SARATOGA SPRINGS

Life's just better here

DRINKING WATER IMPACT FEE FACILITY PLAN

(HAL Project No.: 360.63.100)

January 2025

HANSEN ALLEN & LUCE inc
ENGINEERS

CITY OF SARATOGA SPRINGS

DRINKING WATER
IMPACT FEE FACILITY PLAN

(HAL Project No.: 360.63.100)

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Project Engineer

HANSEN ALLEN & LUCE inc
ENGINEERS
50 YEARS
1974 - 2024

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IMPACT FEE CERTIFICATION

The Utah Impact Fee Act (Chapter 11-36a of the Utah Code) requires certifications for the Impact Fee Facilities Plan (IFFP). Hansen, Allen & Luce provides these certifications with the understanding that the recommendations in the IFFP are followed by City Staff and elected officials. If all or a portion of the IFFP is modified or amended, or if assumptions presented in this analysis change substantially, this certification is no longer valid. All information provided to Hansen, Allen & Luce is assumed to be correct, complete, and accurate.

IFFP Certification

Hansen, Allen & Luce, Inc. certifies that the Impact Fee Facilities Plan (IFFP) prepared for the drinking water system:

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.

HANSEN, ALLEN & LUCE, INC.

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SUMMARY OF DRINKING WATER IFFP

Per Utah Code Section 11-36a-502, this is a summary of the impact fee facilities plan designed to be understood by a lay person.

The proposed drinking water system impact fee for a single-family residential connection is $2,729 for 2025, which is an increase of $20 from the previous impact fee of $2,709 from 2022.

The proposed drinking water system impact fee for a single-family residential connection is $2,729, which is an increase of $20 from the previous fee of $2,709 from 2022.

The **purpose** of the Impact Fee Facility Plan (IFFP) is to comply with the requirements of the Utah Impact Fees Act (Chapter 11-36a of the Utah Code) by identifying demands placed on the existing drinking water system by new development and by identifying the means by which the City will meet these new demands. This analysis is an update to the Drinking Water System IFFP prepared in 2022 to address changes in conditions and assumptions that result in a reduction in the proposed drinking water impact fee. The Drinking Water System Master Plan and Capital Facility Plan have also been updated to support this analysis.

The most significant **change** in this update is increased growth projections. The City has experienced periods of rapid growth since 2000. Zion Public Finance, In. prepared growth projections through 2034 for the City, included in Appendix A. When compared to the growth projections for the 2022 Drinking Water IFFP, the updated growth projections anticipate more rapid growth over the coming 10 years. Several large capital facility projects are required to meet this anticipated growth.

Consistent with the last impact fee update, no remaining capacity of groundwater source is available for future growth. It is assumed all future source will be provided by Central Utah Water Conservancy District (CUWCD). The City could accept new groundwater rights after there is a change application approved by the State Engineer that meets drinking water standards. There are developers that have groundwater capacity credit with the City that have not paid impact fees. For this reason, there are two drinking water impact fees. One impact fee is for those with groundwater capacity credit which includes costs for available drinking water well capacity. The other drinking water impact fee includes costs for available CUWCD capacity.

The impact fee **service area** is the drinking water system service area, which includes the current city boundary. The existing system served about 15,578 equivalent residential connections (ERCs) at the beginning of 2024. Projected **growth** adds 12,887 ERCs in the next 10 years for a total of 28,465 ERCs.

There are two **components** to the drinking water impact fee. The first component is indoor water capacity which includes: well source capacity (for those who have drinking water groundwater credit), CUWCD source capacity, storage, and source conveyance. The second component is fire flow.

The proposed impact fee for a single-family residential connection requiring a ¾" water lateral, using well water, and requiring a 1,500 gpm fire flow will have an impact fee of **$2,729**. This includes $2,465 for indoor water capacity and $264 for fire flow capacity. This is an increase from the current impact fee of $2,709. Refer to the Impact Fee Analysis for additional details regarding the proposed impact fee for the drinking water system.

CHAPTER 1 - INTRODUCTION

1.1 BACKGROUND

The City of Saratoga Springs (the City) has experienced significant growth since the early 2000's that has transformed the once largely agricultural community into an urbanized region of northern Utah County. Residential and commercial developments are being established at a rapid pace with additional undeveloped land available for future growth. As this growth continues, additional drinking water facilities will be required to maintain a water system that meets the City's level of service for indoor water use.

The City has recognized the importance of planning for increased demands from new development as a result of the rapid growth. A Drinking Water Impact Fee Facilities Plan (IFFP) update was required to address changes in conditions and assumptions that result in an increase in the proposed drinking water impact fee.

1.2 PURPOSE

The purpose of the IFFP is to comply with the requirements of the Utah Impact Fees Act by identifying demands placed on the existing Drinking Water (DW) system by new development and identifying the means by which the City will meet these new demands. This analysis is an update to the DW System IFFP prepared in 2022.

This report identifies those items that the Utah Impact Fees Act specifically requires including demands placed upon existing facilities by new development and the proposed means by which the municipality will meet those demands. In preparing this report a systematic approach was utilized to evaluate the existing and planned DW facilities identified in the City's master planning efforts. Each facility's capacity was evaluated in accordance with the new level of service to determine the appropriate share between existing demand and future demands. This approach was used to determine the "proportional share" of improvement costs between existing users and future development users. The basis for this report was to provide proposed project costs and the fractional cost associated with future development. The following analyses were performed to meet the study's objectives:

1) Identify the existing and proposed City DW facilities;
2) Identify the existing level of service for the system;
3) Identify the proposed level of service for the system;
4) Identify if any deficiencies are present in the existing system utilizing the proposed level of service;
5) Identify any excess capacity in the existing system facilities using the proposed level of service;
6) Identify the phasing of new development and the appropriate facilities needed to support the development;
7) Identify public facilities for which an impact fee may be charged or required for a school district or charter school if the local political subdivision is aware of the planned location of the school district facility or charter school;

8) Project growth in water demands attributable to new development within the existing system;
9) Determine projects required to provide the proposed level of service to future development without compromising the existing system;
10) Establish construction phasing of proposed capital facilities;
11) Prepare detailed cost estimates for each proposed project;
12) Determine if proposed projects will provide capacity for growth beyond the IFFP planning period;
13) Separate and identify infrastructure costs to maintain the proposed level of service for existing residents versus infrastructure costs to provide capacity at the proposed level of service for future development, and then identify and subtract the proportionate cost of any excess capacity for growth that is projected to occur beyond the 10-year planning window for the IFFP.

1.3 IMPACT FEE COLLECTION

An impact fee is a one-time charge on new development to pay for that portion of a public facility that is required to support that new development. Impact fees enable local governments to finance public facility improvements necessary to service new developments without burdening existing development with capital facilities construction costs that are exclusively attributable to growth.

To determine the appropriate impact fee, the cost of the facilities associated with future development must be proportionately distributed. As a guideline in determining the "proportionate share," the fee must be found to be roughly proportionate and reasonably related to the impact caused by the new development.

1.4 MASTER PLANNING

This analysis is an update to the DW System IFFP prepared in 2022 to address changes in conditions and assumptions that result in an increase in the proposed DW impact fee. The IFFP identifies all capital facilities required of the DW system for the 10-year planning window including maintenance, repair, replacement, as well as growth related project recommendations. The recommendations made within the IFFP report comply with current City policies and standard engineering practices.

A hydraulic model was prepared to aid in the analyses performed to complete the IFFP and IFA. The model was used to assess existing performance and level of service, to establish a proposed level of service, and to confirm the effectiveness of the proposed capital facility projects to maintain the proposed level of service over the next 10 years.

CHAPTER 2 - EXISTING DRINKING WATER SYSTEM

2.1 GENERAL

The purpose of this section is to provide information regarding the existing DW system, identify the current level of service, identify a proposed level of service, and analyze the remaining capacity of the existing system's facilities. Public facilities including existing and future public schools and charter schools were also identified. Specific impact fees for these public facilities have been included in the impact fee analysis.

The City's existing DW system is comprised of a pipeline network, storage tanks, and water sources. These facilities are found within four separate pressure zones. Figure 2-1 illustrates the existing water system that services the City.

2.2 PRESSURE ZONES

Currently, the DW system has four pressure zones, however Pressure Zones 2 and 3 are split between north and south as they are not interconnected. The pressure zones were designed to provide pressures between 40 and 120 psi throughout the City.

2.3 EXISTING CITY PRESSURIZED IRRIGATION

To preserve DW sources, the City has constructed a pressurized irrigation (PI) system that provides water for outdoor irrigation. The PI system is master planned to be an independent system, however, the system can be supplemented by excess capacity in the DW system. Separate DW and PI pipelines exist in all developments. There are a few isolated developments that currently rely on the DW system to provide storage and source water to the PI system. When the excess capacity in the DW system is needed for future growth, PI facilities will be constructed to increase the capacity of the PI system. A Pressurized Irrigation System Master Plan was prepared in conjunction with the DW System Master Plan. Both the DW System Master Plan and the Pressurized Irrigation System Master Plan were analyzed with no sharing of capacity for future projections. It was assumed for all calculations that no PI facilities are being supplemented by DW system capacity. Additional information regarding the PI system may be found in the Pressurized Irrigation System Master Plan and Pressurized Irrigation System IFFP.

2.4 EXISTING EQUIVALENT RESIDENTIAL CONNECTIONS

Water demands from non-residential water users such as commercial, industrial, and institutional, have been converted to an Equivalent Residential Connection (ERC) for analytical purposes. The use of ERCs is a common engineering practice to describe the entire system's usage based upon a common unit of measurement. An ERC is equal to the average demand of one single-family residential connection. Using ERCs for this analysis allows the allocation of existing and future demands over non-residential land uses. Residential use is defined by the Utah Division of Drinking Water (DDW) as including drinking, washing, sanitation and lawn watering at a primary residence. Residential connections include all units whether they are privately owned or not.

After calculating an average residential water usage per residential customer, the remaining usage including commercial, industrial, and institutional was divided by the average residential water usage per residential customer to determine an equivalent residential connection value for

the remaining usage. The total number of ERCs is then calculated as the sum of the residential connections plus the number of ERCs calculated using the remaining usage.

2.5 SCHOOL RELATED INFRASTRUCTURE

As part of the noticing and data collection process for this plan, information was gathered regarding existing and future public school and charter school development. Where the City is aware of the planned location of a school, required public facilities to serve the school have been included in the impact fee analysis. Table 2-1 shows the existing schools and the accompanied DW usage for 2023. Table 2-2 shows the best available information regarding planned schools. Each table will be updated as additional schools are planned and constructed.

TABLE 2-1: EXISTING SCHOOLS

School Name	Location / Address	Drinking Water Usage 2023 (acre-ft)	Type of School
Harvest Elementary	2105 N Providence Dr	1.66	Elementary School
Riverview Elementary	273 Aspen Hills Blvd	4.21	Elementary School
Thunder Ridge Elementary	264 N 750 W	1.80	Elementary School
Sage Hills Elementary	3033 W Swainson Ave	1.58	Elementary School
Saratoga Shores Elementary	1415 S Parkside Dr	31.75*	Elementary School
Springside Elementary	694 S Highpoint Dr	1.17	Elementary School
Lake Mountain Middle School	1058 S Old Farm Rd	2.66	Junior High School
Vista Heights Middle School	484 W Pony Express Pkwy	3.70	Junior High School
West Lake High School	99 N 200 W	0.01	High School
Lakeview Academy of Science Arts and Technology	527 W 400 N	3.60	Charter
Horizon Special Needs School	682 W 210 N, Marie Way	0.50	Special Purpose
Mountain Sunrise Academy	1802 E 145 N	1.66	Charter
Harbor Point Elementary	4189 Schooner Dr.	1.10	Elementary School
Ascent Academies of Utah	992 W Chianti St. 1692 N Chianti St.	0.75 N/A	Charter

*Saratoga Shores Elementary does not have a connection to the PI system and uses drinking water for irrigation.

TABLE 2-2: PLANNED SCHOOLS

School Name	Location / Address
Planned Junior High	Parcel 58:023:0274
Planned Elementary School	Mt Saratoga Development; Parcel 58:034:0737
Planned Elementary School	Wander Development; Parcel 58:035:0138
Planned High School	Parcels 58:041:0187 and 58:041:0279
Lakeview Academy of Science Arts and Technology Expansion	Parcel 45:511:0001

Each new school, or expansion of an existing school will directly result in the need for additional improvements to public facilities. Analysis of the category of school (elementary school, junior high school, high school, charter school, special purpose) and the average past usage for each school determined the appropriate impact fee for schools based on the average lateral size required for each category. For the purpose of planning, future elementary schools will be charged for a 2-inch lateral, future junior high schools will be charged for a 3-inch lateral, future high schools will be charged for a 6-inch lateral, and future charter and special purpose schools will be charged for a 2-inch lateral. The impact fee for each school may be subject to change after the actual usage for each school is analyzed.

2.6 LEVEL OF SERVICE

The level of service provided by the DW system has been established by the City to provide a reasonable supply of indoor water, fire suppression, and water rights to assure that the system does not run out of water. This level of service establishes the sizing criteria for the City's distribution network (pipelines), well sources, Central Utah Water Conservancy District (CUWCD) connections, storage tanks, and water rights for the DW system. Each level of service criteria has been described below:

Well Source Capacity: The capacity each well must be able to provide to the DW system.

Pump Station Source Capacity: The capacity each pump station must be able to provide to the DW system.

CUWCD Water Source Capacity: The capacity each CUWCD connection must be able to provide to the DW system physically and by contracted volume.

Indoor Water Storage Capacity: Defined as equalization storage by DDW, indoor water storage capacity is the volume of a storage tank which stores water during periods of low demand and releases the water during periods of high demand.

Emergency Storage: Emergency storage as defined by DDW is the storage tank volume which provides water during emergency situations, such as pipeline failures, major trunk main failures, equipment failures, electrical power outages, water treatment facility failures, source water supply contamination, or natural disasters.

Pipe Capacity: The capacity pipelines need to sufficiently convey water to the end user without causing low pressures at the user connection during normal operation.

Minimum Fire Flow: The minimum allowable fire flow as determined by the local fire marshal.

Maximum Fire Flow: The maximum fire flow the system is designed to supply as determined by the local fire marshal.

Fire Suppression Storage Capacity: Defined as fire suppression storage by DDW, fire suppression storage capacity is the storage tank volume allocated to fire suppression activities. It is generally determined by the requirements of the local fire marshal, expressed in gallons, and determined by the product of a minimum flowrate in gpm and required time expressed in minutes

Water Rights Yearly Volume: The maximum water right annual volume amount allowed.

The current level of service standards are provided in Table 2-3.

Indoor Water

TABLE 2-3: DRINKING WATER LEVEL OF SERVICE

Level of Service Criteria	Current Requirement
Well Source Capacity	375 gpd per ERC plus 375 gpd per ERC for redundancy
Pump Station Source Capacity	375 gpd per ERC with largest pump out of service
CUWCD Water Source Capacity	375 gpd per ERC
Indoor Water Storage Capacity	267 gal per ERC
Emergency Storage Capacity	100 gal per ERC
Pipe Capacity	40 psi minimum during peak day demand conditions 30 psi minimum during peak instantaneous conditions

To ensure the City meets DDW requirements, well and pump station sources must include redundancy in case of emergency. Redundancy for the CUWCD wholesale water is provided by CUWCD.

Fire Suppression

- Minimum Fire Flow: 1,500 gpm for 2 hours (180,000 gallons) as directed by the Fire Marshall from the International Fire Code (IFC), issued by the International Code Council.
- Maximum Fire Flow: 4,000 gpm for 4 hours (960,000 gallons) as directed by the Fire Marshall from the IFC.
- Fire Suppression Storage Capacity: As required by the Fire Marshall (see Table 2-8 for a summary of fire suppression storage by pressure zone)
- Minimum Pressure: 20 psi residual during peak day + fire flow event.

Water Rights

TABLE 2-4: WATER RIGHTS LEVEL OF SERVICE

Level of Service Criteria	Current Requirement
Yearly Volume	267 gpd per ERC (0.3 ac-ft per ERC)

2.7 METHODOLOGY USED TO DETERMINE EXISTING SYSTEM CAPACITY

The method for determining the remaining capacity in the system for indoor water supply was based on the defined level of service in terms of ERCs. Each component of the drinking water system was allotted a capacity in terms of ERCs. The components include Well Source, CUWCD Source, Source Conveyance (pumps stations and transmission pipelines), Storage (tanks and associated transmission lines), Fire Suppression (tank volume and transmission line sizing), and Water Rights. Each component was also assigned an existing demand placed on the component by the existing ERCs using each component. The difference between the ERCs capacity and ERCs existing demand for each component is the remaining capacity. For example, to calculate the remaining capacity for source in ERCs, the required source for existing users in ERCs is subtracted from the capacity of the wells and CUWCD in ERCs. For storage, the required storage for existing users in ERCs is subtracted from the capacity of the tanks in ERCs to calculate the remaining capacity for storage in ERCs.

A hydraulic model was developed for the purpose of assessing system operation and capacity. For pipelines, the capacity in ERCs is estimated by the flow capacity of the pipe at a velocity of 5 feet per second subtracted by the minimum fire flow requirement of 1,500 gpm. The transmission pipelines out of Tanks 4, 5, 6, 7, and 8 down to the first intersection include a fire flow capacity of 2,000 gpm or larger based on the highest fire flow assumed from these tanks. Total capacity, demand, and remaining capacity are presented in the following paragraphs for each component of the drinking water system.

2.8 WATER SOURCE AND REMAINING CAPACITY

The City uses a mixture of groundwater and CUWCD water in the drinking water system. The City purchases wholesale water from CUWCD and is supplied from three connections in the City. There are also several wells which provide source water for the City. There is additional physical groundwater and water right capacity remaining, but this is mostly in the form of water right credit owned by developers. An assessment of available water rights and physical groundwater capacity of drinking water quality is limited. Once the capacity is gone, all future drinking water sources and water rights will come from CUWCD.

Existing drinking water wells are actively used throughout the year on a rotating basis. The active wells are equipped with either submersible or vertical turbine pumps. These wells provide the well source capacity level of service of 375 gpd/ERC for indoor water use and 375 gpd/ERC for redundancy. Three CUWCD connections provide the wholesale source capacity level of service of 375 gpd/ERC for indoor water use. Although each connection will provide up to 3,000 gpm at buildout, CUWCD capacity is restricted by the amount of water the City is able to purchase each year.

Several of the drinking water wells are producing half capacity due to groundwater and well conditions. Because of the lack of excess redundancy capacity available to supplement the PI system, CUWCD water needed to be purchased earlier than planned. Table 2-5 summarizes the

information for each well and the three existing CUWCD connections. An ERC count was not allocated to specific wells or CUWCD connections as all sources are in the same pressure zone (Pressure Zone 1).

TABLE 2-5: EXISTING WATER SOURCES

Name	Capacity (gpm)	Existing Demand (gpm)	Remaining Capacity (gpm)
Well 1 - Parkway	1,000	-	-
Well 2 – Vessel	1,020	-	-
Well 3 – 145 North	1,750	-	-
Well 4 – Crossroads	1,000	-	-
Well 6 – Scuttlebutt	1,100	-	-
CUWCD Connection #1	3,000	-	-
CUWCD Connection #2	3,000	-	-
CUWCD Connection #3	3,000	-	-
TOTAL	**14,870**	**4,056**	**10,814**

The City operates pump stations to move water from lower pressure zones to higher pressure zones. These pump stations provide the water source to the upper zones and therefore must meet the pump station source capacity level of service of 375 gpd/ERC for indoor use with the largest pump out of service. Table 2-6 is a summary of the pump station capacities and demands in units of ERCs. Table 2-7 is a summary of the pump station capacities and demands in gallons per minute (gpm).

TABLE 2-6: EXISTING PUMP STATION SUMMARY BY ERC

Zone	Name	Capacity (ERC)	Existing Demand (ERC)	Remaining Capacity (ERC)
2 South	Booster 1 – Grandview Zone 2	4,800	2,877	1,923
2 North	Booster 5N – Harvest Hills	1,920	3,467	2,293
	Booster 5S – Crossroads	3,840		
3 North	Booster 3 – Harvest Moon	2,400	1,408	3,296
	Booster 9 – Talus	2,304		
3 South	Booster 2 – Deer Canyon	8,352	323	8,029
4 North	Booster 4 – Lucky Clover	2,304	0	2,304

TABLE 2-7: EXISTING PUMP STATION SUMMARY BY GPM

Zone	Name	Capacity (gpm)	Existing Demand (ERC)	Remaining Capacity (gpm)
2 South	Booster 1 – Grandview Zone 2	2,500	1,498	1,002
2 North	Booster 5N – Harvest Hills	1,000	1,806	1,194
	Booster 5S – Crossroads	2,000		
3 North	Booster 3 – Harvest Moon	1,250	733	1,717
	Booster 9 – Talus	1,200		
3 South	Booster 2 – Deer Canyon	4,350	168	4,182
4 North	Booster 4 – Lucky Clover	1,200	0	1,200

2.9 STORAGE TANKS AND REMAINING CAPACITY

Saratoga Springs currently operates 10 buried concrete water storage tanks. Each pressure zone has at least one storage tank. Storage requirements are determined on a per zone basis. Some fire flow is shared between zones through pressure-reducing valves (PRV's) used to transfer water from a higher zone to a lower zone during fire events or peak demands. The total storage capacity is 16.1 million gallons (MG). All tanks are in good condition.

The storage level of service is 267 gallons of storage per ERC for equalization storage, and 100 gallons of storage per ERC for emergency storage. The fire flow storage requirements were provided by the Fire Marshal as per IFC. The amount of fire suppression storage was assigned to each tank based on available capacity for fire storage in the tank, the amount of fire flow in the pressure zone or zones the tank can serve, and the capacity of the transmission lines from the tank to where the largest fire flows are required. The required fire storage capacity and existing capacity for each pressure zone is found in Table 2-8. The capacity of each tank was analyzed in respect to the zone it serves. It was assumed that storage in upper pressure zones could assist in providing a portion of the required fire flow demand to a lower zone. Table 2-9 is a summary of the storage facility information. Capacity calculations are shown in Table 2-9 for each tank and account for fire suppression storage volumes.

TABLE 2-8 EXISTING FIRE SUPPRESION STORAGE BY ZONE

Zone	Fire Flow (gpm)*	Fire Duration (hours)	Fire Storage (MG)	Existing Fire Storage in Zone (MG)	Existing Fire Storage from Upper Zones (MG)
1	4,000	4	0.96	0.72	0.24
2 North	2,500	2	0.30	0.54	-
2 South	4,000	4	0.96	0.68	0.28
3 North	2,000	2	0.24	0.48	-
3 South	2,000	2	0.24	0.24	-
4 North	2,000	2	0.24	0.24	-
TOTAL	**-**	**-**	**3.18**	**2.90**	**0.52**

The following are assumptions for fire flow storage at each tank:

- Tank 1—The recommended fire flow for Zone 1 is 4,000 gpm for 4 hours, or 0.96 MG. Tank 1 supplies about 1,000 gpm, or 0.24 MG. The remainder was assigned to Tanks 5 and 3.
- Tank 5—The recommended fire flow for Zone 1 is 4,000 gpm for 4 hours, or 0.96 MG. Tank 5 supplies about 2,000 gpm, or 0.48 MG. The remainder was assigned to Tanks 1 and 3.
- Tank 3—The recommended fire flow for Zone 2 North is 3,000 gpm for 3 hours, or 0.54 MG. Tank 3 supplies 0.30 MG. The remainder was assigned to Tank 9. Tank 3 may also supply fire flow to Zone 1.
- Tank 9—The recommended fire flow for Zone 2 North is 3,000 gpm for 3 hours, or 0.54 MG. Tank 9 supplies 0.24 MG. The remainder was assigned to Tank 3.
- Tank 2—The recommended fire flow for Zone 2 South is 4,000 gpm for 4 hours, or 0.96 MG. Tank 2 supplies about 850 gpm, or 0.20 MG. The remainder was assigned to Tanks 6 and 7.
- Tank 6—The recommended fire flow for Zone 2 South is 4,000 gpm for 4 hours, or 0.96 MG. Tank 6 supplies about 2,000 gpm, or 0.48 MG. The remainder was assigned to Tanks 2 and 7.
- Tank 4—The recommended fire flow for Zone 3 North is 2,000 gpm for 2 hours, or 0.48 MG. Half of the requirement (1,000 gpm or 0.24 MG) was assigned to Tank 4. Tank 4 may also supply fire flow to Zone 2 North.
- Tank 10—The recommended fire flow for Zone 3 North is 2,000 gpm for 2 hours, or 0.48 MG. Half of the requirement (1,000 gpm or 0.24 MG) was assigned to Tank 10. Tank 10 may also supply fire flow to Zone 2 North or Zone 1.
- Tank 7—The recommended fire flow for Zone 3 South is 2,000 gpm for 2 hours, or 0.48 MG. Half of the requirement (1,000 gpm or 0.24 MG) was assigned to Tank 7. Tank 7 may also supply fire flow to Zone 2 South.
- Tank 11—The recommended fire flow for Zone 4 North is 2,000 gpm for 2 hours, or 0.24 MG. This entire requirement was assigned to Tank 11. Tank 11 may also supply fire flow to Zone 3 North.

TABLE 2-9: EXISTING STORAGE TANK SUMMARY

Zone	Total Capacity (MG)	Fire Storage (MG)	Demand Storage (MG)	Emergency Storage (MG)	Remaining Capacity (MG)	Total Capacity (ERC)	Remaining Capacity (ERC)
1	3.75	0.72	2.00	0.75	0.28	8,256	755
2 North	3.0	0.54	0.93	0.35	1.18	6,703	3,236
2 South	4.0	0.68	0.77	0.29	2.26	9,046	6,169
3 North	2.6	0.48	0.38	0.14	1.60	5,777	4,369
3 South	2.0	0.24	0.09	0.03	1.64	4,796	4,473
4 North	0.75	0.24	0.00	0.00	0.51	1,390	1,390

Zone	Total Capacity (MG)	Fire Storage (MG)	Demand Storage (MG)	Emergency Storage (MG)	Remaining Capacity (MG)	Total Capacity (ERC)	Remaining Capacity (ERC)
TOTAL	**16.1**	**2.90**	**4.17**	**1.56**	**7.47**	**35,968**	**20,392**

2.10 WATER RIGHTS AND REMAINING CAPACITY

The City owns a total of 15,007 acre-feet of water rights based on diversion that can be used between its drinking water and pressurized irrigation systems. The existing drinking water right demand at the proposed level of service of 0.3 acre-feet per ERC is 4,673 acre-feet. The existing supply of water rights attributed to the drinking water system is 8,352 acre-feet. Table 2-10 summarizes the water rights owned by the City.

This excess capacity is water right credits owned by various developers within the City that previously deeded the water rights to the City in exchange for the credits. It is recommended that the City not collect impact fees for water rights in the drinking water system for the next ten years. Rather than paying impact fees to the City for new drinking water rights, new developments can utilize the credit they own, or if they do not have a credit, they can purchase a water right credit held by others or work with the City to contract CUWCD water. All water right volumes are annual diversions in acre-feet.

TABLE 2-10: EXISTING WATER RIGHT CAPACITY

DW Well Water Rights (acre-feet)	PI Water Rights (acre-feet)	Total City Water Rights (acre-feet)
8,352	6,655	**15,007**

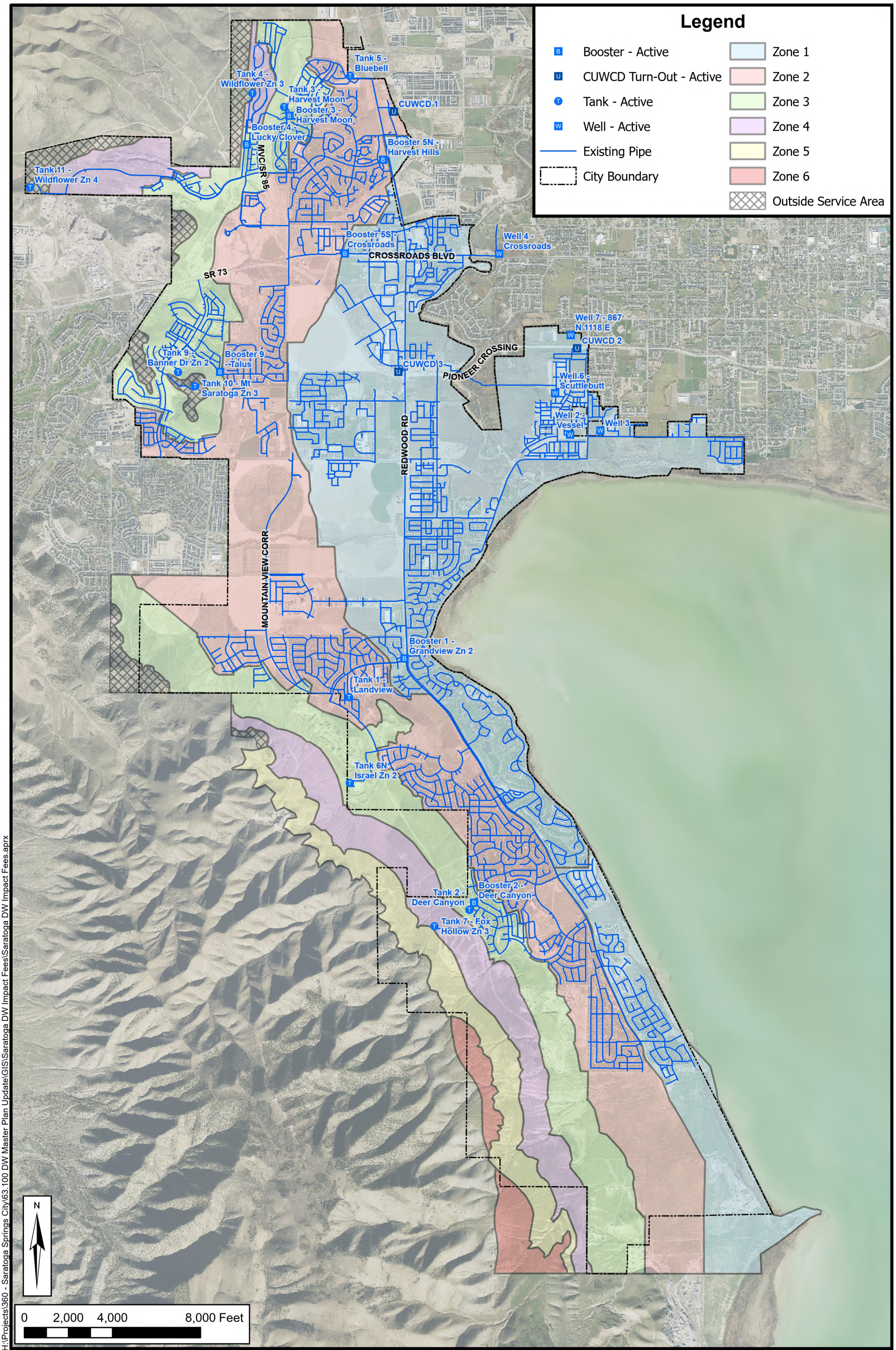
2.11 DISTRIBUTION SYSTEM

Pipe diameters in the drinking water distribution system range from 8 inches to 30 inches, with the majority being 8 inches within subdivisions. The larger pipes serve as transmission lines to deliver water from sources and storage tanks throughout the system. All pipes are in good condition. The City's current standard allows for Ductile Iron Pipe (DIP) for pipe diameters larger than 18 inches and Polyvinyl Chloride (PVC) pipe for pipes up to and including 18 inches.

Figure 2-1 illustrates the existing distribution pipelines. The capacity of the distribution system is assumed to be accounted for in source conveyance, storage, and fire flow capacities since the pipeline sizes include a component of each.

2.12 CAPITAL FACILITIES TO MEET SYSTEM DEFICIENCIES

The existing drinking water system meets the current level of service. There are no existing deficiencies.



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HANSEN ALLEN & LUCE INC ENGINEERS

SARATOGA SPRINGS DRINKING WATER SYSTEM

EXISTING SYSTEM

FIGURE 2-1

CHAPTER 3 - FACILITIES TO MEET FUTURE GROWTH

3.1 GROWTH PROJECTIONS

The development of impact fees requires growth projections over the next ten years. Growth projections for Saratoga Springs were developed by Zions Public Finance, Inc., and have been included in a memorandum in Appendix A. Table 3-1 presents the growth projections for the City over the next 10 years.

TABLE 3-1 GROWTH PROJECTIONS

Year	Residential Units Added (ERCs)	Non-Residential Floor Area Added (ft^2)	Non-Residential Units Added* (ERCs)	Total ERCs	Annual Growth Rate
2023				**15,578**	
2024	1,065	253,217	186	**16,829**	8.0%
2025	1,100	263,255	193	**17,936**	6.6%
2026	1,135	273,293	200	**19,078**	6.4%
2027	1,169	283,332	208	**20,255**	6.2%
2028	1,204	293,370	215	**21,466**	6.0%
2029	1,238	303,409	222	**22,711**	5.8%
2030	1,273	313,447	230	**23,992**	5.6%
2031	1,307	323,485	237	**25,306**	5.5%
2032	1,342	333,524	245	**26,656**	5.3%
2033	1,377	343,562	252	**28,040**	5.2%
2034	592	116,002	85	**28,465**	1.5%

***** Per the Saratoga Springs General Plan, the maximum assumed commercial density is 13 ERU's per acre. For every 75,000 square feet of non-residential floor area, the plan assumes 4.2 acres of total property required. 4.2 acres * 13 ERU's per acre = 55 ERUs per 75,000 square feet of non-residential floor area.

The City has been experiencing periods of rapid growth since 2000. The driving force behind much of the rapid growth in the City is the development of large properties across the City. As shown in Table 3-1, the City is expected to grow from 15,578 ERCs to 28,465 ERCs by 2034.

3.2 COST OF FUTURE FACILITIES

The facilities and costs presented in Table 3-2 and Figure 3-1 are proposed projects essential to maintain the proposed level of service while accommodating future growth within the next 10 years. The facility sizing for the proposed projects was based on the proposed level of service, growth projects and hydraulic modeling. All future projects have a design life greater than 10 years, as required by the Impact Fee Act, and all the projects are 100% growth-related. Each project has a detailed cost for each component of the drinking water impact fee: Wells, Source Conveyance (transmission lines associated with source conveyance and pump stations), Storage (tanks and associated transmission lines), and Fire Suppression. See Appendix B for cost estimate details of future projects.

TABLE 3-2: COST OF FUTURE FACILITIES

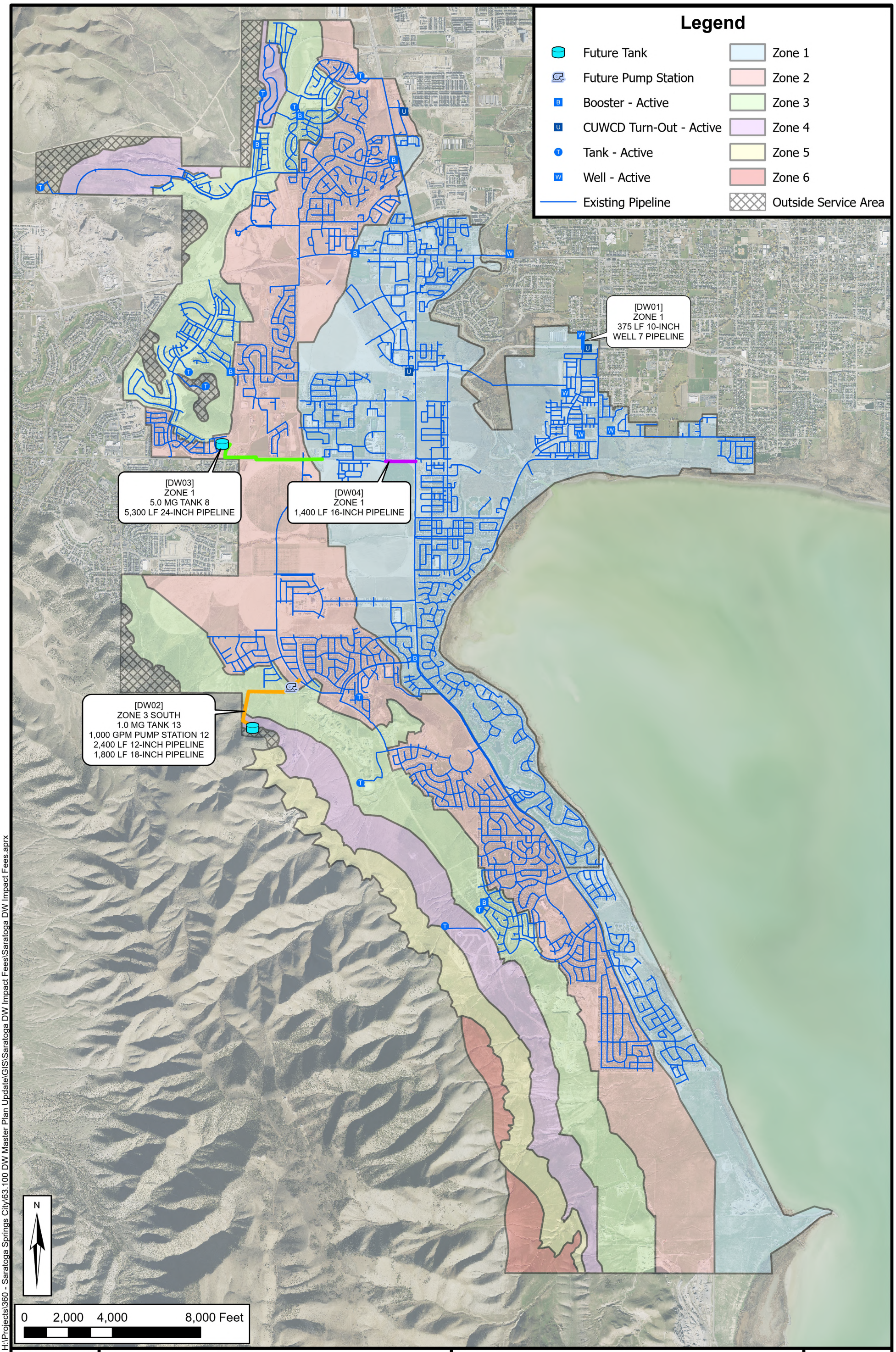
Project	Map ID[1]	CUWCD	Source Conveyance	Storage	Fire	Well	Total[2]
Well 7 Pipeline	DW01	$0	$0	$0	$0	$448,000	**$448,000**
Tank 13	DW02	$0	$3,940,000	$2,272,000	$1,759,000	$0	**$7,971,000**
Tank 8	DW03	$0	$1,266,000	$12,080,000	$4,530,000	$0	**$17,876,000**
Zone 1 16-inch Pipeline	DW04	$0	$298,000	$0	$273,000	$0	**$571,000**
TOTAL[2]		**$0**	**$5,504,000**	**$14,352,000**	**$6,562,000**	**$448,000**	**$26,866,000**

1. See Figure 3-1 (Additional details on cost estimates are in Appendix B).
2. All totals are rounded to the nearest $1,000.

Only those costs attributed to the new growth in the next 10 years can be included in the impact fee. Table 3-3 is a summary of the existing and future facility costs by drinking water system component and by time. Existing costs are those costs attributed to capacity currently being used by existing connections. Costs attributed to the next 10 years are costs for the existing capacity or new capacity for the assumed growth in the next 10 years. Costs attributed to beyond 10 years are costs for the existing capacity or new capacity for the assumed growth beyond 10 years.

TABLE 3-3: FACILITY COST BY TIME PERIOD

	Existing	Next 10 Years	Beyond 10 Years	Total
CUWCD	$70,055	$62,159	$28,564	**$160,779**
Wells	$3,310,165	$1,301,406	$0	**$4,611,571**
Source Conveyance	$19,809,942	$17,577,163	$0	**$37,387,105**
Storage	$9,447,517	$8,382,687	$13,281,423	**$31,111,627**
Fire	$3,397,147	$4,776,287	$11,915,920	**$20,089,354**
TOTAL	**$36,034,826**	**$32,099,702**	**$25,225,908**	**$93,360,435**



Date: 1/28/2025
Document Path: H:\Projects\360 - Saratoga Springs City\63.100 DW Master Plan Update\GIS\Saratoga DW Impact Fees.aprx

HANSEN ALLEN & LUCE INC ENGINEERS

SARATOGA SPRINGS DRINKING WATER SYSTEM

FUTURE IMPACT FEE IMPROVEMENT PROJECTS

FIGURE 3-1

APPENDIX A

Growth Memorandum

ZIONS PUBLIC FINANCE, INC.

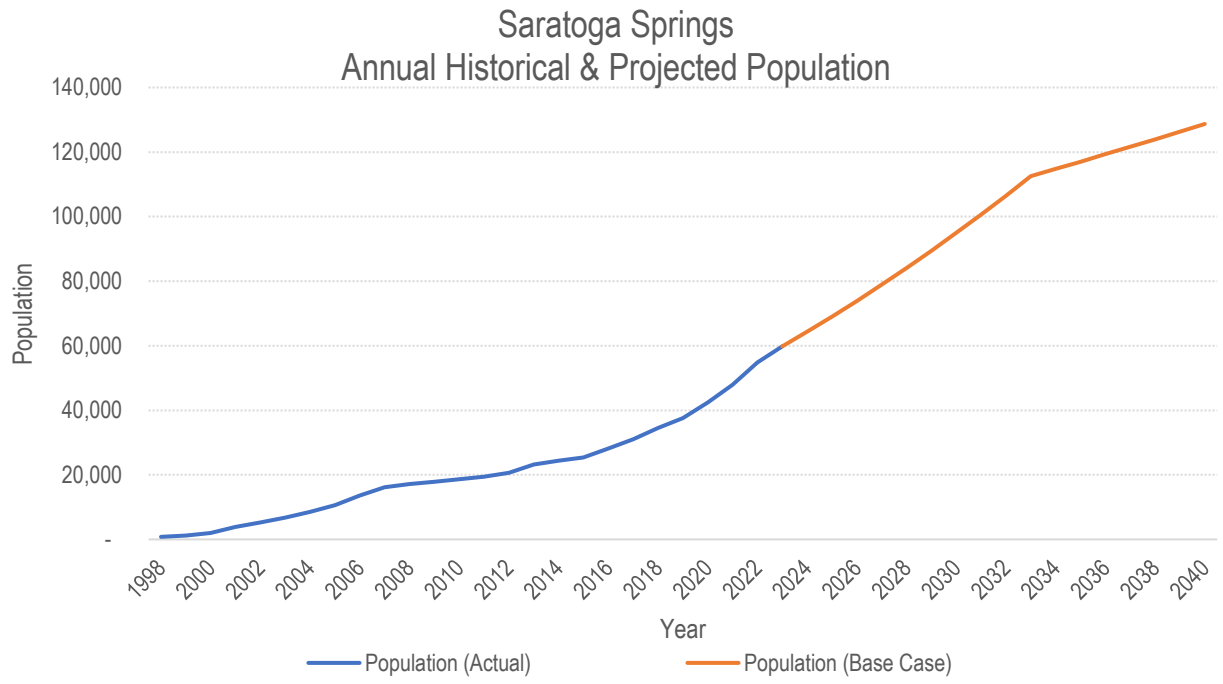
GROWTH PROJECTIONS MEMORANDUM

Historic and Projected Growth

Saratoga Springs continues its historically robust pace of growth as of March 2024. Indeed, over the trailing five-year period from 2018-2023, the City's population has increased at an average annual growth rate of 11.6 percent, reaching a new record population of 59,812 as of 2023. This comprises an absolute increase of 25,288 people since the close of 2018.

Zions projects Saratoga Springs to grow at an average annual growth rate of 6.1 percent, or 4,996 people, per-year over the period 2024-2034. Over the longer period of 2035-2040, Zions projects an average annual growth rate of 4.8 percent, at 4,157 people per year. In the year 2040 this would place Saratoga Springs total population at approximately 130,000 people.

CHART 1: SARATOGA SPRINGS ANNUAL HISTORICAL AND PROJECTED POPULATION



In generating these projections, Zions implemented a linear model coupled with upper and lower prediction intervals calculated at the 95% probability level to provide a base case long-term population growth scenario.

- Base Case – this scenario projects forward population levels assuming the mean growth of the City throughout its history. This is Zions recommended scenario.

The total population scenario is provided in the table below.

TABLE 1: HISTORIC ACTUAL AND PROJECTED POPULATION SCENARIO

Year	Population (Actual)	Projected Population (Base Case)
1998	795	-
1999	1,240	-
2000	1,984	-
2001	3,898	-
2002	5,267	-
2003	6,714	-
2004	8,520	-
2005	10,645	-
2006	13,574	-
2007	16,162	-
2008	17,135	-
2009	17,817	-
2010	18,624	-
2011	19,452	-
2012	20,663	-
2013	23,180	-
2014	24,403	-
2015	25,401	-
2016	28,138	-
2017	31,059	-
2018	34,524	-
2019	37,581	-
2020	42,449	-
2021	47,840	-
2022	54,875	-
2023	59,812	-
2024	-	64,334
2025	-	69,022
2026	-	73,877
2027	-	78,898
2028	-	84,085
2029	-	89,438
2030	-	94,958
2031	-	100,644
2032	-	106,496
2033	-	112,514
2034	-	114,764
2035	-	117,035
2036	-	119,328
2037	-	121,641
2038	-	123,974
2039	-	126,327
2040	-	128,698

Next, considering the recommended population scenario, we highlight annual percentage changes in the table below.

TABLE 2: ANNUAL PERCENT CHANGE IN PROJECTED POPULATION GROWTH

Year	Projected Population (Base Case)	YoY% Growth
2024	64,334	7.6%
2025	69,022	7.3%
2026	73,877	7.0%
2027	78,898	6.8%
2028	84,085	6.6%
2029	89,438	6.4%
2030	94,958	6.2%
2031	100,644	6.0%
2032	106,496	5.8%
2033	112,514	5.7%
2034	114,764	2.0%
2035	117,035	2.0%
2036	119,328	2.0%
2037	121,641	1.9%
2038	123,974	1.9%
2039	126,327	1.9%
2040	128,698	1.9%

Additionally, we provide year-over-year growth figures in count of people below in table 3.

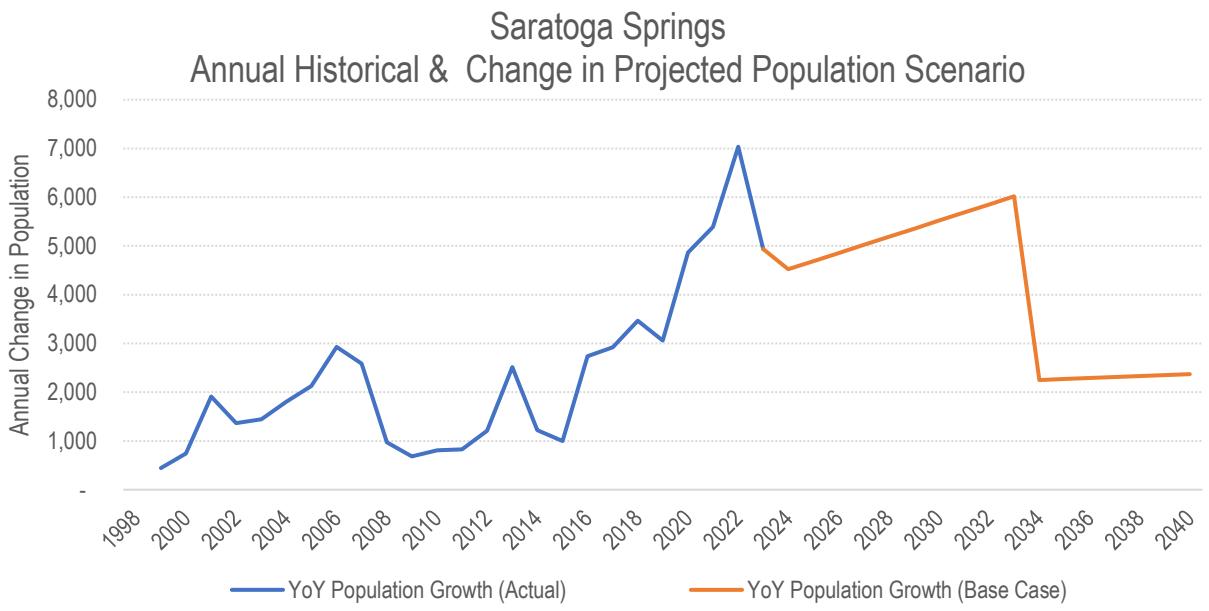
TABLE 3: ANNUAL CHANGE IN HISTORIC AND PROJECTED POPULATION GROWTH

Year	YoY Population Growth (Actual)	YoY Population Growth (Base Case)
1998	-	-
1999	445	-
2000	744	-
2001	1,914	-
2002	1,369	-
2003	1,447	-
2004	1,806	-
2005	2,125	-
2006	2,929	-
2007	2,588	-
2008	973	-
2009	682	-
2010	807	-
2011	828	-
2012	1,211	-
2013	2,517	-
2014	1,223	-
2015	998	-
2016	2,737	-
2017	2,921	-

Year	YoY Population Growth (Actual)	YoY Population Growth (Base Case)
2018	3,465	-
2019	3,057	-
2020	4,868	-
2021	5,391	-
2022	7,035	-
2023	4,937	
2024	-	**4,522**
2025	-	**4,688**
2026	-	**4,855**
2027	-	**5,021**
2028	-	**5,187**
2029	-	**5,353**
2030	-	**5,520**
2031	-	**5,686**
2032	-	**5,852**
2033	-	**6,018**
2034	-	**2,249**
2035	-	**2,271**
2036	-	**2,292**
2037	-	**2,313**
2038	-	**2,333**
2039	-	**2,353**
2040	-	**2,372**
Avg. Forward Growth/Year		**4,052**

Next, utilizing historical data regarding residential units added annually, we can understand the relationship between population growth and the growth of residential units in the community. This historical record of residential units added annually with forward projections is provided below.

CHART 2: SARATOGA SPRINGS HISTORICAL & PROJECTED RESIDENTIAL UNITS ADDED ANNUALLY



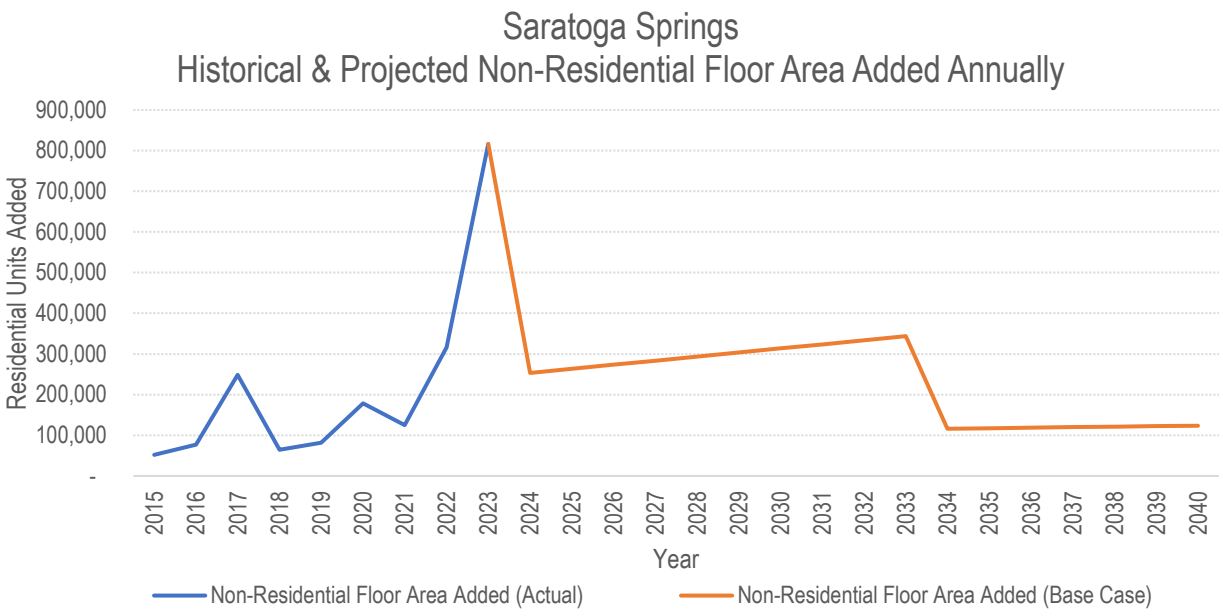
When analyzing the forward growth of residential units within Saratoga Springs, we again note the recommended base case scenario. This data is provided in table 4 below.

TABLE 4: HISTORICAL AND PROJECTED RESIDENTIAL UNITS ADDED ANNUALLY

Year	Residential Units Added (Actual)	Residential Units Added (Base Case)
2013	438	-
2014	315	-
2015	382	-
2016	812	-
2017	620	-
2018	666	-
2019	730	-
2020	1,536	-
2021	1,763	-
2022	1,091	-
2023	1,161	-
2024	-	**1,065**
2025	-	**1,100**
2026	-	**1,135**
2027	-	**1,169**
2028	-	**1,204**
2029	-	**1,238**
2030	-	**1,273**
2031	-	**1,307**
2032	-	**1,342**
2033	-	**1,377**
2034	-	**592**
2035	-	**597**
2036	-	**601**
2037	-	**606**
2038	-	**610**
2039	-	**614**
2040	-	**618**
Avg. Forward Growth/Year		**968**

Finally, we also provide a forecast of non-residential floor area added annually. We note that 2023 added non-residential floor area in an amount of 816,317 square feet, which stands 5.7x the historical average from 2015-2022. This is above trend, and while certainly possible to continue in the future, 2024 floor area constructed thus far is 151,770 square feet. Our statistical calculations predict 2024 to end with 322,719 square feet constructed in total. However, we acknowledge that the City has additional tangible, on-the-ground, knowledge regarding permitted construction that may diverge from this figure. Please see the historical chart and projections below.

CHART 3: SARATOGA SPRINGS HISTORICAL & PROJECTED NON-RESIDENTIAL FLOOR AREA ADDED ANNUALLY



Regarding non-residential floor area added, the Mid-Upper Range growth scenario is again selected. Over the future period from 2024-2040 we project an annual average of 224,844 square feet of non-residential floor area added annually. This data is provided directly in table 5 below.

TABLE 5: HISTORICAL AND PROJECTED NON-RESIDENTIAL FLOOR AREA ADDED ANNUALLY

Year	Non-Residential Floor Area Added (Actual)	Non-Residential Floor Area Added (Base Case)
2015	51,777	-
2016	76,676	-
2017	248,586	-
2018	64,614	-
2019	81,699	-
2020	178,188	-
2021	125,249	-
2022	316,469	-
2023	816,317	-
2024	-	**253,217**
2025	-	**263,255**
2026	-	**273,293**
2027	-	**283,332**

Year	Non-Residential Floor Area Added (Actual)	Non-Residential Floor Area Added (Base Case)
2028	-	**293,370**
2029	-	**303,409**
2030	-	**313,447**
2031	-	**323,485**
2032	-	**333,524**
2033	-	**343,562**
2034	-	**116,002**
2035	-	**117,318**
2036	-	**118,598**
2037	-	**119,843**
2038	-	**121,056**
2039	-	**122,239**
2040	-	**123,392**
Avg. Forward Growth/Year		**224,844**

Additional Considerations

As part of this analysis, Zions implemented a linear regression model coupled with prediction intervals calculated using Saratoga Springs historical data, including a prediction for year 2024 which is yet to close. As mentioned above, we acknowledge that the City may have additional tangible, on-the-ground, knowledge regarding growth in 2024 that is yet to be reflected in data.

APPENDIX B

Cost Estimates

Saratoga Springs Impact Fee Facility Plan
Drinking Water System
Preliminary Engineers Cost Estimates

	Item	Unit	Pipe Diameter	2024 Unit Price	Quantity	Total Price	Category
DW01	***Well 7 Pipeline***						
	Install 10-inch pipeline	LF	10	$ 270	375	$ 101,250	Wells
	Directional drill10-inch HDPE pipeline	LF	10	$ 1,600	170	$ 272,000	Wells
					Total	$ 373,250	
					Engineering & Admin. (10%)	$ 37,325	
					Contingency (10%)	$ 37,325	
					Total to Well 7 Pipeline	**$ 448,000**	
DW02	***Tank 13***						
	Construct 1 MG Tank	GAL	NA	$ 2.60	1,000,000	$ 2,600,000	Storage
	Construct 1,000 gpm Pump Station	LS	NA	$ 3,000,000	1	$ 3,000,000	Source Conveyance
	Install 16-inch Pipeline	LF	16	$ 340	1,800	$ 612,000	Source Conveyance
	Install 12-inch Pipeline	LF	12	$ 300	2,400	$ 720,000	Source Conveyance
					Total	$ 6,932,000	
					Engineering & Admin. (10%)	$ 693,200	
					Contingency (5%)	$ 346,600	
					Total to Tank 13	**$ 7,971,000**	
DW03	***Tank 8***						
	Construct 5 MG Tank	GAL	NA	$ 2.60	5,000,000	$ 13,000,000	Storage
	Install 24-inch pipeline	LF	24	$ 480	5,300	$ 2,544,000	Source Conveyance
					Total	$ 15,544,000	
					Engineering & Admin. (10%)	$ 1,554,400	
					Contingency (5%)	$ 777,200	
					Total to Tank 8	**$ 17,876,000**	
DW04	***Zone 1 16-Inch Pipeline***						
	Install 16-inch pipeline	LF	16	$ 340	1,400	$ 476,000	Source Conveyance
					Total	$ 476,000	
					Engineering & Admin. (10%)	$ 47,600	
					Contingency (10%)	$ 47,600	
					Total to Zone 1 16-Inch Pipeline	**$ 571,000**	

Total By Category	
Wells	$ 447,900
Source Conveyance	$ 5,503,726
Storage	$ 14,352,000
Fire	$ 6,562,874
Total	$ 26,866,500