

CULINARY WATER IMPACT FEE FACILITIES PLAN

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TABLE OF CONTENTS

<u>Sect</u>	ion Page
١.	Executive Summary1
A.	CERTIFICATION of Compliance with Utah State Code (11-36a-306(1)):
11.	Introduction4
III.	Demographics5
A.	Existing Equivalent Residential Units5
В.	Culinary Water Demand6
C.	Projected future connections7
IV.	Impact Fee Facilities Plan
A.	Identify the existing level of service (E-LOS)8
В.	Establish a proposed level of service (P-LOS)11
C.	Identify any excess capacity to accommodate future growth at the proposed level of service12
D.	Identify demands placed upon existing public facilities by new development activity at the proposed level of service
E.	Identify the means by which the political subdivision or private entity will meet those growth demands
F.	Recommended 10-year plan to increase Source Delivery capacity (a.k.a Impact Fee Facilities Plan)

Appendix A – Maps

- Map 1 Wolf Creek Resort / WCWSID Master Land Use Map
- Map 2 Wolf Creek Water and Sewer Improvement District Culinary System Map at Buildout

Appendix B – Letters

- Letter 1 System-Specific Minimum Sizing Standards
- Letter 2 Fire Flow Requirements

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INDEX TO TABLES

Table Page

Table 1 – Summary of Potential Methods to Increase Source Delivery Capacity, 2021-2030	2
Table 2 – Culinary Water	5
Table 3 – Culinary Water Facility Capacity Demand	6
Table 4 – Pipe Inventory	8
Table 5 – Water Rights Inventory	8
Table 6 – Source Delivery Inventory	9
Table 7 – Storage Tank Inventory	9
Table 8 – Existing Level of Service	10
Table 9 – Culinary Water Facility Proposed Levels of Service	11
Table 10 – Capacity Provided at E-LOS and Demanded at P-LOS	12
Table 11 – Facility Demands by New Development at P-LOS at Buildout	13
Table 12 – Estimated Additional Capacity Demand, 2021-2030	15
Table 13 – Summary of Potential Methods to Increase Source Delivery Capacity, 2021-2030	21

I. Executive Summary

The Wolf Creek Water and Sewer Improvement District (WCWSID, District) has retained Gardner Engineering to conduct a study of its current facilities and projections for growth and compile the following Impact Fee Facilities Plan (IFFP).

This Plan researches and documents the answers to several questions:

- 1. What facilities does the WCWSID have?
 - a. "Facilities" include:
 - i. Distribution (pipelines)
 - ii. Water Rights
 - iii. Source Delivery (wells, springs)
 - iv. Storage Tanks
- 2. How are those Facilities used?
 - a. This includes
 - i. Providing a certain level of service to all 1,250 active units within its service area;
 - ii. Providing service when feasible to existing lots, currently without an active water service.
- 3. What excess capacity does the WCWSID have in its Facilities to provide additional services?
- 4. How will the needs of existing platted lots and new development be met in the next 10 years (the "planning horizon")?
- 5. How much will it cost to meet the identified additional needs in the planning horizon?

WCWSID has adequate capacity in its existing Distribution, Water Rights and Storage Tank facilities through the planning horizon. WCWSID is currently not able to meet the Source Delivery demands of all active users, nor existing platted lots.

In 2019, due to inadequate Source Delivery capacity, the WCWSID Board of Trustees ceased issuing Can and Will Serve letters to Developers for culinary water service, unless the applicant provided the District with a legal and physical source of water equal to or greater than the anticipated demands of the applicant's ERUs.

Further, following identification of changes in flow and quality at culinary sources, it became clear that the District no longer had the Source Delivery capacity to provide the Level of Service required by the Utah Division of Drinking Water to its 1,250 active ERUs. Therefore, on July 27, 2021 the Board of Trustees ceased issuing to existing building lot owners final Can and Will Serve letters for new building permit applications.

WCWSID is actively pursuing additional Source Delivery capacity.

This IFFP helps to quantify the Source Delivery capacity requirements of the District related to service for active users and existing un-built lots. Further, this IFFP documents a plan for securing the Source Delivery capacity needed to meet and exceed the demands of these customers, and development of additional building lots within the Master Development Plan at the District's Proposed Level of Service (P-LOS).

The potential Source Delivery capacity improvement projects recommended for implementation within the planning horizon (2021-2030) are summarized in Table 1.

	Estimated Capacity	Estimated Increase in Supported Units		
Mathad	, ladea		Relative Cost	Relative
wiethou	Total Capacity if project	Total Capacity at P-LOS if	(\$/ERU)	Risk
	is as successful as	project is as successful		
	stated here (GPM)	as stated here (ERUs)		
		Existing capacity in terms		
Existing Source	170 554 GPM	of ERUs: 827.932	NΔ	NΔ
Delivery Capacity	170.334 01 101	(170.554 GPM / 0.206 GPM		1
		per ERU)		
A.a- Purchase WCIC	4.540 GPM Added	22.039 Increase	18,150	IOW
shares (10 shares)	175.094 GPM Total	849.971 Total	10,150	2011
B.a- Develop and Equip	20 GPM Added	97.087 Increase	1/ 200	
East Well	195.094 GPM Total	947.058 Total	14,300	IVILDIOIVI
B.b- Re-drill Belnap	50 GPM Added	242.718 Increase		
Well	245.094 GPM Total	1,189.776 Total	5,550	пюп
P-LOS will be provided for the 1,250 active ERUs when a total Source Delivery capacity of 257.500 GPM				
	is av	ailable		
B.c- Construct New	50 GPM Added	242.718 Increase	7 400	
Well, TBD	295.094 GPM Total	1,432.494 Total	7,400	HIGH
B.d- Construct New	50 GPM Added	242.718 Increase	7 000	
Well, east of Highlands	345.094 GPM Total	1,675.212 Total	7,800	HIGH
P-LOS will be provided for the 1,588 active and inactive ERUs when a total Source Delivery capacity of				
	<u>327.128 GPM</u> is available			
C.a- Re-Drill Warm	36 Added GPM	174.757 Increase	11 100	
Springs Well	381.094 GPM Total	1,849.969 Total	11,100	нібн

TABLE 1 – SUMMARY OF POTENTIAL METHODS TO INCREASE SOURCE DELIVERY CAPACIT	гү, 2021-2030
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The WCWSID board of trustees is keenly aware of the need for additional source delivery capacity to meet the needs of all currently active users and provide capacity to serve future ERUs. The board of trustees is actively pursuing multiple methods to increase capacity and will continually monitor the capacity and needs of the District and take appropriate actions.

The Weber Basin Water Conservancy District has commissioned a study to review water resource needs in the Valley. It is anticipated that creation of a regional water authority may be a recommendation of the study. If the results and recommendations of the study are in the best interest of the District's current customers, the District will consider ways to appropriately include the regional facilities in future versions of the District's IFFPs and IFAs.

Not addressed in this document are the facility capacities of WCWSID's secondary water and sanitary sewer utilities. All three utilities must simultaneously have sufficient capacity before additional growth is feasible. Refer to District policies and IFFPs for those utilities for availability of capacities in each utility.

A. CERTIFICATION of Compliance with Utah State Code (11-36a-306(1)):

To the extent the following items are addressed in the IFFP dated March 25, 2022, Gardner Engineering certifies that the following impact fee facilities plan:

- 1. Includes only the costs of public facilities that are:
 - a) allowed under the Impact Fees Act; and
 - b) actually incurred; or
 - c) projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
- 2. Does not include:
 - a) costs of operation and maintenance of public facilities;
 - b) costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is supported by existing residents;
 - c) an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
- 3. Complies in each and every relevant respect with the Impact Fees Act.

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Dan White, P.E.

II. Introduction

The facilities of WCWSID are addressed in the areas of *Distribution, Water Rights, Source Delivery* and *Storage*. Water Rights, Source Delivery and Storage are considered Non-Distribution Facilities. This document has been prepared based on capacity and use data current as of November 1, 2021.

The Impact Fee Act requires that an impact fee only be imposed when based on an Impact Fee Facilities Plan (IFFP, Plan). An IFFP must include the following¹:

- A. Identify the existing level of service (E-LOS) for each public facility.
- B. Establish a proposed level of service (P-LOS) for each public facility.
- C. Identify any excess capacity to accommodate future growth at the proposed level of service
- D. Identify demands placed upon existing public facilities by new development activity at the proposed level of service.
- E. Identify the means by which the political subdivision or private entity will meet those growth demands identified in D, above, through
 - a. "Selling" the excess capacity in C, or
 - b. The acquisition of new capacity, which acquisition would be financed through grants, bonds, interfund loans, impact fees and anticipated or accepted dedication of system improvements.

WCWSID has retained Gardner Engineering to help develop an IFFP to plan to meet the needs of the culinary water system. The District will retain a separate consultant to review and establish the District's impact fee based on this Plan.

¹ Utah Code 11-36a-302(1)

III. Demographics

A. Existing Equivalent Residential Units

"Existing Equivalent Residential Units" (ERUs) refers to active users and existing but un-built building lots. These customers are summarized in Table 2.

UNIT TYPE	ACTIVE UNITS ²	INACTIVE UNITS ³	TOTAL NUMBER OF EXISTING ERUS
SINGLE-FAMILY RESIDENTIAL	632 ⁴	317 ⁵	949
MULTI-FAMILY RESIDENTIAL	603 ⁶	20 ⁷	623
Commercial	15 ⁸	19	16
TOTAL UNITS	1,250	338	1,588

 TABLE 2 – CULINARY WATER UNITS, NOVEMBER 1, 2021

Note that a "Unit" refers to an ERU, whether that dwelling unit has common walls (multi-family) or is in a stand-alone structure (single-family), except in the case of commercial accounts. The District will analyze future commercial connections on a case-by case basis and assess fees based on the estimated peak day use of the commercial connection, relative to an average residential connection, which assessment will determine the impact of the commercial connection on the system's Facilities in terms of ERUs.

Only a portion of the Inactive Units shown above have paid connection and impact fees. For Inactive Units, payment for said service, through collection of an impact fee, appropriately determined in accordance with State Law, must first be made to obtain service. Figure 1 illustrates the number of active and inactive ERUs relative to their payment status.

It is significant to note that "active" units are those that are either physically connected to the culinary system, or those that have a final, unexpired Can and Will Serve letter. Final Can and Will Serve letters have been issued by the District only for those ERUs that have paid the appropriate culinary water impact fee, provided water rights and a physical source equal to or greater than their anticipated demand. Those ERUs with final, unexpired Can and Will Serve letters are authorized by the District to physically connect to the culinary water system on their separate schedules and begin to utilize the culinary water Facilities of the District. Those ERUs with final, unexpired Can and Will Serve letters are considered "active" because the culinary water Facilities to serve them may be used without further authorization by the WCWSID Board of Trustees.

² Units that are either currently physically connected to the culinary water system and can take wet water, or units that have a Can and Will Serve letter issued by the District that authorizes them to connect to the system on their timing and take wet water.

³ Units that are neither physically connected nor have a Can and Will Serve letter.

⁴ 594 physically connected plus 38 with Can and Will Serve letters.

⁵ 130 Single-family units have paid all connection and impact fees (in force at the time the fees were paid) required by the District but have not been issued a Can and Will Serve Letter. 187 Single-family units have applied for culinary water service but have not paid a connection or impact fee. Both "Paid" and "Unpaid" units pay a monthly standby fee.

⁶ 555 physically connected plus 48 with Can and Will Serve letters.

⁷ 20 Multi-family units (Powder Canyon) have applied for culinary water service, but have not paid a connection or impact fee. "Unpaid" units pay a monthly standby fee.

⁸ All physically connected.

⁹ 1 Commercial unit has paid all connection and impact fees (in force at the time the fees were paid) required by the District, but has not been issued a Can and Will Serve Letter.

Please note that on July 27, 2021, WCWSID ceased issuing to existing lot owners final Can and Will Serve letters for building permit applications, regardless of payment status. The moratorium will be reassessed from time to time and may be lifted as determined prudent by the District's Board of Trustees.

FIGURE 1 – ACTIVE AND INACTIVE CONNECTIONS BY PAYMENT STATUS



B. Culinary Water Demand

The system-specific sizing standard for WCWSID was established in July 2020 by the Utah Division of Drinking Water (DDW) using source supply and ERU values provided by the WCWSID to the Utah Division of Water Rights (DWRi) for the years 2017-2019. The calculated average demand per connected active ERU, plus some inflation multiplier called a variability factor has been set by both the District and the DDW as the definition of an Equivalent Residential Unit (ERU).

Note that water for irrigation purposes is provided through a secondary water system, so culinary water use at each connection is for indoor purposes only. **Each residential unit, regardless of the type of unit, is considered an ERU.** Commercial connections are considered some multiple of an ERU, based on anticipated peak day and annual uses, and the impact of each commercial connection will be assessed by the WCWSID in terms of ERUs.

Capacity demand placed on District facilities, based on data collected by the District, and provided to the Utah State Division of Water Rights, is summarized in Table 3¹⁰.

Capacity Criteria	Demand
Water Rights	67,751 GAL/YR/ERU (0.208 AF/YR/ERU)
Source Delivery	296 GAL/day (0.206 GPM)/ERU
Fire Suppression Storage	540,000 GAL
Equalization Storage	185 GAL/ERU

TABLE 3 – CULINARY WATER FACILITY C	APACITY DEMAND
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¹⁰ Refer to the full *System Specific Minimum Sizing Standards* letter, dated July 13, 2020 in Appendix B.

C. Projected future connections

Based on the currently adopted master land use plan for Wolf Creek Resort, included in Appendix A, an additional 1,250 active ERUs¹¹ would be on the culinary water system at buildout within the District. Note that the *Master Land Use Plan* was most recently modified and adopted by the County Commissioners in 2014. The total number of 2,450 approved units shown on the *Master Land Use Plan* indicates the number of *residential units* approved by the County for construction within the WCWSID. The District anticipates that the water and sewer demand of commercial units will be more than 1 ERU each and plans plan to meet the demands of 2,500 ERUs.

Note that the *Master Land Use Plan* indicates the total number of units to be served by WCWSID at buildout and is *not* indicative of the current state of land development.

¹¹ 2,500 anticipated active ERUs at buildout less the 1,250 currently active ERUs.

IV. Impact Fee Facilities Plan

A. Identify the existing level of service (E-LOS)¹²

To identify the existing LOS, we must first inventory the District's capacity on November 1, 2021.

- 1. Inventory of Existing Facilities
 - a) Distribution

The WCWSID distribution system consists of 33.1 miles of pipe, from 4" diameter to 10" diameter as summarized in Table 4, below.

Pipe Diameter (in)	Length (ft)	
4	2,850	
6	40,200	
8	117,200	
10	14,600	
Total	174,850	
Total Miles	33.1	

TABLE 4 – PIPE INVENTORY

b) Water Rights

WCWSID water rights are summarized in Table 5.

Water Right Number	Nature of Use	Quantity (AF/YR)
35-13001 (E5492)	Municipal	872
35-5901 (E156)	Municipal	50
35-7755 (E2023)	Irrigation / Domestic	2
35-13987 (E6249) ¹³	Municipal	151.5
Total		1,075.5

TABLE 5 – WATER RIGHTS INVENTORY

¹² Reference: Utah State Code 11-36a-302(1)(a)(i)

¹³ The District filed an application with the State Division of Water Rights to combine three different contracts (300 AF, 2 AF and 1 AF) into a single water right. Said application was approved on 12-27-2021 under Exchange #E6249.

The contracted amount of 303 AF is for Municipal use, meaning that the water right can be used in either the culinary or secondary systems, as may be required in each system. The District anticipates that approximately ½ of the total amount may be used in the culinary system, as shown in this table. Such statement in no way limits the District's use of the mentioned water right.

A brief history of the 300 AF portion of this water right: Before 2013, the culinary and secondary water systems, which are now owned and operated by WCWSID, were owned and operated by the private Wolf Creek Resort (Resort). As a planning effort to meet the needs of future residents, the Resort contracted with the Weber Basin Water Conservancy District (WBWCD) for the right to divert 300 acre-feet (AF) of water for Municipal use. The Resort reorganized under bankruptcy in 2013, and WCWSID was organized as the public entity to own and operate the culinary and secondary systems serving the area. In the shuffle of reorganization, the 300 AF contract expired.

In 2018, the District recognized that the need for additional Municipal water rights would be satisfied to a significant extent by the expired 300 AF contract. The District negotiated with WBWCD to pay \$521,118.00 to reinstate the contract, with WCWSID as the contracting entity. That capital expense is impact eligible, with half of it collected through the culinary impact fee and half collected through the secondary impact fee.

c) Source Delivery

WCWSID has one active source of culinary water as shown in Table 6.

TABLE 6 – SOURCE DELIVERY INVENTORY ¹⁴	
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Source Name	Source capacity (GPM)
Warm Springs Artesian Well	170.554 ¹⁵
Total	170.554

d) Storage

Six existing storage tanks help establish the four pressure zones on the WCWSID system and are summarized in Table 7.

Facility Name	Facility Capacity (GAL)
Snowflake Tank	55,000
Wolf Creek Tank	250,000
Highlands Tank	400,000
Eden Hills Tank	50,000
Warm Spring/Artesian Wet Well	8,500
Retreat Tank	500,000
Total	1,263,500

TABLE 7 – STORAGE TANK INVENTORY

¹⁴ Active sources from the Division of Drinking Water's information portal: <u>https://waterlink.utah.gov/deqWater/reports.html?systemId=1694</u>, accessed 2022-03-24. The District has recently performed testing and is currently completing maintenance on the Wolf Creek Spring and Eden Hills Well. The resulting approved flow capacities are not yet known, but at this time the sources do not add to the District's culinary water Source Delivery capacity.

¹⁵ WCWSID is a shareholder of the WCIC. According to an agreement between the WCIC and WCWSID, the District is entitled to receive all flow from the Warm Springs above 0.8 CFS, *plus* the proportionate share of the agreed-upon 0.8 CFS represented by shares of WCIC owned by WCWSID. The reliable historic flow from the Warm Springs (at times the flow has been greater, but it has not gone below the "reliable historic flow") has been above 0.97 CFS. The WCWSID can rely on (0.97 CFS – 0.8 CFS) *plus* the District's number of owned shares (as of Nov.1, 2021), 207.66, divided by the total number of WCIC shares, 791, multiplied by the agreed-upon WCIC flow of 0.8 CFS, converted to terms of GPM for ease of reference: Reliable flow of culinary water for use by WCWSID from Warm Springs = ((0.97 CFS – 0.8 CFS) + (207.66 owned shares/791 total shares)*0.8 CFS)*448.8 GPM/CFS.

It is significant to note that WCWSID also leases a variable number of WCIC shares each year as available, which leases allow additional flow from the Warm Springs. The "leased" flow has not been included in this table because the leases may be unavailable at the share owners' discretion. The District currently leases 50 shares of WCIC. The District anticipates being able to continue to lease at least 42.00 shares until the landowners develop their properties and ownership of the shares is transferred to the District. The 42.00 shares allow additional flow of (42.00 shares * 0.8 CFS agreement to WCIC / 791 shares converted to GPM = 0.454 GPM/share) 19.064 GPM, which brings the source capacity up to **189.618 GPM**. However, WCWSID is conservatively planning based on owned capacity rather than relying on uncontrolled lease capacity.

- 2. The LOS provided to existing WCWSID customers is shown below:
 - a) Distribution

A hydraulic model of the WCWSID system was created in the computer modeling Software InfoWater by Innovyze. As predicted by the model, the minimum pressures required in public water systems, as set forth in R309-105 of the Utah Administrative Code, are met throughout the distribution system.

The Weber Fire District marshal in a letter to WCWSID dated July 8, 2020, indicated that the "highest demand building for fire flow would require 3,000 GPM for 3 hours or a total fire flow of 540,000 gallons." A copy of said letter is included in Appendix B. In a telephone conversation with Marshal Reed, he indicated that the required flow statement does not imply a mandate for the District to retrofit its distribution system. Instead, the statement indicates the flow and storage capacity targets the District should aim for if existing capacity allows and as future development or operations and maintenance projects take place.

The District can provide the target fire storage with existing facilities, which will help ensure duration of available fire flow at the flow rate that the existing distribution system can provide. A modeled flow of 2,000 GPM is available for the Pineview Lodge area and 1,000 GPM to 1,500 GPM at most other fire hydrants. Flows less than 1,000 GPM are available in older portions of the system where 4" diameter lines exist.

From the discussion with Marshal Reed, Gardner Engineering understands that the District should provide the stated volume in storage and the flow rate that the existing system can provide. Further, the District should plan to provide, as much as possible, given the configuration of the existing distribution system, fire flows in accordance with the 2018 International Fire Code to future developments.

b) Non-Distribution facilities.

Table 8 summarizes the Existing Level of Service (E-LOS), by dividing the available resources by the existing active units. Note that the E-LOS for Source Delivery is below that required by the DDW. E-LOS for other Non-Distribution resources is adequate or more than needed currently.

Capacity criteria	ERUs ¹⁶	Capacity ¹⁷	Existing LOS					
Water Rights	1,250	1,075.5 AF/YR	0.860 AF/YR/ERU					
Source Delivery	1,250	170.554 GPM	0.136 GPM/ERU ¹⁸					
Fire Suppression Storage		540,000 GAL	540,000 GAL					
Equalization Storage	1,250	723,500 GAL ¹⁹	578 GAL/ERU					

 $^{^{16}}$ Refer to the column labeled "ERUs" on Table 2 – Culinary Water on page 5.

¹⁷ Refer to Table 5 – Water Rights Inventory, Table 6 – Source Delivery Inventory or Table 7 – Storage Tank Inventory.

¹⁸ Note that the E-LOS for Source Delivery is less than the District and State standard noted in Table 9 – Culinary Water Facility Proposed Levels of Service on Page 11 and Appendix B.

¹⁹ Total storage capacity less the quantity reserved for fire suppression.

B. Establish a proposed level of service (P-LOS)²⁰

- 1. Minimum System-Specific Sizing
 - a) Distribution

WCWSID proposes that all new pipelines be constructed to provide pressures as required by the DDW²¹:

(a) 20 psi during conditions of fire flow (2,000 GPM near Pineview Lodge and 1,000 GPM+ for residences); with fire suppression flows experienced during peak day demand;

- (b) 30 psi during peak instantaneous demand; and
- (c) 40 psi during peak day demand.
- b) Non-distribution facilities

Anticipated capacity demand placed on non-distribution facilities within the District is discussed in Section III-B -

Culinary Water Demand, and summarized in Table 3 – Culinary Water Facility Capacity Demand on page 6. Table 9 brings these standards forward as the Proposed Levels of Service (P-LOS), and shows the total capacity demands for the current active users on the culinary system.

Capacity Criteria	Active ERUs ²²	Demand per ERU at P-LOS	Total Capacity Demand at P-LOS
Water Rights	1,250	0.208 AF/YR	260.000 AF/YR
Source Delivery	1,250	0.206 GPM	257.500 GPM
Fire Suppression Storage			540,000 GAL
Equalization Storage	1,250	185 GAL	231,250 GAL

TABLE 9 – CULINARY WATER FACILITY PROPOSED LEVELS OF SERVICE

²⁰ Reference: Utah State Code 11-36a-302(1)(a)(ii)

²¹ UAC R309-105-9(2).

²² Refer to Table 2 – Culinary Water on page 4.

C. Identify any excess capacity to accommodate future growth at the proposed level of service²³

a) Distribution facilities: For the purpose of this Plan, the only definable excess capacity in the distribution system is in the District's 10" lines.

There are no known records of installation costs for the following pipelines and each has an estimated 50% excess capacity, sufficient to meet demands through buildout.

- The 2,000-foot 10" line between the Wolf Creek Tank and the intersection of Elkhorn Drive and Wolf Creek Drive was constructed in 1985.
- The 1,800-foot 10" line between the Wolf Creek and Cobabe Tanks was constructed in 1998.
- The 1,950-foot 10" line between the Elkhorn Drive / Wolf Creek Drive intersection to just above Juniper Lane was constructed in 1998.
- The 1,200-foot 10" line in the Snowflake subdivision was constructed in 2001.
- The 2,750-foot 10" line above and into the Highlands was constructed in 2003.

In 2017, WCWSID constructed 3,100 lineal feet of 10" waterline from the Highlands tank main line to the entrance of the Bridges development at a total cost of \$440,000²⁴. An additional 1,800 lineal feet of 10" water line was installed in 2018 by a developer, for which there is no cost data, but the District anticipates that installation was at approximately the same unit cost as the mentioned 3,100 feet. It is estimated that there is roughly 50% capacity remaining in both pipes, which will be sufficient through buildout.

b) Non-distribution facilities: Excess capacity is herein calculated as the difference between the total demand at the existing LOS (E-LOS) and the proposed LOS (P-LOS) for the number of active ERUs.

Capacity criteria	Active ERUs	Total capacity provided at E-LOS ²⁵	Total capacity demand at P-LOS ²⁶	Excess capacity for use by add'l connections ²⁷
Water Rights (AF/YR)	1,250	1,075.5	260.000	815.500 ²⁸
Source Delivery (GPM)	1,250	170.554	257.500	-86.946
Fire Suppression Storage (GAL)		540,000	540,000	NA
Equalization Storage (GAL)	1,250	723,500	231,250	492,250

$T_{ABLE} = 10 - C_{ABACITA}$				
TABLE IU - CAPACITI	FROVIDED A	DEIVIANDEDA	I F-LUS FUR	ACTIVE DIVITS

²³ Reference: Utah State Code 11-36a-302(1)(a)(iii)

²⁴ \$400,000 construction cost, \$40,000 professional fees.

²⁵ Refer to on Table 8 – Existing Level of Service on Page 10.

²⁶ Refer to Table 9 – Culinary Water Facility Proposed Levels of Service on page 11.

²⁷ Capacity provided at E-LOS less capacity demand at P-LOS. Example, Water Rights: 1,075.5 AF/YR provided at E-LOS - 260.000 AF/YR demanded at P-LOS = 815.5 AF/YR excess capacity for use by additional connections.

²⁸ As shown on Table 5 – Water Rights Inventory on Page 8, most of the District's water rights are Municipal and may be used in the secondary water system as well. The quantity shown here as "excess" will be fully utilized between both systems. No water to which the District has right and access will go to waste.

D. Identify demands placed upon existing public facilities by new development activity at the proposed level of service²⁹

1. Buildout scenario – this is a summary of the estimated total facility demands at buildout.

WCWSID anticipates 2,500 ERUs on the system at buildout, or 1,250 additional ERUs beyond the currently active ERUs. This is based upon the County-approved Wolf Creek Master Plan, not on currently available resources.

- a) Distribution facilities: Where an extension of the distribution system is needed to service new development, main lines should be a minimum of 8" diameter. Pressure reducing stations will also be needed to maintain proper operating pressures and circulation in the distribution system.
- b) Non-distribution facilities: Table 11 is given here for reference, to give an estimate of the magnitude of facility demand at that point in the future when all master planned units in the WCWSID service area have been constructed.

Capacity Criteria	Total Anticipated ERUs	Demand per ERU at P-LOS	Total Capacity Demand at P-LOS	Existing Capacity	Additional Capacity Needed to reach Buildout ³⁰
Water Rights (AF/YR)	2,500	0.208	520.000	1,075.5	NA
Source Delivery (GPM)	2,500	0.206	515.000 ³¹	170.554	344.446
Fire Suppression Storage (GAL)			540,000	540,000	NA ³²
Equalization Storage (GAL)	2,500	185	462,500	723,500	NA

TABLE 11 – FACILITY DEMANDS BY NEW DEVELOPMENT AT P-LOS AT BUILDOUT

- 2. 10-year planning horizon this is a summary of the estimated development and associated facility demands that may occur in the next 10 years. The remainder of this document should regularly be compared against actual development and demand needs and adjusted accordingly.
 - a) Distribution facilities: Where an extension of the distribution system is needed to service new development, main lines should be a minimum of 8" diameter. Pressure reducing stations will also be needed to maintain proper operating pressures and circulation in the distribution system.
 - b) Non-distribution facilities: In 2019, due to inadequate Source Delivery capacity, the WCWSID Board of Trustees ceased issuing Can and Will Serve letters to Developers for providing additional culinary water services in new subdivisions, unless the applicant

²⁹ Reference: Utah State Code 11-36a-302(1)(a)(iv)

³⁰ This column identifies the additional capacity (beyond the existing capacity identified in Table 8 – Existing Level of Service) that is needed before development can occur to the point of buildout. NA indicates that existing capacity is sufficient through buildout. Water Rights and Storage capacities are sufficient through buildout.

³¹ Note that the current Source Delivery deficiency for active ERUs identified in Table 10 – Capacity Provided at E-LOS and Demanded at P-LOS for Active Units on page 10 must first be satisfied before the Additional Capacity demand shown in this table would be a consideration.

³² It is estimated that no additional fire storage capacity will be required to reach buildout conditions.

provided the District with a legal and physical source of water equal to or greater than the anticipated demands of the applicant's ERUs.

Further, following identification of changes in flow and quality at culinary sources, it became clear that the District no longer had the Source Delivery capacity to provide the Level of Service required by the Utah Division of Drinking Water to its active ERUs. Therefore, on July 27, 2021, the Board of Trustees ceased issuing to existing building lot owners final Can and Will Serve letters for new building permit applications.

To estimate additional facility capacity demands that might occur if these restrictions on development and building were not in force, historic growth trends were analyzed to estimate potential future growth patterns. Historic trends are not a guarantee of future trends but give an indication of the growth that may occur.

The District is actively pursuing the development of additional Source Delivery capacity (See Tables 1 and 15). As a result of such active pursuit, it is hoped that sufficient capacity will be developed soon to satisfy the current Source Delivery deficiency for active ERUs, and existing, historically-developed building lots.

For illustration purposes and not to imply any commitment on the part of the District, if WCWSID develops sufficient Source Delivery capacity to allow removal of restrictions on Can and Will Serve letters for building permits for inactive ERUs by the end of 2022, it is estimated that 344 additional ERUs³³ would be active on the system by the end of 2030³⁴.

The estimated additional capacity demand in the planning horizon is indicated in Table 12. It is significant to note that **none of the identified additional demands will occur until the current Source Delivery capacity deficiency** identified in Table 10 – Capacity Provided at E-LOS and Demanded at P-LOS for Active Units on page 12 **is corrected**.

³³ Phone conversation with Annette Ames, WCWSID office manager, 2020-09-01. 2016 = 23 units; 2017 = 12 single-family + 14 Bridges + 24 Mountainside Phase 1; 2018 = 40 Retreat + 16 Eden Escapes; 2019 = 43 units. This is an average of 43 ERUs per year. If an average of 43 ERUs were connected in each of the 8 years from 2023 through 2030, 344 connections would be made in the planning horizon.

³⁴ The District received 25.5 shares of WCIC from developers in 2021. In exchange, development agreements covered an additional 56 ERUs (25.5 shares * 2.2 ERUs per share (See Section A on page 17 for calculation of ERUs per share of WCIC) = 56 Units). Forty-eight units are in the Pointe development and eight are for lots at other locations. The District anticipates that these ERUs will be among the first to build and are among the estimated 344 additional ERUs.

Capacity Criteria	Estimated Additional active ERUs, if no moratoria	Demand per ERU	Additional Capacity Demand at P-LOS	Current Capacity Deficit	Additional Capacity needed in planning horizon ³⁵
Water Rights (AF/YR)	344	0.208	71.552	NA	NA
Source Delivery (GPM)	344	0.206	70.864	83.032 ³⁶	153.896
Fire Suppression Storage (GAL)			NA ³⁷	NA	NA
Equalization Storage (GAL)	344	185	63,640	NA	NA

TARI F 12 -	ESTIMATED		C ΔΡΔCITY		2021-2030
TABLE IZ	LJIIVIAILU	ADDITIONAL	CAFACILI	DLIVIAND,	2021-2030

³⁵ This column identifies the additional capacity (beyond the existing capacity identified in Table 8 – Existing Level of Service) that is needed for development to occur at the rate experienced in the recent past. It is critical to not that the current Source Delivery capacity deficit must be corrected before the District would consider providing Can and Will Serve letters to any of the additional ERUs identified in this table.

NA indicates that existing capacity is sufficient through buildout. Water Rights and Storage capacities are sufficient through buildout.

³⁶ Refer to Table 10 – Capacity Provided at E-LOS and Demanded at P-LOS for Active Units on Page 12.

³⁷ Based on the author's prior experience with the Weber Fire Marshal related to other culinary water providers in Weber County, it is anticipated that no additional fire storage capacity will be required to reach buildout conditions.

E. Identify the means by which the political subdivision or private entity will meet those growth demands³⁸

The identified additional capacity demands may be met by a combination of "selling" the excess capacity identified in Table 10 – Capacity Provided at E-LOS and Demanded at P-LOS on page 12 or by the acquisition of new capacity. Acquisition of new capacity would be through either a) purchase of existing facilities currently owned by a different entity, or b) construction of new facilities.

1. Buildout scenario will not be considered in this document in any more detail than the anticipated facility capacity needs identified on *Table 11 – Facility Demands by New Development at P-LOS at Buildout* on page 13.

The more immediate needs of the District in the ten-year planning horizon are discussed and methods to meet those needs are explored in further detail on the following pages.

- 2. 10-year planning horizon
 - a) Distribution facilities: Existing facilities are considered adequate to provide the P-LOS for Distribution to new development. Where an extension of the distribution system is needed to service new development, main lines should be a minimum of 8" diameter with some PRVs as shown on Map 2 in Appendix A. The costs for the 8" lines and PRVs should be borne entirely by the new development.
 - b) Non-distribution facilities: Facility capacity improvements needed for the current planning horizon are discussed in the previous section (Section IV-D) and are summarized in Table 12 – Estimated Additional Capacity Demand, 2021-2030 on page 15.

Not addressed in this document are the facility capacities of WCWSID's secondary water and sanitary sewer utilities. All three utilities must simultaneously have sufficient capacity before additional growth is feasible. Refer to District policies and IFFPs for those utilities for availability of capacities in each utility.

Further discussion in this document is geared solely towards methods of increasing culinary Source Delivery capacity, as that is the only culinary facility capacity lacking through buildout. Note also that WCWSID is concurrently updating and implementing Impact Fee Facilities Plans for its secondary water and sanitary sewer utilities and the reader is referred to the respective IFFPs for those utilities.

The methods below summarize options under consideration by WCWSID for obtaining additional culinary Source Delivery capacity. The estimated costs of methods to increase Source Delivery capacity are planning level only and intended to be sufficient to cover the costs of needed improvements. The capacity improvements from implementation of each method are not guaranteed and are educated guesses. This IFFP should be reassessed and amended or updated from time to time to account for actual costs and capacity improvements.

³⁸ Reference: Utah State Code 11-36a-302(1)(a)(v)

The relative costs and risks of each method are also estimated and stated to help simplify assessment of the relative value of each. The indicated cost³⁹ and risk of each method should be construed as qualitative only.

- A. Purchase Wolf Creek Irrigation Company (WCIC) shares. According to an agreement between WCWSID and WCIC, WCWSID as a shareholder of WCIC, may divert
 - 1) All flow from Warm Springs in excess of 0.8 CFS (the mentioned 0.8 CFS is to be diverted to WCIC) and
 - 2) WCWSID's portion of said 0.8 CFS flow, based on the number of WCIC shares held by WCWSID.

Based on the mentioned agreement, WCWSID may divert its WCIC entitlement from Warm Springs for culinary use in the WCWSID system.

Each WCIC share held by WCWSID entitles the District to divert 0.454 GPM⁴⁰ from Warm Springs for use in the culinary system. At the P-LOS of 0.206 GPM/ERU, each share of WCIC can support 2.2 ERUs on the culinary system.

In the District's experience, the availability of shares for purchase is highly variable, in frequency, price and quantity. Although capacity improvement is relatively small for each share purchased, this is a real and very secure means of increasing Source Delivery capacity. Additional shares owned by WCWSID have the double benefit of increasing not only the WCWSID's interest in Wolf Creek for use in the secondary system, but also increasing WCWSID's proportional take of flow from the Warm Springs for culinary use.

No additional physical facilities or regulatory agency interaction would be needed to realize the increase of flow. The water is already flowing through the Warm Springs well house, so the District would simply have to redirect its portion of the additional flow from the WCIC supply line to the WCWSID supply line.

It is estimated that 10 shares at a cost of \$40,000 per share will become available in the planning horizon. Since this is the most definite method of securing additional Source Delivery capacity (the quantity and quality of water is already present and needs only to be purchased through acquisition of additional shares of WCIC), it is recommended that the District budget \$400,000 for an additional Source Delivery capacity of 4.540 GPM, which, at the P-LOS of 0.206 GPM, will support an additional 22.039 ERUs.

- i. Relative cost of WCIC share purchase method: \$400,000 / 22.039 ERUs ~\$18,150/ERU.
- ii. Relative risk of share purchase method: LOW

³⁹ Relative costs per ERC have been rounded to the nearest \$500 for convenience.

It is intended that the budget estimates developed in this IFFP be spent on any combination of efforts related to improving Source Delivery capacity and not be limited to the scope of work used here for development of budgetary costs.

⁴⁰ 0.8 CFS (WCIC agreed volume from Warm Springs) * 448.8 GPM per CFS (conversion to GPM) divided by 791 total shares of WCIC = 0.454 GPM from Warm Springs per share of WCIC.

- B. Drill a new well⁴¹ prior to implementation, the District's water rights should be reviewed to determine if a change application to add a Point of Diversion would be needed.
 - a. Develop and equip the recently constructed East Well. The East Well was constructed in early 2022 for \$800,000⁴². It is anticipated that the well can be tested, developed, equipped and tied into the system for an additional \$590,000⁴³ for a total source development cost of \$1,390,000⁴⁴.

Based on initial test pumping it is anticipated that the East Well will increase the District's Source Delivery capacity by 20 GPM⁴⁵.

- Relative cost of completing the East Well location: \$1,390,000/ (20 GPM / 0.206 GPM per ERU = 97.087 ERUs) ~\$14,300/ERU.
- ii. Relative risk of completing East Well: MEDIUM⁴⁶.
- b. Re-drill the "Belnap Well" in an equivalent nearby location. The driller's report for this well indicates that at the time of construction in 2002 it was artesian with a natural flow of 20 GPM, which suggests that the Belnap Well is drilled in a location and manner that a new well in an equivalent location would be a promising source for increasing Source Delivery capacity.

The well was originally drilled for an individual and is not constructed to drinking water standards. To construct a well to the standards of a public water supply well, the existing Belnap Well would act as a test well to guide the casing, screen and drilling method design of a new well. It is estimated that a new well would cost approximately \$1,349,000⁴⁷.

It is estimated, based on pump tests conducted by WCWSID on the existing Belnap Well in 2018, that a 24 hr pump test could be run on a new well at 75 GPM, which would result in the State classifying the well at a 50 GPM Safe Yield.

⁴¹ The District anticipates that costs for drilling wells may be as much as the cost to drill the East Well in early 2022, which met with considerable down-hole geologic difficulties. The District anticipates that the construction cost of the East Well is a safe unit budget number for all new wells in this Plan ((\$800,000 drilling + \$50,000 development + \$40,000 pump test) / 8 in * 540 ft) = \$206/in-ft.

⁴² The East well cost \$800,000 to complete an 8" finished well to a depth of 540'. This cost included well construction, site preparation and professional fees.

⁴³ It is recommended that the District assume 100 hours of pump development (in addition to the minimal rig development included in the drilling effort) at \$500/hr plus 2 weeks of pump testing at \$120/hr. Add to the well costs an estimated \$325,000 for equipping and housing, \$75,000 for yard piping and system tie-in plus \$100,000 for professional fees.

⁴⁴ \$800,000 + 100 hrs*\$500/hr + 336 hrs*\$120/hr + \$325,000 + \$75,000 + \$100,000 = \$1,390,000.

⁴⁵ The drill-rig-based pump test during construction indicated that the Highlands Well and the Eden Waterworks Company's Burnett Springs are hydraulically connected. It is anticipated that WCWSID will be able to conduct a pump test at 30 GPM without affecting flow from Burnett Springs. The allowed safe yield from the new East Well would be 2/3 the test flow rate = 30 GPM *0.67 = 20 GPM.

The agreement and the flow volumes herein are theoretical and would be governed by actual impact and detailed negotiations. The assumptions stated here shall not limit or bind the WCWSID.

⁴⁶ The pump test and negotiations with Eden Waterworks Company have not been finalized, leaving this method with risk.

⁴⁷ Unit cost of \$206/in-ft * 500' depth * 8" casing. Add to the well costs an estimated \$325,000 for equipping and a new well house, \$100,000 for a mixing methodology to improve average delivered water quality, install yard piping and system tie-in plus \$100,000 for professional fees: \$1,349,000.

- iii. Relative cost of Belnap Well method: \$1,349,000 / (50 GPM increase / 0.206 GPM per ERU = 242.718 ERUs) ~\$5,550/ERU.
- iv. Relative risk of re-drilling the Belnap Well: MEDIUM
- c. In a yet-to-be-determined location. It is hoped that the safe yield from any future well will be at least 50 GPM. The total estimated cost of developing a new well is \$1,793,400⁴⁸.
 - v. Relative cost of New Well method: \$1,793,400 / (50 GPM increase / 0.206 GPM per ERU = 242.718 ERUs) ~\$7,400/ERU.
 - vi. Relative risk of New Well method: HIGH
- d. In a yet-to-be-pin-pointed location "east of the Highlands Well". The WCWSID has conceptually sited a well east of the Highlands Well site on property within the District that appears to be a promising source of water. It is hoped that the safe yield from such a well will be at least 50 GPM. The total estimated cost of developing a new well is \$1,893,400⁴⁹.
 - vii. Relative cost of New Well method: \$1,893,400/ (50 GPM increase / 0.206 GPM per ERU = 242.718 ERUs) ~\$7,800/ERU.
 - viii. Relative risk of New Well method: HIGH

⁴⁸ Unit cost of \$206/in-ft * 800' depth * 8" casing = \$1,318,400. Add to the well costs an estimated \$325,000 for equipping and a new well house, an estimated 500 feet of 8" pipe to tie the new well into the distribution system at an estimated \$100 per foot of ductile iron pipe: \$50,000; and an estimated \$100,000 in professional fees: \$1,793,400.

⁴⁹ Unit cost of \$206/in-ft * 800' depth * 8" casing = \$1,318,400. Add to the well costs an estimated \$400,000 for equipping and a new well house, an estimated 500 feet of 8" pipe, to tie the new well into the distribution system at an estimated \$100 per foot of ductile iron pipe: \$50,000 (it is expected that development will fill in the majority of the distance between a future well and the existing distribution system, so a relatively short transmission line is included in this estimate, despite the substantial distance between a new well and the existing system); and an estimated \$125,000 in professional fees: \$1,893,400.

- C. Increase the flows of existing sources.
 - Redrill Warm Springs Well. It is estimated that increasing the currently-artesian Warm Springs Well from a 10" casing 500' deep⁵⁰ to a 16" casing 500' deep⁵¹ would result in an increased flow of 36 GPM⁵² at a cost of \$1,787,000.

The cost estimate to redrill the Warm Springs Well is based on the following assumptions: Verification of methodology: \$60,000⁵³ for the verification stage. Assuming the pump test indicates that an increased well casing will yield an increased flow of at least 10% above the 0.80 CFS that must flow to WCIC, it is estimated that well construction and equipping will cost \$1,940,000⁵⁴.

It is intended that the budget estimate for this or any other potential project identified in this IFFP be spent on any combination of efforts related to improving Source Delivery capacity and not be limited to the scope of work used to develop of a budgetary cost.

- i. Relative cost of Warm Springs Well method: \$1,940,000 / (36 GPM increase / 0.206 GPM per ERU = 174.757 ERUs) ~\$11,100/ERU.
- ii. Relative risk of Warm Springs method: HIGH because Warm Springs Well is currently the District's only approved source of culinary water, nothing should be done related to re-drilling in or near it that may jeopardize well flow until the District has more than enough Source Delivery capacity to replace the flow of the well, at least for the duration of the project. This project is a LAST RESORT.
- D. Join with a regional water district, yet unformed and in very preliminary conceptual stages. It is unknown how or when such an entity might be formed, and at what costs. WCWSID supports efforts by the County, State, and other public and private entities to explore the economic and political feasibility of forming a regional water authority that would provide an additional source of dependable, high-quality water. When costs and benefits related to the study and implementation of such a prospect are presented to the WCWSID, the Board of Trustees may consider financial support if doing so is in the best interest of the District's existing customers. If a corollary between cost and a

⁵⁰ As noted on the State Division of Water Rights site for Water Right Exchange E5492.

<u>https://waterrights.utah.gov/asp_apps/exprint/exprint.asp?exnum=E5492</u>; accessed 2021-10-20. The well construction data shown on these water rights pages are typically very general and likely not accurate representations of actual well construction. However, this is the only well construction data of which Gardner Engineering is aware.

⁵¹ Anticipated new well construction parameters. The budget-level cost estimate for this project is based a new well having a "larger" diameter, but drilled to the same depth. A 16" casing string was selected as the "larger" diameter.

⁵² Estimate only: capacity is strictly based on a theoretical flow increase of 10% above the currently-agreed flow provided to WCIC out of the Warm Springs Well, 0.80 CFS (noted on Page 17). Actual yield and cost will be utilized in subsequent Culinary Water IFFPs.

⁵³ 40 hours of design and permitting fees at an estimated \$150/hr plus an estimated \$20,000 in structural modifications to the existing well house to allow a pump test to be conducted on the well to verify the potential yield from redrilling, plus the pump tester's mobilization at an estimated \$10,000 plus 40 hours of pump test at an estimated \$600/hr.

⁵⁴ Unit cost of \$155/in-ft (it is anticipated that the drilling at Warm Springs will be less fraught with subsurface difficulties than the East Well, so an estimated drilling cost of 75% of the East Well unit cost is used at Warm Springs) * 500' depth * 16" casing. Add to the well costs an estimated \$500,000 for equipping and a new well house, \$75,000 for yard piping and system tie-in plus \$125,000 for professional fees: \$1,940,000.

specific source capacity can be made, said financial support may legally be supported by impact fees and would be reviewed by legal and financial consultants before financial support is offered.

- i. Relative cost of regional water district method: Unknown
- ii. Relative risk of regional water district method: Unknown
- F. Recommended 10-year plan to increase Source Delivery capacity (a.k.a Impact Fee Facilities Plan).

Table 13 summarizes the Recommended 10-year plan to increase Source Delivery capacity sufficient to meet anticipated demands through 2030. The listed projects will be implemented as feasible and are listed in no particular order, with the exception of #6 – Redrill Warm Springs Well, which is considered an option of last resort.

	Estimated Capacity Added	Estimated Increase in Supported Units		
Method		Estimated Increase in Supported UnitsRelative Costotal Capacity at P-LOS if project is as successful as stated here (ERUs)(\$/ERU)xisting capacity in terms of ERUs: 827.932NA(170.554 GPM / 0.206 GPM per ERU)18,15022.039 Increase 849.971 Total18,15097.087 Increase 	Relative	
Wethou	Total Capacity if project	Total Capacity at P-LOS if	(\$/ERU)	Risk
	is as successful as	project is as successful		
	stated here (GPM)	as stated here (ERUs)		
		Existing capacity in terms		
Existing Source	170.554 GPM	of ERUs: 827.932	NA	NA
Delivery Capacity		(170.554 GPM / 0.206 GPM per ERU)		
A.a- Purchase WCIC	4.540 GPM Added	22.039 Increase	10 100	
shares (10 shares)	175.094 GPM Total	849.971 Total	18,150	LOW
B.a- Develop and Equip	20 GPM Added	97.087 Increase	14 200	
East Well	195.094 GPM Total	947.058 Total	14,300	IVIEDIUIVI
B.b- Re-drill Belnap	50 GPM Added	242.718 Increase		шсц
Well	245.094 GPM Total	1,189.776 Total	3,330	поп
P-LOS will be provided for	or the <u>1,250 active ERUs</u> w	hen a total Source Delivery	capacity of 257	.500 GPM
	is av	ailable		
B.c- Construct New	50 GPM Added	242.718 Increase	7 400	нісн
Well, TBD	295.094 GPM Total	1,432.494 Total	7,400	nion
B.d- Construct New	50 GPM Added	242.718 Increase	7 800	нісн
Well, east of Highlands	345.094 GPM Total	1,675.212 Total	7,800	поп
P-LOS will be provided f	or the <u>1,588 active and in</u>	<u>active ERUs</u> when a total So	urce Delivery ca	apacity of
	<u>327.128 GP</u>	<u>M</u> is available		
C.a- Re-Drill Warm	36 Added GPM	174.757 Increase	11 100	нісн
Springs Well	381.094 GPM Total	1,849.969 Total	11,100	

TABLE 13 – SUMMARY OF POTENTIAL METHODS TO INCREASE SOURCE DELIVERY CAPACITY, 2021-2030

-----End of IFFP-----

Appendix A

Maps

Map 1 - Wolf Creek Resort / WCWSID Master Land Use Map

Map 2 - Wolf Creek Water and Sewer Improvement District Culinary System Map at Buildout

WOLF CREEK RESORT/WCWSID



LAND USE LEGEND

EXISTING DEVELOPMENT

FUTURE DEVELOPMENT MEDIUM DENSITY FUTURE DEVELOPMENT RESORT CORE

Lots receiving culinary water from the WCWSID that are not included in the Resort Totals, above; within the District Boundary.

Lots receiving culinary water from the WCWSID that are not included in the Resort Totals, above; outside the District Boundary.

1.442 UNITS

816 UNITS

2,258 UNITS

254 Units

53 Units

2,565 Units* "Unit" on this map = "Equivalent Residential Unit (ERU)" in the IFFP text

ACCESS TO GEERTSEN CANYON

OPEN SPACE

MASTER LAND USE PLAN



Appendix B

Letters

Letter 1 - System-Specific Minimum Sizing Standards

Letter 2 - Fire Flow Requirements



State of Utah GARY R. HERBERT Governor

SPENCER J. COX Lieutenant Governor

July 13, 2020

Department of Environmental Quality

> L. Scott Baird Executive Director

DIVISION OF DRINKING WATER Marie E. Owens, P.E. Director

Robert Thomas Wolf Creek Water and Sewer Improvement District PO Box 658 Eden, Utah 84310

Subject: System-Specific Minimum Sizing Standards Wolf Creek Water and Sewer Improvement District System #2001

Wolf Creek Water and Sewer Improvement District, System #29013, File #12144

Dear Mr. Thomas:

Based on the water use data submitted to the Division of Water Rights (DWRi), the following system-specific minimum sizing standards have been set for Wolf Creek Water and Sewer Improvement District water system:

Peak Day Source Demand – 296 gallons/day/ERC Average Annual Demand – 67,751 gallons/year/ERC Equalization Storage – 185 gallons/ERC Fire Storage – 540,000 gallons

These standards are effective as of the date of this letter. A summary of the water use data and calculations used to set the minimum sizing standards is attached for your reference. The Division plans to evaluate these standards every 3 years, or upon request.

Water System Background

The Wolf Creek Water and Sewer Improvement District (the System) operates a community water system in the Ogden Valley. The System currently has 1,100 active connected units that serve an approximate population of 3,021 people and 10 metered commercial connections. Approximately 50% of these are second homes resulting in the System's overall usage lower than what would be anticipated. The Systems operates three sources, two wells and one spring and six tanks with the associated distribution lines.

The System operates a fully integrated, SCADA monitored systems for culinary flow and a fully metered secondary irrigation water distribution system. The System's Board passed a resolution

Robert Thomas Page 2 of 3 July 13, 2020

prohibiting the use of culinary water for outside use with penalties for violating. Xeriscaping and conservation are encouraged through a tiered retail water rate for both culinary and secondary water.

The System operates a tertiary sewage treatment plant that the System may utilize for additional irrigation purposes. During the winter season, effluent is discharged through rapid infiltration basin resulting in no discharge from the plant. During the summer months the sewage treatment plant effluent is reused for primarily golf course irrigation through a permit with the Division of Water Quality. The secondary/irrigation water is source from the Wolf Creek Channel, through shares in the Wolf Creek Irrigation Company.

The System currently has a commitment to provide service to an additional 400 lots, which have been platted and based upon this water use demand. Each year 10 to 20 new homes are built and connected. These lots pay monthly standby fees to secure their water capacity.

The System's Board works diligently to resolve any water supply issues, provide clean water quality, and balance the needs of their customer, district landowners, and colleagues in the valley community of water and irrigation companies.

Minimum Sizing Standard Background

Per Utah Code 19-4-114, the information needed for the Division of Drinking Water (the Division) to set system-specific minimum sizing standards may be based on water use data submitted to the DWRi, or alternatively, a community water system can submit an engineering study to the Division if the water system's water use data is not representative of future use or the water system does not yet have actual water use data.

Actual water use data was available through DWRi and an engineering study was not submitted to the Division for review. Therefore, the Division analyzed the submitted DWRi water use data and sent a draft summary of the resulting system-specific minimum sizing standards to your office on July 8, 2020. The Division allowed for 30 days for your water system to review the draft system-specific minimum sizing. Your office replied on July 9, 2020 to verify the draft sizing standards are representative; therefore, the Division is setting system-specific minimum sizing standard for Wolf Creek Water and Sewer Improvement District water system.

Water Use Data Definitions

Peak Day Source Demand is the total flow into a public water system to meet the demand of the water system on the day of highest water consumption in a calendar year.

Average Annual Demand is the total quantity of drinking water flowing into a public water system within a calendar year.

Total Equivalent Residential Connections (ERCs) term represents the number of residential service connections and the number of equivalent residential connections for non-residential connections (commercial, industrial, institutional connections).

Robert Thomas Page 3 of 3 July 13, 2020

Minimum Equalization Storage requirement is a volume that is equivalent to the amount of water needed to meet the average day culinary demand for public water systems. Equalized storage per ERC is calculated by dividing the Average Annual Demand per ERC data by the number of operational days in a year.

Fire Storage was set based on information from Local Fire Authority on July 8, 2020. The local fire authority is Weber Fire District and the Fire Deputy Chief/Fire Marshal stated the highest demand for file flow would be 3,000 gpm for three hours for a volume of 540,000 gallons.

Storage Capacity

Your system compliant with the minimum storage capacity requirements based on your systems storage facilities and the storage minimum sizing requirement established in this letter.

Source Capacity

The Division has documentation of established safe yields for all of your system sources. Using total system wide safe yields and the source minimum sizing requirement established in this letter indicates your water system is compliant with minimum source capacity requirements.

If you have any questions regarding this letter, please contact Cheryl Parker, of this office, at (385) 271-7039, or Nathan Lunstad, Engineering Manager, at (385) 239-5974.

Sincerely,

Mathan Runted

Nathan Lunstad, P.E. Engineering Manager

CP/nl/mdb

Enclosures

- 1. Utah Department of Environmental Quality Division of Drinking Water Minimum Sizing Standards Summary Report
- cc: Michelle Cook, Weber-Morgan Health Department, mcooke@co.weber.ut.us Robert Thomas, Wolf Creek Water and Sewer Improvement District, RTHOMAS@WCWSID.COM Cheryl Parker, Division of Drinking Water, chparker@utah.gov David Reed, Weber Fire District, 2023 W 1300 N, Farr West, UT 84404 Coy Porter, Office of the State Fire Marshal, coyporter@utah.gov

DDW-2020-015770



Utah Department of Environmental Quality Division of Drinking Water Minimum Sizing Standards

WOLF CR	REEK WATER	AND SEWER ID			PW	S ID: UTAH290)13
THOMAS, R 3541 N ELK EDEN, UT 8 Phone: 801 Emergency RTHOMAS@	OBERT LYNN VIEW DR 4310 L-745-3454 Phone: 801-745 @WCWSID.COM	i-0834	System ⊺ Populati	Гуре: Communit on: 3,021	ÿ		
MINIMUN	M SIZING STAN	DARD					
	D	ate Standard Effective:	07/08/202	0			
Peak	Day Source Dem	and Per ERC (gal/day):	296				
Avera	age Annual Dema	and Per ERC (gal/year):	67,751				
Equalization Storage Per ERC (gal/day): 185							
MINIMUN	A SIZING STAN	DARD CALCULATION	S	Variability Factor			
	Data from	n these reporting years:	2017 to 2	019			
Max Peak Day Source Demand Per ERC (gal/day):				x 11% =	296		
Max Ave	rage Annual Den	nand Per ERC (gal/day):	63,319	x 7% = 6	7,751		
Max	Equalization Sto	orage Per ERC (gal/day):	173	x 7% =	185		
DWRi WA	TER USE DATA	REPORTED					
Data Year	Peak Day Source Demand (gal/day)	Average Annual Demand (gallons)	ERCs	Peak Demand per ERC (gal/day)	Avg Annual Demand per ERC (gal/year)	Equalization Storage per ERC (gal/day)	Op Days
2019	278,973	71,035,613	1,146	243	61,986	170	365
2018	291,400	69,080,504	1,091	267	63,319	173	365
2017	267,400	66,147,841	1,113	240	59,432	163	365
Variability			5%	11%	7%		
Data Year	Peak Month Average (gal/day)	Peak Month Average per ERC (gal/day)	Ratio of PD/ERC to Peak Month Avg/ERC				
2019	256,026	223	1.1				
2018	262,783	241	1.1				
2017	221,113	199	1.2				

CAPACITY CALCULATIONS FOR STORAGE			
STORAGE CALCULATION			
Equalization Storage per ERC (gal):	185		
Existing Storage (gal):	1,263,500		
ERCs:	1,146		
Required Storage w/o Fire Flow (gal):	212,010		
Required Fire Storage (gal)	540,000		
Required Storage w/Fire (gal)	752,010		
Storage Deficiency:	0	0.0%	
No Storage	Deficiency		

SYSTEM STORAGE AND SOURCE INVENTORY

	SYSTEM STORAGE DETAILS	5			SYSTEM SOURCE DETAILS		
ST005	WARM SPRING/ARTESIAN WET W	8,500	GAL	WS002	WARM SPRING ARTESIAN WELL	193	GPM
ST001	SNOWFLAKE TANK	55,000	GAL	WS001	WOLF CREEK SPRING	30	GPM
ST002	WOLF CREEK TANK	250,000	GAL	WS004	EDEN HILLS WELL	48	GPM
ST003	HIGHLANDS TANK	400,000	GAL		Source Totals:	271	GPM
ST004	EDEN HILLS TANK	50,000	GAL			=, =	•••••
ST006	RETREAT 500K TANK	500,000	GAL				
	Storage Totals:	1,263,500	GAL				



Board of Trustees

Kevin Ward Matthew Gwynn Jim Truett Sharon Bolos Kerry Gibson Michael Hancock Val Heiner Brad Ostler Scott VanLeeuwen

2023 W. 1300 N. Farr West, UT 84404 (801) 782-3580 Fax (801) 782-3582

July 8, 2020

To: Wolf Creek Water and Sewer Improvement District

RE: Fire Flow Requirements

After surveying the area served by Wolf Creek Water District, I believe our highest demand building for fire flow would require 3000 GPM for 3 hours or a total fire flow of 540,000 gallons.

Sincerely,

David Reed Deputy Chief/Fire Marshal Weber Fire District