STANSBURY PARK
IMPROVEMENT DISTRICT

DRAFT WATER CONSERVATION PLAN 2022 UPDATE

WARD ENGINEERING GROUP
Planning • Engineering • Surveying

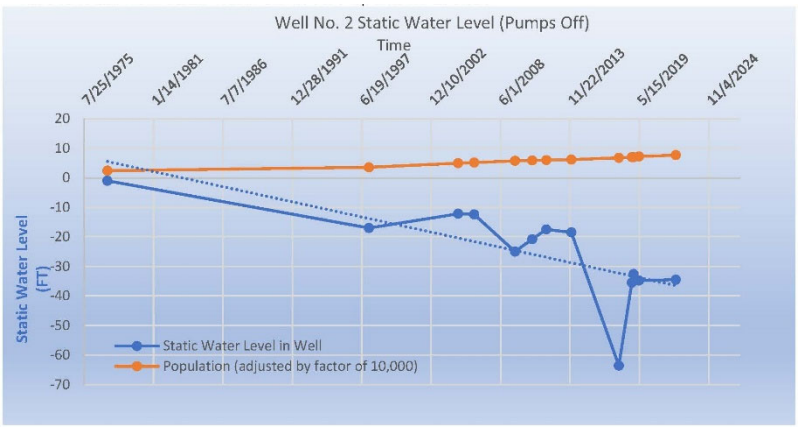
STANSBURY PARK IMPROVEMENT DISTRICT
WATER CONSERVATION PLAN
2022 UPDATE

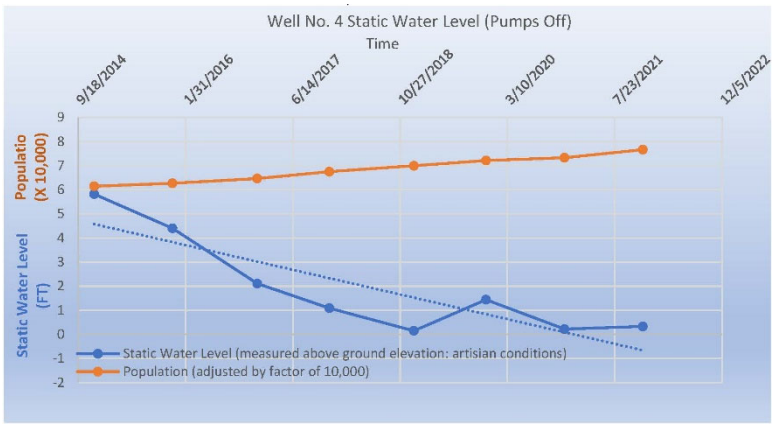
EXECUTIVE SUMMARY

WATER SUPPLY

Primary Sources 2021 Total Annual Yield = 1,082 MG
Secondary Sources 2021 Total Annual Yield = 125 MG
Population 2021 = 13,188

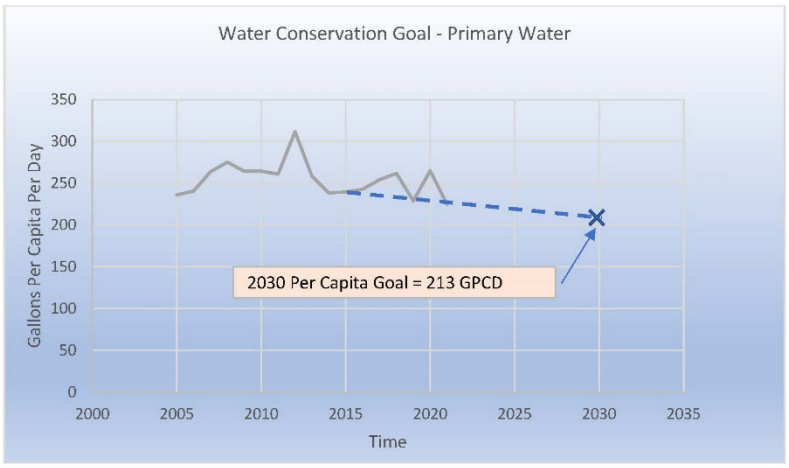
SOURCE RELIABILITY AND PERFORMANCE

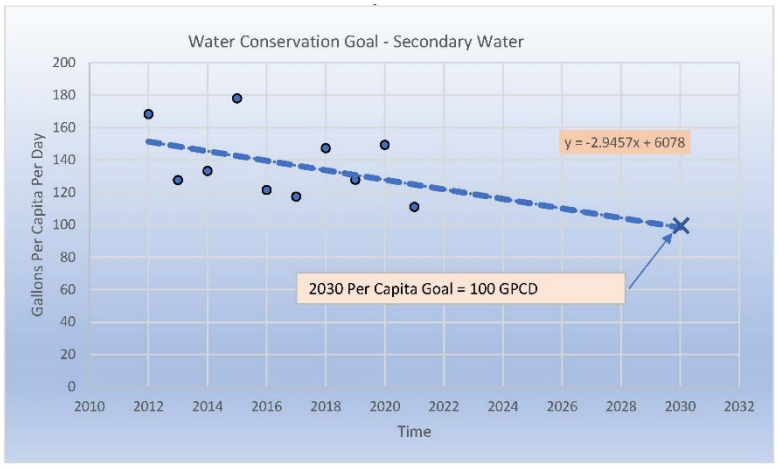




WATER CONSERVATION GOAL

The District is in the Salt Lake region, and aligns its goals with the state's goals, which targets the per capita water use at 187 GPCD by year 2030. The resulting Salt Lake region goal is an 11% decrease baseline comparison to year 2015. The District has adopted a similar goal of an equivalent 11% reduction in per capita use from its baseline year of 2015. This equates to a 2030 per capita use of 213 GPDC.





CONSERVATION INITIATIVES

- Governing Body Consists of Board and General Manager
- Provide Awareness & Education
- Financial Incentive to Conserve Through Rate Schedules
- Conduct System Maintenance for Better Efficiency
- Encourage Water-Wise Local Government Land Use Ordinances
- Annual Water Use Audit & Data Collection
- Emergency Response Protocol

ONGOING CONSIDERATIONS

- Partnering and Education for Local Government Entities
- Regional Coalition (Tooele Valley Water Management Council)
- Ongoing Policy Evaluation (Including Water Right Policies)

STANSBURY PARK IMPROVEMENT DISTRICT
WATER CONSERVATION PLAN
2022 UPDATE

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STANSBURY PARK IMPROVEMENT DISTRICT
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BACKGROUND

In conformance with the 1998 Water Conservation Plan Act, Utah Code 73-10-32, Stansbury Park Improvement District (SPID) proposes an updated Water Conservation Plan (Plan). The first Plan was adopted in February 2006, with subsequent updates adopted in March 2010 and November 2017. Since the previous update, a number of reports and system analysis have been completed by SPID and documented.

- 2019 Water Rights Policy
- 2019 Water Rights Policy, 2021 Addendum No.1
- Forty Year Projected Water Demand, October 2021
- 2018 Water Impact Fee Facilities Plan
- Report for Setting System – Specific Source and Storage Minimum Sizing Requirements, June 10, 2020
- West Erda Improvement District Water Use Assessment, June 20 2017
- Pressure Zone 1 Water Master Plan, December 2019

Additionally, applicable analysis produced by the District includes:

- Water Rights Evaluation for Ponderosa Subdivision in association with the Ironwood Dispute, April 2105,
- Leucadia Corporation Irrigable Area Study, 2010,
- West Erda Improvement District Irrigable Area Study, 2017,
- Supplemental Erda Irrigable Area Study, 2018.

These comprehensive studies and reports are the basis for much of the technical information used in this plan.

This plan was adopted by the Board of Trustees on ????, 2022. A copy of the adopted resolution is provided in Appendix A.

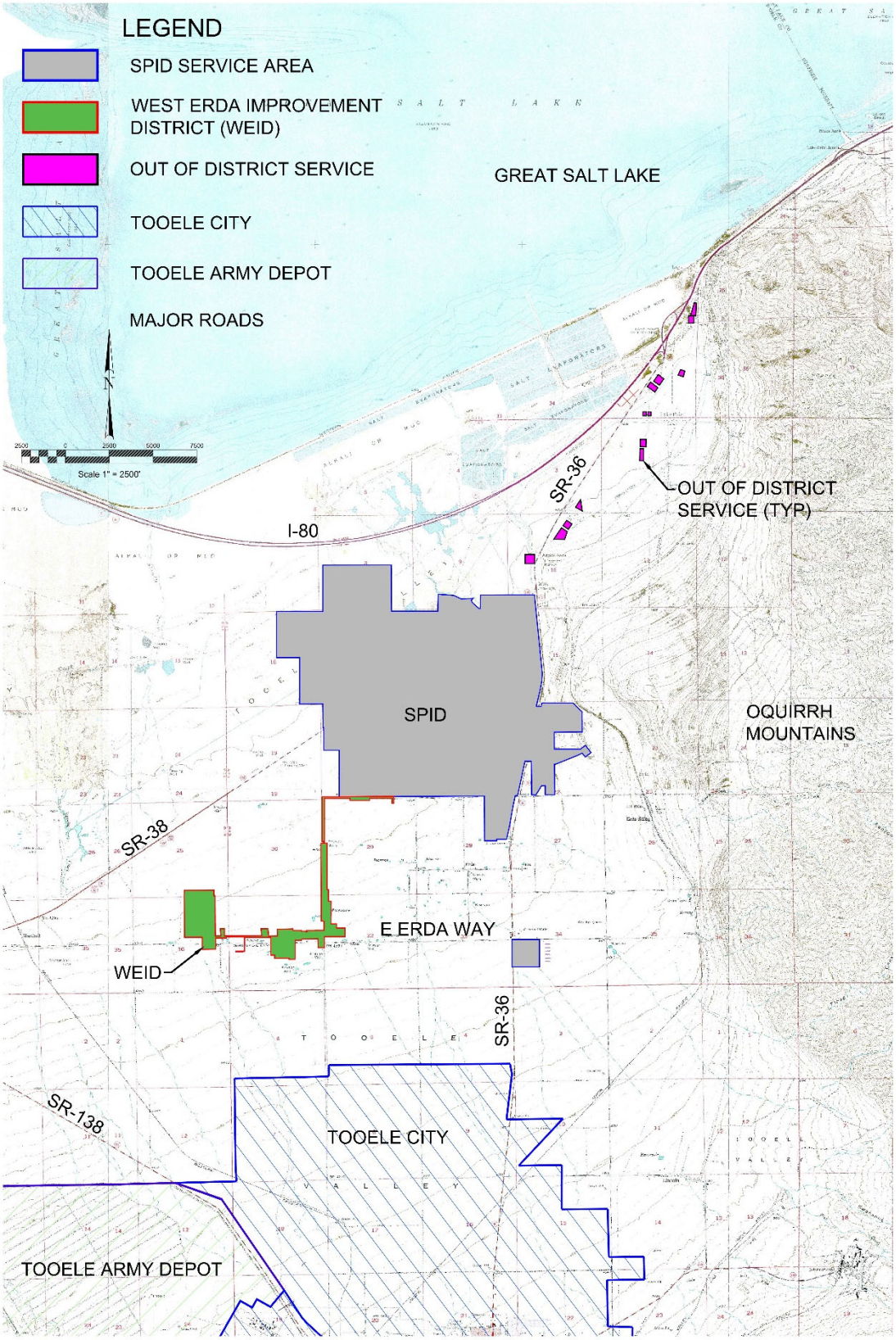
SYSTEM PROFILE

INTRODUCTION

SPID was established by resolution dated September 22, 1971 pursuant to the provisions of Chapter 6, Title 17, U.C.A., 1953, as amended. The District primarily serves the rural community of Stansbury Park, situated in the northwest region of Tooele County, providing culinary water and sewer service. The District also provides culinary water to a small portion of the Lake Point business district located to the north of Stansbury Park, and to the former West Erda Improvement District (WEID) (i.e. Golden Gardens Subdivision), and other miscellaneous customers along the alignment of the WEID water distribution line within Erda. In addition to culinary water, the District and the Stansbury Service Agency together hold water rights for a number of irrigation and secondary sources for the purpose of irrigating the Stansbury golf course, irrigating public open spaces, filling and maintaining the existing golf course ponds, and filling and maintaining the Stansbury Lake. The District has an estimated population of 13,188 people (year ending 2021), and consists of a service area approximately 3,752 acres (Stansbury Park Service Area), and an additional 105 acres (WEID).

In 2018, SPID entered into an interlocal agreement with Tooele County to provide sewer services to unincorporated regions in North Tooele County (outside of SPID's service area). As indicated in the District's Charter, SPID requires annexation for the service of both water and sewer services together. Therefore, with the cooperation of Toole County local government, SPID anticipates future developments and tracts of land to be annexed into the District in the future. In accordance with this interlocal agreement, SPID is in the ongoing process of considering and establishing development standards for unincorporated areas, and exploring the means and methods to construct regional infrastructure to support such future development.

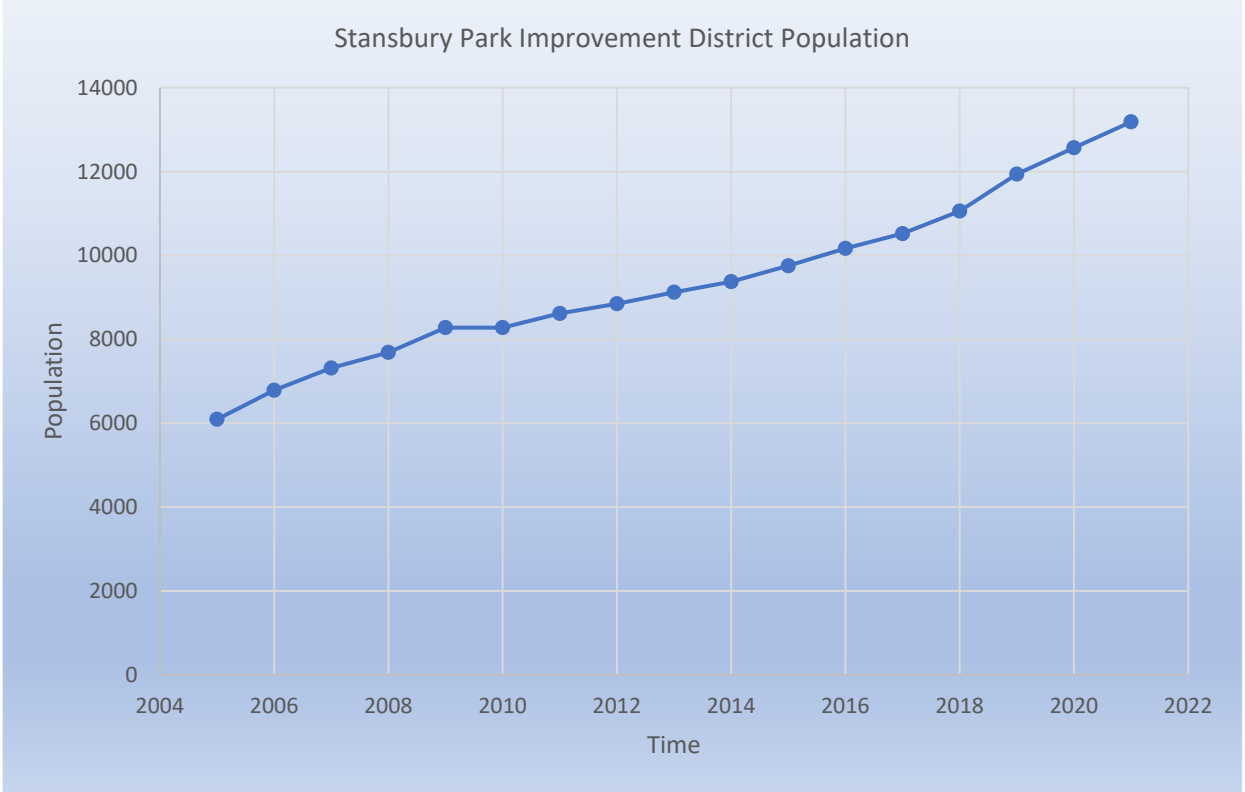
Figure 1: Service Area Map



POPUPLATION

Chart 1 illustrates the growth projections within the District, and within the anticipated areas of future annexation from 2005 through 2021. As of the year ending in 2021, the population of the District, and the associated customers outside of the District currently connected to the system, is 13,188. the population is an estimate based on a conversion from the known number of residential connections. A conversion is made on the basis of 3.23 persons per residential dwelling (U.S. Census Bureau for Tooele County at large years 2012 through 2016). The county-wide growth rate is estimated to be an average of 8.8% as reported by "worldpopulationreview.com", which uses the Census Bureau as its source.

Chart 1: Growth Projections

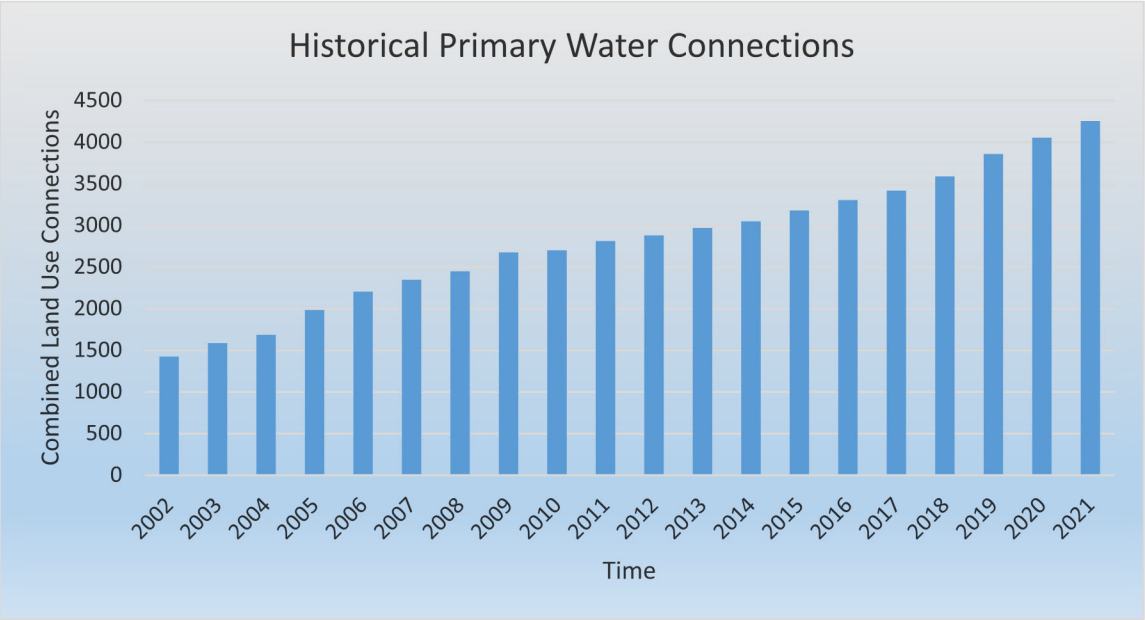


SERVICE CONNECTIONS AND EQUIVALENCY

Primary Service

At year ending 2021, the District has 4,254 primary water accounts / connections, consisting of residential, commercial, industrial and institutional water users. Primary water service is defined as culinary water that is diverted from one or more of the District's municipal wells, meeting Drinking Water Standards, and transmitted to one more of the District's municipal storage tanks, and distributed via the District's distribution system. Primary water is used throughout the District, and within annexed properties in Erda City, Lake Point Township, and within unincorporated areas of Tooele County. Primary water is furnished to customers for both indoor and outdoor use, and for fire protection. Table 2 expresses the historical growth in terms of primary water connections.

Chart 2: Historical Primary Water Connections



A detailed summary of the 2021 primary connections is expressed according to land use in Table 1.

Table 1: 2021 Primary Connections by Land Use

Land Use	Number of Primary Connections
Residential	4,083
Commercial	39
Industrial	4
Institutional	128

Secondary Service

The District and the Stansbury Park Service Agency own and operate multiple secondary water wells, which are used for three purposes.

1) Irrigation of the Stansbury Park golf course
2a) Irrigation of the public green belts directly adjacent to the golf course
2b) Source water for the golf course ponds and the Stansbury lake

For practical purposes, the District does not evaluate secondary water use in terms of number of connections because the end users are large entities with large irrigation demands. Rather, the District evaluates the quantity of use based on the metered and measured use at the points of diversion (at the wells).

Secondary water sources are physically separate from the primary water system previously described. For more detail on the specific ownership of secondary water sources, refer to Page 14: *Non-Metered Water.*

Equivalency

For simplicity, the District defines water demands in terms Equivalent Residential Connections (ERCs), which allows one common unit of expression when performing water use analysis, and in

determining unit system demands. By definition, 1 ERC = 556 gallons per day, an average water use demand.

Table 2: 2021 Total Primary Equivalent Residential Connections

Land Use	ERCs
Residential	3,595
Commercial	103
Industrial	44
Institutional	657
	Total 4,399

Table 3: 2021 Total Secondary Equivalent Residential Connections

Land Use	ERCs
Total Secondary Sources	2,193

WATER SUPPLY

Primary Sources

100% of the District's primary water sources are derived from Tooele valley ground water, with points of diversion contained within the political boundaries of the District in North Tooele County.

Table 4: Existing Primary Water Sources

Well Designation	Point of Diversion	Equipped Capacity (GPM)	Actual Pumping Capacity (GPM)	2021 Annual Yield (MG)
Well No. 1	South 1,336 ft. West 297 ft. from North Quarter Corner of Section 27, T2S, R4W SLB&M	3,000	2,500	681
Well No. 2	South 1,355 ft. West 1,050 ft. from the North Quarter Corner of Section 27, T2S, R4W, SLB&M	2,700	2,000	178
Well No. 3	North 49 ft. East 139 ft. from the Southwest Croner of Section 22, T2S, R4W, SLB&M	1,000	800	1.71
Well No. 4	North 171 ft. West 857 ft. from the East Quarter Corner of Section 28, T2S, R4W, SLB&M	3,000	1,800	221

Table 5: Future Primary Water Sources

Well Designation	Point of Diversion	Equipped Capacity (GPM)	Projected Pumping Capacity (GPM)	Projected Date of Operation
Well No. 5	205 East Church Road, Erda City, UT	N/A	2,000	2022*

*Well has been drilled and developed. Construction of well house and wellhead equipment presently under contract. Well transmission line in design.

Secondary Sources

100% of the secondary water sources provided within the District are derived from Tooele valley ground water and surface water, with points of diversion contained within the political boundaries of the District in North Tooele County. It is an important distinction that secondary water is not currently offered or used by private property owners. Only two customers use the secondary sources.

- The Stansbury Public Golf Course
- Stansbury Park Service Agency

In 2009, the District removed the Stansbury golf course and adjacent green belt irrigation from the primary water system, by drilling and commissioning the Gordon Well No. 2.

Table 6: Existing Secondary Water Sources

Well Designation	Approximate Location	Area of Service / Place of Application	Type of Source	2021 Annual Yield (MG)
Gordon Well No. 1	South 1,338 Ft. West 308 Ft. from the North Quarter Corner of Section 27, T2S, R4W, SLB&M	Source Water for Golf Course Ponds and Stansbury Lake	Pumped / Metered	3.23
Gordon Well No. 2	South 1,370 Ft. West 911 Ft. from the North Quarter Corner, of Section 27, T2S, R4W, SLB&M	Golf Course Irrigation and Adjacent Green Belt Open Space Irrigation	Pumped / Metered	101.53
17th Hole Tee Well	North 813 Ft. East 501 Ft. from the South Quarter Corner of Section 16, T2S, R4W, SLB&M	Source Water for Stansbury Lake	Artesian (Free Flowing) / Meter Inoperable	1.05
Millpond Pump	North 700 Ft. West 800 Ft. from the East Quarter Corner of Section 16, T2S, R4W, SLB&M	Source Water for Stansbury Lake	Pumped / Metered	3.23
Well A	South 1,099 Ft. West 53 Ft. from the Northeast Corner of Section 20, T2S, R4W, SLB&M	Source Water for Stansbury Lake	Free Flowing / Not Metered	15.77
Test Well 4 (Not Currently Used	North 171 Ft. West 857 Ft from the East Quarter Corner of Section 28, T2S, R4W, SLB&M	Source Water for Golf Course Ponds and Stansbury Lake	Artesian (Manually Controlled) / Metered	0.0
			Total	124.81

Reliability: Tooele Valley

The Utah Division of Water Rights (Division) manages the appropriation of water throughout the state. Currently the state has appropriated more rights than exists available physical water. Many of the appropriations however, are not in use or are in partial use because of "lack of use", abandonment, and/or because they are never perfected. The total permitted use for Tooele Valley is approximately 84,000 Ac-Ft, which comprises an over appropriation of about 12% (area-wide) according to the Division. Specifically, in the northeast part of Tooele County, over appropriation (exceedance of permitted use) more closely approaches 62%. This is one of the primary reasons that the Division has separated Tooele Valley into three water rights zones. The highest concentration of over appropriation is in the east zone, which primarily contains the present political boundary of the Stansbury Park Improvement District. Among other factors, this leads to a concentration of diversion points, which has potential to cause local well interference. Therefore, the Division does not allow the transfer of water rights from the central and west zones to the east zone.

While over appropriation is a concern, the important factor for the time being is that the Division considers whether or not the groundwater source within the aquifer is at or near the "safe yield" threshold. This is determined by the annual recharge of the aquifer. In other words, what is actually important, is that the municipal and individual diversions do not exceed the recharge capacity of the basin. For now, the Division does not necessarily consider the Tooele Valley at or critically approaching the safe yield as a whole. With that said, careful consideration is warranted as "…99.47% of the state of Utah is presently in severe drought, with 55.67% of Utah in extreme drought" (Utah Division of Water Resources).

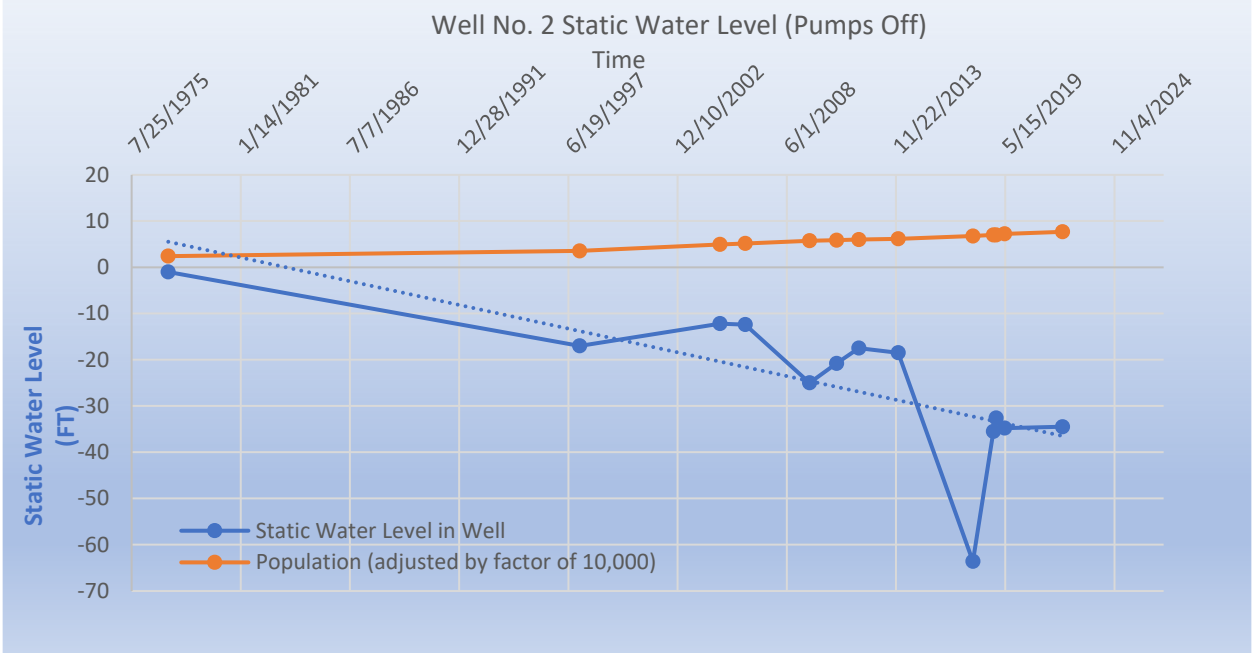
In the future, particularly in the Lake Point and Stansbury Park service areas, the estimated diversions will exceed the Division's present safe yield threshold. Therefore, one of the ways that the District is able to have a positive influence on this future issue, is to effectively reduce the amount of "paper" water tied up in the District's name, and move toward a better balance of physical diverted water and the aquifer's recharge capacity. Furthermore, the District actively seeks to obtain and develop future water sources in the Division's Central Tooele Valley Zone, thus effectively addressing the imbalance in water appropriations in North Tooele County. As previously stated, the District is currently constructing Well No. 5 in the Central Zone. While not necessarily the most cost-effective location, it does meet the more important objective of securing future water recourse reliability for the District's current and future customers.

Reliability: SPID Resources

As provided in Table 4, the District operates four deep primary water wells, which comprise all of the indoor water, as well as irrigation water for residential, commercial, and institutional land uses within the District. Groundwater is generally considered to be a more protected water resource than springs or surface water resources, being less susceptible to regional water shortages, droughts, contamination, etc., thereby providing a higher degree of reliability than a water system containing sources comprised of surface water, shallow wells, and springs.

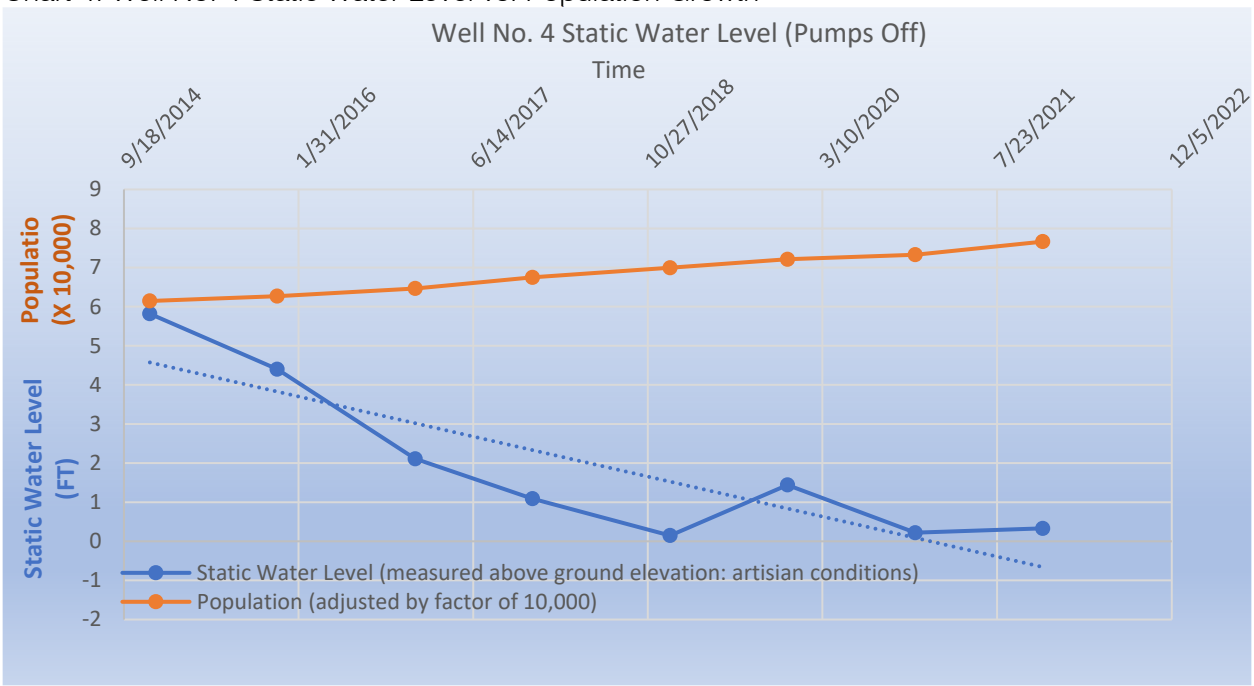
The District has collected available historic measurements of both static and dynamic water levels within its wells as a means of evaluating local water source reliability in terms of graphical data and empirical evidence; to verify long-term reliability, future expectations, and performance moving forward into the future. For consistency and accuracy, only static water levels have been evaluated.

Chart 3: Well No. 2 Static Water Level vs. Population Growth



The District has compiled data for Well No. 2, spanning a forty-seven year time period, from 1975 to 2022. It is observed that over that period of time the static water level, as measured in the well casing, has consistently dropped over time, with one outlier in 2017. A trend line has been plotted to graphically show the average increase in depth over time. This may be expected when plotted against the inversely correlated regional population growth (reported within overall Tooele County) over the same period of time. While the groundwater level decreases (depth in well increases) over time, the data shows that the well has performed reliably over nearly five decades.

Chart 4: Well No. 4 Static Water Level vs. Population Growth



The District has also compiled data for Well No. 4, located approximately 0.6 miles southwest of Well No. 2. This well was operational in 2013, resulting in a shorter time frame of analysis as compared to Well No. 2. Chart 4 shows a similar trend in static ground water levels vs. regional population growth. As demonstrated in the chart, an inverse correlation with population growth is present. However, from 2018 to 2021, the static water levels exhibit a relatively flat line, with a marginal increase in measured water depth (note: Chart 4 water depths are expressed as positive figures above ground, as the well is an artesian well). This "bottoming" effect in the past four years is encouraging and suggests both a moderate increase in performance over the short term, and reliability overall as a projection into the future.

As previously described, the District continues to plan for the addition of future groundwater sources both within the District and regionally, including developmental progress of future Well No. 5 (as described in Table 5). The District is actively planning, developing, and establishing the capital facilities funding tools and pathways to add additional sources. This not only facilitates a more responsible plan for growth, but also creates redundancy within the system, diversifying the District's groundwater assets geographically, in the event of natural or maleficent acts. This ultimately leads to a greater degree of reliability in the District's capacity to deliver water.

Reliability: Reallocation of Historic Groundwater Resources

One of the less considered factors associated with reliability of groundwater regionally within the Tooele Valley, is the historic reallocation of groundwater use, or discharge from the Tooele Valley basin. While this Water Conservation Plan is not intended to included or convey analysis regarding regional water resources, nor in any way does it begin to address the complex relationship of a reallocation of groundwater discharge, it is worth mentioning in the context of municipal water source reliability.

Since 1965, the discharge of the Tooele Valley Basin has shifted primarily from irrigation of farmland in the lower elevations of the valley, to municipal and domestic withdrawals near the mountain benches from consolidated rock. The important point to be made, is that as constant residential and commercial growth has occurred within Tooele County, resulting in a continually increasing source demand, a sharp decrease in farmland irrigation demand has also occurred, particularly between 1980 and 1985. A graphical representation of the farmland irrigation demands vs. the municipal and domestic demands over this period is provided in Appendix B, as part of a brief excerpt from *A 2009 Hydrology and Simulation of Ground-Water Flow in the Tooele Valley Ground-Water Basin, Tooele County, Utah Report published by the United States Department of Interior and the United States Geological Survey, Page 17. Figure 8 (Annual groundwater withdrawals for irrigation and municipal uses, 1968-2006, Tooele Valley groundwater basin, Tooele County, Utah.* From this graph (Figure 8 of Appendix B), it is discovered that growth within Tooele County does not lead to a linear and proportional depletion of the groundwater source. Rather, resources over time are reallocated to a significant degree. While this is an oversimplified description of regional groundwater discharge, it is a significant and relevant consideration relating to the long-term reliability of the Tooele Valley groundwater basin.

Development Economics

The obvious result of finite groundwater capacity, over appropriation of water rights, and restrictions on water rights transfers in the Tooele Valley, is that water rights will become more expensive in the future. While it may not necessarily be the District's prime objective or responsibility to consider the economic hardships of private development entities due to rising costs of water rights, it is nevertheless an economic benefit to property owners within the District's existing and future service

areas to consider reasonable water conservation measures and policies that responsibly reduce water rights exactions. This is perhaps most pronounced when considering future connections to the District's system by existing and future single-family residential lots in the unincorporated areas of Tooele County and Erda City (south of Bates Canyon Road). These future water users own larger lots than those found in Stansbury Park. It is in these areas that current water rights requirements (for outdoor demands) may be the most cost prohibitive for existing and future development should the District's water rights requirements go forward without consideration and more conscientiousness resource management.

WATER USE

The following charts and graphs show the historic water use in the District and the District's service areas.

Chart 5: Population vs. Water Use over Time

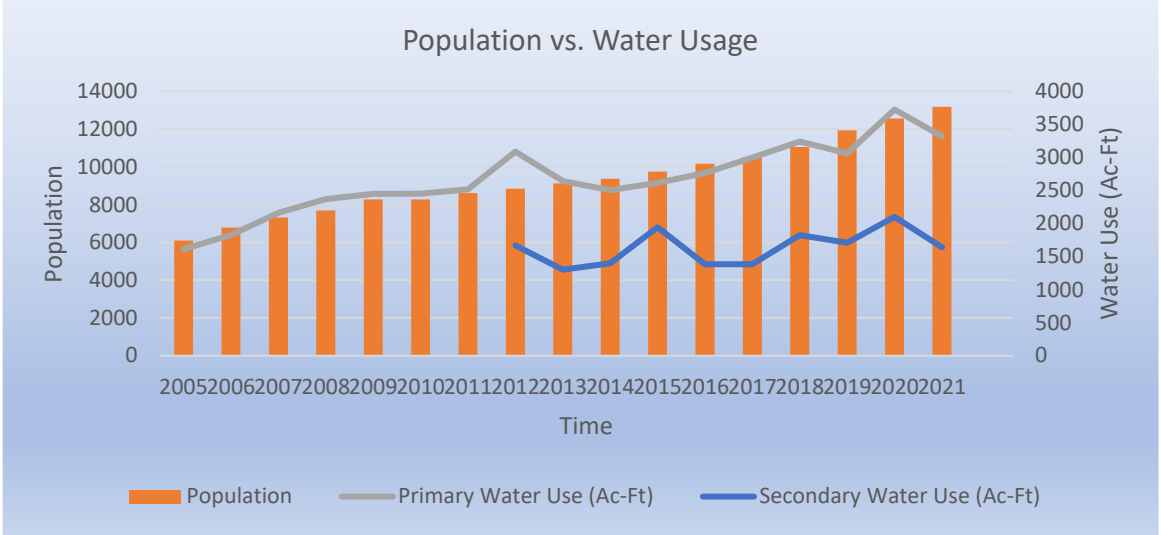


Chart 6: Gallons Per Capita Per Day Efficiency

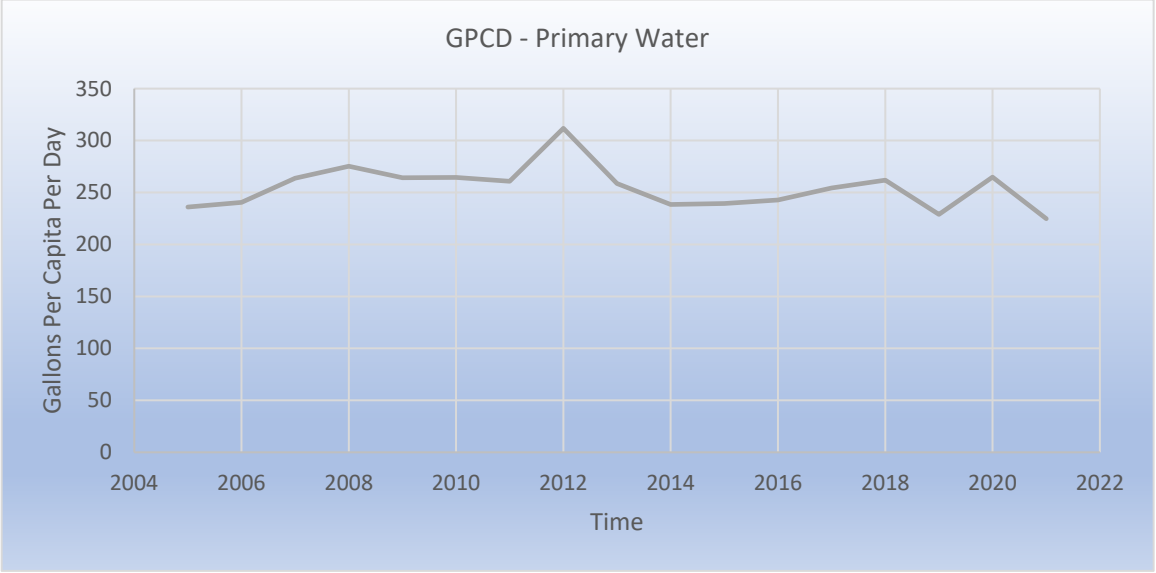
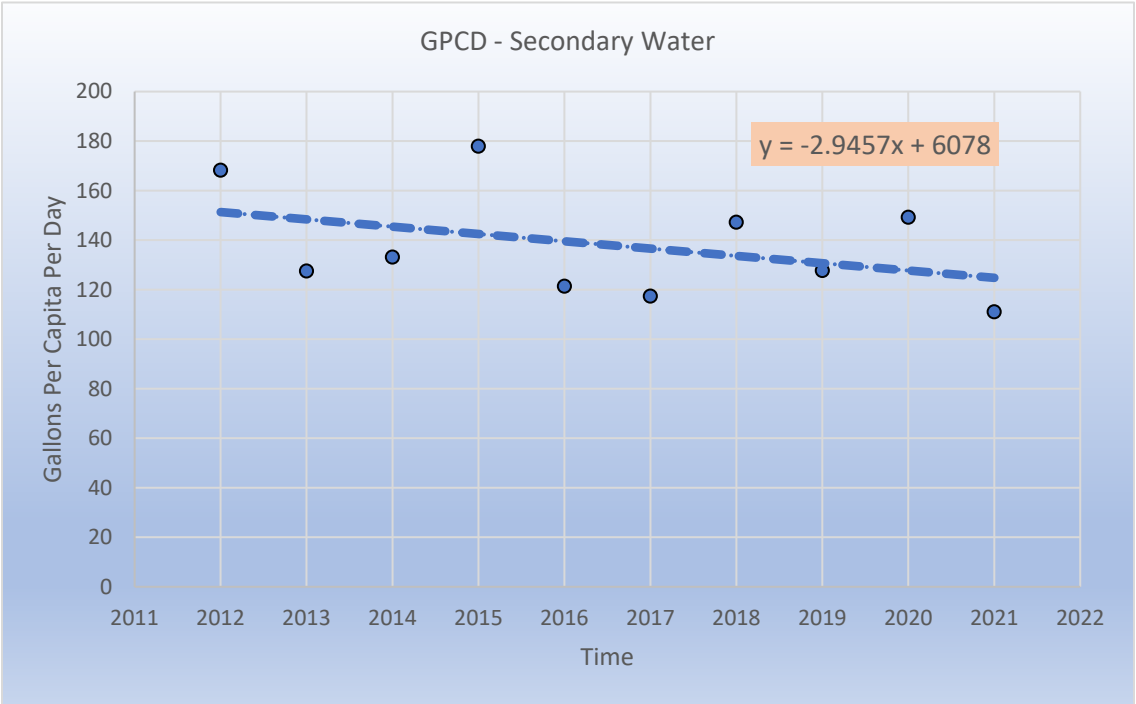


Chart 7: Gallons Per Capita Per Day Efficiency



WATER MEASUREMENT

Primary Water

All connections to the primary water system are metered through District-wide standardized meters and "radio read" equipment, with data reported through the District's Supervisory Control and Data Acquisition system (SCADA). Meters are routinely maintained and replaced according to the District's established schedule. In addition to the measurement at the customer's individual meters, the District precisely meters and monitors all water diverted at its four existing well sources through its integrated SCADA system.

Secondary Water

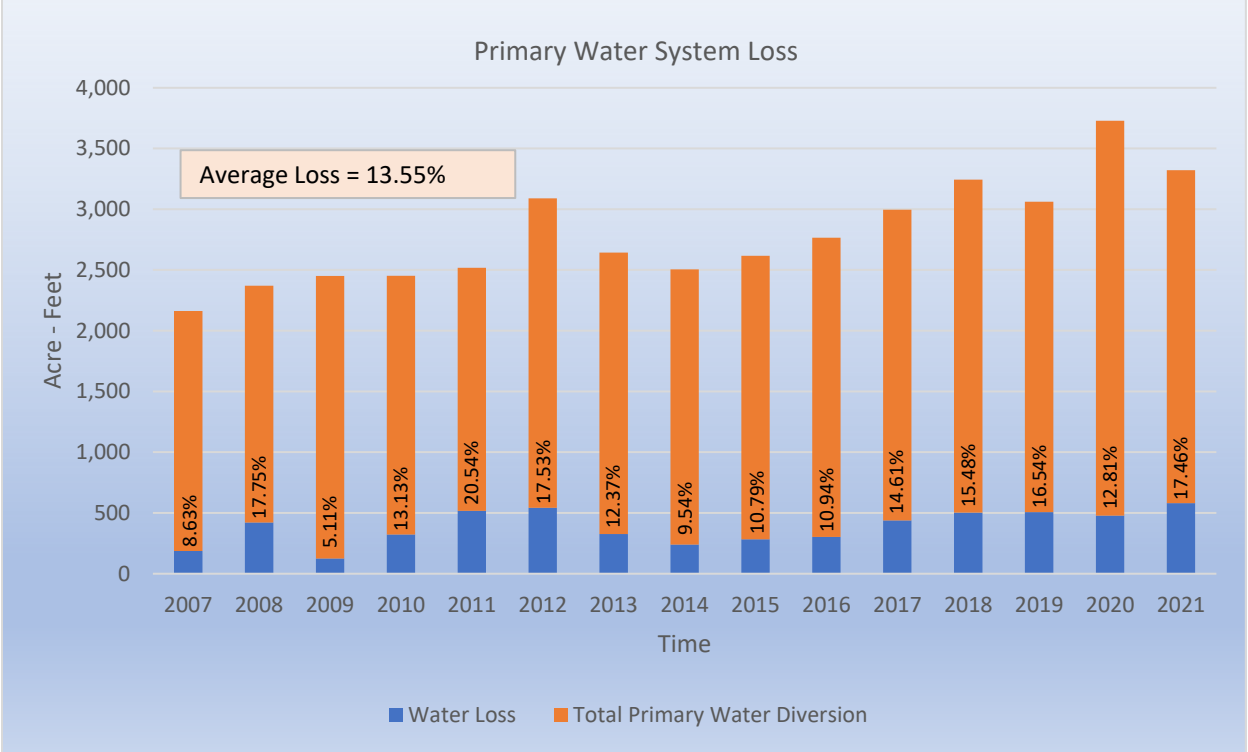
As previously described, the District's users of secondary water are few but substantial in terms of use per user. As a result, there are no "connections" to a standard secondary water system. Rather, there are well sources that directly feed the customers. *Table 6: Existing Secondary Water Sources* previously shown, describes each of the six secondary sources, and the place of application. Four of the sources are controlled with meters at the wellhead. Two of the sources are artesian wells, with both controlled and free flowing conditions that are not metered, and one source contains an inoperable meter. Water measurement from the two non-metered sources is derived by manual flow test measurements conducted periodically for reporting purposes. As expected, it is visually apparent that a greater variance of year-to-year water use is reported for secondary water vs primary water (see Charts 6 and 7). This is likely a result of both an actual higher variance in secondary use, but also a reflection in a less frequent and less precise measurement process. Because of the higher year to year variance in reported secondary water use, *Chart 5: Gallons Per Capita Per Day Efficiency* is expressed as a trend line rather than a line chart.

SYSTEM WATER LOSS

The District experiences water system losses between the identified well sources and the individual customer meters. These loses are typical of any water system and are generally defined as "unaccounted for", meaning that the water lost in the transmission and distribution system is not necessarily easy to identify in a specific quantitative nature. It is most commonly attributed to normal exfiltration, water line breaks, leaking joints, fire hydrant flushing, broken or misfunctioning meters, and low flow – non detectible flow on larger compound meters, etc.

Primary Water

Chart 7: Primary Water System Loss



Since 1995, the District has conducted consistent activities to identify and fix water system losses which include the following investigations and mitigations.

- Retain a professional (such as American Leak Detection) as part of a regular maintenance program to perform leak surveys predominantly targeted to the District's aging system. Replace leaking lines, joints, and appurtenances.
- Identify illegal connections to the system, which are not metered.
- Inspect, repair and replace fire hydrants with faulty foot valves and other components.
- Residential meter replacement program – replace older meters that "under register".
- Retain divers approximately every five years to clean and inspect the District's water storage reservoirs. Repair leaks and perform preventative maintenance.
- Perform mandatory inspection services for new construction to ensure new water systems are installed and tested according to the strict requirements of the District.

Secondary Water

The secondary water system does not contain a pipeline distribution network, with the exception of the onsite golf course irrigation system. Generally speaking, pipelines associated with the secondary system are transmissive in operation (i.e. directly feed the customer from the well source). Therefore, it is difficult it to measure the system losses in this manner. Furthermore, aside from the irrigation water used to irrigate the golf course and adjacent green belt, secondary water is used to fill the golf course ponds and the Stansbury lake. It is also difficult to quantify the losses in practical terms as they include substantial evaporation and percolation. Therefore, the District does not have a method to monitor or measure such system losses.

The District does conclude that system losses are in part due to percolation, and since 2014, the District partners with the Stansbury Park Service Agency to improve the existing ponds on the golf course. Approximately once per year, the District and Agency retain a licensed contractor to drain one pond, excavate, and install a synthetic impermeable geo-liner. At the same time the control structures are upgraded, which increase efficiency, and portions of the ageing interconnecting pipelines are either lined, rehabilitated, or replaced.

SYSTEM BILLING

Billing Rates within the District Boundary

The District incentivizes water conservation by implementing a graduated rate schedule based on increasing water use.

INSIDE DISTRICT WATER RATES	**Minimum Water = $17.55 per qtr / $5.85 per month / $0.20 per day**		
Residential Quarterly	$17.55 Base Rate / 0 gallons to 25,000 gals - 5/8" & 3/4" meter size $28.35 Base Rate / 0 gallons to 25,000 gals - 1" meter size $0.75 per 1,000 gallons / 25,001 gallons up to 50,000 gallons = $18.75 $1.05 per 1,000 gallons / 50,001 gallons to infinite		
Commercial Monthly Meters - Rate Table #141-147	**Meter Size**	**Rate**	**Compound**
(0 to 8300 gallons) 3/4" size $ for 0 usage $0.85 per 1,000	5/8" & 3/4"	$5.85	3", 4", 6" etc. w/ Level 1 = Meter Level 2 = 0-infinite
	1"	$9.45	
	1.5"	$14.82	
	2"	$23.73	**Compound**
Meters - Rate Table #140	3"	$44.54	1", ¾ or 5/8" Level 1 = $0.00 for Level 2 = 8,301 to infinite
0-8,300 gals infinite $0.85 per 1,000	4"	$74.32	
	6"	$148.86	
	8" & 12"	$236.91	
School, Church, Commercial	8,300 = meter size amount + $0.85 per 1,000 gallons /8,301 gallons to infinite		
Golf Course Irrigation 12" no use/no charge in winter	8,300 = meter size amount + $0.50 per 1,000 gallons /8,301 gallons to infinite,		
SSA Irrigation &Greenbelts no use/no charge in winter	8,300 = meter size amount + $0.15 per 1,000 gallons /8,301 gallons to infinite,		

NTV Car Wash	8,300 = meter size amount + $0.85 per 1,000 gallons /8,301 gallons to infinite

COMMERCIAL BUILDINGS EQUIPPED WITH FIRE WATER LINE = $7.32 PER MONTH

Billing Rates within the District Boundary

The District also has provisions for water service outside of the boundary, which includes certain commercial connections in the Lake Point Township, The Great Salt Lake Marina, and other special cases for which the board may approve in the future for service.

OUTSIDE DISTRICT WATER RATES

Residential Quarterly	$33.75 Base Rate / 0 gallons to 25,000 gallons - 5/8” & 3/4" meter size $54.52 Base Rate / 0 gallons to 25,000 gallons - 1” meter size $1.40 per 1,000 gallons / 25,001 gallons up to 50,000 gallons = $35.00 $1.75 per 1,000 gallons / 50,001 gallons to infinite		
Commercial Monthly	**Meter Size**	**Rate**	**Hydrants**
(0 to 8300 gallons) gallons	5/8” & 3/4"	$11.25	$2.00 per 1,000
	1”	$18.17	
	1.5”	$28.49	
	2”	$45.64	
	3”	$85.66	
	4”	$142.92	
	6”	$286.26	
	8” & 12”	$455.58	
Outside Commercial	8,300 = meter size amount + $1.50 per 1,000 gallons / 8,301 gallons to infinite		
State Park	8,300 = meter size amount = $142.92 + $1.00 per 1,000 gallons / 8,301 gallons to infinite Rate table # 188 4” = $142.92 for 0 use & 0 to infinite $1.00 per 1,000 Rate table # 189 3/4" = $0.00 for 0-8,300 gals & 8,301 to infinite $1.00 per 1,000		

West Erda Improvement District

In 2017 the Stansbury Park Improvement District entered into an agreement with Tooele County to make a connection to the West Erda Improvement District (WEID), and provide service. The service to WEID consisted of certain system improvements, including transmission and distribution piping. The County procured a bond to fund improvements, and Stansbury Park Improvement District agreed to take ownership and maintenance of the new system improvements. As customers in WEID abandon their private wells and make a connection to the system they will be annexed in to the District. On June 20, 2017 the District adopted a Water Use Assessment Fee for the former customers of the West Erda Improvement District. The assessment fees are based on the limited water rights have been and will be transferred to the District, and water conservation is further incentivized based on a Tiered water assessment structure.

Fixed Monthly Fee (Culinary Water Service)

$105.00 Per Residential Connection
Water Allocation: 30,416 Gallons Per Month (Average) 365,000 Gallons Annually

Monthly Fire Suppression Fee

$20.00 Per Single Family Dwelling
Assessed only to lots which do not receive culinary water service.

Annual Overage Fees for Culinary Water Service (In Excess of 365,000 Gallons):

Tier 1	Tier 2	Tier 3
365,000 to 415,000 gallons (50,000 gallons)	415,001 to 465,000 gallons (50,000 gallons)	465,001 +
$3.00 / 1,000 gallons	$4.50 / 1,000 gallons	$6.00 / 1,000 gallons

- Customers are responsible to track their own annual water use.
- Overage fees are evaluated and billed annually.
- Customer water allocation is derived from a single connection, water use of 1.49 ac-ft. (1.12 ac-ft measured at the customer's meter). This is equivalent to 1.0 domestic connection, ¼ acre of irrigated landscaping, and 1.43 Equivalent Livestock Units.

Non-Metered Water

While all of the secondary sources shown on Table 7 are maintained and operationally managed by the District, many of these assets are owned by the Stansbury Park Service Agency. These sources deliver water to the Service Agency's "facilities", and with the exception of the Gordon Well No. 2, water use is not billed by the District.

Table 7: Secondary Water Source Ownership

Well Designation	Ownership
Gordon Well No. 1	Stanbury Park Service Agency
Gordon Well No. 2	Stanbury Park Improvement District
17th Hole Tee Well	Stanbury Park Improvement District
Millpond Pump	Stanbury Park Service Agency
Well A	Stanbury Park Service Agency
Test Well 4 (Not Currently Used)	Stanbury Park Improvement District

In conjunction with Tables 6 and 7, it is recommended that the District work with the Stansbury Park Service Agency to install accurate, working meters on all secondary sources, in order to better obtain, record, and evaluate secondary water use, and to ensure that conservation goals are on track, as described in the subsequent section.

WATE9R CONSERVATION GOAL

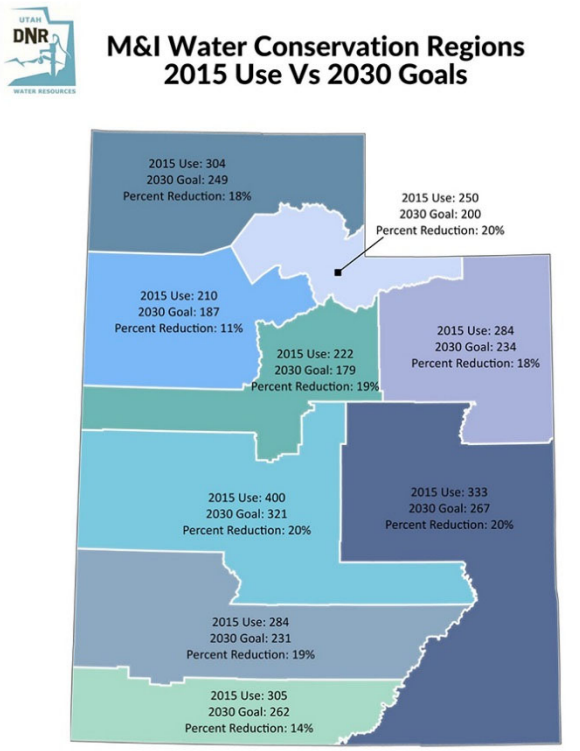
WATER CONSERVATION GOAL

Primary Water

"In November 2019, the Utah Division of Water Resources finalized the state's Regional Water Conservation Goals, which are established for nine regions around the state for municipal and industrial (M&I) water conservation…"
~ https://water.utah.gov/regional-conservation-goals/

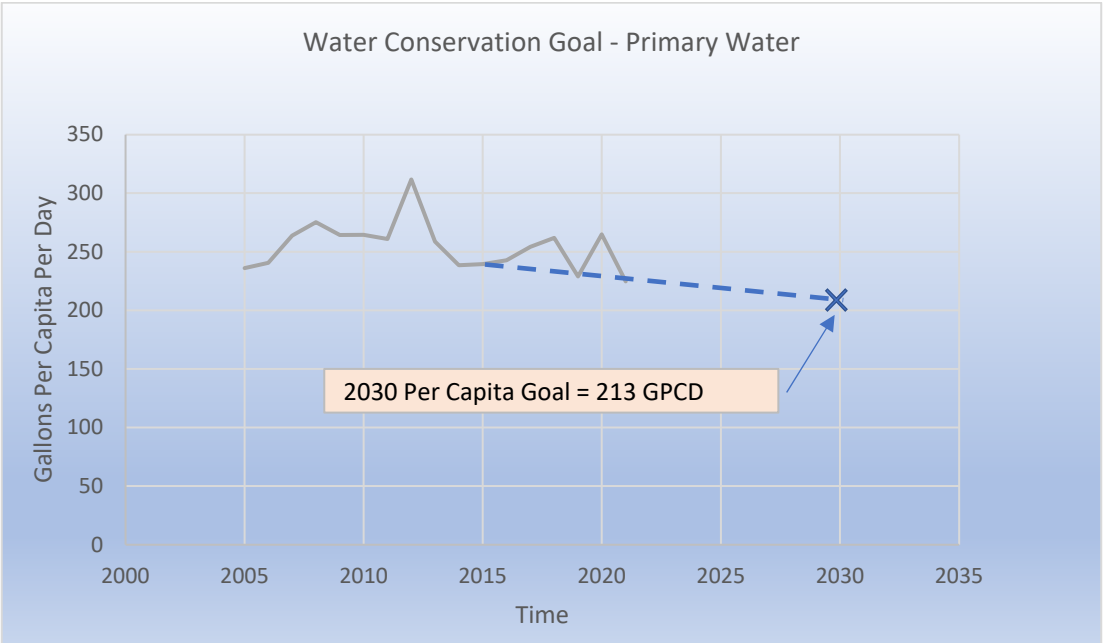
The District is in the Salt Lake region, and aligns its goals with the state's goals, which targets the per capita water use at 187 GPCD by year 2030. The resulting Salt Lake region goal is an 11% decrease with a baseline comparison to year 2015.

The District has adopted a similar goal of an equivalent 11% reduction in per capita use from its baseline year of 2015. This equates to a 2030 per capita use of 213 GPDC.



A regional approach allows the goals to be tailored for nine different regions and takes into account climate, elevation, and each region's characteristics.
Note: Use is measured in gallons per capita per day.

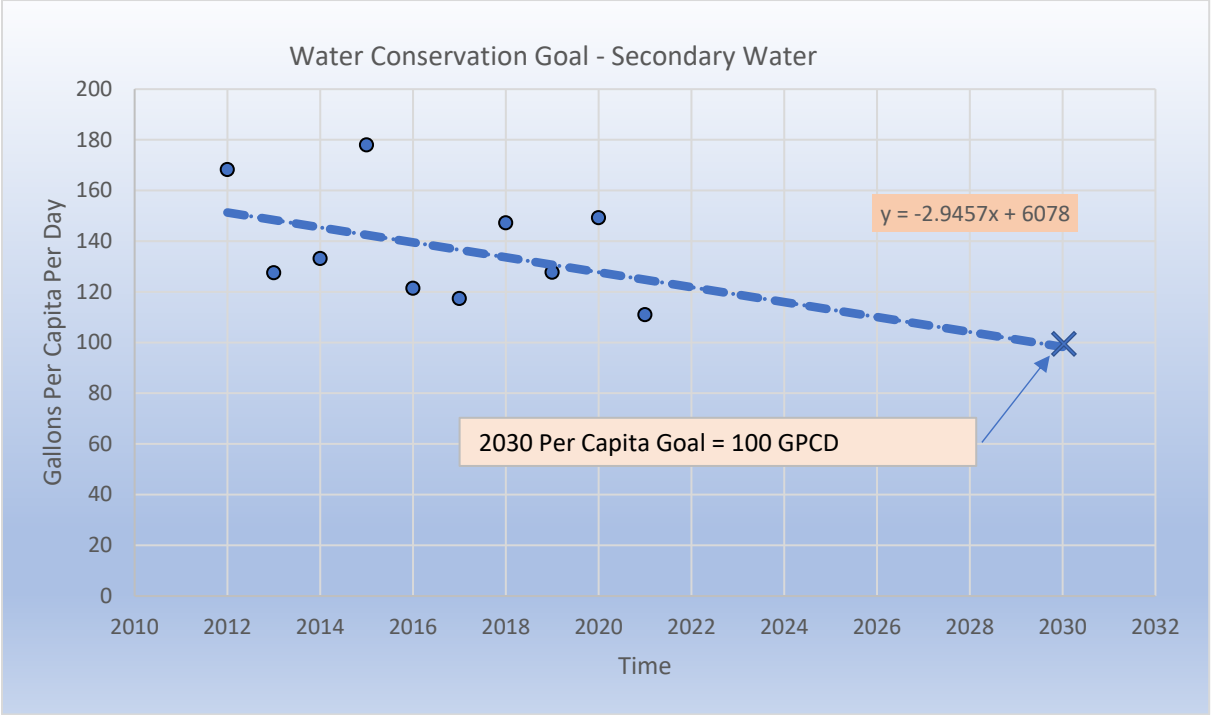
Chart 8: Water Conservation Goal – Primary Water



Secondary Water

For consistency, the District has established a secondary water conservation goal in terms of per capita water use. The 2030 goal is 100 GPCD. This is based on a continuing decline in the historic trend expressed in Charts 7 and 9, and has a mathematical equation and descending slope of 2.95.

Chart 9: Water Conservation Goal – Secondary Water



WATER CONSERVATION PRACTICES & INITIATIVES

The District's water conservation management is primarily focused on its primary water sources and delivery. The reason for this, is that these are the assets under the District's full ownership, operation, and control, and which the District holds nearly all of the its water rights.

GOVERNING BODY

The District is governed by a three-member Board of Trustees.

Chairman	Jacob Clegg	jclegg@ensignutah.com
Member	Neil Smart	neil@smartbenefits.co
Member	Brock Griffith	brockg@cgconst.com

The District is managed under the Board's direction by:

General Manager	Brett Palmer	brettpalmer2007@yahoo.com

These four individuals comprise the water conservation committee, responsible to oversee the efficiency goals, practices, and initiatives of the *Water Conservation Plan.*

PUBLIC AWARENESS & EDUCATION

The District's most effective means of communication to the public is directly through physical and electronic billing notices. The District sends periodic communication regarding awareness and education, which are focused on the following objectives.

- Make residential, commercial, institutional, and industrial water users aware that the District has adopted a Water Conservation Plan, which plainly states what the District's water reduction goals are.
- Reinforce from time to time, what the public understands about regional drought conditions, and that such conditions are applicable on a local "District" level.
- Promote awareness and established tools and resources already created by programs such as Slow the Flow, the Governor's Action Plan for Water, Utah Water Savers, etc.

The District continues to work with the governing local municipalities overlapping the District's service areas, both present and future, to promote water-wise landscaping methods, and to enact water conservation minded ordinances and development requirements.

FINACIAL INCENTIVE TO CONSERVE

As presented in the billing section of this plan, the District contains three subsets of customers

- Within the District boundary
- Outside of the District boundary
- The West Erda Improvement District (WEID)

Each group of users contains its own specific set of service conditions and parameters. One

common parameter is that the user rates for each customer type are graduated in terms of unit cost per gallon. The tiered rate structures are designed to promote water conservation, and discourage and penalize excessive water use, and to keep the users within the bounds of the water rights set aside for the various land use classifications.

WATER SYSTEM MAINTENANCE & EFFICIENCY

Since 1995, the District has initiated a number of best management practices (BMPs) to improve the water delivery system in terms of efficiently, reduction in water losses, and measurement. The District has continued these practices and endeavors to add new practices and improve ongoing maintenance and replacement programs. The District reiterates a list of its practices below.

- Retain a professional (such as American Leak Detection) as part of a regular maintenance program to perform leak surveys predominantly targeted to the District's aging system. Replace leaking lines, joints, and appurtenances.
- Identify illegal connections to the system, which are not metered.
- Inspect, repair and replace fire hydrants with faulty foot valves and other components.
- Residential meter replacement program – replace older meters that "under register".
- Retain divers approximately every five years to clean and inspect the District's water storage reservoirs. Repair leaks and perform preventative maintenance.
- Perform mandatory inspection services for new construction to ensure new water systems are installed and tested according to the strict requirements of the District.
- Update and revise regularly, the District's standard engineering construction details and technical specifications, to ensure high quality water systems are designed and constructed within the District.
- Include maintenance projects in the District's long-term capital improvement plan, which includes water replacement projects under the Stansbury Lake.

LOCAL GOVERNMENT AND LAND USE ORDINANCES

The District serves multiple land use authorities, including the newly formed Erda City (2021), Unincorporated Tooele County, and the Lake Point Township. The District does not have the legal authority to create zoning ordinances, set and enforce landscape policy and requirements, or control land use in any manner. Therefore, it is not within the District's prevue to incorporate such practices in its water conservation plan. However, the District does have within its control the ability to promote and participate in interlocal government consortiums and partnerships, that can discuss water use in the Tooele Valley, and lead out to form common goals and objectives that involve local governmental ordinances and policies. Furthermore, the District does set water rights policy, and has the ability to control water use (to a limited extent) through water rights conveyance from development, which in turn has an impact on the cumulative water used among its customers, most particularly in regards to the amount of irrigation area that can be irrigated.

ANNUAL WATER USE AUDIT

The District collects water use data at the beginning of each year, and updates its historic data base of water use. The District collects water use at each of its diversion points, and at the individual customer meters. The data is analyzed and results reported for the following core elements.

- Population growth
- Connections added by land use
- Equivalent Residential Connections (ERCs)
- Annual water loss
- Annual unit average and peak demands
- Source demand
- Storage demand
- Sewer treatment plant influent and effluent hydraulic loading

The District uses this information to track progress in water use efficiency, and self-evaluation in meeting water conservation goals and objectives.

EMERGENCY RESPONSE

In times of extreme water shortage, the District implements the following protocall.

- Step 1: Shut off water service to all Stansbury Park recreational facilities, golf course, and public green belts.
- Step 2: Implement a Drought Mitigation Plan.
- Step 3: Formally notify residential, commercial, institutional, and industrial users of specific water use restrictions.

-Sample Notifications-

STANSBURY PARK IMPROVEMENT DISTRICT

Water Supply Status Report and Request to Conserve
May 15, 2015

Stansbury Park Improvement District (SPID), the public water supplier serving the Stansbury Park community, has received calls from concerned citizens wondering if watering restrictions will be imposed as a consequence of this year's near record low snow pack and the drought which has continued during recent years. We are aware that several water suppliers along the Wasatch Front have already imposed or plan to impose outside watering restrictions this summer, and there are reports that irrigation water suppliers in Tooele County will be imposing, in some cases, severe restrictions due to an extremely reduced water supply.

The water suppliers most directly impacted by this year's lack of snow are those whose water supply is comprised primarily of surface water, meaning water running in streams and springs, which is impounded and stored in reservoirs. The severe lack of run-off from this year's diminished snow pack has resulted in very low reservoir levels and a limited supply of water to be distributed among the shareholders and customers of these suppliers.

SPID, on the other hand, receives its culinary water supply entirely from groundwater sources, including 4 underground water wells ranging from 500-800 feet deep. The deep groundwater aquifers from which these wells draw water are influenced by annual precipitation, but according to studies it is estimated that it may take up to 15 years for surface water to percolate through the soils, sediment and rock formations to reach these aquifers. Historically, over this long period of time, the cycles of plentiful moisture and drought tend to even out the impact somewhat.

The first historical water level data was reported in 1970, when SPID's first well was drilled, (Well 1). In 1970 the water level in Well 1 was measured at 25 feet below the surface. In 1977 SPID's second culinary well was drilled, (Well 2) which is about 600 feet west of Well 1. The water level in Well 2 measured one foot below the surface. There was a 24' change in water level between the two wells from 1970 to 1977. As a comparison, in April of 2004, the water level in Well 2 measured 19 feet below the surface, still more than was measured in 1970 but less than was measured in 1977. 2015 measurements show the water level holding steady at 19 feet.

Fluctuations in groundwater levels do occur, based upon the total precipitation from year to year, this results in drawdown fluctuations in water levels each year depending upon the time of year and the withdrawals required to satisfy the water demand of our customers, primarily for irrigation.

Notwithstanding the foregoing, SPID's board of directors feels that it is important for our customers to contribute in a responsible way in conserving the vital water supplies of the State. Thus, even though current water levels in our wells do not dictate placement of a mandatory restriction on water use in our community, the board nevertheless strongly encourages all residents to voluntarily exercise prudence and good judgment when considering their water needs, in an effort to avoid the imposition of watering restrictions should such become necessary.

We strongly suggest that we all be water-wise in preserving and protecting this vital natural resource upon which we all depend – for life.

Please implement the following water-wise suggestions, as a minimum:

1. Do not water when the wind is blowing, in the middle of the day, or when it's raining.
2. Reduce the amount and frequency of watering times. Keep your grass alive; AVOID having a nice plush green lawn.
3. For areas with sloping landscape, or areas prone to have standing water, implement shorter watering periods with more frequency to allow the clay soil time to absorb the water, rather than allowing it to pond, or run off the grass.
4. Showers can be taken, avoid filling the bathtub; do not let water run in the tap unnecessarily.
5. Install water wise fixtures, and repair toilets and other fixtures that leak.

Additional Water Information

Water for the golf course and golf course ponds are fed by two secondary irrigation wells located near Village Boulevard and Kravers. The Stansbury Lake, receives residual water from the golf course ponds in addition to water from the Millpond, and a few small artesian wells.

The Stansbury Service Agency is responsible for maintaining the parks and greenbelt irrigation systems, ponds and lakes, and all other recreation facilities. All questions regarding these facilities should be directed to the Service Agency.

Stansbury Park Service Agency: (435) 882-6188

Stansbury Park Improvement District: (435) 882-7922

STANSBURY PARK IMPROVEMENT DISTRICT
Recommendations and Considerations During Drought

On March 17, 2021, Gov. Spencer Cox issued an Executive Order declaring a state of emergency due to drought conditions. The entire state of Utah is in a drought. 2020 was one of the hottest and driest summers on record, our snowpack was well below average this year, and soil moisture is at an all-time low. Taking action now is critical-especially because we don't know how long these drought conditions will continue. The following bullet points are recommendations that the State of Utah Department of Water Resources has suggested. Please do your part to protect our precious natural resource.

- Limit outdoor irrigation to 2 days per week, then 1 day per week if drought continues through the spring and summer. Avoid watering on windy days, in the middle of the day, or when it's raining.
- Postpone new landscape projects and planting trees until a wetter year.
- Avoid using water for washing driveways and sidewalks.
- Use a shower rather than a bath tub and keep time in the shower to a minimum.
- Consolidate laundry, avoid running taps for an extended period of time.
- Install waterwise fixtures and repair leaky toilets other fixtures that may be leaking.

RESOURCES:
utahwatersavers.com - Offers statewide residential rebates for smart irrigation controllers and toilet replacement.
Localscapes.com – Jordan Valley Water Conservation District is offering free online LocalScape classes this year. LocalScape guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
Cwel.usu.edu/watercheck – Utah State University Extension offers free water checks in some areas of the state. Water checks help homeowners better understand their lawns water needs. DIY instructions are also online for homeowners outside of areas offer water checks.
Slowtheflow.org – The Governors Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on this website.
Surveymonkey.com/rFameOrShame – Residents can report water waste by filling out the form.
If you have questions, please call Stansbury Park Improvement District office at 435-882-7922.

ONGOING EVALUATION AND CONSIDERATIONS

LOCAL GOVERMENTS

As previously described, the District does not have any legal land use authority, and is limited in the its ability to incorporate and enforce waterwise landscape practices, and other water conservation through zoning, land use, and zoning regulations. However, the District places an emphasis on coordinating with and providing education to the municipal entities that do control land use, but do not necessarily have a pulse on local water resources.

REGIONAL COALITION

Beginning in February 2020, The District began spearheading the formation of an Interlocal Tooele Valley Water Management Council, under the authority of the Utah Interlocal Cooperation Act, Title 11, Chapter 13 of the Utah Code Ann. 1953, as amended (the "Act"). The participating entities include both private and public water providers in north Tooele County.

- Stansbury Park Improvement District
- Lake Point Improvement District
- Tooele City
- Grantsville City
- Tooele County
- Oquirrh Mountain Water Company
- Erda Acres Water Company, and
- Lincoln Water Company.

The entities all recognize that surface and ground water resources in north Tooele Valley are limited, and that the demand for the same will increase as development continues. The council is intended to remain as a nonbinding organization, having an objective, among other things, to engage monthly and/or regularly to advise, plan, and otherwise work together in sharing, preserving, protecting, and where possible, augmenting and enhancing the critical and limited water resources currently existing, or that may otherwise exist or become available in the valley.

This council is a first of its kind in the Tooele Valley, and is a leap forward in the advancement of regional cooperation in managing and conserving the valley's water resources. The District considers itself a critical member of the council due to the District's establishment in the heart of North Tooele County, and strategically located at the center of the most predominant un-developed areas in north Tooele Valley.

ONGOING POLICY EVALUATIONS

One of the most productive means to manage and control water use, is to control and reduce the amount of outdoor (irrigation) water among residential users (the overwhelming majority of land use in Stansbury Park and in Erda City). One of the most effective ways to reduce irrigation water use, is to reduce and limit the amount of areas that are landscaped, requiring irrigation. As previously described, there are two ways to approach this objective.

1) Control landscaping through land-use ordinances and zoning.
The District continues to coordinate with the various municipal entities to find common ground and move in a coordinated direction toward water conservation through limited landscape.

2) Control irrigation water use through water right policy.
In 2014 the District began evaluating water rights and the correlation to irrigable areas for residential development in association with the Ironwood Water Right Dispute. As result, the District measured and evaluated the irrigable areas of 826 individual single-family lots, comprising a representative cross section of lot sizes within the District. From this data, the District developed an accurate and reliable baseline of ratios of irrigable area to lot size. This enabled the District to more accurately assess the requirement for water rights.

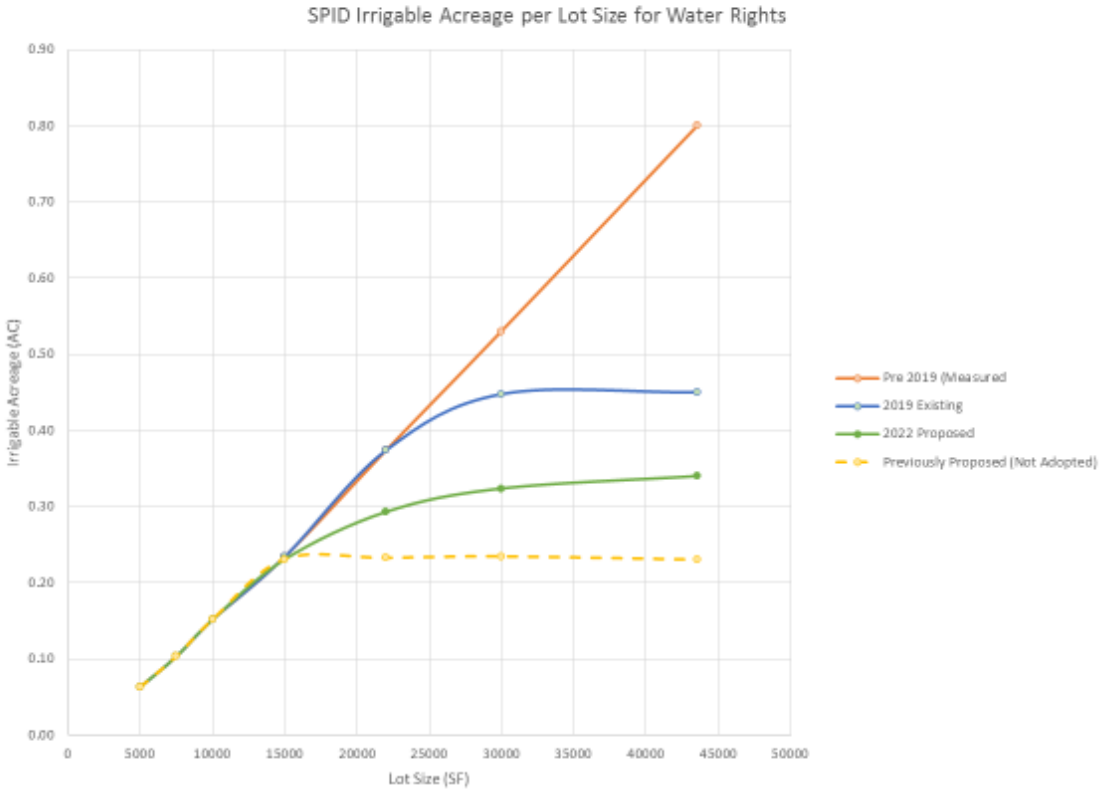
In 2019 the District added upon this database of unique information by creating an updated water rights policy. Among other things, the District imposed a cap on allowed irrigable area for its future, larger single-family lot developments. This was a step forward in enacting policy that was conservation minded.

From October 2021 to January 2022, the District has conducted additional evaluations and considerations in further amending its water rights policy by extending more limits on the irrigable areas of single-family lots. This is a result of development pressure and annexation requests in Erda City and Unincorporated Tooele County, where zoning requires only larger single-family lots (1 acre and larger). During three separate board meetings, the Trustees and General Manager evaluated and entertained considerations to further restrict the irrigable areas on a broader distribution of lot sizes. Provided below is a representation of those considerations.

Graphical Analysis

Lot Size (sq. ft.)	Upper Band Lot Size (sq. ft.)	Pre 2019 (MEASURED) Ratio of Irriable Area	2019 Existing Ratio of Irrigable Area	2022 Proposed Ratio of Irrigable Area	Previously Proposed Ratio of Irrigable Area	Pre 2019 (MEASURED) S.F	Pre 2019 (MEASURED) ACRE	2019 Existing S.F	2019 Existing ACRE	2022 Proposed S.F	2022 Proposed ACRE	Previously Proposed (not adopted) S.F	Previously Proposed (not adopted) ACRE
4000-4999	4999	0.55	0.55	0.55	0.55	2749.45	0.06	2749.45	0.06	2749.45	0.06	2749.45	0.06
5,000-7,499	7,499	0.6	0.6	0.6	0.6	4499.40	0.10	4499.40	0.10	4499.40	0.10	4499.40	0.10
7,500-9,999	9,999	0.66	0.66	0.66	0.66	6599.34	0.15	6599.34	0.15	6599.34	0.15	6599.34	0.15
10,000-15000	15000	0.68	0.68	0.67	0.67	10200.00	0.23	10200.00	0.23	10050.00	0.23	10050.00	0.23
15,001-22,000	22,000	0.74	0.74	0.58	0.46	16280.00	0.37	16280.00	0.37	12760.00	0.29	10120.00	0.23
22,001-30,000	30,000	0.77	0.65	0.47	0.34	23100.00	0.53	19500.00	0.45	14100.00	0.32	10200.00	0.23
30,001-43560	43560	0.8	0.45	0.34	0.23	34848.00	0.80	19602.00	0.45	14810.40	0.34	10018.80	0.23

Graphical Analysis



Representative Water Rights Requirements

Lot Size (sq. ft.)	Existing Ratio of Irrigable Area to Total Lot Area	New Ratio of Irrigable Area to Total Lot Area	2019 Existing Representative Water Right ac-ft	New Representative Water Right Requirement
4,999	N/A	0.55	N/A	**0.50**
7,499	0.6	0.6	0.61	0.61
9,999	0.66	0.66	0.75	0.75
15000	0.68	**0.67**	0.98	**0.97**
22,000	0.74	**0.58**	1.37	**1.15**
30,000	0.65	**0.47**	1.58	**1.23**
43560	0.45	**0.34**	1.59	**1.28**

~ Based on the upper band of the lot size tiers

The Board of Trustees places a high propriety on the continuing evaluation of water rights policy and its effect in conserving irrigation water through irrigable area limits. The Board will continue an ongoing process of evaluation of single-family lots, as well as exploring the potential to revise policy regarding other nonresidential land uses, which involves input and cooperation with the various land use authorities.

APPENDIX A
BOARD OF TRUSTEES RESOLUTION OF PLAN ADOPTION

APPENDIX B
HYDROLOGY AND SIMULATION OF GROUND-WATER FLOW IN THE TOOELE VALLEY BASIN, TOOELE COUNTY, UT, PAGE 17 EXCERPT

Extracted from *A 2009 Hydrology and Simulation of Ground-Water Flow in the Tooele Valley Ground-Water Basin, Tooele County, Utah Report provided by the United States Department of Interior and the United States Geological Survey, Page 17. figure 8 (Annual groundwater withdrawals for irrigation and municipal uses, 1968-2006, Tooele Valley groundwater basin, Tooele County, Utah.*

assigned 35 percent of the average annual streamflow (table 4). Starting in 1986, a pipeline diverted streamflow from North Willow, South Willow, and Box Elder Creeks for storage in Grantsville reservoir. No seepage is assumed from the pipeline system or reservoir, and recharge from these streams is considered negligible in 1986 and thereafter.

During spring snowmelt and directly after summer thundershowers, surface runoff and subsequent recharge can occur from ephemeral streams in drainages along the mountain fronts. In May 2005, ephemeral streamflow was observed and measured for Hickman Creek. At (C-5-6)20acc, about 2 mi upstream of the canyon mouth, flow on May 20, 2005, was 17.5 ft^3/s. Six miles downstream at (C-5-5)32abb, measured streamflow on the same day was 6.9 ft^3/s. This episodic streamflow was estimated to have lasted about 6 weeks. Recharge from this event is estimated to be about 900 acre-ft and illustrates the potential variability in recharge, particularly during years of above average precipitation.

Table 4. Average annual recharge from streams, 1971–2000, Tooele Valley ground-water basin, Tooele County, Utah.

[All amounts in acre-feet, rounded]

Stream	Average annual streamflow	Recharge from streams
Pine Canyon (Big Springs)	900	900
Middle Canyon Creek	3,200	1,100
Settlement Canyon Creek	7,200	0
North Willow Creek[1]	4,000	1,400
South Willow Creek[1]	5,100	1,800
Box Elder Wash[1]	600	200
Hickman Canyon	600	200
Clover Creek	3,600	1,300
Soldier Canyon	2,700	900
Total	**27,900**	**7,800**

[1] Starting in 1986, loss from North Willow Creek, South Willow Creek, and Box Elder Creek is considered negligible because streamflow is piped to Grantsville reservoir.

Discharge

Discharge from the Tooele Valley ground-water basin is by withdrawal from irrigation, industrial, public-supply, and domestic stock wells; discharge to springs and drains; and evapotranspiration. Little or negligible ground water is estimated to discharge directly to Great Salt Lake.

Wells

Discharge to wells from the Tooele Valley ground-water basin occurs by pumping and artesian flow (flowing wells). Estimated discharge to wells in 1939 in Tooele Valley was at about 7,000 acre-ft, almost all of it from flowing wells (Thomas, 1946, p. 230). The estimated total discharge to wells in 1962 was about 22,000 acre-ft (Gates, 1965, p. 25 and table 1). This threefold increase was due in part, to additional drilling and utilization of large diameter pumping wells for irrigation purposes. Starting in the late 1990s, pumping from municipal wells started to become a larger percentage of total discharge to wells. The estimated 1996–2005 average annual discharge from pumping wells is 14,000 acre-ft/yr. During that period, irrigation pumping ranged from 3,700 to 7,600 acre-ft/yr, and municipal and domestic/stock pumping ranged from 3,400 to 10,700 acre-ft/yr (fig. 8). Increased municipal pumping has changed the location of withdrawals, with more water being removed near the mountains from consolidated rock.

Pumping for industrial purposes was less than 1,000 acre-ft/yr during 1996–2005. As part of the remediation activities

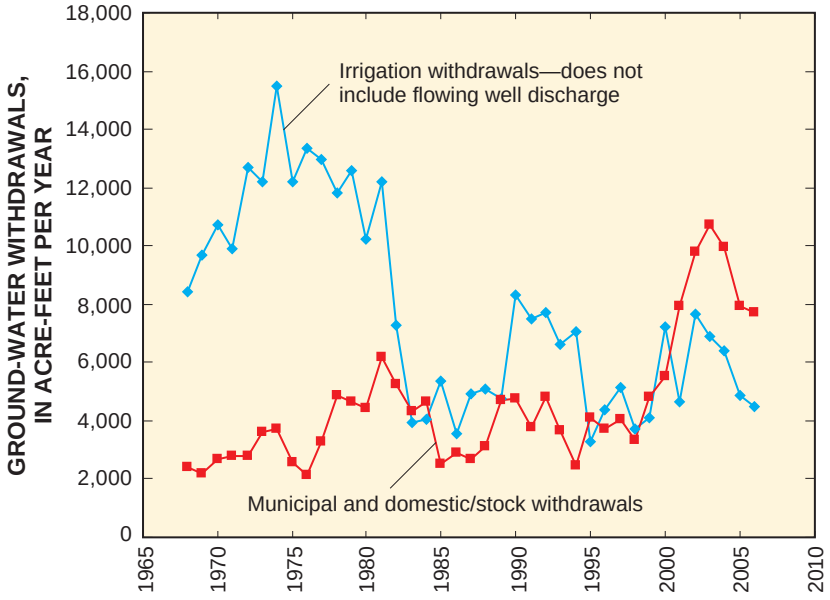


Figure 8. Annual ground-water withdrawals for irrigation and municipal uses, 1968–2006, Tooele Valley ground-water basin, Tooele County, Utah.