structure:

Tier 1 Measure (Agency matches at least 20%): This is for projects with proven, quantifiable water savings resulting in direct water use reduction. Upon applying, JVWCD estimates the potential water savings to determine the funding match level. Examples of potential projects include indoor fixture replacement programs, irrigation product rebates, leak mitigation programs, or customer feedback programs.

Tier 2 Measure (Agency matches at least 40%): This includes studies and projects that have a strong research component with the potential for significant future water use reduction. Examples of potential projects include studies relating to secondary water metering, water rate structures, demand management, end use, or cost effectiveness of conservation programs. Requests for consulting services are also considered Tier 2.

Tier 3 Measure (Agency matches at least 60%): This involves conservation measures where water use reduction is difficult to determine. Examples of potential projects include promotional materials, community information campaigns, or demonstration gardens.

Enhancements:

Increased Funding – Changes to the Member Agency Grant Program during this plan period may include adjustments to the funding model and clarification on specific projects that would be eligible. Based on a recent survey, most Member Agencies favor increased funding in some way. Incentive funding will be increased by doubling the dollars available to a member agency based on their contract amount from $1 per acre foot to $2 per acre foot. The base incentive of $50,000 available to all member agencies will remain the same.

Turnkey Programs – Due to staffing constraints, many Member Agencies also favor "turnkey" type conservation programs. These could include pre-developed programs such as product rebates, leak detection and mitigation, and landscape design. The Landscape Incentive Program offered through Utah Water Savers is an example of a turnkey program available to Member Agencies.

4. Supplemental Grants for Member Agency Water Efficiency Standards

To offset the cost to cities associated with implementing and enforcing Water Efficiency Standards, an additional "supplemental" grant is temporarily available for member agency cities. Member Agencies may apply for supplemental funding for up to five years following formal adoption of JVWCD's Water Efficiency Standards. Funding amounts and limitations are the same as the traditional Member Agency Grant program.

Pillar 3: Regulations

Effective regulations like indoor and outdoor water efficiency standards help create more sustainable communities.

1. Water Efficiency Standards

In 2019, JVWCD developed a set of water efficiency standards based on extensive research into landscape ordinances, water conservation programs, and indoor fixture standards of many western water providers and cities. These standards are now being used to guide JVWCD's planning, programs, initiatives, model landscape ordinances, and indoor fixture recommendations. As of April 2024, all cities within JVWCD's wholesale service area have adopted the standards.

Enhancement:

Standards Update – JVWCD is proposing an update to the standards. A summary of the updates is below, and the full document is in Appendix E.

- New residential landscapes will no longer be expected to follow Localscapes design elements but no more than 35% of the property's irrigable area may be lawn irrigated with overhead spray in the front and backyards.
- At maturity, landscapes must have enough plant material to create at least 50% living plant cover, not counting tree canopy.
- Lawn may not be planted in park strips, in areas less than eight feet wide, or on slopes greater than 25% grade.
- Commercial, industrial, and institutional properties may not plant lawn or use overhead spray except as part of an active recreation area.

An extensive review process involving member agency feedback will be conducted by November 2025. Based on the feedback, the adoption date for the new standards will be established. Member agencies willing to adopt and enforce the new standards, specifically prohibiting non-functional turf on commercial properties, will be granted a supplement to their water budget for future water supply contracts applicable to undeveloped or redeveloped lands as currently specified in District policy.

2. Conservation-Oriented Rate Structure

As discussed in Section 3.1, the District implemented a conservation-oriented rate structure for its retail customers in 2018 and has continued refining that rate structure since then. The District's member agencies also use conservation-oriented rate structures.

Enhancements: Advancements in technology have made new approaches to implementing rate structures possible. For example, some utilities have implemented rate structure that vary with evapotranspiration rates throughout the year. Other water rate structures optimization efforts include adjustments to water impact fees, water purchase contracts, efficient landscape easements, multiple rate tiers, budget-based rates, and water availability fees. The District will select new approaches to test with its retail customers and hold workshops with the member agencies to share lessons learned and encourage refinement to their rate structures. JVWCD will also consider conservation-oriented rate structures for its wholesale contracts.

3. Policy Planning

Water policy planning and regulations will play a major role in whether JVWCD's conservation goal is achieved and how much it will cost. Though JVWCD does not have the jurisdiction to enforce water-efficient landscape ordinances, establish plumbing standards, determine land use, or dictate growth trends, it has tools to encourage water efficiency standards within its service area. These tools include new land annexation petitions and water fees and charges.

In spring 2024, JVWCD implemented a new water budget policy. The policy sets a water budget for each developable acre that is projected to annex into JVWCD's service area (1.35 acre-feet per year per acre with opportunity to increase to 1.65 acre-feet per year per acre). If a new development will require more water than the budgeted amount, then the property owners/developers will need to make the District whole by conveying water interests to the District or paying the District in lieu of conveying water rights. This policy is intended to give land use decision makers the tools they need to guide development down a path that available water supplies can support.

7. Water Conservation

JVWCD is proud of the progress made toward the goals set forth in the 2019 Conservation Plan Update. As mentioned, the general trend line is well below the current 2030 goal of 187 GPCD. When updating the Conservation Plan for 2025, we analyzed goals that best answered the following question: **What conservation investments are needed to support the community's desired quality of life?**

JVWCD relies and surveys and focus groups to inform our understanding of the community's desired quality of life. When answering this question, we focused on four key components:

- Economic Growth
- Emotional/Social Wellbeing
- Affordability
- Public Health

Conservation programs help inform the community how water can be used most efficiently in each of these components. JVWCD chose a goal that sustains economic growth within our current and future supply, honors our commitment to healthy Great Salt Lake levels, doesn't overburden consumers who use water efficiently with high water costs, and allows the residents of Salt Lake County to continue to enjoy their landscapes, parks and other outdoor recreation areas.

JVWCD's new conservation goals include a revised end-use per capita demand goal and two new categories of goals: turf replacement and program participation. The following section describes how the goals were selected and a description of future analyses that should be performed to continue refining our conservation goals and efforts.

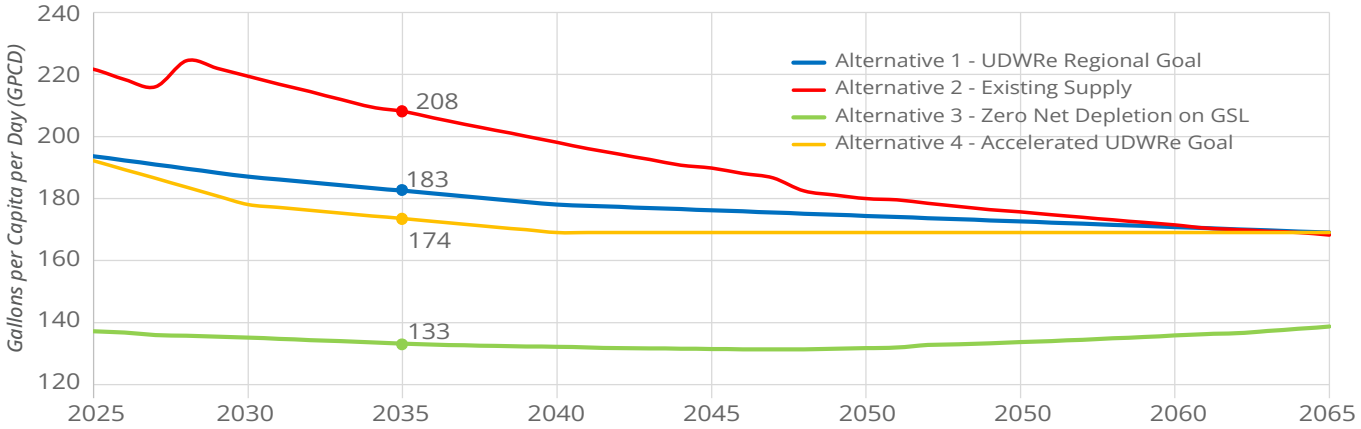
7.1 Goals Analysis

To determine a goal that best answers the quality-of-life question, JVWCD analyzed four alternative targets.

1. Achieve UDWRe's Regional M&I Water Conservation Goals (regional goals)
2. Keep system demands within currently secured water supply projects through 2065
3. Achieve net zero depletion impacts on Great Salt Lake (GSL) by 2065
4. Achieve the GSL Commissioner's suggestions for accelerating UDWRe's regional conservation goals

UDWRe's regional goals specify targeted per capita usage rate for years 2030, 2040, and 2065. Analyses were performed to determine the per capita usage rate required to achieve alternatives 2 and 3 by 2065. The Great Salt Lake Commissioner's strategic plan for the lake asks water managers to consider accelerating the UDWRe's regional goals from 2040 to 2030 and from 2065 to 2040. Exhibit 18 shows a comparison of the per capita usage rates required over time to achieve each of the four alternatives.

Exhibit 18. Per Capita Water Use By Type



With the alternative targets set, varying levels of investment in the enhanced and new conservation programs discussed in Section 6.2 were modeled to estimate the costs to achieve each alternative. The estimated total costs and cost per acre foot of savings are summarized in Exhibit 19.

Exhibit 19. Per Capita Water Use By Type

Target Alternatives	Total Cost from 2025 to 2035 *(range)*	JVWCD Cost ($/AF)
Alternative 1 – UDWRe Regional Goal	$87,400,000 *($43,700,000-$131,000,000)*	$12,200
Alternative 2 – Existing Supply	$87,400,000* *($43,700,000-$131,000,000)*	$12,200
Alternative 3 – Zero Net Depletion on GSL	$387,000,000 *($194,000,000-$581,000,000)*	$9,300
Alternative 4 – Accelerated UDWRe Regional Goal	$112,000,000 *($55,700,000-$167,000,000)*	$11,400

*Costs are the same for Alternatives 1 and 2 because Alternative 2 is less aggressive than Alternative 1. Since we must meet the DWRe's regional goals, we will achieve Alternative 2 by meeting Alternative 1.

A comparison of cost per acre foot is listed in Exhibit 19 for conservation and in Exhibit 7 for water supply development, shows that achieving all four conservation target alternatives are more cost effective than Membrane Treatment of Utah Lake/Jordan River Water and the Bear River Project. Money spent in any of the four alternatives would provide equal or greater value to the District as money spent on supply development projects.

Through further analyses of the four alternatives' effectiveness in supporting the community's desired quality of life, it was determined that starting to invest at a consistent level to achieve Alternative 1's 2065 target not only meets DWRe's goals, but will allow us to achieve Alternative 4 through 2036. Should DWRe change the goals before our next plan update in 2030, JVWCD will be prepared to be more aggressive in our conservation efforts without a significant increase in investment.

Details of our goals analysis can be found in the technical memorandum included as Appendix D.

7.2 Selected Goals

For this plan period, we will measure our progress against three goals based on the hybrid of Alternative 1 and 4 targets:

1. End-use per capita demand reduction,
2. Square footage of turf removed per year, and
3. Program participation levels.

JVWCD's end-use per capital demand reduction will align with Alternative 1 discussed above. We plan to reach 178 GPCD by 2030 and 173 GPCD by 2035.

In addition to this goal, JVWCD is introducing two new goals relating to turf removal and program participation that will help us stay on track for 173 GPCD by 2035. To reach this end use, we will need to convert approximately 5,875,000 square feet of turf to water efficient landscaping through 2029 (see Exhibit 20).

Exhibit 20. Five Year Turf Removal Goals

Year	Sq ft Residential	Sq ft CII	Total AF conserved
2025	583,333	208,333	66
2026	666,667	316,667	81
2027	750,000	425,000	97
2028	833,333	533,333	113
2029	916,667	641,667	129

Tracking square feet of turf removed will allow us to estimate the volume of water that has been conserved. We will also set goals for program participation, which will help us to understand the effectiveness of our outreach efforts and advertising campaigns. The program participation goal will be developed in early 2025 after 2024 participation levels are recorded.

7.3 Additional Conservation Metrics

In addition to the three conservation goals, JVWCD will enhance existing monitoring metrics and develop new ones. These metrics will provide a more detailed view of our progress and may also serve as goals for the next plan period.

The metrics include:

1. Ratio of outdoor water use to indoor water use (existing metric),
2. County-wide consumptive use (existing metric),
3. Percent reduction in non-functional turf (new metric to begin in 2026), and
4. Usage per connection benchmarks for customer categories (new metric to begin in 2026).

See Section 8.2 for details on how we will use the metrics to monitor our progress.

7.4 Recommended Future Analyses

The analyses to establish the goals listed in Section 7.2 were performed through 2065 to align shorter-term goals with long-term targets. However, uncertainty associated with key variables in the analyses introduces uncertainty in the true level of investment required to achieve even shorter-term goals. Those variables include impacts of:

1. Education efforts,
2. Density and type of future development,
3. Compliance rate of future landscapes to Water Efficiency Standards,
4. Evapotranspiration (depletion) associated with outdoor water use,
5. Willingness of existing customers to convert turf, and
6. Future climate change impacts on water demands.

JVWCD staff will complete studies to reduce uncertainty associated with these variables, which will allow us to make the appropriate adjustments to the implementation plan provided in Section 8 as conditions unfold and to set effective longer-term goals. The studies that will be performed over the next five years for these purposes are listed in the Section 8.1.

8. Implementation and Monitoring Plan

The following implementation and monitoring plans outline the steps JVWCD will take to ensure the successful execution of its conservation goals and measure progress over time.

8.1 Implementation Plan

This section describes the costs, programs, timing, and program participation necessary to achieve the water savings goal of 173 GPCD by 2035. A summary of proposed budget and staffing requirements through 2035 is shown in Exhibit 21. For an in-depth analysis on the development of these numbers, refer to Appendix D.

Exhibit 21. Current and Future Budget and Staffing Requirements

	2024 Budget and Staffing (current)	2030 Budget and Staffing	2035 Budget and Staffing
Total Annual Budget	$4,482,900	$8,105,659	$8,333,657
Full Time Employees	9 FTEs	12 FTEs	14 FTEs
Seasonal Employees	16 (8 FTEs)	19 (9.5 FTEs)	20 (10 FTEs)

New full-time and seasonal positions will be needed to fulfill this plan as shown in Exhibit 22 below. JVWCD will also explore options to offset staffing costs, such as developing a robust volunteer program and/or working with member agencies to supplement our staffing needs with their conservation staff.

Exhibit 22. Staffing Projections

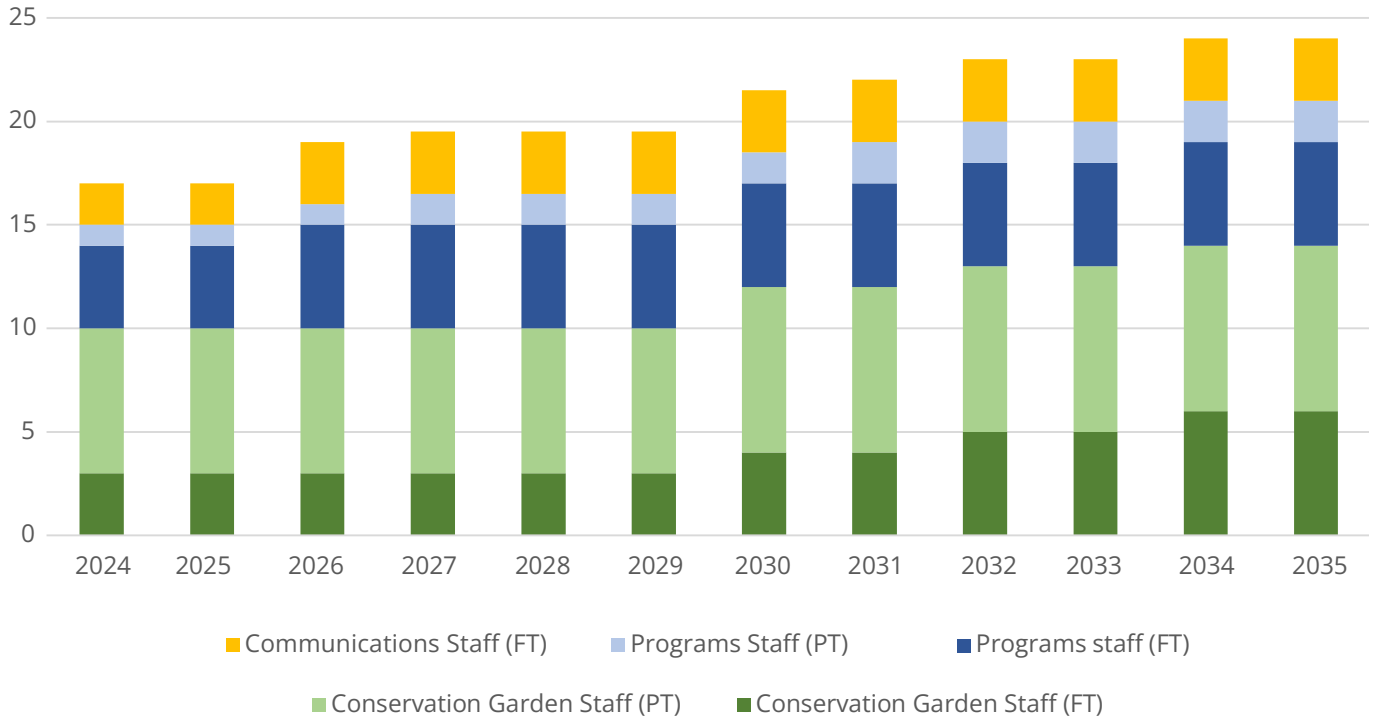
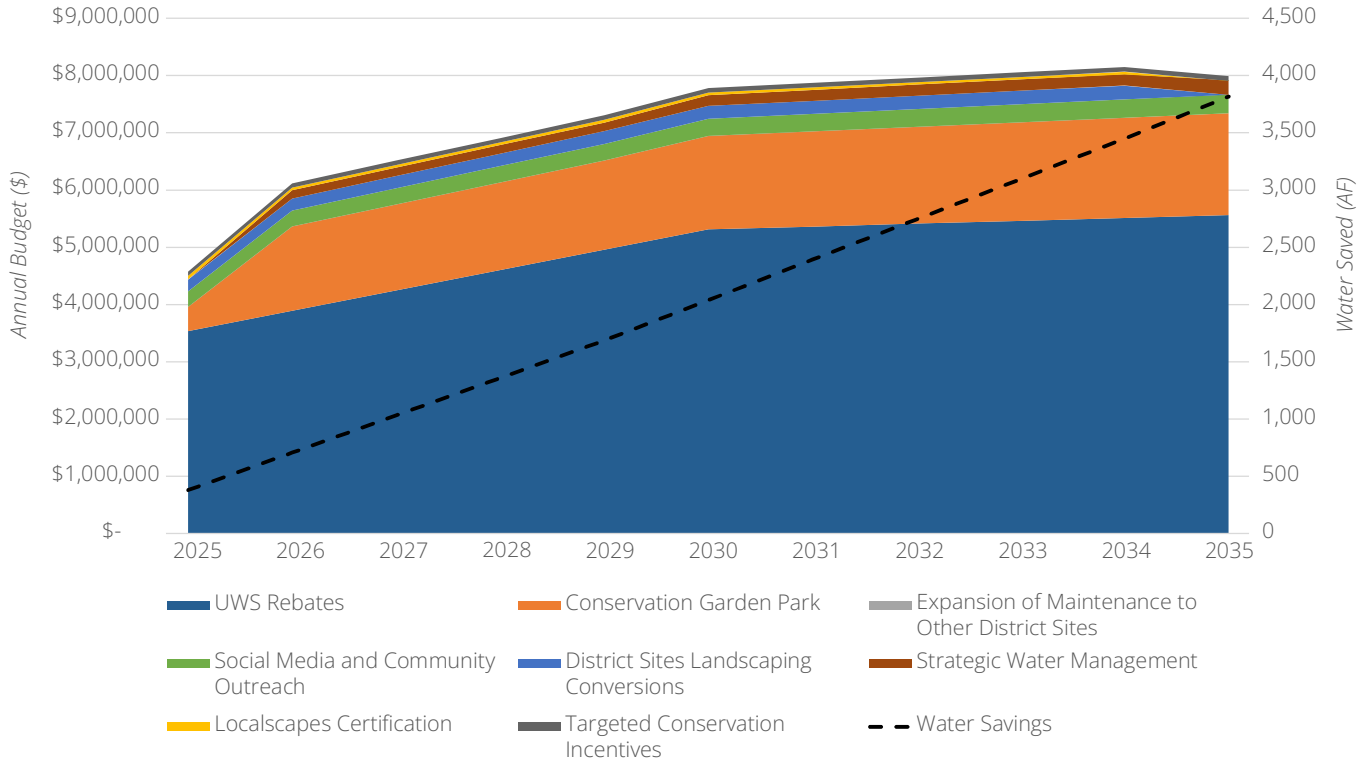


Exhibit 23 shows projections for all the conservation budget lines to accomplish the goal. If complimented with ongoing education and outreach efforts, programs that incorporate structural efficiencies like landscape renovations, drip irrigation, toilet replacements, and indoor fixtures can produce perpetual water savings. In other words, if a landscape were to be renovated in 2025, it would produce water savings each year through the planning period.

Programs that rely on behavioral changes like customer feedback tools, consultations, audits, and smart controllers that can be disabled are more challenging to produce perpetual savings, but JVWCD staff are committed to outreach efforts that help drive permanent behavioral changes. Both program types and estimated annual savings are considered in the chart below.

Exhibit 23. Conservation Budget and Water Savings Projections



While performing the cost/benefit analysis of different programs, JVWCD noted areas where insufficient data is creating uncertainty in the analyses and will undertake the studies listed below and incorporate the results into its 2029 Water Conservation Plan.

- Population density impacts on water usage rates
- 10-year study on efficacy of turf removal programs (ie, analyze water use data of program participants)
- Projections of land use distribution in future development
- Water-efficiency benchmarking for customer classes and usage per connection benchmarks for customer categories
- Quantify non-functional turf in 2022 and monitor its reduction over time
- Develop an Outreach and Education Comprehensive Plan as part of the District-wide Communications Plan
- Effective innovation in conservation-oriented rate structures

8.2 Progress Monitoring Plan

JVWCD's Board of Trustees and staff will perform an annual assessment of the District's conservation goals and monitoring metrics as follows:

1. Determine annual water use and GPCD
    - Collect data from Member Agencies and retail service area (supply, demand, and population)
    - Adjust projections and estimate water demand for the following year
    - Track county-wide consumptive use
2. Assess conservation needs from JVWCD's programs
    - Determine water savings gap using latest projections (ex. demand, population, density, and climate trends)
    - Set needed turf removal levels to overcome identified gap (either maintain plan trajectory or escalate resource allocation)
    - Set needed conservation program participation levels to overcome identified gap (either maintain plan trajectory or escalate resource allocation)
3. Determine and track ratio of outdoor vs. indoor water use
4. Identify quantity of turf in our service area using aerial imagery

5. Track progress for removing non-functional turf
6. Target high water-use landscapes for programs and incentives
7. When the water efficiency benchmarking is complete, compare current water use to the benchmark, then target customers with information and incentives
8. Prioritize and plan for the next year
    - Prioritize advertising and marketing budgets using water use statistics for targeting users and areas
    - Track progress through year based on program level participation

8.3 Summary

The previously stated implementation plan and conservation program descriptions outline important milestones and benchmarks for evaluating progress in this plan period and achieving the 2035 goal. A summary of these major benchmarks is found below.

- Enhance existing education and incentive programs and create new, targeted programs and campaigns
- Conservation Garden Park expansion (Interpretive Master Plan and Phase 1 construction)
- Start accelerated schedule for non-functional turf replacement at all District sites
- Create enhancements to strategic water management program including a cost efficiency road map and rebates for water-saving devices
- Enhance the Member Agency Grant Program with increased funding limit and a turnkey leak detection program
- Finalize the Water Efficiency Standards update and set a target date for area-wide adoption
- Hire 3 new full-time positions and the full-time equivalent of 2 new seasonal positions
- Increase participation levels and budgets of conservation programs to the stated levels necessary to achieve the goal

JVWCD is dedicated to fostering a community that values the essential role of water in supporting a thriving future. As awareness grows, residents have shown an eagerness to engage and contribute to securing a sustainable water supply. JVWCD anticipates that its commitment to conservation will expand as it addresses the challenges of population growth, climate variability, and the rising costs of future water development.

9. Appendices

Appendix A. Board Resolution, Minutes, and Notification Procedures

Appendix B. Demand Projection Calculations

Appendix C. Best Management Practices

Appendix D. Technical Memorandum

Appendix E. Proposed Updates to Water Efficiency Standards


8275
CONSERVATION
GARDEN

Appendix A

Board Resolution, Minutes, and Notification Procedures

Resolution of the Board of Trustees

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

RESOLUTION NO. 24-16

APPROVING THE WATER CONSERVATION PLAN UPDATE

WHEREAS, pursuant to §73-10-32 Utah Code Ann. (1953) (the "Act"), Jordan Valley Water Conservancy District ("Jordan Valley") prepared a Water Conservation Plan in 1999, prepared updates to its Plan every five years, as required by law, and has now prepared an additional update to its Plan, (the "Updated Plan") as set forth in attached Exhibit 1 (the "Updated Plan");

WHEREAS, Jordan Valley has established in its Updated Plan a conservation goal to reduce water use within its service area to 173 gallons per capita per day by 2035;

WHEREAS, Jordan Valley has determined that achieving this conservation goal will sustain existing water supplies, eliminate or delay more expensive water supply and infrastructure projects, and assist in providing an adequate water supply for future generations;

WHEREAS, the Updated Plan identifies existing and proposed water conservation measures and programs needed to continue making progress towards achieving Jordan Valley's goal; and,

WHEREAS, pursuant to the Act, Jordan Valley has held a public hearing, after reasonable and advance public notice, for purposes of inviting and encouraging discussion and public comment on the Updated Plan.

NOW, THEREFORE, BE IT RESOLVED by the Jordan Valley Water Conservancy District Board of Trustees:

1. Jordan Valley has met the requirements of the Act in its preparation of the Updated Plan.

2. The General Manager is authorized and directed to cause a copy of the Updated Plan to be filed with the Utah Division of Water Resources and with all other persons or entities deemed appropriate.

3. This Resolution shall take effect immediately upon execution by an authorized member of the Board.

PASSED, ADOPTED, and APPROVED this 13th day of November 2024.

Corey L. Rushton
Chair of the Board of Trustees

ATTEST:

Alan E. Packard
Clerk

MINUTES OF THE PUBLIC HEARING/REGULAR BOARD MEETING OF THE BOARD OF TRUSTEES OF JORDAN VALLEY WATER CONSERVANCY DISTRICT

(Approved January 8, 2025)

November 13, 2024

A regular meeting of the Board of Trustees of the Jordan Valley Water Conservancy District was held both in person and electronically on Wednesday, November 13, 2024, at 3:00 p.m. at JVWCD's administration building located at 8215 South 1300 West, West Jordan, Utah.

This meeting was conducted electronically in accordance with the Utah Open and Public Meetings Act (Utah Code Ann. (1953) §§ 52-4-1 et seq.) and Chapter 7.12 of the Administrative Policy and Procedures Manual ("Electronic Meetings").

Trustees Present:

Corey L. Rushton, Chair
Karen D. Lang (electronic)
Zach Jacob
Andy Pierucci (electronic)
John H. Taylor
Barbara L. Townsend
John Richardson

Trustees Not Present:

Mick M. Sudbury
Dawn Ramsey

Staff Present:

Alan Packard, General Manager
Jacob Young, Deputy General Manager
Shazelle Terry, Assistant General Manager
Mark Stratford, General Counsel
David Martin, Chief Financial Officer
Brian McCleary, Controller
Gordon Batt, Operations Department Manager
Brian Callister, Maintenance Department Manager
Kelly Good, Community Engagement Department Manager
Kurt Ashworth, Human Resources Manager
Martin Feil, Database Administrator (electronic)
Shane Swensen, Chief Engineer
Jon Hilbert, Water Quality Division Manager
Travis Christensen, Engineering Group Leader
Mindy Keeling, Executive Assistant
Lisa Wright, Administrative Assistant III (electronic)
Cheyenne Davis, Customer Service Representative
Conor Tyson, Registered Engineer
Margaret Dea, Senior Accountant (electronic)
Matt Volmar, Asset Management Data Analyst (electronic)
Mike Brinton, Asset Management Program Administrator (electronic)
Kyle Allcott, Communication Section Supervisor

Also Present:

Greg Davenport, Utility Manager, City of West Jordan
Ana Paz, Associate Engineer, City of South Jordan (electronic)

Jason Helm, General Manager, Granger-Hunter Improvement District (electronic)
Troy Stout, Assistant General Manager/COO, Granger-Hunter Improvement District (electronic)
Justun Edwards, Director of Public Works, Herriman City (electronic)
Gary Henrie, Engineer, Bureau of Reclamation (electronic)
Austin Ballard, CFO/Controller, Granger-Hunter Improvement District (electronic)
Shawn Robinson, Director of Operations and Maintenance, Taylorsville-Bennion Improvement District (electronic)
Wayne Winsor, Assistant General Manager/CAO, Metropolitan Water District of Salt Lake and Sandy
Jason Luettinger, Principal, Bowen Collins & Associates
Clint Dilley, General Manager, Magna Water District (electronic)
Ryan Willeitner, Engineer, Jacobs Engineering (electronic)
Greg Anderson, General Manager, Kearns Improvement District
Greg Christensen, Trustee, Kearns Improvement District
Mark Chalk, General Manager, Taylorsville-Bennion Improvement District
Don Russell, Trustee, Taylorsville-Bennion Improvement District
Brett Behling, WSP Engineering
Clark Burbidge, Codale Electric
Ron Stewart, Gilbert & Stewart, CPA's
Bob (electronic)

Call to order and introduction of visitors

Mr. Corey Rushton, Chair, convened the Board meeting of the Jordan Valley Water Conservancy District Board of Trustees at 3:00 p.m. on Wednesday, November 13, 2024. Mr. Rushton introduced the members of the Board and the public who joined the meeting both in person and electronically. Mr. Mick Sudbury and Ms. Dawn Ramsey were excused.

Public hearing on the Water Conservation Plan Update

Mr. Rushton stated this public hearing was being held to receive public comments relating to JVWCD's Water Conservation Plan Update.

Verification of legal notification requirements

Mr. Rushton asked Mr. Mark Stratford, General Counsel, to report on verification of legal notification requirements for the public hearing. Mr. Stratford explained that State Code requires a Class A notice to be given for public hearings. He said notice was posted at the JVWCD Administration and Education buildings, on the Utah Public Notice website, and the JVWCD website. He stated that all requirements were met for legal notification as required by Utah Code.

Motion to open public hearing and receive public comments

Mr. Rushton called for a motion to open the public hearing and receive public comments. Mr. John Richardson moved to open the public hearing and receive public comments. Following a second by Ms. Barbara Townsend, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Staff presentation on the water conservation plan update

Mr. Jacob Young, Deputy General Manager, provided an overview of the Conservation Plan Update (Plan) which included an analysis summary, resulting 2035 goals and metrics, and a five-year achievement plan. He said

as part of the analysis summary, JVWCD's conservation programs were assessed. Eight programs were identified for enhancements to help promote further conservation, and four new programs were identified to be considered for adoption. The resulting 2035 goals are to reach 174 gpcd, and to achieve 7.7 million square-feet of turf replacement over the next six years. Mr. Young summarized elements of the achievement plan including a schedule for ramping up turf removal, increasing JVWCD's conservation budget, and projected staffing needs.

Questions from Trustees

There were no questions from Trustees.

Invitation for public comments

Mr. Young explained that several forms of outreach provided for public comments on the proposed Plan. The Plan was made available on jvwcd.org for the public to review, along with a form for comments. Mr. Young said no written public comments were received through jvwcd.org. He said the Plan was also submitted to the Utah Division of Water Resources, who approved of the Plan. Finally, a meeting was held with JVWCD's Member Agencies in which valuable comments were received. He then shared a letter from Greg Anderson, General Manager, Kearns Improvement District (KID), which included suggestions that would help support KID in its conservation efforts as well as JVWCD. Mr. Young summarized KID's comments including: 1) consider conservation oriented rates for wholesale contracts, 2) enhance accessibility of water conservation classes and incentives, 3) provide a conservation demonstration trailer, 4) dispersed garden and conservation concepts in place of a Garden expansion, 5) enhance recognition, and 6) enhance legislative education efforts. Mr. Young said the suggestions by KID were considered and addressed in the final version of the proposed Plan. He stated that there will be continued discussions with KID and other Member Agencies as the Plan is implemented.

Motion to close public comment session

Mr. Rushton called for a motion to close the public comment section. Mr. John Taylor moved to close the public comment section. Following a second by Mr. John Richardson, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Staff response and summary

Mr. Alan Packard, General Manager, expressed appreciation to Mr. Young and staff for the work put into developing the updated Plan and for their efforts in involving Member Agencies. He said the updated Plan will help guide investment decisions and achievements in conservation.

Mr. Young gave recognition to Ms. Kelly Good, Community Engagement Department Manager, and Mr. Courtney Brown, Conservation Division Manager, for their significant efforts in developing the Plan update.

Motion to close public hearing

Mr. Rushton called for a motion to close the public hearing on the Water Conservation Plan Update. Ms. Barbara Townsend moved to close the public hearing. Following a second by Mr. Andy Pierucci, the motion was approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Consider adoption of Resolution No. 24-16 "Approving the Water Conservation Plan Update"

Mr. Young presented Resolution No. 24-16 to approve the Water Conservation Plan Update. He stated that the Resolution verifies JVWCD has met requirements pursuant to the Water Conservation Act. The Resolution also authorizes the General Manager to submit the Plan to the Utah Division of Water Resources, for their records. He said approval of the Resolution would put the Plan into immediate effect. Mr. Young recommended the adoption of Resolution No. 24-16, "Approving the Water Conservation Plan Update".

Mr. Rushton called for a motion on the recommendation. Ms. Barbara Townsend moved to adopt Resolution No. 24-16, "Approving the Water Conservation Plan Update". Following a second by Mr. John Richardson, the motion was unanimously approved as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Public hearing on proposed adjustments to Trustee division boundaries

Mr. Rushton stated this public hearing was being held to receive public comments relating to the proposed Trustee division boundaries adjustments.

Verification of legal notification requirements

Mr. Rushton asked Mr. Mark Stratford, General Counsel, to report on verification of legal notification requirements for the public hearing. Mr. Stratford explained that State Code requires a Class A notice to be given for public hearings. He said notice was posted at the JVWCD Administration and Education buildings, on the Utah Public Notice website, and the JVWCD website. He stated that all requirements were met for legal notification as required by the Utah Code.

Motion to open public hearing and receive public comments

Mr. Rushton called for a motion to open the public hearing and receive public comments. Mr. John Richardson moved to open the public hearing and receive public comments. Following a second by Ms. Barbara Townsend, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Staff presentation on proposed adjustments to Trustee division boundaries

Mr. Packard presented information on the proposed adjustments to Trustee division boundaries saying that State law requires special districts to review Trustee division boundaries at least every ten years. In 2022, JVWCD reviewed Trustee division boundaries and arrived at a preferred boundary adjustment. At that time, State law required a public hearing to be held by

the Governor. Due to the impractical nature of the Governor holding a public hearing, State law has since been modified to allow the board of a special district to hold its own public hearing and make a recommendation for final approval by the Governor. Mr. Packard shared JVWCD's existing Trustee division boundaries which includes nine Trustees and eight divisions. He said nominations for Trustees must be made by municipalities within JVWCD's service area, or Salt Lake County. When a Trustee term is coming to an end, JVWCD will reach out to municipalities or the county asking them to submit at least two nominations to the Governor's office. The Governor then considers the nominations and makes appointments which are later confirmed by the Senate.

The review of Trustee division boundaries every ten years accounts for population growth and to ensure representation is as equitable as possible. Mr. Packard said as boundary adjustments were considered, four parameters were followed to help guide the development of any adjustments: 1) Seek to maintain Trustee division boundaries which provide broad and equitable representation across various constituencies of the JVWCD service area, 2) Maintain current Board structure and governance (recommend keeping the number of Trustees at nine), 3) Population served and water purchase contract amount are both considerations for allocating representation, and 4) State law requires nominating entities be either municipalities or counties. Mr. Packard reported that within those parameters, JVWCD has developed recommended adjustments to Trustee boundaries and involve creating a ninth division which encompasses the four improvement districts who have water purchase contracts with JVWCD. JVWCD will encourage these municipalities to consult with the improvement districts in making nominations. The proposed boundary adjustments are also equitable in population served and water purchase contract amounts, with each division being served by one Trustee. Mr. Packard said that JVWCD met with Member Agencies to seek feedback on the proposed boundary adjustments. Among the Member Agencies there was general support for the proposed changes, and none were opposed to the proposed changes.

Questions from Trustees

There were no questions from Trustees.

Invitation for public comments

Mr. Packard stated that JVWCD received a letter from Mr. Mark Chalk, General Manager, Taylorsville-Bennion Improvement District (TBID), which commented on the municipalities who would nominate in the new ninth division should give deference to the wishes of the improvement districts. He requested JVWCD to make that deference a requirement rather than a recommendation. Mr. Packard said JVWCD does not have the latitude to require cities to submit nominations for whomever the improvement districts suggest.

Mr. Rushton invited Mr. Chalk to comment. Mr. Chalk expressed his thanks for consideration of his letter. He also expressed TBID's support of the proposed boundary adjustments. He voiced appreciation for the proposed division nine that would give the improvement districts a voice on the Board. He said although TBID is not a nominating entity, the hope is for TBID to be able to submit names for a potential trustee and to have them considered by the nominating municipality.

Mr. Greg Anderson, General Manager, Kearns Improvement District (KID), expressed KID's support of the proposed Trustee division boundary adjustments with the addition of division nine, and Corey Rushton as the representative of new division. He suggested that language be modified to allow for preferred nominees by improvement districts to be considered, rather than a candidate that potentially may not represent the combined voice of the improvement districts.

Motion to close public comments session

Mr. Rushton called for a motion to close the public comment session. Mr. John Richardson moved to close the public comment session. Following a second by Ms. Barbara Townsend, the motion was approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Staff response and summary

Mr. Packard thanked those who commented and said that it is the intent of JVWCD to ensure the improvement districts are well represented on the JVWCD Board. He mentioned that JVWCD is recommending the nomination cycles for divisions one through four be staggered so they are not in the same nomination cycle as division nine. He said for ease of administration and to accomplish this, the term of Mayor Karen Lang be abbreviated to end in February 2026 rather than 2028. Mr. Packard mentioned that pending Board approval of the proposed Trustee division boundaries adjustments, the information will be forwarded to Governor Cox for final approval. If approved by the Governor, the boundaries adjustment information will be brought back to the Board for a modification of JVWCD's bylaws.

Mr. Rushton voiced his appreciation for Member Agencies, nominating entities, the public, Salt Lake County, and staff for their cooperation and for keeping the best interest of JVWCD in mind.

Mr. Zach Jacob inquired as to the process of nominating entities when there is more than one municipality in a division. Both Mr. Andy Pierucci and Mr. Rushton responded that each entity may submit up to two nominees each, or they may choose to coordinate and submit agreed upon nominations, or they may defer to one or the other.

Motion to close public hearing

Mr. Rushton called for a motion to close the public hearing on proposed adjustments to Trustee division boundaries. Mr. John Richardson moved to close the public hearing. Following a second by Ms. Barbara Townsend, the motion was approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Mr. Packard presented Resolution No. 24-17 to approve the realignment of Trustee division boundaries. He stated that the proposed realignment is described in the Resolution, and reiterated that pending Board action, the

Consider adoption of Resolution No. 24-17 "Realignment of Trustee Division Boundaries"

Resolution would be forwarded to Governor Cox for final approval. Mr. Packard recommended the adoption of Resolution No. 24-17, "Realignment of Trustee Division Boundaries".

Mr. Rushton called for a motion on the recommendation. Mr. John Richardson moved to adopt Resolution No. 24-17, "Realignment of Trustee Division Boundaries". Following a second by Ms. Barbara Townsend, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye	Mr. Jacob – aye
Ms. Lang – aye	Mr. Pierucci – aye
Ms. Ramsey – not present	Mr. Rushton – aye
Mr. Sudbury – not present	Mr. Taylor – aye
Ms. Townsend - aye	

Approval of common consent items

Mr. Rushton presented the minutes of the Executive Committee meeting held October 7, 2024, and regular Board meeting held October 9, 2024. He also presented the October 2024 Trustees' Expenses Report. Mr. Rushton called for a motion. Mr. Zach Jacob moved to approve the minutes of the October 7 and October 9 meetings and the October 2024 Trustees' Expenses Report. Following a second by Ms. Barbara Townsend, the motion was approved by those present as follows:

Mr. Richardson – aye	Mr. Jacob – aye
Ms. Lang – aye	Mr. Pierucci – aye
Ms. Ramsey – not present	Mr. Rushton – aye
Mr. Sudbury – not present	Mr. Taylor – aye
Ms. Townsend - aye	

Public comments

There were no public comments.

Core Mission Reports

Water supply update

Mr. Alan Packard, General Manager, reviewed the Municipal and Industrial (M&I) Water Deliveries report through October 2024, saying that due to a warm and dry October, combined wholesale and retail deliveries were up forty percent (40%) from the previous year. He said total fiscal year-to-date deliveries are approximately 5,500 acre-feet more than the previous year. Mr. Packard shared a graph comparing temperature and precipitation levels from 2023 and 2024, which illustrated the recent warm and dry October. He then reviewed the Wholesale and Retail Actual and Projected Deliveries report. The M&I Water Sources report through the end of September, showed a continued decrease in groundwater usage due to good snowpack and available supply of un-stored surface water. Mr. Packard reviewed the Provo River Reservoirs Update which continues to show reservoir storage at or above its 10-year average.

Water quality update

Mr. Jon Hilbert, Water Quality Division Manager, stated that the Lead and Copper Rule Revisions (LCRR) were published in 2021. Lead Service Line Inventories were kept as part of the original rule revisions and were due October 16, 2024. In the last three years, JVWCD has successfully taken inventory of all service lines for which it provides retail water delivery and has determined that there are no lead service lines. He said all service line materials information has been digitized and can be found on jvwcd.org. Mr. Hilbert said JVWCD submitted its Lead Service Line Inventory on September 24, 2024, to the Utah Division of Drinking Water, and it was

approved on October 7, 2024. Looking forward, to remain in compliance with the LCRR, JVWCD will develop a new sampling site plan, identify and map any potential lead service line connectors, and improve customer communication and public notification.

Standing Committee Reports

Finance update

Mr. Brian McCleary, Controller, reviewed the Financial Report for September 2024, explaining that on the summary page, a deficit of $14 million can be seen, and is the result of the semi-annual bond debt service payment that was made in September. He mentioned that actual expenses and revenues are in line with projected expenses and revenues.

Conservation update

Ms. Kelly Good, Community Engagement Department Manager, gave an update on recently completed grass removal projects through the Salt Lake County Municipal Partnerships Program (Program). She explained that the Partnership is made up of Salt Lake County, Utah League of Cities and Towns, The H2O Collective, and JVWCD. The Program is a turf replacement program and is funded from the payment of the American Rescue Plan Act. She said to date, approximately 471,259 square feet of turf has been replaced with $1,413,777 in rebates. Ms. Good then shared information on projects that have been completed in Cottonwood Heights, Millcreek, Riverton, Sandy, South Jordan, and West Jordan.

Consider approval of Board and Committee meetings' schedule for 2025

Mr. Rushton said in the October 2024 Board meeting, a schedule for the 2025 Board meetings was proposed and no modifications to that schedule have been made. Mr. Rushton called for a motion to approve the Board and Committee meetings schedule for 2025. Mr. John Richardson moved to approve the 2025 Board and Committee meetings schedule. Following a second by Mr. John Taylor, the motion was approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – aye
Mr. Rushton – aye
Mr. Taylor – aye

Financial Matters

Presentation on the audit report by Gilbert & Stewart for FY ending June 30, 2024

Mr. Ron Stewart, of Gilbert & Stewart, reviewed what was included in the audit process and stated that there are three objectives pertaining to the audit: 1) to determine if the financial statements are accurate, materially correct and meet accounting standards, 2) to determine if internal controls are implemented and working effectively, and 3) to determine if JVWCD is compliant with State finance rules and regulations. He stated that the unmodified opinion expressed by Gilbert & Stewart in the firm's audit report is that the financial statements present fairly, in all material respects, the financial position of the business type activities of JVWCD as of June 30, 2024. He mentioned some of the various documents and procedures that are reviewed or tested during the audit. Mr. Stewart said that in the evaluation of JVWCD's internal controls, Gilbert & Stewart did not find any significant deficiencies or material weaknesses, and JVWCD met all compliance requirements in Utah law. There were no issues or findings.

Mr. Stewart said during the audit process, a significant amount of documentation is required, and many questions are asked. He commended JVWCD staff for their cooperation and responsiveness during the audit.

Mr. Andy Pierucci left the meeting at 4:21 p.m.

Consider adoption of Resolution No. 24-18 "Authorizing a Transfer of Funds from the Revenue Fund to the Capital Projects Fund and Other Designated Reserve Funds

Mr. Martin stated that after the audit report is completed, an annual transfer is proposed from the Revenue Fund to various reserve funds. The proposed Resolution No. 24-18 will authorize the transfer of these funds. He provided a reconciliation summary of the fiscal year 2023/2024 ending financial results including the adopted budget, Board report, audit adjustments, and the audit report. Mr. Martin mentioned that the audit report is consolidated with the Jordan Valley Conservation Gardens Foundation, and that those amounts and non-cash accruals were removed in the summary. He then provided information on the funds included in the Resolution for transfer, including the balance of those funds before and after the transfer. Mr. Martin said the total transfer amount is $21,759,328. He said actual water deliveries exceeded the budgeted amount of 102,000 acre-feet, and the revenues generated by the higher water sales are proposed to be transferred to the Revenue Stabilization Fund. Also, savings from budgeted expenses that were not fully spent are proposed to be transferred to the Short-Term Operating Reserve Fund.

Mr. Martin recommended transferring funds from the Revenue Fund to the following funds: $14,328,572 to the Replacement Reserve Fund, $345,294 to the Development Fee Fund, $900,000 to the General Equipment Fund, $300,000 to the Emergency Reserve/Self-Insurance Fund, $300,000 to the Operation and Maintenance Fund, $4,062,666 to the Short-Term Operating Reserve Fund, and $1,522,796 to the Revenue Stabilization Fund.

Mr. Martin recommended adoption of Resolution No. 24-18, "Authorizing a Transfer of Funds from the Revenue Fund to the Capital Projects Fund and Other Designated Reserve Funds."

Mr. Rushton called for a motion on the recommendation. Mr. John Taylor moved to adopt Resolution No. 24-18, "Authorizing a Transfer of Funds from the Revenue Fund to the Capital Projects Fund and Other Designated Reserve Funds." Following a second by Ms. Barbara Townsend, the motion was approved by those present as follows:

Mr. Richardson – aye	Mr. Jacob – aye
Ms. Lang – aye	Mr. Pierucci – not present
Ms. Ramsey – not present	Mr. Rushton – aye
Mr. Sudbury – not present	Mr. Taylor – aye
Ms. Townsend - aye	

Conservation, Communications, and Information Systems Activities

Consider approval of a Water Conservation Funding Agreement with the City of South Jordan

Mr. Young said the City of South Jordan (City) has applied for a Water Conservation Funding Agreement to assist in funding a Toilet Rebate Program, an Indoor Water Fixture Rebate Program, and a Turf Conversion Rebate Program. Mr. Young recommended approval of a Water Conservation Funding Agreement with the City of South Jordan in the amount of $68,000.

Mr. Rushton called for a motion on the recommendation. Ms. Barbara Townsend moved to approve a Water Conservation Funding Agreement with the City of South Jordan in the amount of $68,000. Following a second by Mr. John Richardson, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – not present
Mr. Rushton – aye
Mr. Taylor – aye

Engineering Activities

Consider authorization to award a construction contract for the 2024 Vault Improvement Project

Mr. Shane Swensen, Chief Engineer, said as part of JVWCD's ongoing efforts to upgrade and restore transmission system vaults, the proposed project will rehabilitate five vaults in the JVWCD system. Three of the vaults are located on or near the 4500 South pipeline and the other two vaults are located on the 11400 South pipeline. He explained that one of the vaults on the 11400 South pipeline is a meter station for WaterPro, Inc., and that WaterPro, Inc. will cost share the rehabilitation project in the amount of 50 percent. He said three contractors submitted bids for the project. One of the contractors was deemed non-responsive due to not meeting the minimum requirements. He recommended authorizing the award of a construction contract for the 2024 Vault Improvement Project to VanCon Construction in the amount of $2,582,200.

Ms. Townsend asked about the difference in bid amounts and why one was considerably more than the other. Mr. Swensen explained that the nature of the project includes unfavorable conditions such as night work, work in UDOT rights-of-way, and extensive traffic control. He said some contractors will offer to do the work but at a premium.

Mr. Rushton called for a motion on the recommendation. Mr. John Richardson moved to authorize the award of an engineering contract to VanCon Construction in the amount of $2,582,200 for the 2024 Vault Improvement Project. Following a second by Ms. Barbara Townsend, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – not present
Mr. Rushton – aye
Mr. Taylor – aye

Operations and Maintenance Activities

Consider approval of expenditure to purchase dump truck

Mr. Brian Callister, Maintenance Department Manager, said staff regularly evaluate vehicles and equipment to ensure they remain safe, reliable, and cost-effective and whether they should be replaced. In a recent evaluation of equipment, it was determined there is a need to replace the 2004 International 4400 dump truck with a larger and more reliable dump truck. He said a new dump truck will increase efficiency with larger capacity, updated safety features, reliability, and less risk of damage. Mr. Callister said an invitation for bids was posted on JVWCD's website along with reaching out to several known vendors. Three responsive bids that met the minimum specifications for a complete dump truck were received. Mr. Callister recommended the lowest bid from Premier Truck Group of SLC for a 2026 Freightliner 114SD Plus in the amount of $186,061.

Mr. Rushton called for a motion on the recommendation. Mr. John Richardson moved to approve the expenditure to purchase a dump truck in the amount of $186,061 from Premier Truck Group of SLC. Following a second by Ms. Barbara Townsend, the motion was unanimously approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – aye
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – not present
Mr. Rushton – aye
Mr. Taylor – aye

Reporting Items

Mr. Packard reviewed the routine reporting items which included: Central Utah Project/CUWCD activities report, easement encroachment agreements signed by the General Manager, monthly performance scorecard for October 2024, and media coverage. Mr. Shane Swensen, Chief Engineer, reported on a final project completion report for the 2022-23 Vault Improvement Project and the AC Mitigation and Monitoring Project.

Mr. Packard then shared a letter received from Ms. Marcelle Shoop, the Executive Director of the Great Salt Lake Watershed Enhancement Trust, which expressed appreciation for JVWCD's recent contribution of water to Great Salt Lake.

Mr. Packard reported on a letter sent to Ms. Dorothy Adams, Executive Director of the Salt Lake County Health Department. The letter communicated JVWCD's concerns with enforcement of current fluoride regulations in light of the recent federal court ruling that there is an insufficient margin of safety between the known hazard level of fluoride and the regulated exposure level. The letter asked the health department to consider suspending enforcement of fluoride regulations until EPA has completed the court-ordered regulatory review.

The Utah Association of Special Districts held their annual conference November 6 – 8, in which JVWCD Board Chair, Corey Rushton, received the Distinguished Board Member award. Mr. Packard congratulated Mr. Rushton on the award and recognized him for his great service on the JVWCD Board.

Ms. Karen Lang left the meeting at 4:49 p.m.

Upcoming meetings

Mr. Rushton reviewed the upcoming meetings including the Conservation Committee meeting, Monday, December 9 at 3:00 p.m.; Executive Committee meeting, Monday, December 9 at 3:30 p.m.; and regular Board meeting, Wednesday, December 11 at 3:00 p.m.

Consider approval to cancel the Conservation Committee meeting and the Executive Committee meeting scheduled on December 9, 2024, and the Board of Trustees meeting scheduled for December 11, 2024

Mr. Rushton recommended cancelling the Conservation and Executive Committee meetings scheduled for Monday, December 9 and the regular Board meeting scheduled for Wednesday, December 11. Ms. Barbara Townsend moved to cancel the meetings scheduled for December 9 and 11. Following a second by Mr. John Taylor, the motion was approved by those present as follows:

Mr. Richardson – aye
Ms. Lang – not present
Ms. Ramsey – not present
Mr. Sudbury – not present
Ms. Townsend - aye
Mr. Jacob – aye
Mr. Pierucci – not present
Mr. Rushton – aye
Mr. Taylor – aye

Adjourn

Mr. Rushton called for a motion to adjourn. Ms. Barbara Townsend moved to adjourn. Following a second by Mr. John Taylor, the meeting adjourned at 5:04 p.m.

Corey L. Rushton, Chair of the Board of Trustees

Alan E. Packard, District Clerk

NOTICE OF PUBLIC HEARING

The Board of Trustees of the Jordan Valley Water Conservancy District has prepared the "2024 Water Conservation Plan Update" (hereafter referred to as the "Plan Update"). The Plan Update may be examined Monday through Friday, from 8:00 A.M. to 5:00 P.M., at the District's Administrative Office located at 8215 South 1300 West, West Jordan, Utah. The Plan Update may also be found on Jordan Valley Water Conservancy District's website at www.jvwcd.org/public/conservation.

A public hearing on the Plan Update will be held at the District's Administrative Office:

DATE: Wednesday, November 13, 2024
TIME: 3:00 P.M.
PLACE: 8215 South 1300 West, West Jordan, Utah.

At the hearing, the public may ask questions and obtain further information about the Plan Update and issues raised by it. Any person interested in presenting comments or other information for or against the Plan Update may (i) prior to the hearing, submit relevant comments and other information in writing to the Board (at the address given above); or (ii) at the hearing, present relevant comments and other information in writing and may also present comments and information orally. Members of the public may participate remotely in the meeting by visiting the District's webpage to access the live streaming options: https://jvwcd.org/calendar/1679/jvwcd-board-meeting-and-public-hearing.

Dated: 10-16-2024

Alan Packard, Clerk
Jordan Valley Water Conservancy District

Appendix B

Demand Projection Calculations

2024 Demand Projections Sources and Methodology

December 19, 2024

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

8215 S 1300 W West Jordan, UT 84088 | T: 801-565-4300

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Section 1 Introduction

This technical memorandum summarizes Jordan Valley Water Conservancy District's (JVWCD) baseline service area water demand projection from 2025 to 2100. The baseline service area demands are projected to occur if no additional investments in conservation and no new changes to development practices are implemented. This projection is an important input into water resource and capital improvement planning efforts. This memorandum outlines the data sources used, highlights key assumptions and methodologies for each population projection horizon, and establishes the connection between population projections and system demand.

Section 2 Data Sources

The data sources used in this analysis include:

- Wasatch Front Regional Council (WFRC) population projections using traffic analysis zones (TAZ).
- Kem C. Gardner Policy Institute (KCG) state and local county projection scenarios (2025-2060).
- Future development land details provided by Rio Tinto – Kennecott (RTK), Olympia developers, and Utah Division of Facilities Construction and Management (UDFCM).
- Water demand data collected from JVWCD member agencies and customers.

Section 3 Population Projections

JVWCD's demand planning uses population as a key parameter for projecting water demands within the service area. The projections were performed to provide population estimates for the entire JVWCD service area (current and expected) and for each individual member agency. Several key assumptions were made to establish a methodology for projecting population growth within JVWCD's service area. The population projection methodology shifts from one planning horizon to the next based on the data available for each horizon. This section summarizes the historical population of the service area, key definitions and assumptions, the population projection methodology, and the resulting projections.

3.1 Historical Population

JVWCD tracks changes to its current service area population from year to year. JVWCD service area population numbers are gathered annually from member agencies and for the retail service area. Individual population numbers are aggregated into an annual population amount, shown in Figure 1.

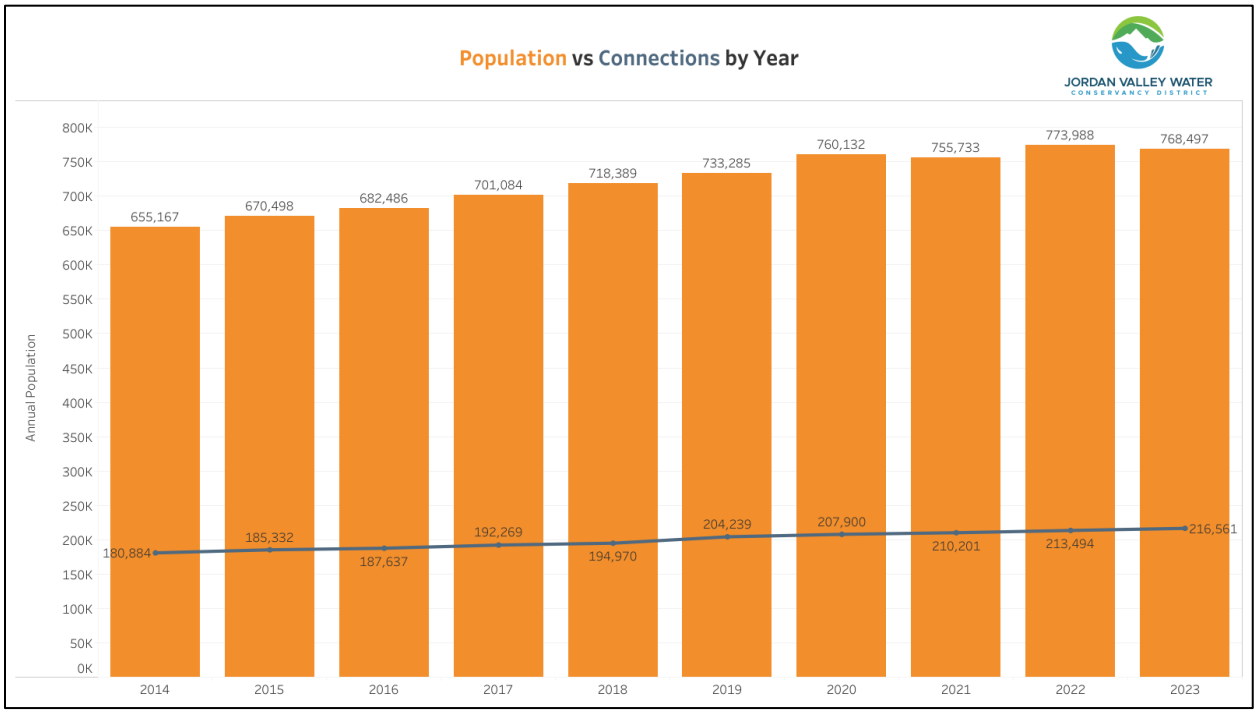


Figure 1 | Population vs. Connections

3.2 Definition of Terms and Key Assumptions

The following terms and key assumptions are defined to facilitate the description of the population project methodology.

3.2.1 Definitions

Projected JVWCD Service Area: JVWCD's current (December 2024) service area plus the lands RTK proposes to develop on the west bench of the Salt Lake Valley.

New Large-Scale Developments: These are large areas of land, typically greater than 500 acres, owned by a single landowner who has provided information on master planned developments for those lands. The information provided by the landowners, or their developer representatives, (developers) was not available at the time the WFRC TAZ data was developed, and therefore requires specialized treatment in JVWCD's population projection process. The New Large-Scale Developments include The Point, Olympia, and seven distinct developments planned by RTK.

Traditional Development Areas: Vacant parcels or agricultural lands within JVWCD's current service area but outside of the New Large-Scale Developments that are expected to develop into residential, commercial, industrial, or institutional units.

Developed Areas: Fully developed residential, commercial, industrial, or institutional lands within JVWCD's current service area.

3.2.2 Population Assumptions for New Large-Scale Developments

3.2.2.1 RTK New Large-Scale Developments

RTK provided the number of residential units planned for the Midas Development, one of their seven New Large-Scale Developments. The number of units divided by the land area of the Midas Development equates to density of 5.18 dwelling units per acre (DU/acre). RTK does not have similar planning information for their other six developments areas, so it is assumed that each will develop at a similar density to the Midas Development. JVWCD assumed an average household size for the RTK New Large-Scale Developments is 3 people, which is consistent with United States Census Bureau findings of the JVWCD service area. The total population for each development is projected by multiplying the land area for the development by the 5.18 DU/acre and 3 people household.

3.2.2.2 The Point

At the time of developing these projections, UDFCM stated that the number of residential units planned for The Point is 9,285. JVWCD assumed an average household size of 3 people for The Point to be consistent with its current service area. The total population for The Point is projected by multiplying the 9,285 dwelling units by 3 people per household.

3.2.2.3 Olympia

At the time of developing these projections, Olympia stated that the number of residential units planned for the development is 8,330. Because Olympia demographics are expected to be similar to Herriman City, the average household size from United States Census Bureau of 3.44 for Herriman City was used for Olympia. The total population for Olympia is projected by multiplying the 8,330 dwelling units by 3.44 people per household.

3.2.3 Development Window Assumptions for New Large-Scale Developments

The Point and Olympia developments both started this year. RTK's Midas Development is expected to begin as soon as the annexation process for the land is completed, which is assumed to be by 2027. RTK reported that their remaining New Large-Scale Developments will not commence until after mine closure, and that there is no projected date for mine closure. Start dates for the other six RTK developments are assumed to be no sooner than 30 years from now. Table 1 lists the assumed start date for each of the New Large-Scale Developments.

Development Name	Start Year
Olympia	2025
The Point Development	2025
Midas 1	2027
Clay Hollow	2055
Harkers East	2055
Little Valley	2055
Midas 2	2055
Bingham Creak	2055
Oquirrh Foothills	2065

Table 1 | Planned Development

For the purposes of this projection, it is assumed that each New Large-Scale Development will take 30 years to

fully develop. Using the estimated population at build-out describe above for each development, the population growth is divided into three phases for estimating rate of population growth:

1. **First Tier**: It is expected that 30% of the total population at build-out will occur during the first 6 years.
2. **Second Tier**: 60% of the population growth is anticipated to occur from years 7 to 24.
3. **Third Tier**: The final 10% of population growth is expected to occur during the last 6 years (years 24 to 30).

The underlying assumption is that population growth will be strongest in the early years of development and will slow in the middle and later stages.[1]

3.2.4 Assumed Growth Ceiling for Traditional Development Areas and Developed Area

It is assumed that Traditional Development Areas will be built out by the year 2050 and that significant redevelopment of lands within the existing service area will not take place until after the New Large-Scale Developments are built out. As a result, it is determined that the population growth in the Projected JVWCD Service Area after 2050 will occur in the New Large-Scale Developments, and that other growth in the service area will be insignificant.

3.2.5 Internal Population Growth Rate for the Projected JVWCD Service Area

It is assumed that the New Large-Scale Developments will not change the growth rate from what WFRC and KCG project for the JVWCD service area through 2060, but rather redistribute the projected growth across the service area up to 2060.

3.3 Methodology per Planning Horizon

Based on the characteristics of the available data, population estimates were divided into three planning horizons: 2025 to 2050, 2051 to 2060, and 2061 to 2100. A description of the methodology for each is given below.

3.3.1 2025 to 2050 Horizon

The WFRC TAZ are subsections within the Salt Lake Valley that include population projections from the current date to 2050. This information was identified as the best available population projection for the Projected JVWCD Service Area through that period. Sections of the Projected JVWCD Service Area only partially overlap with TAZ areas, meaning the projections of TAZ require modification to better reflect the area JVWCD is expecting to serve. After TAZ modifications there is a redistribution of the population projections by introducing the New Large-Scale Developments to reflect the more up-to-date projections. This redistribution scales all areas within the Projected JVWCD Service Area to

[1] Additional research of information on development timing length and the rate of growth within the development cycle may improve the outcome of projections.

match the originally projected total before the introduction of the New Large-Scale Developments. Accordingly, the total projected population for each year within this planning horizon was calculated through the following steps:

1. Cut all TAZ polygons intersecting the Projected JVWCD Service Area to create new polygons for the portions that fall within.
2. Estimate the projected population for each new TAZ polygon portion by multiplying the population for the original TAZ polygon by the land area ratio of the original TAZ polygon and new TAZ polygon portion.
3. Sum the population of all TAZ polygons and TAZ polygon portions within the Projected JVWCD Service Area.

These steps generated the projected total population from the original TAZ. Redistributing that population based on the more current information for the New Large-Scale Developments is done through the following steps:

4. Working from the outcome of step 2 within the New Large-Scale Developments areas, overwrite the population projection with the population projected from the more current information from the developers.
5. Sum the revised projections for the TAZ polygon portions and full TAZ polygons that fall within the Projected JVWCD Service Area.
6. Divide the sum of the revised projections of step 5 by the projected total population from the original TAZ of step 3 to get a multiplier that will scale the revised projections for each individual TAZ so that the sum of all TAZ equals the projected total population from the original TAZ.
7. Apply the multiplier to each TAZ.

The resulting outcome is a redistribution of the population by introducing the new development population estimates but ensuring that the yearly totals remain consistent with the original TAZ projections. Only the projected total population is used in the Conservation Plan Update, but the redistributed growth projections are an important input to the master plan update.

3.3.2 2051 to 2060 Horizon

The countywide population projection by KCG goes through 2060 and provides the best available population projection through that period but requires a determination of what portion of the countywide population will be within the Projected JVWCD Service Area. This is determined based on the work done in the 2025 to 2050 horizon from the WFRC data. Figure 2 shows a line chart of the ratio between the modified WFRC data and the KCG, colored in gray. The trend of this ratio is projected outward from 2051 to 2060, colored in blue. This ratio is applied to the growth projection of KCG from 2051 to 2060 to give the estimated growth within JVWCD's service area. That estimated growth was then added to the 2050 projected total population described in the previous horizon. This generated the projected total population from the KCG projection for the Project JVWCD Service Area.

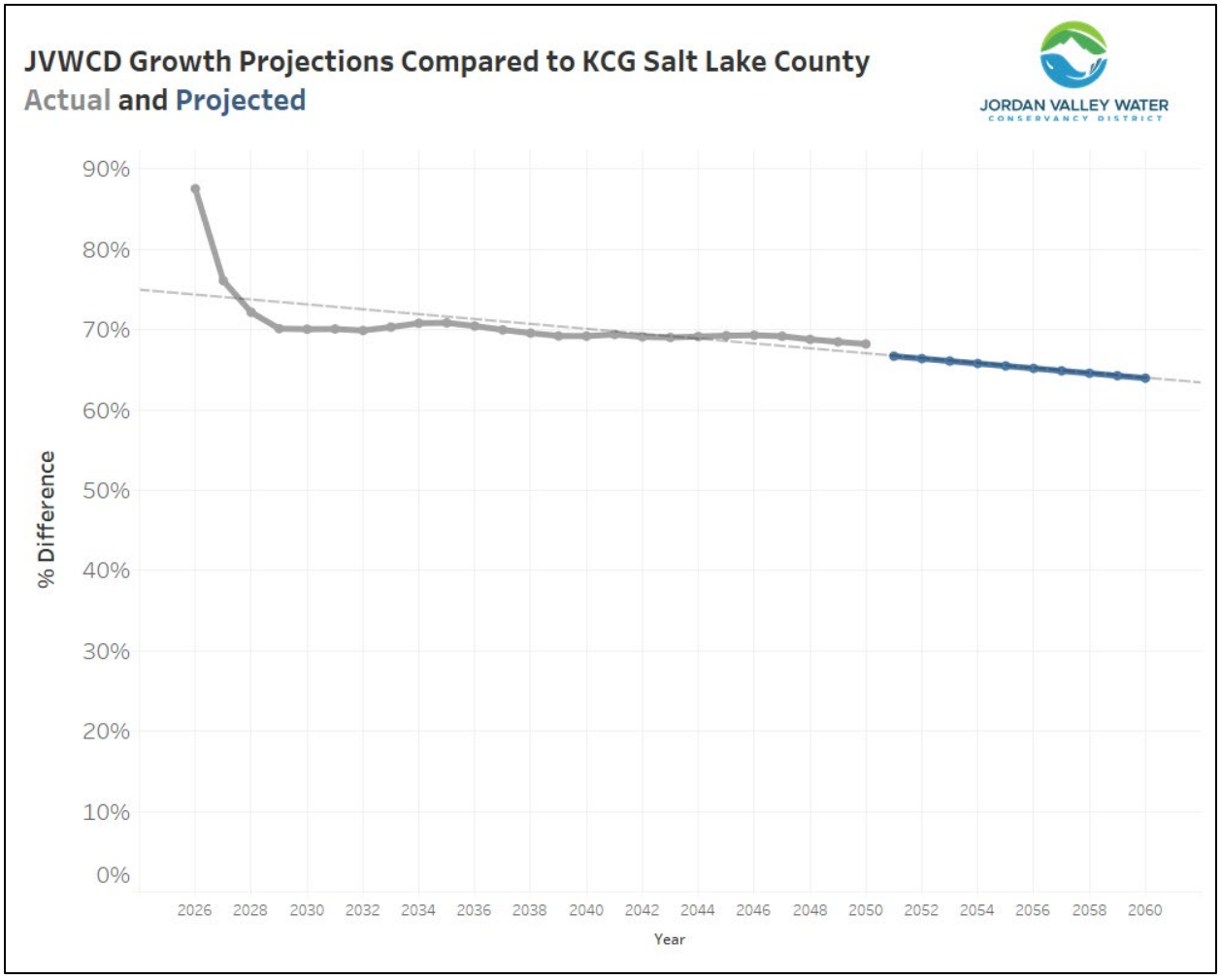


Figure 2 | JVWCD Growth Projections vs. Kem C. Gardner Institute

Redistributing that population based on the more current information for the New Large-Scale Developments is done through the following steps:

1. Set the population for TAZ polygons and portions of TAZ polygons that fall within the Traditional Development Areas and the Developed Areas to the original 2050 projections provided by WFRC.
2. For the TAZ polygons and portions of TAZ polygons that fall within the New Large-Scale Developments overwrite the population projection with the population projected from the more current information from the developers.
3. Scale the overwritten projections for each individual TAZ polygon and TAZ polygon portion in the New Large-Scale Developments so that the sum of all the TAZ polygons and TAZ polygon portions within the Projected JVWCD Service Area equals the projected total population from the KCG projection.

Again, only the projected total population is used in the Conservation Plan Update, but the redistributed growth projections are an important input to the master plan update.

3.3.3 2061 to 2100 Horizon

Similar to the prior horizon, TAZ polygons and portions of TAZ polygons that fall within the Traditional Development Areas and the Developed Areas are held static at the original 2050 projections provided by WFRC. The growth in the New Large-Scale Developments is no longer scaled to any external data source and set as described in the *Development Window Assumptions for New Large-Scale Developments* section above.

3.4 Summary of Population Projections Results

The results of JVWCD population projections from the methodology described above are summarized in Figure 3.

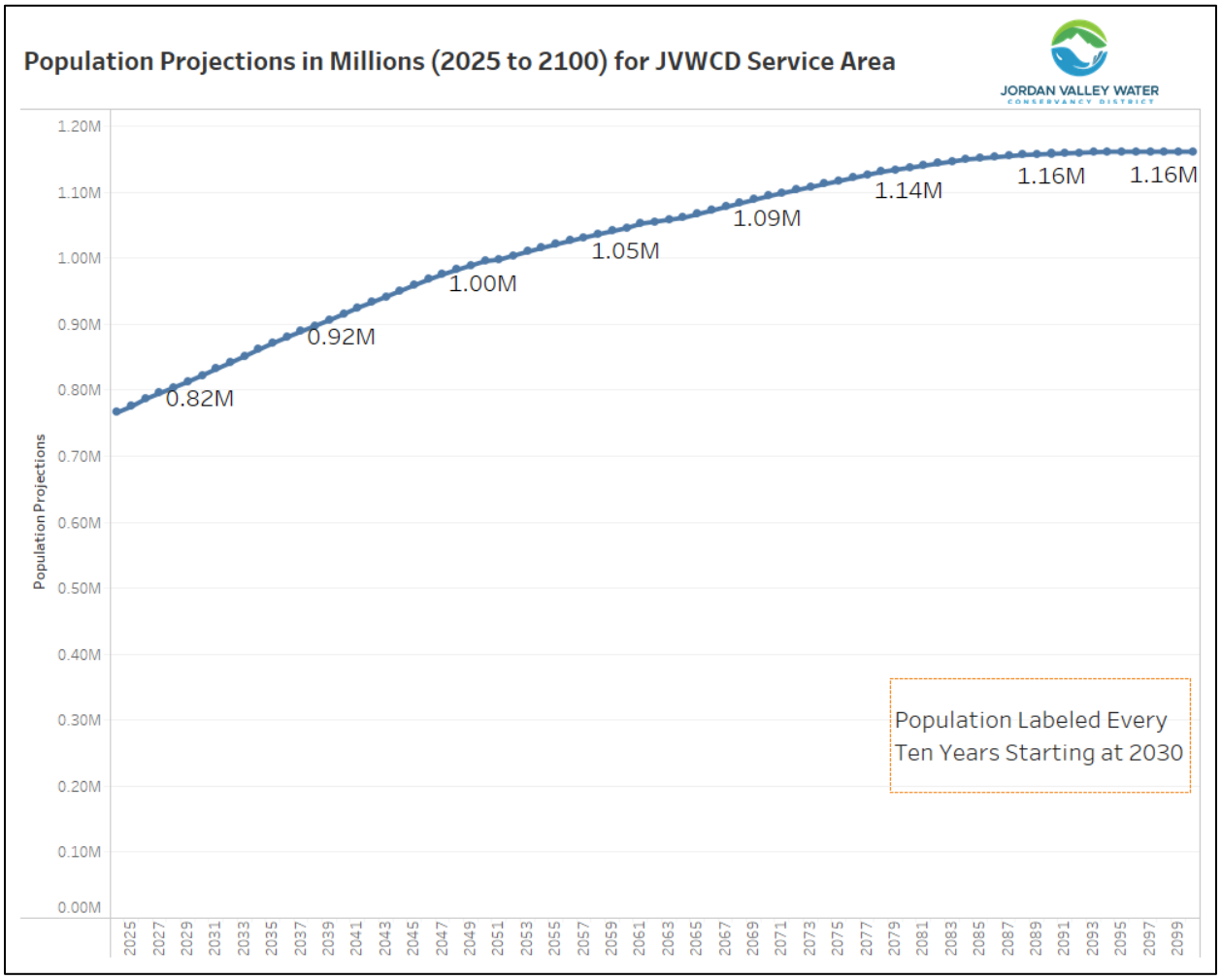


Figure 3 | Population Projections in Millions for JVWCD Service Area

Section 4 Baseline Service Area Demand Projection Methodology

With an established population projection, the baseline service area water demand projection can be calculated. Baseline service area demand is calculated for each year within the 2100 planning horizon with the following equation:

$$D_{baseline} = (P_{total} \times U) \times (1 + NRW_{factor}) \times (1 + C)$$

Where:

$D_{baseline}$ = JVWCD Service Area demand if no additional investments in conservation and no new changes to development practices are implemented (volume over time (gallons per day [GPD] converted to acre-feet per year [AFY]))

P_{total} = Total Projected JVWCD Service Area population

U = End use per capita usage rate (gallons per capita per day [GPCD])

NRW_{factor} = Non-revenue water for both JVWCD and its member agencies as a percentage of total water supplied to the service area

C = Climate change adjustment factor as a percentage increase on demands

Total Projected JVWCD Service Area Population is described in the previous section of this TM. A description of the other variables in the demand calculation equation is provided in the subsections that follow.

4.1 U – End Use Per Capita Usage Rate Estimates

End-use gallons per capita per day (GPCD) is calculated using total deliveries to end users throughout the service area divided by the total service population divided by days in the year. Total deliveries (from potable and secondary water systems) and population are gathered annually from JVWCD member agencies. The best-fit line is determined using historical data beginning in 2018. The point on the best-fit line corresponding to 2023 is calculated at 178.9 GPCD.

4.2 NRW_{factor} – Service Area Non-Revenue Water Estimates

Non-revenue water is estimated through water supply and demand data reported by JVWCD member agencies and service areas. The average difference between supply and demand is considered non-revenue and applied to water demand projections. This Baseline Service Area Demand Projection uses the average non-revenue water for the last five years. The combined NRW for JVWCD and its Member Agencies is 8.28%.

4.3 C - Current Estimation of Climate Change Impacts

JVWCD incorporated climate effects into the demand projection by assuming a factoring of ten percent by the year 2060.[2] In the years 2025 to 2060, the effect grew each year from zero by 0.22%. No additional impacts were added beyond year 2060 because data is not currently available for the JVWCD service area beyond that time.

Section 5 Baseline Service Area Demand Projection Summary

The data, methodology, and assumptions described in this TM are used to generated the baseline service area demand projection summarized in Figure 8 and listed in Table 2. This is the municipal and industrial (M&I) demand that will have to be met by JVWCD, member agencies, and secondary systems within the Projected JVWCD Service Area if no additional investments in conservation and no new changes to development practices are implemented. An alternative projection without applying the climate change adjustment factor is shown to illustrate the anticipated impacts of climate change on service area demands. It is noted that total baseline service area demand with anticipated climate change is projected to increase by 67%, or 112,000 AFY by year 2100. This baseline projection is used in JVWCD's conservation plan update and master plan update.

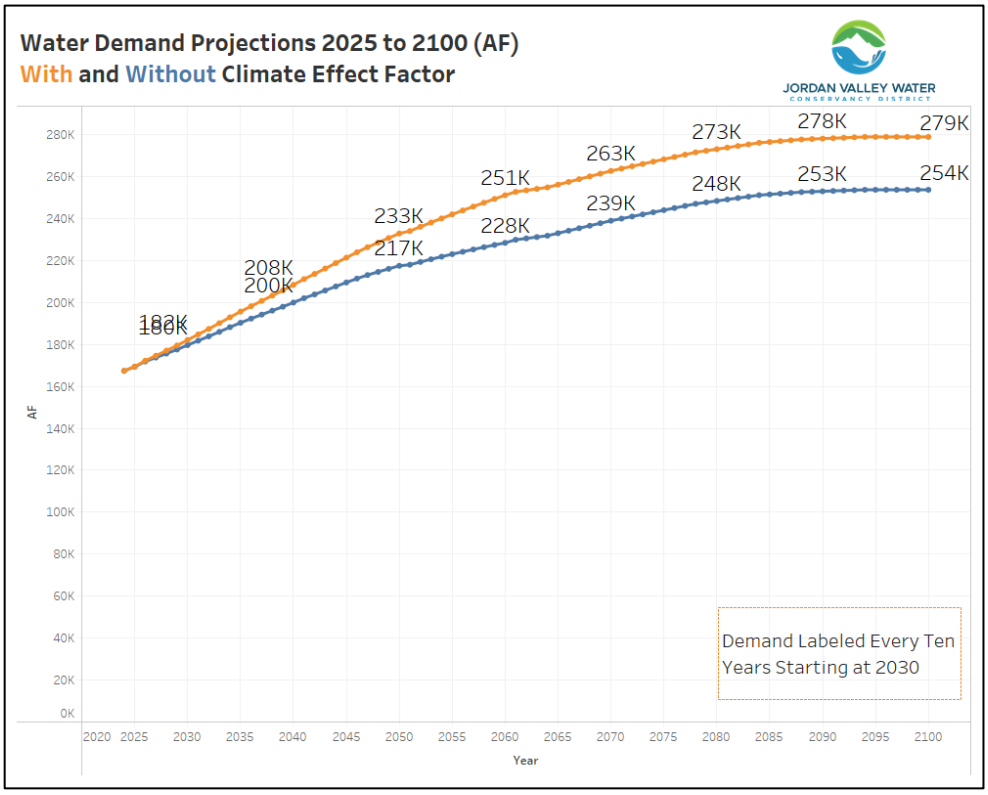


Figure 8 | Water Demand Projections (2025-2100)

[2] This is based on JVWCD's 2018 Climate Change Management Plan.

Year	Population Projection	Demand Projections	
		Without Climate Effect Factor	With Climate Effect Factor
2025	775,422	169,362	169,362
2030	822,599	179,666	182,119
2035	871,401	190,325	195,642
2040	915,537	199,965	208,408
2045	959,301	209,523	221,363
2050	995,742	217,482	232,879
2055	1,021,108	223,023	241,997
2060	1,045,812	228,419	251,115
2065	1,066,844	233,012	256,165
2070	1,094,105	238,966	262,711
2075	1,117,172	244,004	268,250
2080	1,137,303	248,401	273,084
2085	1,151,563	251,516	276,508
2090	1,158,274	252,982	278,119
2095	1,161,629	253,714	278,925
2100	1,161,629	253,714	278,925

Table 2 | Water Demand Projections (2025-2100)

Appendix C

Best Management Practices

Best Management Practices Comparison

Overall Measure	Detailed Measure	Implemented (or is in plan)	Explanation
Water Conservation Coordinator, Committee, or Team	Hire or designate a Water Conservation Coordinator.	Yes	7 full-time conservation staff
	Create a committee/team/board with a chair that includes a combination of the following participants; Water Conservation Coordinator, Public Works Director, City Council Member, and/or applicable local advocacy group member to help research, coordinate, create and implement public information campaign(s), water conservation programs and incentives.	Yes	Conservation Committee Meeting
Water Conservation Plan (WCP)	Develop a WCP	Yes	See plan
	Provide contact information, system profile, water use history and detail specific ongoing and new conservation programs.	Yes	See plan
Public Awareness and Public Outreach	Develop or utilize existing messaging from Slow The Flow, Water Resources, CWEL and WaterSense.	Yes	Slow the Flow partner
	Display educational materials & resources on agency website(s), social media & bills.	Yes	See websites
	Offer agency materials and resources to community partners for distribution.	Yes	Partner with Hogele Zoo and others
	Hold or collaborate events, programs and/or presentations.	Yes	Garden Open House and classes
Education and Training	Provide adult efficient water use education and training. Or, direct them to available local training(s) such as Localscapes.	Yes	Localscapes University; Design and Irrigation Workshops
	Provide or support youth education programs for elementary school students.	Yes	School tours
	Provide or recommend a waterwise demonstration garden.	Yes	Conservation Garden Park (CGP)
	Educate customers about new water-saving technology. Example: weather based smart controllers.	Yes	CGP classes
	Provide new homeowner water-efficient landscape information.	Yes	JVWCD retail welcome packet
	Participate and promote large efficient landscape training and programs: https://www.qwelutah.com/training/	Yes	QWEL partener
	Create and/or distribute “how to videos”. Example: switching to drip.	Yes	CGP classes
Rebates, Incentives, and Rewards	Offer or collaborate on rebates for high efficiency appliances, fixtures, irrigation smart controllers, drip irrigation, nozzles, shut off hose valves, and landscape conversions.	Yes	Utah Water Savers partner
	Promote rebates offered in your service area.	Yes	Bill stuffers, ads

Overall Measure	Detailed Measure	Implemented (or is in plan)	Explanation
Public Involvement	Offer or collaborate on residential water audit programs.	Yes	Utah Water Savers partner
	Offer or collaborate on landscape consultation programs	Yes	Strategic Water Management
	Offer residential water budgeting programs.	Yes	Water bill comparisons
	Offer indoor and outdoor retrofit kits.	Yes	Switch to Drip
	Perform outdoor high water use inquiries and resolution techniques.	Yes	Strategic Water Management
	Address water waste complaints.	Yes	Customer Service process
	Identify structures built before 1992 and organize low efficiency fixture replacements.	Yes	Strategic Water Management
Ordinances and Standards	Adopt a time-of-day watering ordinance.	Yes	In DCP
	Adopt an ordinance requiring a water-efficient landscaping in all new residential developments.	Yes	Part of WES
	Review existing plumbing codes and revise them as necessary to ensure water-conserving measures in all new construction.	Yes	Recommended in WES
	Adopt an ordinance requiring water-efficient landscaping in all new commercial development.	Yes	Recommended in WES
	Change business license requirements to require water reuse and recycling in new facilities.	No	Not our jurisdiction
	Mandate retrofit upon resale.	No	Not our jurisdiction
Water Pricing	Utah SB28 requires water rates to rise for higher tiers of consumption.	Yes	See plan
	Charge for secondary water based on individual use.	No	N/A
	High water use notification.	Yes	Will update for high use, not just continuous flows.
Physical System	Install and maintain efficient irrigation, utilize water-wise landscaping & smart controller technology at agency facilities.	Yes	Turf conversions at District sites
	Perform agency water system audit and implement a leak detection program	Yes	See plan
	Meter all connections (UT SCR 1), repair and replacement program, read meters on a regular basis.	Yes	See plan
	Consider water reuse.	No	Not currently part of our future supply plan

Appendix D

Technical Memorandum

MEMORANDUM

DATE: February 6, 2025

TO: Courtney Brown
Jacob Young, P.E.
Kelly Good
Jordan Valley Water Conservancy District (JVWCD)
8215 S. 1300 W.
West Jordan, UT 84088

FROM: Steve Jones, P.E.
Easton Hopkins
Hansen, Allen & Luce, Inc. (HAL)
859 W. South Jordan Pkwy. Ste. 200
South Jordan, UT 84095

SUBJECT: Water Conservation Plan Update

PROJECT NO.: 127.45.100

The purpose of this memorandum is to document the work that HAL completed for the JVWCD Water Conservation Plan Update (WCP). HAL supported Phase 3 (revise conservation goal) and Phase 5 (water conservation program assessment) of JVWCD's scope of work. A major output was a spreadsheet model to determine per capita use rate targets for alternatives identified by JVWCD and estimate the level of investment in conservation programs to achieve the alternative targets. The development of the model and update to the water conservation plan utilized several efforts, including studies from JVWCD, HAL, and separate analyses, not all of which are documented in this memorandum.

BACKGROUND

The Utah Division of Water Resources (DWRe) requires all public water suppliers to prepare a Water Conservation Plan and update it every five years in compliance with Utah Code 73-10-32 and the Water Conservation Plan Act. JVWCD most recently updated its plan in 2019.

The key objectives in the 2019 plan were achieved and were highly effective in reducing per capita water use. The District is currently exceeding the DWRe regional conservation goal for the Salt Lake Area of 169 gallons per capita per day (gpcd) by 2065. (The District was at 168 gpcd in 2023.) For this reason, JVWCD wanted to explore a stricter conservation goal and analyze the potential benefits and costs. Additionally, total water consumption could increase over time, and continually revising the existing programs can help ensure that conservation is still achieved.

JVWCD retained HAL to assist in the preparation of the WCP. HAL was tasked with working through Phases 3 and 5 of the JVWCD scope of work, which are summarized as follows:

- Phase 3: Revise the conservation goal
- Phase 5: Analyze water conservation programs

MODEL DEVELOPMENT

To best complete Phases 3 and 5, a model was developed that could simulate water conservation scenarios. The model allowed for various supply, demand, and conservation scenarios to be tested. It was a tool used to guide JVWCD's decision-making process in determining the level of investment in each conservation program required to achieve each of the alternative targets and to select the conservation goal that provided the greatest value to the community. It utilized the efforts from each phase to outline assumptions and lay the foundation for the analysis. JVWCD staff were included throughout the development of the model. Their input was used for developing assumptions for conservation-related costs, water savings, and future land use.

Supply and Demand

Based on recent analysis of historic water use and supply, JVWCD provided supply and demand scenarios from their master planning efforts to be used in the model. It incorporated population projections developed from land use projections and anticipated future development. The analysis was set up to allow comparison of different supply and demand projections. Further details on the supply and demand scenarios are provided in later sections.

Conservation Goals

The four alternative conservation targets considered in the WCP update were implemented into the modeling analysis. The model shows the gap between projected demands and those associated with each of the conservation targets. Additional tools were implemented into the alternatives that provided flexibility in the derivation of the goals. Additional information on the alternative targets is provided in later sections of the memorandum.

Program Levers (Education, Incentive, and Regulation)

Several levers were built into the model to quantify the costs and water savings for conservation programs. The types of programs were education, incentive, and regulation. The user may input the investment and duration for each program and the model will tabulate annual costs and water savings. The values for costs and water savings were derived from past JVWCD projects, published literature, data from HAL projects, and information from DWRe. A Conservation Program Database was developed for this purpose to collect that information and help outline inputs for the model. Assumptions for the different programs are dynamic, allowing annual costs to be adjusted based on actual expenditures. Additional flexibility is incorporated to simulate the water savings and costs for each.

Consistency with the State Model

The State and DWRe had developed a model as part of the efforts to establish the Regional M&I Water Conservation goals in 2019. HAL participated in the process and utilized that experience to develop the model for JVWCD. However, the model for JVWCD is more comprehensive and has flexibility for user inputs. The State's model focused on demand projections and had limited capacity for conservation program implementation or ongoing updates. Furthermore, the JVWCD model can be used as a tool for future planning given its adaptability and ability to test potential conservation programs.

PHASE 3: CONSERVATION GOAL ASSESSMENT

Currently, JVWCD is ahead of the DWRe 2065 goal of 169 gpcd. For this reason, a more stringent conservation goal was explored to determine the overall feasibility. Four alternative targets were explored as part of the analysis:

1. DWRe water conservation goals
2. Meet future demands with currently secured water rights
3. Achieve zero net depletion on Great Salt Lake (GSL)
4. DWRe water conservation goals, advanced timeline

The model was used to quantify the costs and water savings of water conservation programs to meet each of the alternatives.

The gap between water demand and supply estimates was measured for each of the four alternatives to determine the net difference in 2035 and 2065. Furthermore, the difference in volume between each demand was compared.

Summary of Conservation Goals

Each of the different goals has varying degrees of conservation. A summary of per capita demand in 2035 and 2065 for each alternative is summarized in Table 1. Demand projections from JVWCD are shown for comparison. Details on each goal will be discussed in the following sections.

Table 1: Summary of per Capita Demand

Conservation Target	2035 Demand (gpcd)	2065 Demand (gpcd)
JVWCD No-Action Demand Projections[1]	*184*	*197*
Alternative 1: DWRe Water Conservation Goals[2]	183	169
Alternative 2: Existing Water Supply Portfolio[3]	208	168
Alternative 3: Zero Net Depletion on Great Salt Lake[4]	131	135
Alternative 4: Accelerated DWRe Water Conservation Goals[2]	174	169

1. Increase from climate change impacts, and no additional investment in conservation nor changes in land development practices to reduce water use rates.
2. Interpolated based on DWRe conservation goals. See Table 2 below.
3. Does not consider future water supply projects.
4. Per capita demand increases over time as depletion is reduced. Future development will primarily consist of indoor water demands, which has a lower depletion rate than outdoor watering.

Figure 1 illustrates the trends in demand over time for each of the conservation goals.

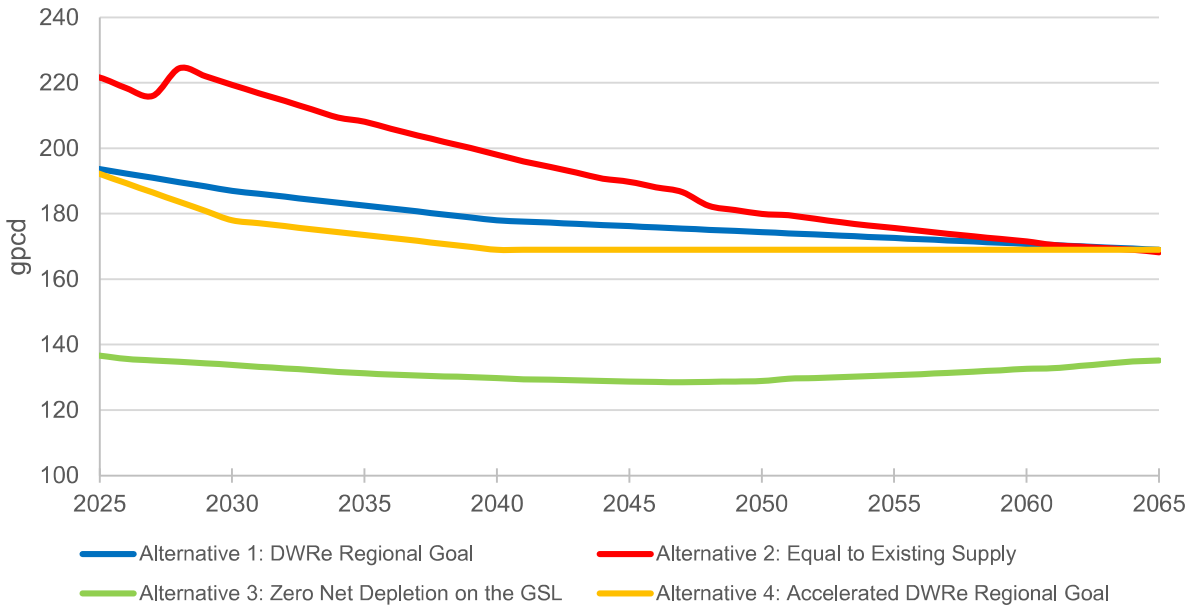


Figure 1: Alternative Target Comparison – per Capita Trends

Alternative 1: DWRe Water Conservation Goals

The conservation goals set forth by DWRe are projections based on a study completed in 2019 (see Table 2). The goals vary based on region, with JVWCD having to meet the goals set for the Salt Lake region. By 2030, the aim is to achieve a per capita usage of 187 gpcd. Projections for 2040 and 2065 are considered goal projections and are to be reevaluated after 2030.

Table 2: DWRe Water Conservation Projections

Year	Goal Projection (gpcd)
2030	187
2040	178
2065	169

The District is on track to achieve the goal of 187 gpcd by 2030. Using data collected since 2018, per capita water use trends show an overall hardened reduction of 4.5%, or reduction from 188 gpcd in 2018 to 179 in 2023. However, the data also indicate that water demands fluctuate from year to year due to several factors. Such factors include temperature, precipitation, media messaging, new development, and human behavior. JVWCD predicts an increase in water demands due to future development and population projections. For this reason, the DWRe water conservation goals were considered as an alternative for analysis, highlighting the need for ongoing conservation efforts.

Alternative 2: Existing Water Supply Portfolio

The objective of this goal scenario is to determine the conservation costs required to keep future demands within the capacity of the currently secured water supply. Based on current projections, sufficient water supply is available to meet future water demands; therefore, this goal requires the

least investment. It is mainly due to the fact that source redundancy is necessary to ensure adequate supply is available to meet demands. A diverse water supply portfolio allows for more flexibility in operations, maintenance, and resilience to unforeseen outages. Conservation efforts should continue, and this goal was used as a reference during modeling to understand system redundancy. Additionally, this goal is less stringent than the State goal (Alternative 1). If the State goal is met, Alternative 2 will also be achieved.

Alternative 3: Zero Net Depletion on Great Salt Lake

To obtain zero net depletion in respect to Great Salt Lake (GSL), this scenario balances local water depletion with imported water. Depletion is the portion that does not return to the same hydrologic system as liquid, often lost through evaporation. To reach this balance, the volume of water depleted in the service area must be equal to the amount of water imported from outside of the GSL basin (i.e., Strawberry system).

Analysis to determine the values for this goal were based on two parts: 1) depletion from indoor water demands and 2) evapotranspiration from outdoor water demands. The existing ratio between indoor and outdoor water demands was determined from existing water demand data. The ratio of future development was derived from future development trends paired with outdoor watering regulations. Four different components were considered when developing the future indoor and outdoor water demands (see Table 3).

Table 3: Future Indoor and Outdoor Water Demand Components

	Component	Description
1	Landscape of existing developed land	The volume of existing landscaping and the conversion of turf grass to waterwise landscaping.
2	Landscape of future developed land	The ratio between future anticipated volumes of turf grass versus waterwise landscaping.
3	Density of future development	Types and density of future development, including the expected irrigated area.
4	Densification through redevelopment	Conversion between low-density and high-density development, whether commercial and industrial to residential or vice versa.

Inputs for each of the four components were changed to reflect anticipated future conditions and establish the goal for each time period. Additional analysis will be completed over time to refine the assumptions and track the potential of JVWCD achieving net zero depletion.

A significant finding from this scenario was the change from outdoor watering demands to indoor watering demands. Demands in this scenario change based on the investment in incentive programs. To support the planned population, it is anticipated that future development will occur at a higher density and have less outdoor watering, thus lowering the amount of water an individual uses and increasing the amount of water that is returned to the hydrologic system. Figure 2 shows the changes in per capita demand based on future development, redevelopment, and reductions in outdoor watering demands. It is important to emphasize that investment in incentive programs—ranging from $35,000,000 to $39,000,000 annually, including turf grass and outdoor watering reduction initiatives—drives the demand projections below.

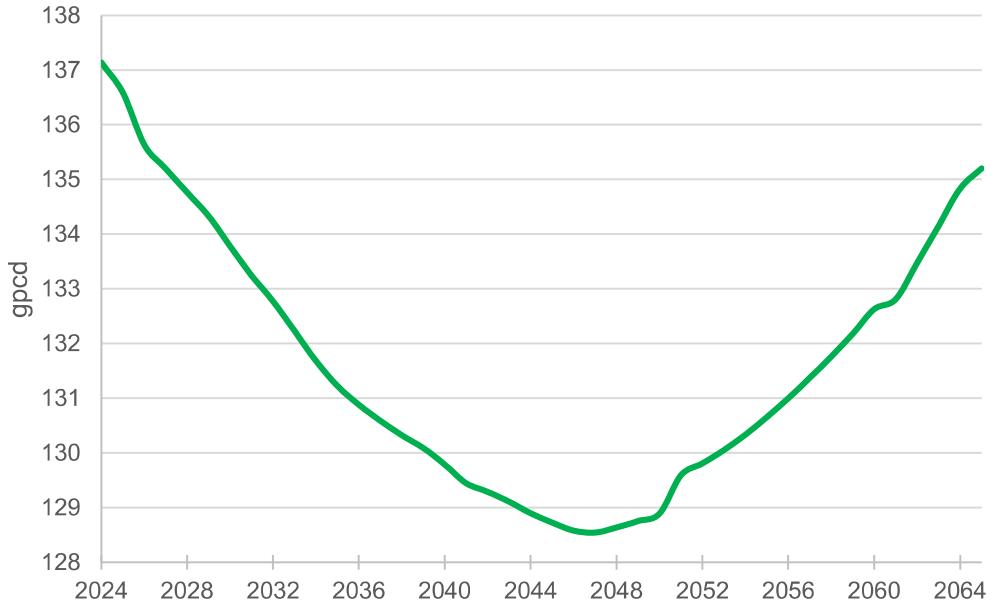


Figure 2: Alternative 3 - Per Capita Water Demand Trends

The future per capita trend associated with this goal is expected to trend upwards after a decline through the mid-2040s. It assumes that future depletion will be reduced with the reduction in outdoor watering demands. With reduced water loss to evapotranspiration, the water can be returned to GSL, allowing for an increased gpcd goal. According to historic demands, approximately 60% of water demands in the JVWCD service area are outdoor. Moving forward, the number is expected to decrease as housing density, and therefore indoor water use, increases.

Alternative 4: Accelerated DWRe Water Conservation Goals

The objective for Alternative 4 is to accelerate the timeline of the DWRe regional goals. The new goal moves the 2040 goal of 178 gpcd to 2030 and the 2065 goal of 169 gpcd to 2040. Its main benefit is to be consistent with the Great Salt Lake Commissioner's Strategic Plan, which suggested that the conservation goals be accelerated.

Gap Analysis

Three different supply and demand projections were provided by JVWCD through 2065. Scenarios are listed in Table 4, listed from best- to worst-case in terms of available supply and lowest demand requirement.

Table 4: Supply and Demand Scenarios

	Scenarios[1]
Water Supply	1. Average year with no climate change effects 2. Dry year with no climate change effects 3. Dry year with climate change effects
Water Demand	1. Low demands with climate change effects 2. Baseline demands with climate change effects 3. High demand projections with climate effects

1. Listed from best- to worst-case scenario.

Scenario 2 for both the supply and demand projections was chosen to complete the gap analysis. The conservation goals were then compared to the demand projections associated with each alternative to identify the gap in water supply. Table 5 illustrates the difference between supply and demand for each of the conservation goals in 2035.

Table 5: 2035 Supply and Demand Comparisons by Alternative

Conservation Goal	Supply (ac-ft)[1]	Demand (ac-ft)	Gap: Supply (-) Demand (ac-ft)
Base Scenario	*210,943*	*195,642*	*+15,301*
Alternative 1: DWRe Water Conservation Goals	210,943	194,219	+16,724
Alternative 2: Existing Water Supply Portfolio	210,943	221,483	-10,540
Alternative 3: Zero Net Depletion on Great Salt Lake	210,943	139,651	+71,292
Alternative 4: Accelerated DWRe Water Conservation Goals	210,943	184,641	+26,302

1. Based on Scenario 2 for supply projections: dry year with no climate change effects. No additional water supply projects were considered outside of the existing available supply.

Through 2035 the available supply is sufficient to meet water demands in each conservation scenario. Table 6 shows the water supply gap for each conservation scenario in 2065.

Table 6: 2065 Supply and Demand Comparisons by Goal

Conservation Goal	Supply (ac-ft)[1]	Demand (ac-ft)	Gap: Supply (-) Demand (ac-ft)
Base Scenario	*208,612*	*256,165*	*-47,553*
Alternative 1: DWRe Water Conservation Goals	208,612	220,190	-11,578
Alternative 2: Existing Water Supply Portfolio	208,612	219,152	-10,540
Alternative 3: Zero Net Depletion on Great Salt Lake	208,612	176,158	+32,454
Alternative 4: Accelerated DWRe Water Conservation Goals	208,612	220,190	-11,578

1. Based on Scenario 2 for supply projections: dry year with no climate change effects. No additional water supply projects were considered outside of the existing available supply.

The results in Table 6 show that the existing supply is not adequate to meet future demands in each alternative except Alternative 3. However, the supply deficit is reduced with increased

conservation. Additional water that is conserved can reduce the costs associated with developing new water supplies.

Table 7 outlines the differences between JVWCD demand projections and the demands associated with each alternative target in 2035 and 2065. It illustrates the additional volume of water that needs to be conserved to meet each goal.

Table 7: Difference Between Demand Projections and Alternative Targets

Alternative Targets	2035 Gap: Demand Projections (-) Conservation Alternative Demand (ac-ft)	2065 Gap: Demand Projections (-) Conservation Alternative Demand (ac-ft)
Alternative 1: DWRe Water Conservation Goals	+1,423	+35,975
Alternative 2: Existing Water Supply Portfolio	-25,841	+37,013
Alternative 3: Zero Net Depletion on Great Salt Lake	+55,991	+80,007
Goal 4: Accelerated DWRe Water Conservation Goals	+11,011	+35,975

Demands will have to be reduced significantly to meet each conservation goal, requiring additional investment in conservation programs. The model was utilized to understand the anticipated investment for each alternative to eliminate the gaps shown in Table 7.

Benefits to Target Alternatives

The model was used to determine the program inputs necessary to meet each of the conservation goals. The costs and savings are shown for each conservation goal. Further discussion is also provided on the benefits of each goal in terms of 1) benefits to GSL, 2) additional costs to JVWCD for new water development, 3) increased costs on consumers, and 4) impact on public perception. Exact benefits are difficult to measure, but general assumptions were made to help differentiate between each alternative.

JVWCD estimated that the construction of future supply costs $17,821 per ac-ft on average. A summary of the average annual costs per acre-foot for conservation programs through 2035 is outlined in Table 8.

Table 8: Water Conservation Costs

Alternative Targets	Cost per ac-ft Conserved per Year
Alternative 1: DWRe Water Conservation Goals	$12,200
Alternative 2: Existing Water Supply Portfolio	$12,200
Alternative 3: Zero Net Depletion on Great Salt Lake	$9,300
Alternative 4: Accelerated DWRe Water Conservation Goals	$11,400

Costs associated with conservation are significantly less than that of new water development. Furthermore, the reliable water supply in the valley is difficult to quantify. Better managing water

demands is more feasible than developing new water supplies in an overallocated basin.

Alternative 1: DWRe Water Conservation Goals

Future demand projections were compared to water conservation efforts to determine the investment required to meet the goals by each time period. Benefits for obtaining this goal are centered around the following:

- Regulatory consistency
- Continued leadership in water conservation
- Increased investment in conservation programs to ensure future water conservation
- Providing a reliable water supply to customers while limiting financial burden derived from the development of future water supply infrastructure

Modeling results of Alternative 1 are shown in Table 9 outlining total investment, average annual cost, and anticipated water savings.

Table 9: Alternative 1 – Summary of Costs and Water Savings

Year	Alternative Projection (gpcd)	Total Investment Required	Average Annual Investment	Total Anticipated Water Savings (ac-ft)
2035	183	$87,386,503	$7,944,228	3,817
2065	169	$326,832,480	$7,971,524	14,284

Future conservation efforts in this scenario are centered around increased funding in education programs and turf replacement programs. Requirements for annual investment may change as water conservation may occur at a faster rate than anticipated based on the success of different water conservation programs.

Alternative 2: Existing Water Supply Portfolio

Planned investments to achieve the goal equal to existing supply are similar to that of Alternative 1. The District has to meet the conservation goals of Alternative 1 to be in compliance with DWRe and the regional goals. The regional goals happen to be more stringent than Alternative 2 until 2065. A summary of costs and water savings is shown in Table 10.

Table 10: Alternative 2 – Summary of Costs and Water Savings

Year	Alternative Projection (gpcd)	Total Investment Required	Average Annual Investment	Anticipated Water Savings (ac-ft)
2035	208	$87,386,503	$7,944,228	3,817
2065	168	$326,832,480	$7,971,524	14,284

To meet the 2035 goal of 208 gpcd, JVWCD would not require additional investment into conservation. Current demand projections are less than the 2035 goal. However, this would not be beneficial to GSL and the public perception of the District. The District is seen as a leader in conservation in the Salt Lake Valley, and it is important to continue those efforts to conserve water. Additionally, the current condition of GSL requires water conservation to occur now to make a positive impact.

Alternative 3: Zero Net Depletion on Great Salt Lake

Alternative 3 requires the largest investment in water conservation. It is anticipated that outdoor watering will have to drastically decrease in order to meet zero net depletion. Alternative 3 has all the benefits of Alternative 1 plus additional benefits to GSL. In this scenario, JVWCD would only be depleting water that is being imported into the basin. A summary of modeling results showing the required investment and water savings for Alternative 3 are shown in Table 11.

Table 11: Alternative 3 – Summary of Costs and Water Savings

Year	Alternative Projection (gpcd)	Total Investment Required	Average Annual Investment	Anticipated Water Savings (ac-ft)
2035	131	$387,374,626	$35,215,875	16,299
2065	135	$1,601,705,454	$39,065,987	58,324

As shown in Table 11, Alternative 3 requires substantial investment in water conservation programs. The majority of the costs occur from replacing turf and implementing regulations that limit the amount of irrigated area for new development. The increased costs could impact consumers and may prove to be unfeasible. It requires extensive investment from current customers to reduce outdoor watering through turf removal. That could be taxing on individuals and may be difficult to implement over the entirety of the service area. The best way to achieve this alternative is to limit outdoor demands associated with new development. This would be the least costly and help limit depletion in the basin, providing more benefits to GSL.

Alternative 4: Accelerated DWRe Water Conservation Goals

Benefits of Alternative 4 are focused on remaining ahead of new water conservation regulations. Additionally, it ensures that efforts are being made to implement successful water conservation programs that guarantee conservation. The GSL may require advanced water conservation to help stabilize the levels in the lake. Alternative 4 would put a moderately higher burden on customers compared to Alternatives 1 and 2, but not as drastic as Alternative 3. Modeled results for this goal are shown in Table 12.

Table 12: Alternative 4 – Summary of Costs and Water Savings

Year	Alternative Projection (gpcd)	Total Investment Required	Average Annual Investment	Anticipated Water Savings (ac-ft)
2035	178	$111,522,703	$10,138,428	4,808
2065	169	$429,504,480	$10,475,719	17,807

The majority of the costs would occur through 2035 to meet the updated conservation goals. A stricter goal could be chosen for 2065 that may increase the investments over a longer period of time.

PHASE 5: CONSERVATION GOAL ASSESSMENT

Phase 5 focused on evaluating water conservation programs and their impacts on meeting the four alternative targets. The cost of investment and potential water savings were quantified for

each. An extensive program assessment was completed to compare JVWCD's existing program to industry standards and how it could be enhanced to encourage better water conservation.

PROGRAM ASSESSMENT

The program assessment was completed in two parts: 1) HAL reviewed literature and water systems in the Western U.S., developed a database with rankings and 2) a workshop was held with JVWCD to examine findings, develop a list of new potential programs, and suggest enhancements to existing programs.

Western U.S Water System Conservation Effort Review

As part of the Western State Conservation Effort review, HAL gathered information about conservation efforts by public water systems in other states. The purpose of this research was to identify the most impactful programs and best public engagement practices. Research included studies in both practice and academia and was focused on the Western U.S. in areas with a semi-arid or arid climate.

The research findings were compiled into a Conservation Programs Database with locations, descriptions, key findings, and other pertinent information. The database, now in JVWCD's possession as part of this project, has more than 50 programs. For each conservation effort identified, scores were given in four categories: 1) cost effectiveness, 2) technology/market maturity, 3) service area match, and 4) customer acceptance and equity. In addition to these four scores, the level of investment and key components were identified, as well as the effectiveness of the program and quantifiable water savings and investment costs. The database was reviewed by JVWCD, and they completed their own assessment of the programs to develop scores in the four categories.

Existing Program Assessment

Upon completion of the Conservation Programs Database, HAL held a workshop with JVWCD staff to determine a list of water conservation programs to incorporate into the WCP update. The final program list, including enhancements to existing programs, is listed below:

- Conservation Garden Park
- Expansion of Maintenance to Other District Sites
- Localscapes Certification
- District Sites Landscape Conversions
- Social Media and Community Outreach
- Homebuilder Certification
- Utah Water Savers (UWS) Rebates
- Strategic Water Management
- Targeted Conservation Initiatives
- Member Agency Grant Program
- Water Efficiency Standards

Findings showed that JVWCD is consistently ahead on conservation programs compared to other water systems in the Western U.S. There were several enhancements that could be made to their existing programs to provide more conservation opportunities. Each program is discussed in more detail in subsequent sections.

PROGRAM COSTS

The programs were categorized as either education, incentive, or regulations. Education programs were determined to have a cost but no direct water savings. It was assumed that there would be some water savings associated with education programs, and factors were incorporated to account for that within the incentive programs lever. Incentive programs had both quantifiable costs and water savings. Regulations focused on programs that could limit the outdoor watering of future development.

Education Programs

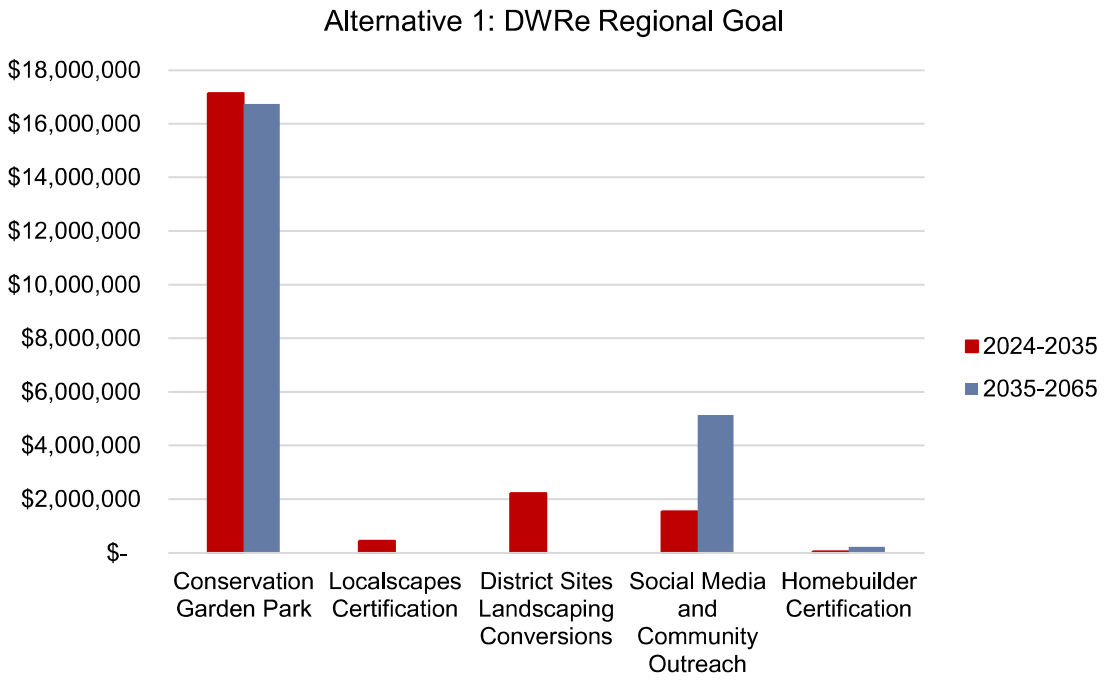
HAL collaborated with JVWCD staff to determine the associated costs with each of the education programs previously listed. Several of the programs would have a one-time implementation cost and all programs would have an annual cost to maintain the program.

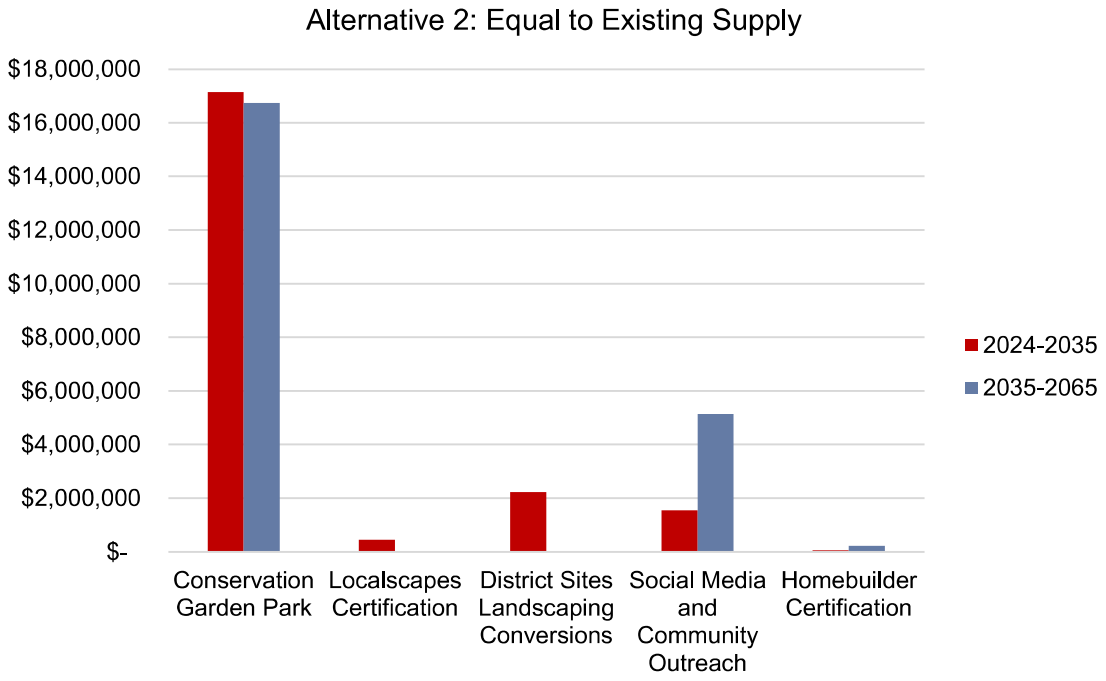
Given that it is difficult to quantify water savings from education programs directly, each program was assumed to have an impact on the amount of water saved from the implementation of the different incentive programs. Similarly, it was assumed that the education programs have an impact (positive or negative) on the cost of the incentive programs. Table 13 summarizes the education programs selected by JVWCD staff.

Table 13: Summary of Education Programs

Program	Description	Enhancements
Conservation Garden Park	Current programs include community classes, tours, educational exhibits, field trips, work and learn workshops, immersive learning, garden events, plant database, and online education.	• Garden Expansion Phase 1-3 • Interpretive Master Planning • Ongoing Improvements to Existing Exhibits
Expansion of Maintenance to Other District Sites	Cross-training and collaboration with the Maintenance Department to assist them with landscape maintenance.	• Additional staff
Localscapes Certification	A structured certification program for landscape professionals which includes instruction, exam, and CEU requirements. Localscapes certification for homeowners and businesses in the form of signage, recognition, advertising, awards	*Implement as a new program*
District Sites Landscape Conversions	A plan to replace turf with waterwise landscaping at District sites. Projects could also include signage and marketing.	*Implement as a new program*
Social media and Community Outreach	Current efforts include retail customer feedback tools and 1-2-3 classes.	• Self-guided Conservation Education • Customer Messaging System
Homebuilder Certification	Coordinate with DWRe to promote builders and homes with water-efficient ratings.	*Implement as a new program*

A summary of total costs through 2065 for the education programs by conservation goal is shown in Figure 3.


Alternative 1: DWRe Regional Goal
$18,000,000
$16,000,000
$14,000,000
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$-
Conservation Garden Park
Localscapes Certification
District Sites Landscaping Conversions
Social Media and Community Outreach
Homebuilder Certification
2024-2035
2035-2065


Alternative 2: Equal to Existing Supply
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$16,000,000
$14,000,000
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
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Conservation Garden Park
Localscapes Certification
District Sites Landscaping Conversions
Social Media and Community Outreach
Homebuilder Certification
2024-2035
2035-2065

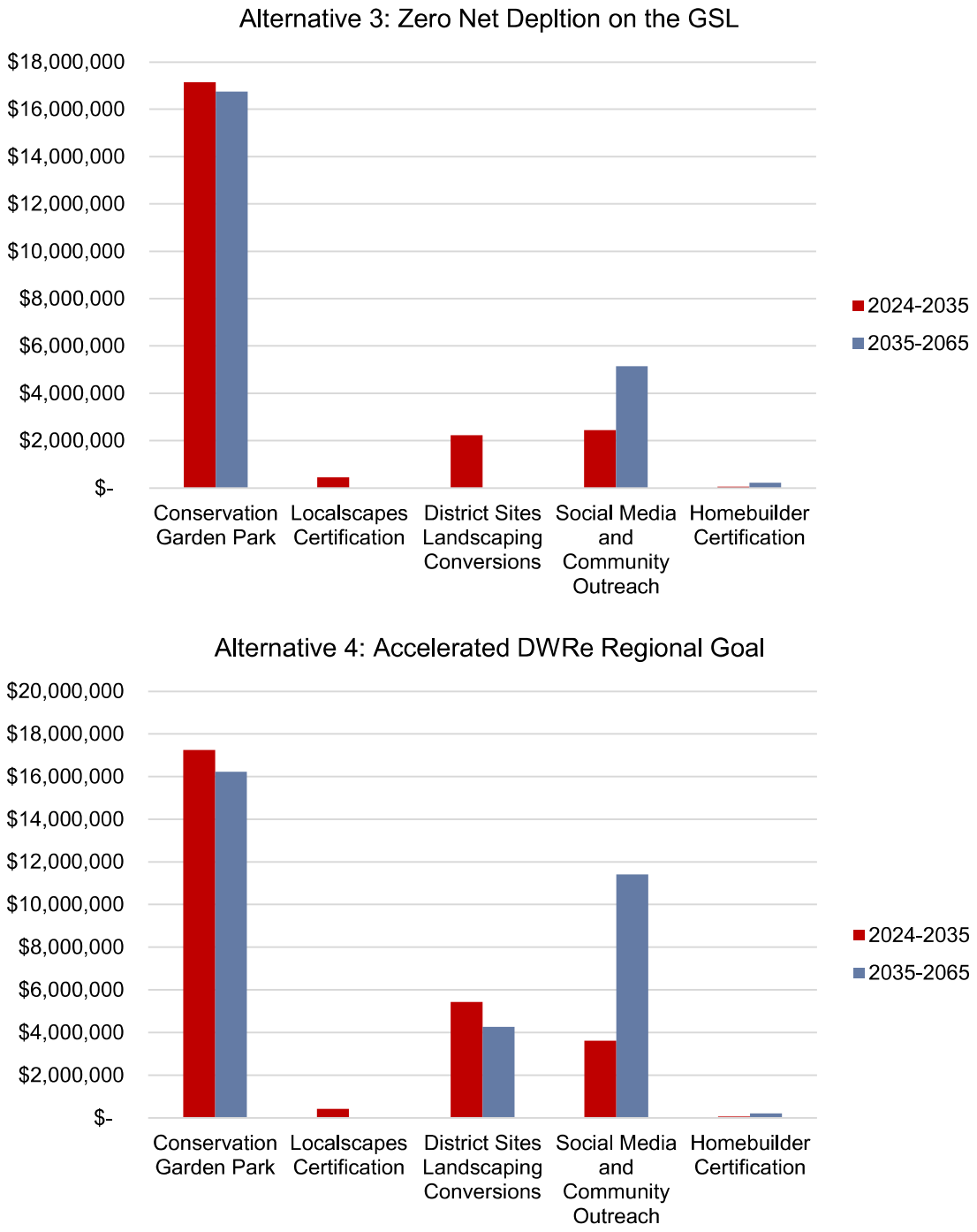


Figure 3: Education Program Investment by Conservation Goal

The costs illustrated in Figure 3 show the level of investment necessary to achieve each goal. Of the four alternatives, Alternatives 3 and 4 require the largest investment in education programs to meet them.

Incentive Programs

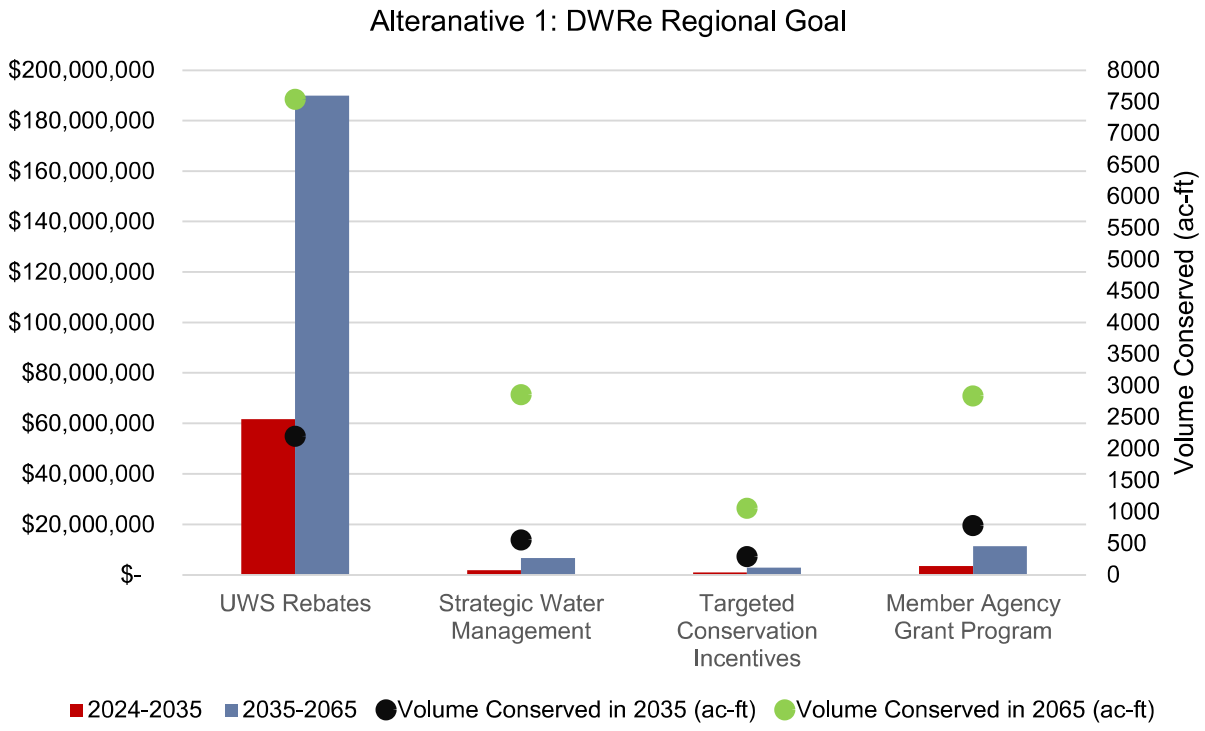
HAL collaborated with JVWCD staff to determine the associated costs and estimated water saved

for each of the incentive programs previously listed. It was assumed that incentive programs have an annual cost needed to run and maintain the program as well as a cost associated with the different types of rebates. Additionally, JVWCD has the ability to invest more into each program to increase the number of incentives offered. Yearly inflation costs were also considered. It was assumed that the water saved from each program is perpetual. Table 14 summarizes the education programs selected by JVWCD Staff.

Table 14: Summary of Incentive Programs

Program	Description	Enhancements
UWS Rebates	Landscape Incentive Program - $3.00 per square foot for replacing turf with waterwise landscaping ($2.00 per square foot commercial). Also includes Switch to Drip ($0.50 per square foot) and Tree Rebate ($100 per tree).	• Require participants to provide their water bills before and after the retrofit project. • Stormwater incentives—rain barrel installations and bioswales or rain gardens. • Irrigation device incentives
Strategic Water Management	Water assessments for CII. Ongoing work with CII customers to identify water-saving measures and implement improvements.	• Cost efficiency roadmap/irrigation assessments (Mimir App) • Water-saving device incentives for toilets, high-efficiency urinals, showerheads, flow control valves, pressure reducing valves, etc.
Targeted Conservation Initiatives	Using AMI data to identify inefficient water users in our retail service area and providing personalized communications educating them on the conservation incentives that would be most impactful for them. Offer the following incentives: leak mitigation, plumbing vouchers, smart controllers, fixture rebates, and consultations with schools and churches.	*Implement as a new program*
Member Agency Grant Program	$50,000 plus one dollar per acre foot of purchase contract to assist member agencies with their own conservation measures.	• Increasing funding for higher potential conservation programs

The estimated costs for each of the incentive programs and estimated water savings by conservation goal are shown in Figure 4.


Alteranative 1: DWRe Regional Goal
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$180,000,000
$160,000,000
$140,000,000
$120,000,000
$100,000,000
$80,000,000
$60,000,000
$40,000,000
$20,000,000
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7000
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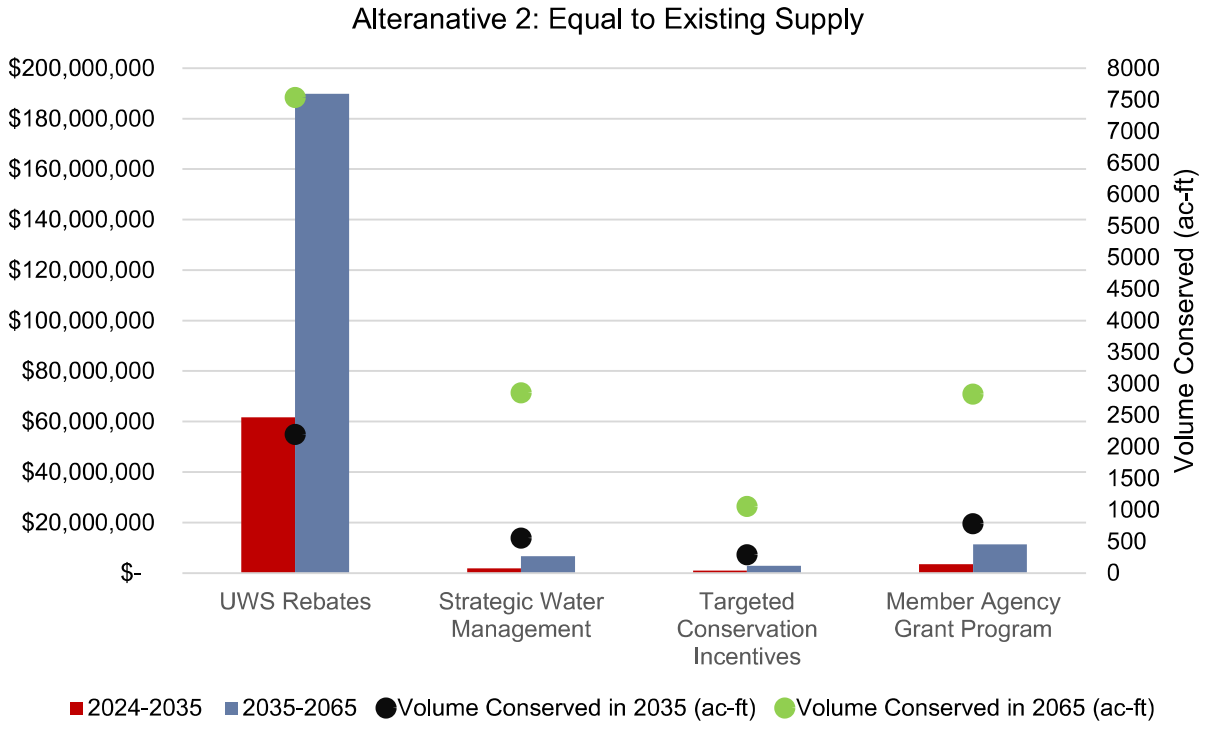
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Volume Conserved (ac-ft)
UWS Rebates
Strategic Water Management
Targeted Conservation Incentives
Member Agency Grant Program
2024-2035
2035-2065
Volume Conserved in 2035 (ac-ft)
Volume Conserved in 2065 (ac-ft)


Alteranative 2: Equal to Existing Supply
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$180,000,000
$160,000,000
$140,000,000
$120,000,000
$100,000,000
$80,000,000
$60,000,000
$40,000,000
$20,000,000
$-
8000
7500
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Volume Conserved (ac-ft)
UWS Rebates
Strategic Water Management
Targeted Conservation Incentives
Member Agency Grant Program
2024-2035
2035-2065
Volume Conserved in 2035 (ac-ft)
Volume Conserved in 2065 (ac-ft)

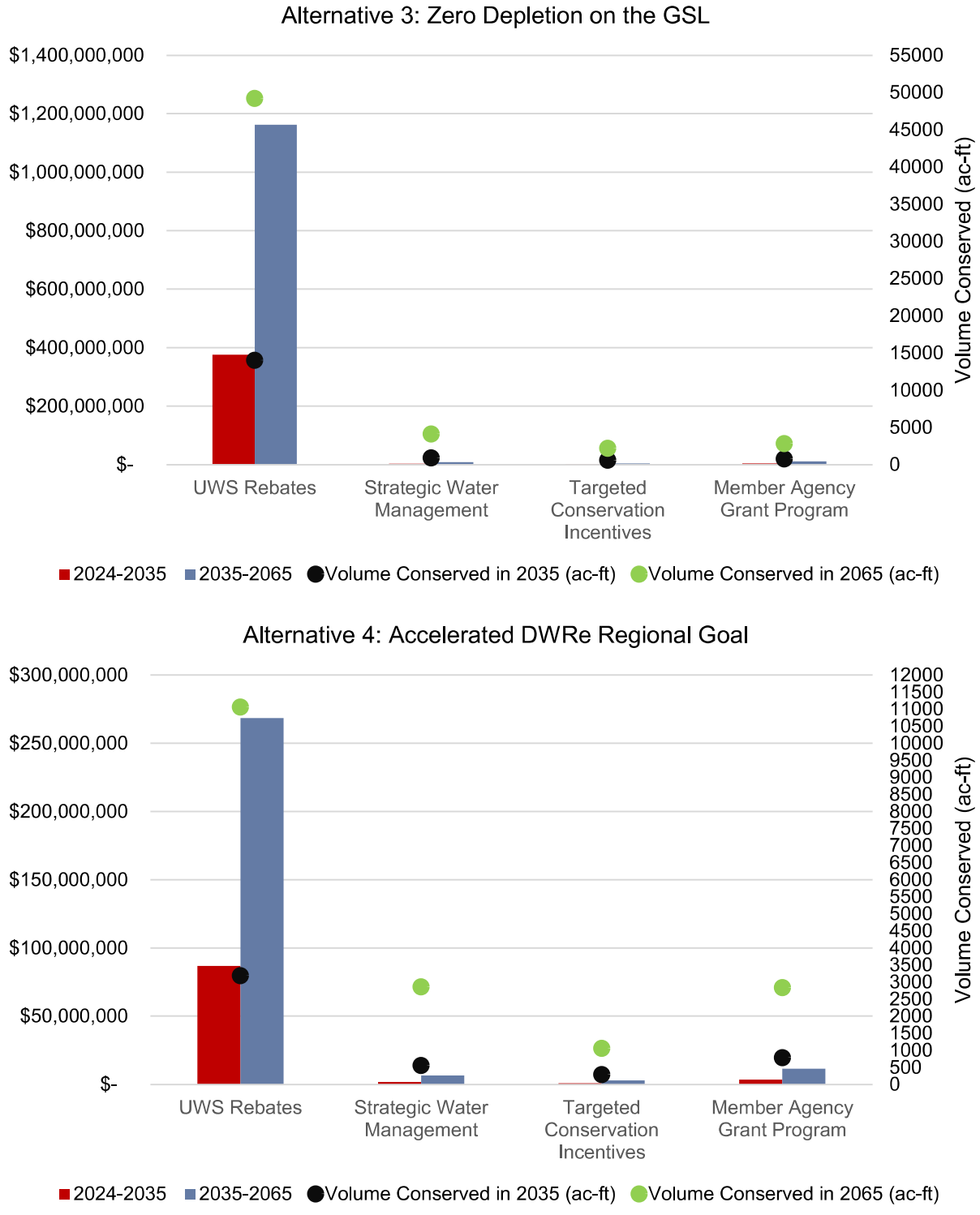

Figure 4: Incentive Program Investment by Conservation Goal

Alternatives 1, 2, and 4 have relatively similar costs. Alternative 3 has the highest investment requirement. The amount of water that needs to be conserved is substantial and requires extensive investment in turf replacement programs to reduce outdoor watering in the existing

service area.

Of the different programs, each has different savings potential based on level of investment. The limiting factor in each case was the number of units that are available to replace. For example, flow control valves are the most effective in terms of cost per ac-ft at $362. But there is a finite number that can be replaced in the JVWCD service area. Other programs have more available volume for conservation incentives, for example, the turf replacement program. It is one of the more expensive programs at approximately $38,000 per ac-ft. A summary of the average cost per acre-foot conserved by each of the main programs is shown in Table 15.

Table 14: Summary of Education Programs

Program	Average Cost per ac-ft Conserved
UWS Rebates	$1,463
Strategic Water Management	$143
Targeted Conservation Initiatives	$150
Member Agency Grant Program	$244

Regulatory Programs

The main regulatory program that was considered in the modeling process was the requirement for waterwise landscaping for all future development. This would reduce the amount of outdoor watering, and therefore reduce the demands of future development. An analysis was completed in the spreadsheet model to determine the estimated water savings that would occur based on assumed future development patterns and densities. It was estimated that waterwise landscaping would save approximately 2,000 ac-ft by 2035 and 7,250 ac-ft by 2065. The savings are based on the development of approximately 30,000 acres from 2024 to 2065. Preliminary assumptions for that development are shown in Table 15.

Table 15: Summary of Future Land Use Assumptions

Development Type	% of Future Development Area	% Irrigated Area	% of Irrigated Area is Water Efficient
Single-Family Homes	40	72	60
Townhomes	35	36	95
Apartments	10	11	95
Commercial	10	20	100
Open Space	5	100	0

CONCLUSIONS & RECOMMENDATIONS

The model shows that different levels of investment are required to meet each of the water conservation goals. Additionally, investment in conservation remains more economical than developing new water sources. The following conclusions were derived from the analysis:

- Alternative 2 is not viable because it is less aggressive than DWRe's current conservation goals for the region.
- Costs associated with conservation are significantly less than that of new water development.

- Alternative 1 would require the least investment through 2035, and Alternative 3 would require the highest investment. Results are similar for 2065, with Alternative 4 requiring the least investment after 2035.
- JVWCD's conservation programs are ahead of other public water systems programs in the Western U.S.
- Education programs are important for promoting conservation even though water savings cannot immediately be quantified.
- Turf replacement and limiting outdoor watering will help the District reduce depletion from the GSL basin.

It is recommended that the model be used in future planning efforts to best quantify conservation efforts. Additional analysis should be completed on future land use to determine expected densities and estimated water usage.

Appendix E

Proposed Updates to Water Efficiency Standards

WATER EFFICIENCY STANDARDS

1. Purpose

The purpose of these Water Efficiency Standards is to conserve the public's water resources by establishing water conservation standards for indoor plumbing fixtures and outdoor landscaping.

2. Applicability

The following standards apply to:

A. Developer/contractor installed residential, commercial, institutional, and industrial construction.

B. New landscaping and water fixtures installed by homeowners.

3. Indoor Fixture Requirements

It is recommended and encouraged, but not mandated, that all new and future construction and future additions, remodels, or refurbishments use plumbing fixtures that have the WaterSense label or, where feasible, are more efficient than WaterSense standards, including:

A. Lavatory faucets that use a maximum flow of:
   - 1.5 gallons per minute at 60 psi for private lavatories; or
   - 0.5 gallons per minute at 60 psi for public lavatories,

B. Shower heads that use a maximum flow of 2 gallons per minute at 80 psi,

C. Kitchen faucets that use a maximum flow of 1.8 gallons per minute (with optional temporary flow up to 2.2 gallons per minute),

D. Water closets (tank and flushometer-valve toilets) in residential and commercial settings that operate with either:
   - A single flush where the flush volume does not exceed 1.28 gallons of water per flushing cycle; or
   - A dual flush with both a full flush and a reduced flush option where the composite average flush volume of two reduced flushes and one full flush does not exceed 1.28 gallons of water, and

E. Urinals that use a maximum of 0.5 gallons of water per flushing cycle.

4. Outdoor Landscaping Standards Definitions

A. Active Recreation Areas: Areas of the landscape dedicated to recreation, social gathering and active play where lawn may be used as the playing surface (ex. sports fields and play areas).

B. Hardscape: Durable landscape materials, such as concrete, wood, pavers, stone, or compacted inorganic mulch.

C. Lawn: Ground that is covered with grass or turf that is regularly mowed.

D. Mulch: Any material such as rock, bark, compost, wood chips or other materials left loose and applied to the soil.

E. Overhead spray: Above ground sprinklers or irrigation heads that spray water through a nozzle.

F. Park strip: A landscaped area located between the back-of-curb and sidewalk.

G. Planting bed: Areas of the landscape that consist of plants, such as trees, ornamental grasses, shrubs, perennials, and other regionally appropriate plants.

H. Total landscaped area: Improved areas of the property that incorporate all of the completed features of the landscape, including the front, side, and backyard areas of residential lots. The landscape area does not include footprints of buildings or structures, sidewalks, parking areas and driveways completed for and intended to be used as part of the primary property use, and other non-irrigated areas intentionally left undeveloped.

5. General Landscaping Requirements

New and rehabilitated landscaping for both public and private development, including developer-installed landscaping in multi-family and single-family residential projects and homeowner provided landscape improvements, shall comply with the landscaping standards below:

A. All irrigation shall be appropriate for the designated plant material to achieve the highest water efficiency.

- Each irrigation valve shall irrigate landscaping with similar site, slope and soil conditions, and plant materials with similar watering needs.

- Lawn and planting beds shall be irrigated on separate irrigation valves.

- Lawn may be irrigated with overhead spray.
- Planting beds may only be irrigated with drip irrigation and may not be irrigated with overhead spray.
- Bubblers and micro-sprays shall be installed on separate valves from any other type of irrigation.

B. Drip irrigation systems:

- Shall be equipped with a pressure regulator, filter, flush-end assembly, and any other appropriate components.
- Shall incorporate low-volume emitters appropriate for the soil type in which they are used.

C. Irrigation systems shall be operated by a WaterSense labeled smart irrigation controller that:

- Automatically adjusts the frequency and/or duration of irrigation events in response to changing weather conditions, and
- Is equipped with automatic rain delay or rain shut-off capabilities.

D. At least 3-4 inches of mulch, permeable to air and water, shall be used in planting beds to control weeds and improve the appearance of the landscaping.

E. At maturity, landscapes must have enough plant material (perennials and shrubs) to create at least 50% living plant cover at the ground plane, not including tree canopies.

F. Lawn shall be free from obstructions (trees, play structures, signs, posts, etc.) that impair irrigation efficiency by disrupting head-to-head spray coverage and shall not be installed:

- In a park strip,
- In entryways to, or interior islands of, parking lots,
- In an area where the lawn will be less than eight feet wide at its narrowest point,
- For use primarily as a pathway, or
- On slopes greater than 25% or 4:1 grade.

G. Trees should be incorporated into the total landscaped area, but trees are not appropriate in all parts of the landscape. Trees:

- May not be planted in a park strip that is less than 5 feet wide,
- Should be appropriately sized for the space they are intended to occupy based on the tree's size at maturity,
- May not be planted in an area with lawn.

6. Landscaping Requirements Applicable to Single Family Detached Dwellings and Duplexes / Twin Homes.

Residential landscaping for single family homes and duplexes or twin homes shall adhere to the following requirements:

A. For lots with both a front yard and a backyard, lawn:
- Shall not exceed the greater of 250 square feet, or 35% of the total landscaped area, and
- Is limited to a maximum of 7,500 square feet regardless of lot size.

7. Small residential lots without a backyard and where the total landscaped area is less than 250 square feet are exempt from the 8 feet minimum lawn width requirement.

8. Park strips

- Shall have at least 50% plant coverage at maturity
- May not drain to the street

9. Landscaping Requirements Applicable to Commercial, Industrial, Institutional, and Multi-family Development

In commercial, industrial, institutional, multi-family development and residential development with common areas:

A. Lawn is only allowed as part of an active recreation area, except that individual lots within a common interest community may have lawn based on the standards for residential landscaping.

B. Lawn is not allowed within ten feet of an area that is primarily used for vehicular purposes, including:

- Streets and parking lots that do not have adjacent park strips or sidewalks, and

- Sidewalks adjacent to a street or parking lot

10. Exceptions

A. Certain special purpose landscape areas (e.g. stormwater management areas, etc.) may receive exceptions from the slope limitations and other elements of the Landscaping Requirements (see Paragraph F, above). Applications to receive exceptions are to be considered on a case-by-case basis.

B. These outdoor standards are not intended to be in conflict with other landscaping requirements as defined by Utah law, including stormwater retention requirements and low-impact development guidelines. Notwithstanding these outdoor standards, whenever any requirement may be in conflict with Utah law, such conflicting requirements shall not apply.

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