NOTICE OF MEETING AND AGENDA
PLANNING COMMISSION
JANUARY 13, 2026 AT 7:00 P.M.

City Council Chambers
110 South Main Street
Springville, Utah 84663

The agenda will be as follows:

Call to Order

- Approval of the Agenda
- Approval of Minutes: December 9, 2025

Administrative Session

No Items

Legislative Session – Public Hearing

1) Lakeside Landing Partners and Unified Business Alliance request an amendment to the Development Agreement for Lakeside Landing Property dated April 2022.

2) Springville Public Works requests a recommendation on the approval of the Drinking Water Master Plan, Impact Fee Facility Plan and Impact Fee Analysis.

3) Springville Public Works requests a recommendation on the adoption of the Pressurized Irrigation Master Plan, Impact Fee Facility Plan, and Impact Fee Analysis.

Adjournment

THIS AGENDA SUBJECT TO CHANGE WITH A MINIMUM OF 24-HOURS NOTICE

This meeting was noticed in compliance with Utah Code 52-4-202 on January 9, 2026. Agendas and minutes are accessible through the Springville City website at www.springville.org/agendas-minutes. Planning Commission meeting agendas are available through the Utah Public Meeting Notice website at www.utah.gov/pmn/index.html. Email subscriptions to Utah Public Meeting Notices are available through their website.

In compliance with the Americans with Disabilities Act, the City will make reasonable accommodations to ensure accessibility to this meeting. If you need special assistance to participate in this meeting, please contact the Community Development department at (801) 491-7861 at least three business days prior to the meeting.

MINUTES
Planning Commission
Regular Session
Tuesday, December 9, 2025

IN ATTENDANCE

Commissioners Present: Genevieve Baker, Ann Anderson, Ralph Calder, Hunter Huffman and Tyler Patching
Commissioners Excused: Brett Nelson and Peter Pratt

City Staff: Josh Yost, Community Development Director
Carla Wiese, Planner II
City Council: Jake Smith

CALL TO ORDER
Chair Baker called the meeting to order at 7:04 p.m.

APPROVAL OF THE AGENDA
Commissioner Huffman moved to approve the agenda as written. Commissioner Calder seconded the motion. The vote to approve the agenda was unanimous.

APPROVAL OF THE MINUTES
October 28, 2025
Commissioner Calder moved to approve the October 28, 2025 meeting minutes. Commissioner Patching seconded the motion. The vote to approve the meeting minutes was unanimous.

ADMINISTRATIVE SESSION
1) ***Approve the 2026 Planning Commission Meeting Schedule***

Commissioner Calder brought up the December 22 date and Commissioner Huffman agreed that might be a difficult date to meet. Commissioner Calder suggested removing the December 22 meeting. No decision was made. Commissioner Calder moved to approve the 2026 Planning Commission Meeting Schedule as written. Commissioner Huffman seconded the motion. The vote to approve the Administrative Session item was unanimous.

LEGISLATIVE SESSION:
1) ***Springville Community Development seeks to amend Springville City Code Title 11 Chapter 4 Article 301 Land Use Matrix to allow paint and body shops and Light Industrial Manufacturing as permitted uses in the Highway Commercial Zone.***

Carla Wiese, City Planner, provides a primer on conditional use permits and the amendment to the City Code. Rather than these less intense uses having to come before the Planning Commission to get a conditional use permit, we ask to add these 2 L-IM uses to the HC zone.

Commissioner Calder asked about spraying. Ms. Wiese said she reached out to local body shops. They keep their paint contained in a room because they don't want anything to get on the paint when they are doing body work. It is clean and controlled. They have ventilation and they must use a specific type of paint. The fire inspector checks all of these things. Commissioner Calder asked how often the inspections are done. Ms. Wiese said they are done yearly.

Chair Baker opened the public hearing at 7:28 p.m. Seeing no speakers, Commissioner Patching moved to close the public hearing. Commissioner Calder seconded. The public hearing was closed at 7:29 p.m.

Commissioner Huffman asked about how it would affect the HC zone. Director Yost said conditional uses are already allowed. They just have additional conditions. It aligns with the General Plan and the Council's direction and priorities.

Commissioner Calder asked about why it wasn't allowed to begin with. Director Yost said there are conditions, and we decide if we like them. State law has changed. This code has been carried over from years ago and that is part of it.

Commissioner Calder moved to recommend approval of the amendment to the Springville City Code Title 11 Chapter 4 Article 301 Land Use Matrix to allow paint and body shops and Light Industrial Manufacturing as permitted uses in the Highway Commercial Zone. Commissioner Anderson seconded the motion. The vote to approve the Legislative Session item was unanimous.

2) Springville Public Works requests a recommendation on the approval of the Sewer Collection Master Plan, Impact Fee Facility Plan, and Impact Fee Analysis.

Jake Nostrom, Public Works Assistant Director, presented. He explained ERU's (Equivalent Residential Units), peak flows and the sewer lift and pumping stations. This information is used to evaluate service levels.

Eleven projects are anticipated within the next ten years, totaling approximately $18 million. Key improvement areas include west-side conveyance upgrades, sewer infrastructure for the north interchange/Buc-ee's area (planned as gravity where feasible), and new or upgraded lines near 1600 South to support residential growth.

Additional long-term projects are identified for future planning but are not included in the current IFFP/IFA.

The proposed maximum allowable collection impact fee is $1,423 per standard (¾-1 inch) water meter, up from the current fee of $1,199 due to additional projects entering the 10-year window. Combined with the sewer treatment impact fee, the total proposed sewer impact fee is $3,137. Staff recommends adopting the maximum allowable fee to ensure new development pays its proportionate share.

Chair Baker opened the public hearing at 7:52 p.m. Seeing no speakers, Commissioner Anderson moved to close the public hearing. Commissioner Huffman seconded. The public hearing was closed at 7:52 p.m.

Commissioner Huffman moved to recommend to the City Council approval of the adoption of the Sewer Collection Master Plan as presented. Commissioner Calder seconded. The vote to approve the Legislative Item was unanimous.

Commissioner Calder moved to recommend to the City Council the approval and adoption of the Sewer Collection Impact Fee Facility Plan and Impact Fee Analysis as presented. In addition, recommend the City Council adopt the maximum allowable impact fee as calculated in the IFA in accordance with the requirements of the Utah Impact Fees Act. Commissioner Huffman seconded. The vote to approve the Legislative Item was unanimous.

3) Springville Public Works requests a recommendation on the approval of the Water Reclamation Facility Impact Fee Facility Plan and Impact Fee Analysis.

Jake Nostrom, Public Works Assistant Director, presented. A site plan overview of the existing treatment plant infrastructure was provided. The City now updates impact fee analyses annually, which helps account for inflation, adjust project costs as designs advance, and minimize sudden fee increases.

The annual updates also allow staff to verify growth projections, evaluate level-of-service assumptions, and make early adjustments as conditions change. The level of service for treatment remains consistent with the collection system at 250 gallons per day per ERU (Equivalent Residential Units), with additional consideration given to wastewater concentrations. Staff reviewed regulatory requirements related to phosphorus removal, including state-mandated permit changes implemented around 2020 to protect Utah Lake.

Growth projections indicate approximately 6,000 additional ERUs over the next 20 years, approaching the capacity of the existing treatment plant. Nestlé was identified as a significant contributor to treatment plant loading, accounting for approximately 3,400 ERUs, supported by an on-site pretreatment facility.

Planned projects over the next 10 years include headworks upgrades, standby power generation (currently under construction), and sludge dewatering improvements, with a portion eligible for impact fee funding.

Staff noted the recommended impact fee increase is minimal, from $1,685 to $1,714.34, and that the City's sewer impact fees remain competitive due to long-term planning and responsible infrastructure investment.

Chair Baker opened the public hearing at 8:04 p.m. Seeing no speakers, Commissioner Huffman moved to close the public hearing. Commissioner Patching seconded. The public hearing was closed at 8:04 p.m.

Commissioner Calder moved to recommend to City Council approval and adoption of the water reclamation facility impact fee plan and the impact fee analysis as present. In addition, recommended that the City Council adopt the maximum allowable impact fee as calculated in the IFA in accordance with the requirements of the Utah Impact Fees Act. Commissioner Anderson seconded. The vote to approve the Legislative Item was unanimous.

4) Springville Public Works requests a recommendation on the approval of the Storm Water Impact Fee Facility Plan and Impact Fee Analysis.

Jake Nostrom, Public Works Assistant Director, presented. He explained the plan evaluates level-of-service standards and updates fees to reflect current conditions and costs. The stormwater system is designed to convey the 10-year storm event within the pipe network, utilize regional detention ponds for 25-year storm events, and safely convey 100-year storm events within public rights-of-way without flooding private property.

Regional detention ponds are designed for efficiency, long-term maintenance, and dual public use, and are owned and maintained by the City. Stormwater ERUs (Equivalent Residential Units) are based on impervious surface area rather than water use. Current conditions reflect approximately 23,000 ERUs, with buildout projections of approximately 41,000 ERUs over 20 years.

Identified projects include one stormwater conveyance improvement associated with the 1600 South roadway project in coordination with UDOT, and a future regional detention pond near the 1600 South and 1200 West area.

The plan uses a simplified, table-based approach to support annual updates and more accurate cost allocation based on storage volume and conveyance capacity. Impact fee eligibility applies to pipe upsizing beyond the City's minimum 15-inch storm drain standard, with costs allocated proportionally based on added conveyance capacity.

Staff reviewed the City's stormwater impact fee "bucket" system to fairly account for higher-density and smaller-lot development by adjusting fees based on impervious surface area.

The recommended stormwater impact fee decreases from $2,808 to $2,770 per ERU, reflecting a correction to the ERU baseline while resulting in a minimal per-square-foot cost increase.

Staff noted that Springville's stormwater fees are higher than some neighboring communities due to local topography, flat terrain, pipe sizing requirements, and limited discharge elevation to Utah Lake.

Chair Baker opened the public hearing at 8:17 p.m. Seeing no speakers, Commissioner Anderson moved to close the public hearing. Commissioner Calder seconded. The public hearing was closed at 8:17 p.m.

Commissioner Patching moved to recommend City Council approval and adoption of the Stormwater Impact Fee Facility Plan (IFFP) and Impact Fee Analysis (IFA) as presented, and to recommend adoption of the maximum allowable impact fee calculated in the IFA in accordance with the Utah Impact Fees Act. Commissioner Huffman seconded. The vote to approve the Legislative Item was unanimous.

With nothing further to discuss, Commissioner Huffman moved to adjourn the meeting. Commissioner Calder seconded the motion. Chair Baker adjourned the meeting at 8:19 p.m.

PLANNING COMMISSION
STAFF REPORT

Agenda Item #1
January 13, 2026

January 9, 2026

TO: Planning Commission Members

FROM: Josh Yost

RE: Amendment to Lakeside Landing Development Agreement

Petitioner: Springville Community Development Requests an amendment to the Development Agreement for Lakeside Landing Property between Springville City, Lakeside Land Partners, and Davies Design Build.

Summary of Issues

Does the proposed amendment equitably balance the interests of the city and the development group, while resolving the development groups' default.

Background

The Lakeside Landing Special District Overlay was adopted in December 2021. A development agreement was recorded in April 2022, between the city and the two primary landowners in the district. Two primary purposes of the development agreement were to establish vesting periods and set timelines for the completion of two planned public parks.

The development group defaulted on the agreement when the two public parks were not completed by April 2025. To continue the development process, the City and the development group negotiated terms of an amendment. This amendment reestablishes the required time-period for completing and installing the Parks and resets the vesting period for Design Rights.

Analysis

Springville and the development group both desire that the Lakeside Landing area continue to develop in accordance with the adopted overlay district. The development group needs to resolve its default to continue the development process, as the city cannot approve any further land use applications, including preliminary subdivision plats, while the development group remains in default.

The development agreement is a land use regulation, which required approval by the City Council after recommendation from the Planning Commission following a public hearing. This amendment must be approved through the same process.

The proposed amendment establishes a new completion timeline for the two public parks, the North and South Neighborhood Parks, contingent on the progress of development in the north and south portions of the district. Each park must be complete before the city will issue any building permits for more than 40% of the units within each respective portion of the district. The proposed amendment also resets the six-year vesting period for the Design Rights, which includes all articles of the Lakeside Special District Overlay Zone, except Article 2, which contains the regulating plan and the provisions determining residential density and required commercial space. The 15-year vesting period for these Article 2 right, began in 2022 on the effective date of the original agreement and is not changed by this amendment.

The amendment does not affect any other provision of the original agreement. In short, nothing changes except the park completion timeline and the vesting period for design rights. This result equitably balances the city's and the development groups' interests to ensure the proper development of Lakeside Landing and the completion of the two neighborhood parks by establishing a new flexible park completion timeline and extending the Design Rights vesting, but not extending the vesting period for the Article 2 rights.

Springville and the development group collaboratively drafted this agreement. The final draft has been reviewed and is recommended for approval by the Springville Legal, Administration, and Community Development Departments.

Staff Recommendation

Staff finds that the proposed First Amendment to the Development Agreement for Lakeside Landing Property equitably balances the interests of the city and the development group, while resolving the development group's default.

Recommended Motion

Move to recommend approval of the First Amendment to the Development Agreement for Lakeside Landing Property between the City of Springville, Lakeside Land Partners, and Davies Design Build.

DRAFT

FIRST AMENDMENT

to Development Agreement

This First Amendment to Development Agreement ("First Amendment") is entered this ___ day of _______, 202__, by and between the City of Springville, a Utah municipal corporation (the "City"), Lakeside Land Partners, LLC, a Utah limited liability company ("Lakeside"); and Davies Design Build, Inc., a Utah corporation ("Davies" and, together with Lakeside, each a "Developer" and, collectively, "Developers"). This First Amendment is to amend that certain Development Agreement for Lakeside Landing Property, dated January 31, 2022, recorded in the Utah County Recorder's Office, Entry Number 53661:2022 (the "Development Agreement").

Background

A. City entered into the Development Agreement with Lakeside and Davies as part of these two entities' desires to develop the Property as described in the Development Agreement and in the attached Exhibit A to this First Amendment.

B. As of today, neither the North Neighborhood Park nor the South Neighborhood Park (both neighborhood parks are herein collectively referred to as the "Parks") have been constructed nor installed within the required three-year period described in the Development Agreement.

C. The parties desire to enter into this First Amendment of the Development Agreement to reestablish the required time-period for completing and installing the Parks.

D. This First Amendment to the Development Agreement only amends the Development Agreement as to the Parks and the vesting period for the Design Rights.

NOW THEREFORE, the parties mutually agree to amend and revise the Development Agreement as follows:

1. **Definitions**. Any terms not defined in this First Amendment shall have the same definitions as found in the Development Agreement.

2. **Lakeside Landing Special District Overlay Ordinance Amendments**. Since the effective date of the Development Agreement, the Lakeside Landing Special District Overlay Ordinance (the "Lakeside Ordinance") has been amended several times. The Lakeside Ordinance mentioned in the Development Agreement shall be amended to include the Lakeside Ordinance described in the Development

Agreement as amended by all amendments to the Lakeside Ordinance that have been approved by the City Council from the time of the effective date of the Development Agreement to the time of the effective date of this First Amendment (the "Amended Lakeside Ordinance"). Accordingly, Developers' vested rights, including, but not limited to, all Article 2 Rights and Design Rights, as defined in Subsection 4.1, "Vested Rights," of the Development Agreement shall be amended to vesting in the Amended Lakeside Ordinance. Springville's Community Developer Director and City Recorder shall keep a copy of the Amended Lakeside Ordinance within their respective offices, which copies the parties will use as the official Amended Lakeside Ordinance.

3. **Design Rights**. Subsection 4.1(b) of the Development Agreement is amended to read:

(b) Design Rights. The "**Design Rights**" shall include all Articles of the Amended Lakeside Ordinance, except for Article 2 of the Amended Lakeside Ordinance. Developers shall be vested in the Design Rights for a period of six (6) years, commencing on the Effective Date of this First Amendment (the "**Design Rights Period**"), which period may be extended by mutual written agreement of each of the Parties at each of the Parties' sole discretion. If a Party does not agree in writing to extend the Design Rights Period as to a Developer, that Developer's Design Rights shall terminate as to future development applications. Also, in the event this Agreement expires or is otherwise terminated as to a Developer, all such Developer's Design Rights shall terminate as to future development applications, and the Developer shall be subject to any lawful amendments made to the Design Rights under the Lakeside Ordinance.

4. **North Neighborhood Park.** Subsection 5.2(b)(v) of the Development Agreement is amended to read:

(v.) North Neighborhood Park.

(A) Development, Dedication and Maintenance of the Park. Developer shall design, construct, and install the north neighborhood park in the location shown on the "Neighborhood Park North Inspirational Site Plan," under Section 11-9-703 of the Lakeside Ordinance (the "**North Neighborhood Park**"). The North Neighborhood Park shall contain park amenities, open space, and green space in accordance with a design plan and construction costs and expenses that shall be developed and agreed to by the Parties. Developer shall install, at Developer's sole cost and expense, the following public right-of-way improvements adjacent to the park: curb and gutter, park strip, and sidewalk improvements. The public right-of-way improvements are not part of the North Neighborhood Park improvements described in this Subsection 5.2(b). After the City approves and accepts the park improvements as installed by Developer, the North Neighborhood Park shall be dedicated to the City. After receiving the dedication of the park, the City will be responsible for the general maintenance of the park, and the North Neighborhood Park shall be open to the public. Even though the City will maintain the park for one-year after the North Neighborhood Park is dedicated to the City, Developers, during the one-year period after the park is completed and dedicated to the City, shall warrant all improvements installed or constructed by Developers in the North Neighborhood Park, including fixing or replacing all defective work or improvements that need repairs. Notwithstanding the foregoing, Developers warranty to repair and replace work and improvements shall be strictly limited to defectively installed or constructed work and improvements installed or constructed by Developers. Any work and improvements in the North Neighborhood park installed or constructed by Developers that are damaged by other causes, including but not limited to, use, weather, negligence, or intentional destruction, are not included in Developers' warranty and shall not be the responsibility of Developers to repair or replace.

(B) Park Costs, Density Bonus, and Timing.

a. The Parties acknowledge and agree that the North Neighborhood Park shall be purchased, designed, and installed by the Developer, at the Developer's sole cost and expense. This cost shall be no less than Ten Dollars and Thirty-Seven Cents per square foot $10.37/sf of the entire park property (the "$10.37 Cost").
b. The $10.37 Cost shall be adjusted over time to reflect inflation, based on the Consumer Price Index (CPI). If available, the CPI Inflation Calculator provided by the U.S. Bureau of Labor Statistics (https://www.bls.gov/data/inflation_calculator.htm) shall be used to calculate the adjustment. The inflation calculation shall begin in August 2025 and continue until the month in which the park construction costs are finalized through a fully executed agreement with a contractor to construct the North Neighborhood Park (the "Contractor Agreement").
c. Before the contractor to construct the North Neighborhood Park is selected and the Contractor Agreement is signed, Developer shall obtain three bids from qualified contractors for constructing the North Neighborhood Park and review the bids with the City. Both parties must mutually agree upon a contractor and their bid amount before the Contractor Agreement is signed.
d. The total cost, including all inflationary adjustments, along with the Developer's dedication of the North Neighborhood Park property to the City at no charge, shall collectively be referred to as the "Developer's North Park Costs."
e. The Developer's obligation to incur the Developer's North Park Costs and dedicate the park property is a condition of, and consideration for, the development densities granted to the Developer under the Lakeside Ordinance.

(C) Impact Fees and Timing. Developer's North Park Costs are in addition to any park impact fees that Developer is required to pay to develop Developer's north property, which property is highlighted in red, blue, and yellow on the attached Exhibit B to this First Amendment ("Developer's North Property"). Developer acknowledges and agrees that Developer is required to pay all park impact fees for each unit in Developer's North Property. The Parties acknowledge and agree that Developer shall substantially complete the construction of the North Neighborhood Park before receiving building permits for more than 40% of the units within the North Property, totaling ___ units. If the park is not substantially completed prior to issuance of building permits for ___ units, no additional certificates of occupancy or building permits for the North Property shall be issued until the park is substantially completed and accepted by the City. The park will be considered substantially completed when all amenities, landscaping, and infrastructure are installed, less any reasonable punch list items, and the park meets life safety standards for its intended use, as reasonably determined by Springville's Parks and Recreation Director, or their designee.

5. **South Neighborhood Park.** Subsection 5.2(b)(vi) of the Development Agreement is amended to read:

(vi) South Neighborhood Park.

(A) Development, Dedication and Maintenance of the Park. Developer shall design, construct, and install the south neighborhood park in the location shown on the "Neighborhood Park South Inspirational Site Plan," under Section 11-9-703 of the Lakeside Ordinance (the "**South Neighborhood Park**"). The South Neighborhood Park shall contain park amenities, open space, and green space in accordance with a design plan and construction costs and expenses that shall be developed and agreed to by the Parties. Developer shall install, at Developer's sole cost and expense, the following public right-of-way improvements adjacent to the park: curb and gutter, park strip, and sidewalk improvements. The public right-of-way improvements are not part of the South Neighborhood Park improvements described in this Subsection 5.2(b). After the City approves and accepts the park improvements as installed by Developer, the South Neighborhood Park shall be dedicated to the City. After receiving the dedication of the park, the City will be responsible for the general maintenance of the park, and the South Neighborhood Park shall be open to the public. Even though the City will maintain the park for one-year after the South Neighborhood Park is dedicated to the City, Developers, during the one-year period after the park is completed and dedicated to the City, shall warrant all improvements installed or constructed by Developers in the South Neighborhood Park, including fixing or replacing all defective work or improvements that need repairs. Notwithstanding the foregoing, Developers warranty to repair and replace work and improvements shall be strictly limited to defectively installed or constructed work and improvements installed or constructed by Developers. Any work and improvements in the North Neighborhood park installed or constructed by Developers that are damaged by other causes, including but not limited to, use, weather, negligence, or intentional destruction, are not included in Developers' warranty and shall not be the responsibility of Developers to repair or replace.

(B) <u>Park Costs, Density Bonus, and Timing</u>.

a. The Parties acknowledge and agree that the South Neighborhood Park shall be purchased, designed, and installed by the Developer, at the Developer's sole cost and expense. This cost shall be no less than Ten Dollars and Thirty-Seven Cents per square foot $10.37/sf) of the entire park property (the "$10.37 Cost").
b. The $10.37 Cost shall be adjusted over time to reflect inflation, based on the Consumer Price Index (CPI). If available, the CPI Inflation Calculator provided by the U.S. Bureau of Labor Statistics (https://www.bls.gov/data/inflation_calculator.htm) shall be used to calculate the adjustment. The inflation calculation shall begin in August 2025 and continue until the month in which the park construction costs are finalized through a fully executed agreement with a contractor to construct the South Neighborhood Park (the "Contractor Agreement").
c. Before the contractor to construct the South Neighborhood Park is selected and the Contractor Agreement is signed, Developer shall obtain three bids from qualified contractors for constructing the South Neighborhood Park and review the bids with the City. Both parties must mutually agree upon a contractor and their bid amount before the Contractor Agreement is signed.
d. The total cost, including all inflationary adjustments, along with the Developer's dedication of the South Neighborhood Park property to the City at no charge, shall collectively be referred to as the "Developer's South Park Costs."
e. The Developer's obligation to incur the Developer's South Park Costs and dedicate the park property is a condition of, and consideration for, the development densities granted to the Developer under the Lakeside Ordinance.

(C) <u>Impact Fees and Timing</u>. Developer's South Park Costs are in addition to any park impact fees that Developer is required to pay to develop Developer's south property, which property is highlighted in purple on the attached Exhibit B to this First Amendment ("Developer's South Property"). Developer acknowledges and agrees that Developer is required to pay all park impact fees for each unit in Developer's South Property. The Parties acknowledge and agree that Developer shall substantially complete the construction of the South Neighborhood Park before receiving building permits for more than 40% of the units within the South Property, totaling ___ units. If the park is not substantially completed prior to issuance of building permits for

___ units, no additional certificates of occupancy or building permits for the South Property shall be issued until the park is substantially completed and accepted by the City. The park will be considered substantially completed when all amenities, landscaping, and infrastructure are installed less any reasonable punch list items, and the park meets life safefy standards for its intended use, as reasonably determined by Springville's Parks and Recreation Director, or their designee.

All other subsections of Section 5 of the Development Agreement shall remain the same and continue in full force and effect.

6. Developer Responsibilities. Developer shall fulfill and complete all requirements, responsibilities, and obligations of all developers under the Development Agreement, including, without limitation, the requirements, responsibilities, and obligations of Lakeside, Davies, Developers, and Developer, as those terms are defined, in the Development Agreement.

7. All other terms of the Development Agreement not in conflict with or amended by this First Amendment shall remain the same and continue in full force and effect. Exhibits A and B of this First Amendment are only for this First Amendment and do not amend any exhibits in the Development Agreement.

In Witness Whereof, the parties hereto have executed this Amendment on the date indicated above.

DEVELOPERS:

Lakeside Land Partners, LLC

____
Glen K. Lent, Manager

State of Utah)
:ss
County of Utah)

On this _____day of______________, 2025, personally appeared before me Steve Broadbent, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he is the Manager of Lakeside Land Partners, LLC, and said document was signed by him in behalf of said company, and he acknowledged to me that said company executed the same.

____
Notary Public

Davies Design Build, Inc.

______________ ________
________________, _______

State of Utah)
:ss
County of Utah)

On this _____day of______________, 2025, personally appeared before me ___________, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he is the _________ of Davies Design Build, Inc., and said document was signed by him in behalf of said company, and he acknowledged to me that said company executed the same.

____
Notary Public

SPRINGVILLE CITY:

Springville City, a Utah municipal corporation

____
Matt Packard, Mayor

State of Utah)
:ss
County of Utah)

On this _____day of______________, 2025, personally appeared before me ___________, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he is the Mayor of Springville City, and said document was signed by him in behalf of said company, and he acknowledged to me that said company executed the same.

____
Notary Public

EXHIBIT A
(Property Legal Description)

EXHIBIT B
(North and South Properties Map)

To: Planning Commission

From: Carla Wiese, Planner/Econ Dev

Date: January 8, 2026

Re: **Drinking Water Master Plan, Impact Fee Facility Plan, and Impact Fee Analysis Pressurized Irrigation Master Plan, Impact Fee Facility Plan, and Impact Fee Analysis.**

Planning Commission Members,

In the following months, the Planning Commission will make recommendations on the master plans submitted by various departments. State Code, in the Land Use Development and Management Act, requires land use decisions to go before the municipality's planning commission, and recently the state legislature expanded the items that would be considered land use decisions to include "... specification, fee, or rule that governs the use or development of land...". Our City Attorney, John Penrod, has advised that the required impact fee facilities plans and analysis fall into this category and, therefore, should be submitted to the planning commission for recommendation to the City Council.

State Code also governs the requirements for cities to impose an impact fee on development. Title 11-36a is the Impact Fee Act, and it defines an impact fee as "... a payment of money imposed upon new development activity as a condition of development approval to mitigate the impact of the new development on public infrastructure." Before a city can impose an impact fee, it must "...prepare an impact fee facilities plan to determine the public facilities required to serve development resulting from new development activity" and "prepare a written analysis of each impact fee".

Each city department that imposes an impact fee will update its Impact Fee Facility Master Plan and Impact Fee Analysis, and will bring these documents to the Planning Commission for recommendations to the City Council. The Mayor and City Council have directed the various departments to review these master plans annually to ensure that the fees are sufficient to fund the infrastructure required by new growth.

SPRINGVILLE CITY

DRINKING WATER MASTER PLAN AND CAPITAL FACILITY PLAN

January 2026

HANSEN ALLEN & LUCE INC
ENGINEERS

SPRINGVILLE CITY

DRINKING WATER MASTER PLAN
AND CAPITAL FACILITY PLAN

(HAL Project No.: 260.62.100)

DRAFT

J. Enoch Jones, P.E.
Project Engineer

Recommended by: ______________________________
Katie Gibson Jacobsen, P.E., Project Manager

HANSEN ALLEN & LUCE INC
ENGINEERS

January 2026

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GLOSSARY OF TECHNICAL TERMS

Average Daily Flow: The average yearly demand volume expressed in a flow rate.

Average Yearly Demand: The volume of water used during an entire year.

Buildout: When the development density reaches maximum allowed by planned development.

Culinary Water: Water of sufficient quality for human consumption. Also referred to as Drinking or Potable water.

Demand: Required water flow rate or volume.

Distribution System: The network of pipes, valves and appurtenances contained within a water system.

Drinking Water: Water of sufficient quality for human consumption. Also referred to as culinary or Potable water.

Dynamic Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is flowing through the system.

Equivalent Residential Connection (ERC): A measure used in comparing water demand from non-residential connections to residential connections.

Fire Flow Requirements: The rate of water delivery required to extinguish a particular fire. Usually it is given in rate of flow (gallons per minute) for a specific period of time (hours).

Head: A measure of the pressure in a distribution system that is exerted by the water. Head represents the height of the free water surface (or pressure reduction valve setting) above any point in the hydraulic system.

Head loss: The amount of pressure lost in a distribution system under dynamic conditions due to the wall roughness and other physical characteristics of pipes in the system.

Level of service (LOS): The selected level to which the water system will be designed

Peak Day: The day(s) of the year in which a maximum amount of water is used in a 24-hour period.

Peak Day Demand: The average daily flow required to meet the needs imposed on a water system during the peak day(s) of the year.

Peak Instantaneous Demand: The flow required to meet the needs imposed on a water system during maximum flow on a peak day.

Pressure Reducing Valve (PRV): A valve used to reduce excessive pressure in a water distribution system.

Pressure Zone: The area within a distribution system in which water pressure is maintained within specified limits.

Service Area: Typically the area within the boundaries of the entity or entities that participate in the ownership, planning, design, construction, operation and maintenance of a water system.

Static Pressure: The pressure exerted by water within the pipelines and other water system appurtenances when water is not flowing through the system, i.e., during periods of little or no water use.

Storage Reservoir: A facility used to store, contain and protect Drinking water until it is needed by the customers of a water system. Also referred to as a Storage Tank.

Transmission Pipeline: A pipeline that transfers water from a source to a reservoir or from a reservoir to a distribution system.

ABBREVIATIONS AND UNITS

ac	acre [area]
ac-ft	acre-foot (1 ac-ft = 325,851 gal) [volume]
CIP	Capital Improvement Plan
CFP	Capital Facilities Plan
DDW	Utah Division of Drinking Water
DIP	Ductile Iron Pipe
DWR	Utah Division of Water Rights
EPA	U.S. Environmental Protection Agency
EPANET	EPA hydraulic network modeling software
ERC	Equivalent Residential Connection
ft	foot [length]
ft/s	feet per second [velocity]
gal	gallon [volume]
gpd	gallons per day [flow rate]
gpm	gallons per minute [flow rate]
HAL	Hansen, Allen & Luce, Inc.
hr	hour [time]
IFA	Impact Fee Analysis
IFC	International Fire Code
IFFP	Impact Fee Facilities Plan
in.	inch [length]
irr-ac	irrigated acre
kgal	thousand gallons [volume]
MG	million gallons [volume]
MGD	million gallons per day [flow rate]
mi	mile [length]
psi	pounds per square inch [pressure]
s	second [time]
SCADA	Supervisory Control And Data Acquisition
yr	year[time]

CHAPTER 1 INTRODUCTION

PURPOSE AND SCOPE

The purpose of this master plan is to provide direction to the City of Springville regarding decisions that will be made now and well into the future to provide an adequate drinking water system for its customers at the most reasonable cost. Recommendations are based on demand data, growth projections, standards of the Utah Division of Drinking Water (DDW), city zoning, General Plan land uses, known planned developments, and standard engineering practices. The planning horizon for the master plan is approximately 2070. Buildout occurs beyond 2070 and refers to the time period when all parcels are developed within the annexation declaration boundary according to the current General Plan. The service area considered in this master plan is the entire City of Springville, as well as all areas serviced outside City limits, including Kelly's Grove and Grindstone subdivision, and all customers along the Left Fork Hobble Creek Canyon Road between Rotary Park and Bartholomew Tank. Canyon customers include the Holiday Hills and Hobble Creek Haven private water systems supplied by Springville City.

The master plan is a study of the City's drinking water system and customer water use. The following topics are addressed herein: growth projections, source requirements, storage requirements, and distribution system requirements. Operational parameters for the City's drinking water system were reviewed and optimized based on stability, ease of use, and cost. Based on this study, needed capital improvements have been identified and conceptual-level cost estimates for the recommended improvements have been provided. This master plan includes a Capital Facility Plan (CFP) to identify the drinking water facilities that are required to meet the demands placed on the system by future development for the 10-year and 20-year planning period.

The results of the study are limited by the accuracy of growth projections, data provided by the City, and other assumptions used in preparing the study. It is expected that the City will review and update this master plan every 5–10 years as new information about development, system performance, or water use becomes available. This master plan updates the previous plan completed by the City of Springville and adopted in August 2020.

BACKGROUND

Springville was originally settled in 1850 and had an estimated population of 36,500 in 2024 (provided by the City). It is located in central Utah County and has an area of 14.4 square miles. As a result of its location along the I-15 corridor and in the rapidly growing Provo-Orem metropolitan area, Springville is experiencing rapid growth and is expected to grow into the future. Growth rates were determined based on future population estimates produced by Mountainland Association of Governments (MAG) and average annual growth rates produced by Kem C. Gardner. See population estimates in Figure 1-1. Data for this figure is shown in Appendix A as Table A-1. By mid-2024, the City provided water service to approximately 11,400 residential units via approximately 10,130 connections.

The City's existing drinking water system includes seven wells, five springs, nine tanks, two pump stations, eleven pressure zones, and about 221 miles of pipe with diameters of 4 to 30 inches. Existing facilities are shown on Figure 1-2. The City recognizes that its continued growth necessitates proactively planning additional drinking water facilities to maintain the current level of service for indoor water use.

The City also maintains a pressurized irrigation (PI) water system for outdoor use in the newer, western portion of the City, approximately west of 400 West. The eastern boundary of the area served by the PI system is shown on Figure 1-2. The drinking water system supplies both indoor and outdoor water needs for areas east of 400 West, as well as for some customers located within the PI system area who have not yet connected to the PI system. The pressurized irrigation water system is addressed in a separate master plan. The findings and conclusions in this master plan are dependent on the PI system being constructed per its separate master plan.

In 2020, the City prepared a Capital Facilities Plan, with an Impact Fee Facilities Plan (IFFP) and Impact Fee Analysis (IFA) following in 2024 for its drinking water system. This master plan will provide the bases for updating those studies and providing a basic full system layout design to guide new development.

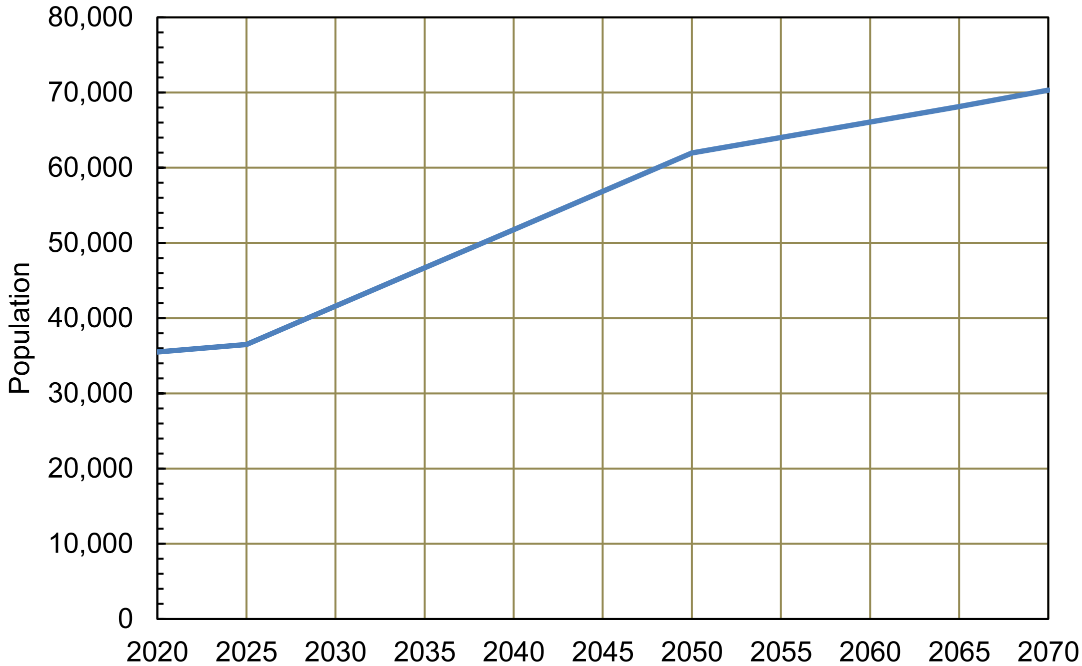
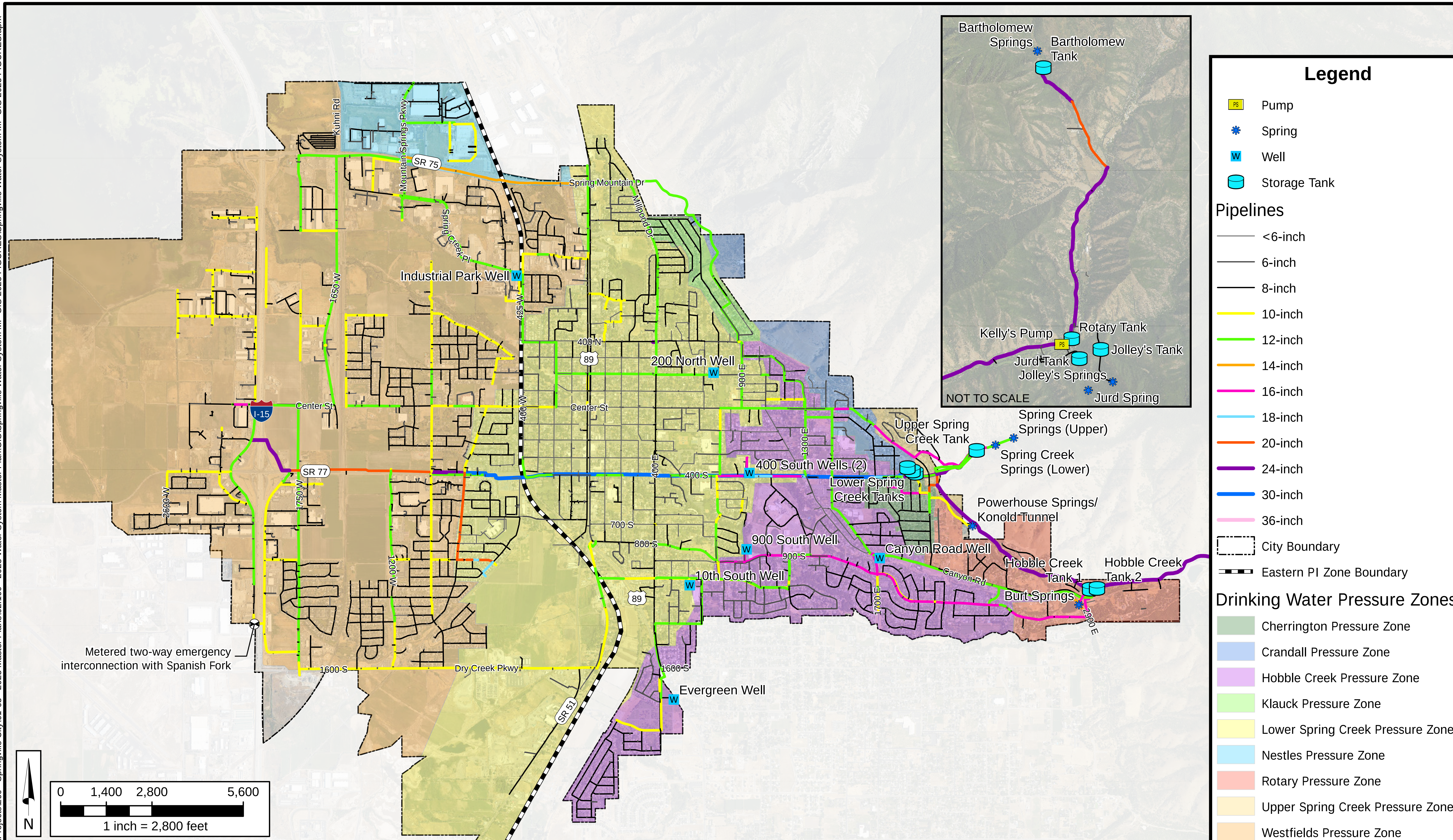


Figure 1-1: Springville Projected Population

MASTER PLANNING METHODOLOGY

Drinking water systems consist of water sources, storage facilities, distribution pipes, pump stations, valves, and other components. Design and operation of the individual components must be coordinated so that they operate efficiently under a range of demands and conditions. The system must be capable of responding to daily and seasonal variations in demand while simultaneously providing sufficient capacity for firefighting and other emergency situations.

Identifying present and future water system needs is essential in the management and planning of a water system. For this study, existing water demands are based on billing data and the level of service established by the City. Future water demands were predicted using this level of service, current zoning and densities provided by the City, and future estimated population growth. Computer models of the City's drinking water system were prepared to simulate the performance of facilities under existing and future conditions. System improvement recommendations were prepared from the analysis and are presented in this report.



HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
DRINKING WATER SYSTEM MASTER PLAN

EXISTING SYSTEM

FIGURE 1-2

Date: 10/29/2025
Document Path: H:\Projects\260 - Springville City\61-63 - 2025 Master Plans\62.100 - 2025 Water System Master Plan\GIS\Springville Water System MP GIS 2025 FIGURES\Springville Water System MP GIS 2025 FIGURES.aprx

The development of impact fees requires growth projections over the next ten years. In addition to impact fee projects, this report will also highlight anticipated projects required in the next 10 to 20 years in the "Capital Facilities Plan" section of this report. The master planning period covered in this report continues through 2070, when City population is projected to approach the current planning population of 70,000.

This report follows the DDW requirements of Rule R309-510 ("Facility Design and Operation: Minimum Sizing Requirements") and Rule R309-105 ("Administration: General Responsibilities of Public Water Systems") of the Utah Administrative Code. The report addresses sources, storage, distribution, minimum pressures, hydraulic modeling, capital improvements, funding, and other topics pertinent to Springville's drinking water system.

LEVEL OF SERVICE (LOS)

One Equivalent Residential Connection (ERC) is equal to the average indoor water usage of a typical single family residence in the City. The level of service is the reliable flow or volume the system is designed to provide under normal operating conditions and is usually quantified in terms of flow or volume per ERC for indoor usage and flow or volume per irrigated acre for outdoor usage. HAL analyzed production and billing data provided by Springville City for the previous three years. Once water production and demand patterns were well understood, HAL and the City met to establish a level of service that is based on this data and incorporates appropriate safety factors. A summary of the level of service selected by the City is included in Table 1-1. These values are expected to meet the requirements of the DDW.

Table 1-1: System Level of Service

Criteria	Indoor Level of Service (ERC)	Outdoor Level of Service (irr-ac)
Average Yearly Demand	0.3 ac-ft/ERC	4.0 ac-ft/irr-ac
Peak Day Demand	260 gpd/ERC = 0.18 gpm/ERC	12,240 gpd/irr-ac = 8.5 gpm/irr-ac
Peak Instantaneous Demand	1.5 Peaking Factor = 0.27 gpm/ERC	1.5 Peaking Factor = 12.8 gpm/irr-ac
Storage	230 gal/ERC	6,120 gal/irr-ac

Additional information on level of service calculations for outdoor use is included in the pressurized irrigation system master plan, which is based on the customers in the PI system service zone using the PI system for outdoor watering.

DESIGN AND PERFORMANCE CRITERIA

Summaries of the key design criteria and demand requirements for the drinking water system are included in Table 1-2, with additional details in Table A-2 in Appendix A. The design criteria were used in evaluating system performance and recommending future improvements based on the 2070 planning horizon. Criteria development is described in later chapters.

Table 1-2: System Design Criteria

			Criteria	Existing Requirements	Estimated Future Requirements (2070)
ERCs			Calculated from past water use and projected growth	20,794	35,572
Irrigated Acreage			Calculated from past water use and projected growth	1,209	1,057
Source	**Peak Day Demand**		Section R309-510-7/LOS	14,030 gpm	15,410 gpm
Source	**Average Yearly Demand**		Section R309-510-7/LOS	11,070 ac-ft	14,900 ac-ft
Storage	**Equalization**		Section R309-501-8/LOS	12.18 MG	14.65 MG
Storage	**Emergency**		City Preference	2.02 MG	2.02 MG
Storage	**Fire Suppression**		IFC/Fire Marshal	1.32 MG	1.32 MG
Storage	**Total**		-	15.52 MG	17.99 MG
Distribution	**Peak Instantaneous Flow**		1.5x Peak Day Demand	21,050 gpm	23,120 gpm
Distribution	**Minimum Peak Day Fire Flow**	**Residential (East of 400 W)**[1]	IFC/ Fire Marshal	1,000 gpm @ 20psi	1,000 gpm @ 20psi
Distribution	**Minimum Peak Day Fire Flow**	**Residential (West of 400 W)**[1]	IFC/ Fire Marshal	1,500 gpm @ 20psi	1,500 gpm @ 20psi
Distribution	**Minimum Peak Day Fire Flow**	**Non-Residential**	IFC/ Fire Marshal	2,000 gpm @ 20 psi	2,000 gpm @ 20 psi
Distribution	**Maximum Operating Pressure**		LOS	110 psi	110 psi
Distribution	**Minimum Pressure**	**Peak Day**	Section R309-510-9/LOS	50 psi	50 psi
Distribution	**Minimum Pressure**	**Peak Instantaneous**	Section R309-510-9	30 psi	30 psi

1 – The minimum fire flow requirement is 1,000 gpm east of 400 West/Highway 89/Highway 51, and 1,500 gpm west of this boundary. The boundary coincides with the eastern boundary of the PI service zone, as shown on Figure 1-2.

CHAPTER 2 SYSTEM GROWTH

EXISTING CONNECTIONS

Indoor water demands are expressed in terms of equivalent residential connections (ERCs), which for planning purposes are the same as equivalent residential units (ERUs). The use of ERCs is a standard engineering practice to describe the entire system in a common unit of measurement. One ERC is equal to the average demand of an average residential connection. Non-residential demands are converted to ERCs for planning purposes. For example, a commercial building requiring six times as much water as a typical residential connection is assigned an ERC of 6. The entire water demand then can be described with a single ERC count.

HAL analyzed the City's water use data from May 2021 to April 2024 along with discussion with the City and determined that the existing system serves 20,794 ERCs for indoor usage. An extended-period hydraulic model was updated with current water use and pipe information to represent existing conditions. A breakdown of the existing ERCs by pressure zone is shown in Table 2-1.

Table 2-1: Existing ERCs by Pressure Zone

Zone	ERCs
Bartholomew	56
Kelly/Jurd	167
Rotary	202
Cherrington	186
Hobble Creek	2,388
Lower Spring Creek	6,346
Westfields	6,081
Upper Spring Creek	51
Crandall	125
Klauck	218
Nestlé	4,974
Total	**20,794**

These existing ERCs are shown by customer type in Table 2-2.

Table 2-2: Existing ERCs by Customer Type

Customer Type	ERCs
City Owned	471
Government/Church	498
Commercial	3,586
Residential	11,397
Industrial (Nestlé)	4,842
Total	**20,794**

EXISTING IRRIGATED ACREAGE

Outdoor water demands were estimated based on usage per irrigated acre (irr-ac). Existing irrigated areas were identified using a combination of water use data and remote sensing analysis. The analysis utilized imagery from the National Agricultural Imagery Program (NAIP), available through the Utah Geospatial Resource Center (UGRC), to identify areas of healthy vegetation. Water demand and storage requirements were then determined in accordance with the level of service established by the City.

The Springville City drinking water system provides water for outdoor irrigation in a portion of the system. The area of the City generally west of 400 West, Highway 51, and Highway 89 is master-planned to be served by a separate pressurized irrigation (PI) system. The eastern boundary of the PI system is shown on Figure 1-2. A portion of the City near the mouth of Hobble Creek Canyon is irrigated by the Highline Canal but is planned to be added to the drinking water system. Additionally, the outdoor irrigation for a portion of Plat A near the City center (the area bounded by 400 North, 400 East, 400 South, and 400 West) is served by a separate irrigation system fed by Hobble Creek, but is planned to be added to the drinking water system. The remainder of the irrigated acreage in the City (generally east of 400 West, Highway 51, and Highway 89) is served by the drinking water system. The total area served by the PI system and drinking water system are shown in Table 2-3 below. Table 2-4 lists the area for Plat A and Highline Canal and the area that is within the PI system service boundary but still supplied by the drinking water system.

A portion of the PI system has been constructed and is in use and is addressed in a separate master plan. The PI system will be expanded as development occurs. Some portions of the existing and planned PI service area are currently supplied by the drinking water system because PI infrastructure is not yet available or other factors are preventing customers from connecting to the existing PI network. This includes some customers adjacent to the active PI system ("wet PI pipe") and customers adjacent to PI pipelines that are not yet active ("dry PI pipe"). Currently these connections are assumed to be borrowing capacity in the drinking water system because capacity for these connections is accounted for in the PI system. As the City develops, it is assumed that customers within the PI service area will be served by the PI system.

Table 2-3: Existing Irrigated Acreage

Pressure Zone	Total Irrigated Acreage	Served by Drinking Water System	Served by PI System
Bartholomew	5	5	
Kelly/Jurd	13	13	
Rotary	80	80[1]	
Cherrington	34	34	
Hobble Creek	356	356	
Lower Spring Creek	471	384[2]	87
Westfields	522	247[3]	275
Upper Spring Creek	7	7	
Crandall	16	16	
Klauck	28	28	
Nestlé	39	39[4]	
Total	**1,571**	**1,209**	**362**

1. Includes the Highline Canal service area.
2. Includes approximately 211 irrigated acres within the PI system service zone.
3. Includes approximately 12 irrigated acres within the PI system service zone.
4. Includes approximately 37 irrigated acres within the PI system service zone.

Table 2-4: Summary of Planned Drinking Water System Service Area Alterations

Name	Irrigated Acres	Description
Wet PI Pipe	122	Customers with access to the PI system but who have not connected and are still served by the drinking water system
Dry PI Pipe	138	Areas with PI piping installed that has not yet been connected to the PI system.
Plat A	25	Area in the Lower Spring Creek pressure zone that is currently irrigated by a separate irrigation system but planned to be connected to the drinking water system.
Highline Canal	35	Area in the Rotary pressure zone that is currently irrigated by a separate irrigation system but planned to be connected to the drinking water system.

It is recommended that all existing and future customers in the PI system service zone use the PI system for outdoor watering. This will require many existing customers to make connections to the PI system. The City may explore opportunities to provide hardship funding to assist customers in making these connections. This could include the use of grants to reimburse the City.

FUTURE CONNECTIONS

Future ERCs were calculated based on existing land use patterns, current zoning and General Plan land use designations, and densities allowed by City code or anticipated by planners.

The City has committed to serve approximately 850 ERCs that are not yet connected to the system. These ERCs have been accounted for in the future growth areas of this report.

The area of the City generally east of 400 West and S.R. 51, and north of Hobble Creek, has a relatively small amount of undeveloped land remaining. A substantial portion of existing development in this area is built at a lower density than is allowed by City zoning ordinances. It was assumed that existing land uses would remain similar in the future. Excessively steep areas above the Bonneville Shoreline Trail were assumed to remain undeveloped indefinitely.

The City's General Plan land use classifications were used to determine densities and allocate demands across the City. As these classifications were prepared in 2011, updates to these classifications were made by HAL based on community plans for large developments, city zoning, and nearby development. City code does not specify a development density in units per acre for most zoning types or General Plan land use designations. For all commercial and industrial areas of the City, HAL evaluated the existing development density in ERCs per acre. Future commercial and industrial areas were assumed to have a development density similar to existing areas. Density of residential areas was determined in consultation with City staff. The above analysis of density resulted in the following development densities for future planning, shown in Table 2-5.

Table 2-5: Development Densities

Land Use	ERC Density Per Acre
Agriculture (Placeholder for Future Residential/Mixed Use)	10
Commercial	5
Industrial Manufacturing	3
Low Density Residential	3
Medium Density Residential	10
Medium High Density Residential	15
Medium Low Density Residential	5
Mixed Use	5

The Nestlé USA campus was excluded from the analysis of industrial density because of its very high water use. It was assumed that it is not representative of future industrial development in Springville. Usage for the campus was assumed to stay at existing volumes and flow rates in the future.

Increases to the existing water usage and ERCs (other than for Nestlé) were projected at the growth rates shown in Figure 1-1, resulting in the projected ERCs shown in Table A-1 in Appendix A. In 2070 (the planning horizon or terminus of this master planning period), 35,572 ERCs are expected. This is an increase of 14,778 ERCs beyond the existing 20,794 ERCs. The estimate is based on current zoning and General Plan land use maps (shown in Appendix E), on plans for known future developments which HAL has reviewed, and on the development densities shown above. Springville is projected to reach full development after 2070. Although actual 2070 conditions may be different if zoning and density change significantly, the basic system layout plan developed by this study will help guide the construction of a responsible system. A breakdown of the existing and expected 2070 ERCs by pressure zone is shown in Table 2-6.

Table 2-6: Existing and Future ERCs

Zone	Existing ERCs	2070 ERCs
Bartholomew	56	75
Kelly/Jurd	167	180
Rotary	202	238
Cherrington	186	187
Hobble Creek	2,388	2,469
Lower Spring Creek	6,346	8,787
Westfields	6,081	18,227
Upper Spring Creek	51	51
Crandall	125	135
Klauck	218	249
Nestlé	4,974	4,974
Total	**20,794**	**35,572**

The majority of the anticipated growth is associated with large undeveloped parcels on the western side of the City. They are zoned for a mix of single-family houses and higher-density planned communities. From expected locations and densities of new development, HAL prepared an extended-period hydraulic model and engineering calculations to analyze 2070 conditions.

The City will continue to review individual developments through the Development Review Committee (DRC) process, including analyzing water source, storage, and transmission requirements for any usage that does not fit the typical requirements. Developments located in areas where the water system is not well connected should be analyzed individually to determine necessary pipe sizing in the development.

FUTURE IRRIGATED ACREAGE

Future irrigated acreage was calculated based on actual usage on existing land use types, projected land uses, and their associated proportions of irrigated acreage. Irrigated area based on lot size is shown in Table 2-7.

Table 2-7: Irrigated Acreage by Lot Size

Lot Size Min (sq ft)	Lot Size Max (sq ft)	Irrigated Area		Annual Volume[1] (ac-ft)
		(sq ft)	(acre)	
0	2,000	1,000	0.03	0.09
2,000	3,999	1,100	0.03	0.10
4,000	5,999	2,500	0.06	0.23
6,000	7,999	3,600	0.09	0.33
8,000	10,889	4,400	0.11	0.40
10,990	21,779	6,300	0.15	0.58
≥ 21,780		14,900	0.35	1.37

1. Irrigated areas incorporate green space/common space into each lot.
2. Annual volume calculated based on an outdoor level of service of 4 ac-ft per irrigated acre.

Estimated 2070 irrigated acreage is shown in Table 2-8.

Table 2-8: 2070 Irrigated Acreage

Zone	Total Irrigated Acreage	Served by Drinking Water System[1]	Served by PI System
Bartholomew	7	7	
Kelly/Jurd	14	14	
Rotary	85	85	
Cherrington	34	34	
Hobble Creek	364	364	
Lower Spring Creek	668	421	247
Westfields	1,120	74	1,046
Upper Spring Creek	7	7	
Crandall	18	18	
Klauck	32	32	
Nestlé[1]	40	2	38
Total	**2,388**	**1,057**	**1,331**

1. Includes Plat A and the Highline Canal. Excludes areas within the PI service area.

Only the irrigated acreage served by the drinking water system will be considered in this master plan. The irrigated acreage in the master-planned PI service area is addressed in a separate master plan. The findings and conclusions of this master plan are dependent on the PI system being constructed as shown in the PI master plan.

CHAPTER 3 WATER SOURCES

EXISTING WATER SOURCES

The Springville City drinking water system is supplied by seven drinking water wells and five springs, shown on Figure 1-2. For planning purposes, the City has requested that the analysis consider the lowest summer flows over the past five years as the reliable supply for springs to add an extra measure of safety and plan for future drought. These flows are included in Table 3-1. Well capacity has not been observed to significantly decrease during drought periods, so typical observed flows are shown from the wells.

Table 3-1: Existing Drinking Water Sources

Source	Zone	Flow Rate (gpm)	Annual Source Capacity[1] (ac-ft)
Bartholomew Springs	Rotary	1,000	1,060
Jurd Springs[2]	Jurd	n/a	n/a
Spring Canyon Springs	Upper Spring Creek	620	1,080
Konold Springs	Lower Spring Creek	160	230
Burt Springs	Hobble Creek	760	220
200 North Well	Lower Spring Creek	2,400	2,770
400 South Well #1	Lower Spring Creek	3,000	3,460
400 South Well #2	Lower Spring Creek	3,900	4,490
900 South Well	Hobble Creek	3,000	3,460
1000 South Well	Hobble Creek	550	630
Canyon Road Well	Hobble Creek	1,500	1,730
Evergreen Well[3]	Hobble Creek	350	400
Total Source Capacity		**17,240 gpm**	**19,530 ac-ft**
With Largest Well Out of Service		**13,340 gpm**	**15,040 ac-ft**

1. Annual well capacity assumes about 75% of the year-round flow at the given flow rate. Actual volume may be limited by demand or hydrologic constraints.
2. Jurd Springs is located near the Grindstone subdivision and Jurd tank, but the source is discharged directly into Hobble Creek. Flows are not metered.
3. Evergreen Well is not currently used but could be reintroduced into the system if needed. It could also be transferred to the pressurized irrigation system.

A summary of the water rights owned by Springville is included in Chapter 6. Existing water right capacity for the drinking water system is approximately 15,831 acre feet. Thus, water rights available exceed water available in the case shown in Table 3-1 with the largest well out of service.

PUMP STATIONS

Pump stations allow the City to supply water to zones that do not have their own sources and to supply zones from lower head zones. Springville has two pump stations whose service zones and pump capacity are summarized in Table 3-2.

Table 3-2: Springville City Pump Stations

<table>
<tr><th>Name</th><th>From</th><th>To</th><th>Total Capacity</th></tr>
<tr><td>Kelly's</td><td>Rotary Zone</td><td>Kelly Zone
Jurd Tank</td><td>200 gpm</td></tr>
<tr><td rowspan="2">Spring Creek Pumpback</td><td rowspan="2">Lower Spring Creek Tank</td><td>Upper Spring Creek Tank</td><td rowspan="2">3,300 gpm</td></tr>
<tr><td>Rotary Tank</td></tr>
</table>

EXISTING WATER SOURCE REQUIREMENTS

According to DDW standards (Section R309-510-7), water sources must be able to meet the expected water demand for two conditions:

1. Sources must be able to provide an adequate supply of water for the peak day demand (flow requirement).
2. Sources must be able to produce one year's supply of water, or the average yearly demand (volume requirement).

Because the pressurized irrigation system only provides water for a portion of the city's outdoor use, both indoor demand and outdoor demand are included in the drinking water system for areas not served by the PI system.

Outdoor demand is calculated based on the estimated irrigated area using the irrigation areas shown in Table 2.5.

Peak day and average yearly demand are calculated using the level of service criteria shown in Table 1-1 of this report. The level of service was established based on the DDW standard for minimum source and storage sizing, including computing the demand from an analysis of three years of actual water use data with an added factor of safety.

Existing Peak Day Demand

Peak day demand is the water demand on the day of the year with the highest water use. It is used to determine required source capacity under existing and future conditions. Based on the requirements shown in Table 1-1, the total peak day drinking water demand is 14,030 gpm (20.2 MGD). Table 3-3 summarizes the indoor and outdoor components of this demand.

Table 3-3: Existing Peak Day Demand

Indoor Connections (ERCs)	Peak Day Demand (gpm/ERC)	Indoor Peak Day Demand (gpm)	Irrigated Acres[1]	Peak Day Outdoor Demand (gpm/ irr-ac)	Peak Outdoor Demand (gpm)	Total Peak Day Demand (gpm)
20,794	0.18	3,750	1,209	8.5	10,280	14,030

1. Includes 260 acres that are planned to be served by the PI system.

A breakdown of the existing peak day demand by pressure zone is shown in Table 3-4.

Table 3-4: Existing Source Requirements by Pressure Zone

Zone	ERCs	Irrigated Acres[1]	Demand (gpm)
Bartholomew	56	5	50
Kelly/Jurd	167	13	140
Rotary	202	80	710
Cherrington	186	34	320
Hobble Creek	2,388	356	3,460
Lower Spring Creek	6,346	384	4,410
Westfields	6,081	247	3,200
Upper Spring Creek	51	7	70
Crandall	125	16	160
Klauck	218	28	280
Nestlé	4,974	39	1,230
Total	**20,794**	**1,209**	**14,030**
Total Supply Available			**17,240**
With Largest Well Out of Service			**13,340**

1. Includes 260 acres that are planned to be served by the PI system.

Not all sources are available to all pressure zones in the City. A mass balance matching sources to pressure zones is included in Appendix A as Table A-3. If all sources are in service, the mass balance shows that the existing sources can supply the existing peak day demand for each zone, with approximately 3,210 gpm capacity remaining in the system. With all the irrigated area planned to be supplied by the PI system removed from the drinking water system, the capacity remaining in the system is 5,420 gpm.

The City desires a level of redundancy that will allow the system to have sufficient source even if any of the wells are out of service. With existing usage (including customers planning to transition to the PI system) and with the largest well (3,900 gpm) out of service, the system would have a capacity deficit of 690 gpm. During a non-drought year, some additional capacity is likely available from the springs. However, to achieve full redundancy, an additional source should be added to the system. If all irrigated area planned to be served by the PI system were removed from the drinking water system, there would be 1,520 gpm excess capacity remaining in the system with the largest well out of service. The city plans to transition these customers to the PI system as soon as practicable, but this effort could still take 5 to 20 years, and some customers may have challenges transitioning systems. In addition, some Springville Irrigation Company (SIC) customers using SIC facilities to irrigate outdoor areas (garden tickets) are likely to be added to the drinking water system in the next 5 to 10 years. These garden ticket users could require as much as 400 gpm for peak day flows. It is recommended to add another source to the system to provide full redundancy for the existing system and these potential new uses.

It is also recommended that the City provide backup power for primary water sources sufficient to meet indoor water needs, including the springs and 400 South Well #2. A portable generator could be used to operate spring chlorinators during outages. A permanent generator could be considered at 400 South Well #2.

Each pressure zone will experience different impacts if a source is out of service. Table A-4 in Appendix A shows which sources are available to each zone. This table can be used to evaluate the effect of the loss of each source.

Existing Average Yearly Demand

Average yearly demand is the volume of water used during an entire year and is used to ensure the sources can supply enough volume to meet demand under existing and future conditions.

Based on the requirements shown in Table 1-1, the total existing average yearly demand is 11,070 acre-feet. Table 3-5 summarizes the indoor and outdoor components of this demand.

Table 3-5: Existing Average Yearly Demand

Indoor Connections (ERCs)	Average Yearly Indoor Demand LOS (ac-ft/ ERC)	Average Yearly Indoor Demand (ac-ft)	Irrigated Acres[1]	Average Yearly Outdoor Demand LOS (ac-ft/irr-ac)	Average Yearly Outdoor Demand (ac-ft)	Total Average Yearly Demand (ac-ft)
20,794	0.3	6,240	1,209	4.0	4,830	11,070

1. Includes 260 acres that are planned to be served by the PI system.

A breakdown of the existing average yearly demand by pressure zone is shown in Table 3-6.

Table 3-6: Existing Average Yearly Demand Requirements by Pressure Zone

Zone	ERCs	Irrigated Acres[1]	Demand (acre-feet)
Bartholomew	56	5	40
Kelly/Jurd	167	13	100
Rotary	202	80	380
Cherrington	186	34	190
Hobble Creek	2,388	356	2,140
Lower Spring Creek	6,346	384	3,440
Westfields	6,081	247	2,810
Upper Spring Creek	51	7	40
Crandall	125	16	100
Klauck	218	28	180
Nestlé	4,974	39	1,650
Total	**20,794**	**1,209**	**11,070**
Total Yearly Supply Available (ac-ft)			**19,530**
With Largest Well Out of Service			**15,040**

1. Includes 260 acres that are planned to be served by the PI system.

The current yearly supply available is sufficient to meet existing average yearly demand even with the largest well out of service.

FUTURE WATER SOURCE REQUIREMENTS

Future water source requirements were evaluated based on the same criteria as discussed above for existing water source requirements:

1. Sources must be able to provide an adequate supply of water for the peak day demand (flow requirement).
2. Sources must be able to produce one year's supply of water, or the average yearly demand (volume requirement).

The same conditions were used to evaluate the future source requirements as were used for the existing:

1. Peak day and average yearly demand are calculated using the level of service criteria shown in Table 1-1 of this report.
2. The level of service was set based on the DDW standard for minimum source and storage sizing, including computing the demand from an analysis of three years of actual water use data with an added factor of safety.
3. For all future development scenarios, the pressurized irrigation system is assumed to provide all outdoor demand for any areas within the PI service boundary.

As discussed in Chapter 2 of this report, this master plan covers the planning period through 2070, when the City is projected to reach 35,572 ERCs and approximately 70,000 population. The majority of this growth will occur in the Lower Spring Creek and Westfields pressure zones, with relatively little growth occurring in the areas east of 400 West. The majority of future development is located within the PI service zone boundary, resulting in very little increase in the outdoor irrigated acreage served by the drinking water system.

The City will likely continue to expand beyond the projected 2070 level of development as areas continue to fill in and redevelopment occurs. Detailed analysis of development beyond 2070 is beyond the scope of this master plan.

Future Peak Day Demand

Following the methodology described for existing conditions and estimating 35,572 ERCs in 2070, the peak day source requirement is projected to be 15,410 gpm (22.2 MGD). See Table 3-7.

Table 3-7: 2070 Peak Day Demand

Indoor Connections (ERCs)	Peak Day Demand (gpm/ERC)	Indoor Peak Day Demand (gpm)	Irrigated Acres[1]	Peak Day Outdoor Demand (gpm/ irr-ac)	Peak Outdoor Demand (gpm)	Total Peak Day Demand (gpm)
35,572	0.18	6,420	1,057	8.5	8,990	15,410

1. Excludes areas planned to be served by the PI system.

A breakdown of the 2070 peak day demand by pressure zone is shown in Table 3-8.

Table 3-8: 2070 Source Requirements by Pressure Zone

Zone	ERCs	Irrigated Acres[1]	Demand (gpm)
Bartholomew	75	7	70
Kelly/Jurd	180	14	150
Rotary	238	84	760
Cherrington	187	34	320
Hobble Creek	2,469	364	3,540
Lower Spring Creek	8,787	421	5,170
Westfields	18,227	74	3,920
Upper Spring Creek	51	7	70
Crandall	135	18	180
Klauck	249	32	320
Nestlé[1]	4,974	2	910
Total	**35,572**	**1,057**	**15,410**
Total Supply Available			**17,240**
With Largest Well Out of Service			**13,340**

1. Excludes areas planned to be served by the PI system.

Under 2070 conditions, if all sources are in service there is a projected source capacity excess of 1,830 gpm based on the capacity of all the existing sources, including the Evergreen Well and 400 South Well #2. This capacity is sufficient to meet the requirements stated herein if all sources are in service but is not sufficient to provide redundancy if one of the City's wells pumping larger than 1,830 gpm is out of service. Evergreen Well could potentially be transferred to the pressurized irrigation system. An additional well or increased flow from an existing source is required to provide this redundancy. It is unlikely that existing sources can reliably provide this much additional flow, so an additional well is recommended to provide this redundancy. As discussed previously, SIC users transitioning to the drinking water system are likely to increase the peak day demand of the system.

As with existing conditions, not all sources are available to all pressure zones in the City. The general pattern of the source mass balance shown as Table A-3 in Appendix A for existing conditions will continue to function for 2070 conditions, with 400 South Well #2 being used to provide source capacity for the Lower Spring Creek and Westfields zones. Similarly, Table A-4 in Appendix A will still apply for future conditions and can be used to evaluate the effect of the loss of each source.

Future Average Yearly Demand

Following the methodology described for existing conditions and estimating 35,572 ERCs in 2070, the average yearly source requirement is projected to be 14,900 ac-ft. See Table 3-9.

Table 3-9: 2070 Average Yearly Demand

Indoor Connections (ERCs)	Average Yearly Indoor Demand (ac-ft/ ERC)	Average Indoor Yearly Demand (ac-ft)	Irrigated Acres[1]	Average Yearly Outdoor Demand (ac-ft/ irr-ac)	Average Yearly Outdoor Demand[1] (ac-ft)	Total Average Yearly Demand (ac-ft)
35,572	0.3	10,670	1,102	4.0	4,410	14,900

1. Excludes areas planned to be served by the PI system.

A breakdown of the 2070 average yearly demand by pressure zone is shown in Table 3-10.

Table 3-10: 2070 Average Yearly Demand Requirements by Pressure Zone

Zone	ERCs	Irrigated Acres[1]	Demand (acre-feet)
Bartholomew	75	7	50
Kelly/Jurd	180	14	110
Rotary	238	84	410
Cherrington	187	34	190
Hobble Creek	2,469	364	2,200
Lower Spring Creek	8,787	421	4,320
Westfields	18,227	74	5,770
Upper Spring Creek	51	7	40
Crandall	135	18	110
Klauck	249	32	200
Nestlé	4,974	2	1,500
Total	**35,572**	**1,057**	**14,900**
Total Yearly Supply Available (ac-ft)			**19,530**
With Largest Well Out of Service			**15,040**

1. Excludes areas planned to be served by the PI system.

The current yearly supply available is sufficient to meet anticipated future average yearly demand. However, the City is encouraged to keep acquiring water rights at levels required in City Code and to develop sources to provide redundancy. The City currently has a metered two-way emergency interconnection with Spanish Fork. Additional emergency interconnections with Mapleton and Provo could also provide redundancy.

FUTURE WATER SOURCES AND RECOMMENDATIONS

The City plans to continue to use spring sources to the maximum extent possible, including redeveloping springs as needed. The City is considering moving water rights to Bartholomew Springs to allow the City to fully utilize the flow from Bartholomew Springs when it is available in high water years. If this effort is successful, this will reduce the need for future wells in high water years. It is recommended that the City continue to pursue the transfer of water rights to Bartholomew Springs.

The City's existing source capacity with all sources in service is sufficient to meet the peak day demand and annual volume requirements discussed herein, but with little redundancy. If the largest well is out of service, the City may not have sufficient source capacity to meet the peak day demand. Additionally, Evergreen Well could be transferred from the drinking water system to the pressurized irrigation system, and some SIC users could transition outdoor watering to the drinking water system. An additional source is recommended to meet existing needs with redundancy. As source demand increases over time, an additional source to provide redundancy will become increasingly critical. Additionally, older wells can reduce production or stop producing over time due to a variety of reasons including biofouling and chemical encrusting. It is recommended that an additional well be added to the system within the next five years. A recommended potential location is near the existing 900 South Well. Budgeting for and development of additional wells should continue to be pursued to replace wells as they age. It is recommended that the City install permanent generators at new or rehabilitated wells.

One or more wells in the Westfields zone may be beneficial, allowing the city to avoid pumping water higher than necessary and wasting energy as the water flows through PRVs to the Westfields zone. However, past experience suggests that well production decreases moving westward in Springville. If a good producing well can be located in the Westfields zone, it would be beneficial as a peaking source on high demand days.

It is recommended that the City pursue installing metered two-way emergency interconnections with Mapleton and Provo, to provide redundancy and increase fire flow in the far reaches of the system (discussed in Chapter 5.)

CHAPTER 4 WATER STORAGE

EXISTING WATER STORAGE

The City's existing drinking water system includes nine concrete storage facilities with a total capacity of **15.57 MG**. Their locations are shown on Figure 1-2. Table 4-1 presents a listing of the names and select attributes of the City water storage tanks. Tanks are grouped into four service areas, and volume for fire suppression and emergency storage is distributed among the four tank groups. Fire suppression storage is balanced among the tanks so that the maximum fire flow is available at any point in the city from a tank in the same pressure zone or upstream.

Table 4-1: Existing Storage Tanks

Tank Name	Diameter (ft)	Nominal Volume (MG)	Base/ Outlet Elevation	Emergency Storage Volume (gallons)	Fire Suppression Volume (gallons)	Lowest Level of Equalization Volume (Elevation)	Overflow Elevation
Bartholomew	118	1.5	6219.2	400,000	240,000	7.8 (6,227.0)	6238.2
Jurd Springs	50	0.25	5262.0	20,000	120,000	9.5 (5,271.5)	5282.0
Rotary	135	2.0	5091.9	300,000	300,000	5.6 (5,097.5)	5114.4
Upper Spring Creek	135	2.0	5111.1	100,000	270,000	3.5 (5,114.6)	5132.6
Lower Spring Creek 1	110	1.0	4804.8	0	0	0 (4,804.8)	4818.9
Lower Spring Creek 2	124	2.0	4794.3	430,000	60,000	5.5 (4,799.7)	4817.3
Lower Spring Creek 3	150	3.0	4794.0	670,000	90,000	5.8 (4,799.7)	4817.2
Hobble Creek 1	140	2.0	4878.2	0	0	0 (4878.2)	4898.2
Hobble Creek 2	140	2.0	4874.2	50,000	120,000	3.0 (4877.2)	4898.0
Total		**15.75**		**2,020,000**	**1,320,000**		

EXISTING WATER STORAGE REQUIREMENTS

According to DDW standards outlined in Section R309-510-8, storage tanks must be able to provide: 1) equalization storage volume to make up the difference between source and demand; 2) fire suppression storage to supply water for firefighting; and 3) emergency storage, if deemed necessary. Each of the requirements is addressed below. Because the pressurized irrigation system only provides water for a portion of the City's outdoor use, both indoor demand and outdoor demand are included for customers not connected to the PI system.

Equalization Storage

As shown in Table 1-1, Springville has planned for a level of service of 230 gpd/ERC of equalization storage for indoor use and 6,120 gpd/irr-ac of equalization storage for outdoor use, with irrigated acreage as shown in Table 2-8. With 20,794 ERCs and 1,209 irrigated acres under existing conditions, Springville needs 12.18 MG of equalization storage in its existing drinking water system. Table 4-2 lists the equalization storage requirement by pressure zone.

Table 4-2: Existing Drinking Water Equalization Requirements

Pressure Zone	ERCs	Irrigated Acres	Equalization (MG)
Bartholomew	56	5	0.04
Kelly/Jurd	167	13	0.12
Rotary	202	80[1]	0.54
Cherrington	186	34	0.25
Hobble Creek	2,388	356	2.73
Lower Spring Creek	6,346	384[2]	3.81
Westfields	6,081	247[3]	2.91
Upper Spring Creek	51	7	0.05
Crandall	125	16	0.13
Klauck	218	28	0.22
Nestlé	4,974	39[4]	1.38
Total	**20,794**	**1,209**	**12.18**

1. Includes the Highline Canal service area.
2. Includes approximately 211 irrigated acres within the PI system service zone.
3. Includes approximately 12 irrigated acres within the PI system service zone.
4. Includes approximately 37 irrigated acres within the PI system service zone.

Fire Suppression Storage

Fire suppression storage is required for water systems that provide water for firefighting (Subsection R309-510-8(3)). The local fire authority determines the need for fire suppression storage. Springville's Fire Chief and Fire Marshal have consulted with City Engineering staff and have provided fire flow rate and duration requirements based on the International Fire Code (IFC). The contact information for the Springville Fire department is as follows:

Fire Marshal: Scott Nagle
Phone: 801-491-5602
Address: 75 West Center Street, Springville, Utah

Storage was allocated to each tank according to requirements for fire suppression flow during peak day conditions, considering that fire flow may be supplied by storage in upstream zones. Fire suppression storage was determined based on the following assumptions:

- Typical residential fire flow east of 400 West/Highway 89/Highway 51 (boundary shown on Figure 1-2) – 1,000 gpm for 2 hours (0.12 MG)
- Typical residential fire flow west of 400 West/Highway 89/Highway 51 (boundary shown on Figure 1-2) – 1,500 gpm for 2 hours (0.18 MG)
- Non-Residential Fire Flow – minimum 2,000 gpm for 2 hours (0.24 MG), and can increase depending on building size, building type, and sprinkling system

Some buildings may require approved sprinkling systems to reduce their fire flow requirement to the flow rates available. All new buildings should be constructed to meet these requirements.

Table 4-3 summarizes the fire suppression storage assumed in each storage facility. As described in the Source chapter of this report, one tank group can supply multiple pressure zones in the City. The table shows which pressure zones are directly supplied by which tank and which tank groups are downstream. For example, the Rotary tank and Hobble Creek tank group are located downstream of the Bartholomew tank, so it is assumed that fire requirements in the Hobble Creek pressure zone can be met by a combination of fire storage from all these tanks. In a fire situation, water will be pulled from multiple tanks as the system demands increase. As future storage tanks are constructed, additional fire storage can be provided in those tanks to provide fire storage closer to locations of potential fire demand.

The Upper Spring Creek, Crandall, Klauck, Rotary, and Cherrington pressure zones contain only residential zoning, and storage for these zones is based on the residential fire flow requirements above, as well as storage needed for other zones downstream. Most large buildings in the City include fire sprinkler systems and will not require flows larger than 2,000 gpm. Storage for the Hobble Creek, Nestlé, and Westfields pressure zones is based on a 2,000 gpm fire suppression requirement. The largest fire flow requirement in the Lower Spring Creek pressure zone is 5,000 gpm, and storage for this zone was provided to meet this higher flow rate.

The distribution system evaluation in commercial and industrial areas is generally based on the 2,000 gpm non-residential requirement noted above, except at specific locations where larger required fire flows have been identified. The distribution system is discussed in Chapter 5 of this report.

Table 4-3: Existing Fire Suppression Storage by Tank Group

Tank	Pressure Zones Supplied	Other Tank Groups Downstream	Fire Suppression Storage (MG)
Bartholomew	Bartholomew	All	0.24
Jurd Springs	Kelly's, Jurd	None	0.12
Rotary	Rotary, Cherrington	Hobble Creek, Lower Spring Creek	0.30
Upper Spring Creek	Upper Spring Creek, Crandall, Klauck	Lower Spring Creek	0.27
Lower Spring Creek 1[2]	Lower Spring Creek, Nestlé[1], Westfields	None	0.15
Lower Spring Creek 2[2]			
Lower Spring Creek 3[2]			
Hobble Creek 1	Hobble	None	0.24
Hobble Creek 2			
Total			**1.32 MG**

1. Fire storage for the Nestlé zone is provided in the Upper Spring Creek, Hobble, Rotary, and Bartholomew tanks via interconnects to the Lower Spring Creek zone.
2. Fire storage for the Lower Spring Creek and Westfields zones is provided in the Upper Spring Creek, Bartholomew, Rotary, Hobble Creek, and Lower Spring Creek tanks, totaling 1.2 MG (5,000 gpm for 4 hours).

Emergency Storage

While there are no specific DDW requirements for emergency storage (Subsection R309-510-8(4)), most water systems maintain emergency storage to mitigate risks, provide system reliability, and protect public health and welfare. Emergency storage may be used in case of pipeline failures, equipment failures, power outages, source contamination, and natural disasters.

Springville has planned for a total of approximately 2,000,000 gallons between all the tanks within the City in both existing and future conditions. As future storage tanks are constructed, additional emergency storage can be provided in those tanks to provide emergency storage closer to locations of potential need.

Total Storage

A total of 15.52 MG equalization, fire suppression, and emergency storage is required, as shown in Table 4-4.

Table 4-4: Existing Storage Requirements

Component	Volume (MG)
Equalization[1]	12.18
Fire Suppression	1.32
Emergency	2.02
Total	**15.52**

1. Includes the Highline Canal service area and 260 acres that are planned to be served by the PI system.

The current tanks have a capacity of 15.75 MG, and there is considered to be **no additional storage required** to meet current requirements. Similar to the source mass balance shown in Chapter 3 of this report, not all storage tanks are able to serve all pressure zones in the City. An existing storage mass balance is included as Table A-5 in Appendix A. If all the irrigated area planned to be served by the PI system were removed from the drinking water system, there would be 1.82 MG excess capacity remaining in the storage tanks.

FUTURE WATER STORAGE REQUIREMENTS

As described previously in this report, all area within the PI service zone boundary is assumed to be serviced by the PI system for outdoor watering in all future scenarios. The future requirements cover the planning period through 2070, which primarily occurs in the Lower Spring Creek and Westfields pressure zones, with scattered development in other pressure zones. The City will likely continue to expand beyond the projected 2070 level of development. Detailed analysis of storage for this development is beyond the scope of this master plan.

Equalization Storage

Following the methodology described for existing conditions, and calculating 35,572 ERCs in 2070, the projected indoor equalization storage requirement per the standards shown in Table 1-1 is 8.18 MG. The projected equalization storage requirement for outdoor use is 6.47 MG, for a total of 14.65 MG of storage. Table 4-6 lists the equalization storage requirement by pressure zone.

Table 4-5: 2070 Drinking Water Equalization Requirements

Zone	ERCs	Irrigated Acres[1]	Equalization (MG)
Bartholomew	75	7	0.06
Kelly/Jurd	180	14	0.13
Rotary	238	84	0.57
Cherrington	187	34	0.25
Hobble Creek	2,469	364	2.80
Lower Spring Creek	8,787	421	4.60
Westfields	18,227	74	4.65
Upper Spring Creek	51	7	0.05
Crandall	135	18	0.14
Klauck	249	32	0.25
Nestlé	4,974	2	1.16
Total	**35,572**	**1,057**	**14.65**

1. Excludes areas planned to be served by the PI system.

Fire Suppression Storage

Fire suppression storage is assumed to remain similar to current conditions, as shown in Table 4-3. Volumes may be shifted among tanks, as long as the tank can supply the zones indicated. Up to 1 MG volume for fire suppression can be provided in each new tank, even if other tanks can provide fire flow, so that fire suppression is available close to the area of need.

Emergency Storage

It is recommended that new tanks provide 500,000 gallons or more emergency storage in each tank.

Total Storage

A total of 17.99 MG equalization, fire suppression, and emergency storage is required in 2070, as shown in Table 4-7.

Table 4-6: 2070 Storage Requirements

Component	Volume (MG)
Equalization	14.65
Fire Suppression	1.32
Emergency	2.02
Total	**17.99**

1. Excludes areas planned to be served by the PI system.

As described in the existing storage section of this report, not all storage tanks are available to serve all pressure zones in the city. A mass balance for 2070 storage requirements is included in Appendix A as Table A-6.

The mass balance shows that 2.24 MG additional storage (beyond existing) is required to meet 2070 requirements. Additional storage could be provided to add fire suppression and emergency volumes closer to areas of need as described previously in this chapter.

EXISTING AND FUTURE WATER STORAGE RECOMMENDATIONS

The City currently requires 15.52 MG of drinking water storage. All the irrigated area within the PI system service area is planned to be irrigated by the PI system. This will lower the existing storage requirement to 10.59 MG. The City will need a total of 17.99 MG of drinking water storage in 2070. A total of 15.75 MG storage has already been constructed. An additional 2.24 MG of storage is needed to meet 2070 requirements. Potential locations for future drinking water storage tanks are shown on the Figure 4-1, Drinking Water Master Plan Map and Capital Facilities Plan, located at the end of this chapter. Table 4-8 gives the approximate years additional storage will be needed assuming all the irrigated area planned to be served by the PI system is moved off the drinking water system. Additional storage may be needed sooner if development occurs faster than assumed for this Master Plan.

Table 4-7: Approximate Timeline for Additional Storage

Volume of Storage	Approximate Year Additional Storage is Needed
Existing Storage	2036
Additional 3.0 MG Beyond Existing	2070

As development increase in the Westfields zone, the next tank recommended is a 3+ MG tank located at or near Evergreen Cemetery or Big Hollow Park, due to its proximity to the Westfields zone and new development in the south portion of the city. The tank may need to be larger than 3 MG to account for post-2070 development that is not part of the scope of this master plan.

POTENTIAL LOCATIONS FOR THE NEXT STORAGE TANK

A tank for the Westfields zone would need to be located at elevation 4680 or higher to allow the tank to be buried while maintaining 50 psi or higher in the Westfields zone. The Westfields zone currently operates at a pressure of 75 psi or higher, so a tank at the following locations would require a reduction in pressure in the zone. The following locations were evaluated:

Child Park/Nebo School District Property/Springville Junior High – 200 South 1470 East
A tank at one of these locations would require 12,500 feet of transmission piping to reach the Westfields zone via 400 South. The tank could be buried and Child Park restored on top of the tank to maintain park space. The Nebo School District property west of the intersection of 300 South 1470 East is slightly higher in elevation and would allow slightly higher pressures in the Westfields zone. A third option would be to locate the tank in the hill east of Springville Junior High. This would allow still higher pressures in the Westfields zone.

There is already a major transmission line into the Westfields zone on 400 South. Adding a transmission line for the tank on 400 South would reduce usage of the existing 400 South transmission line. It is possible that one of the existing transmission lines could be used to supply the Westfields zone from this tank.

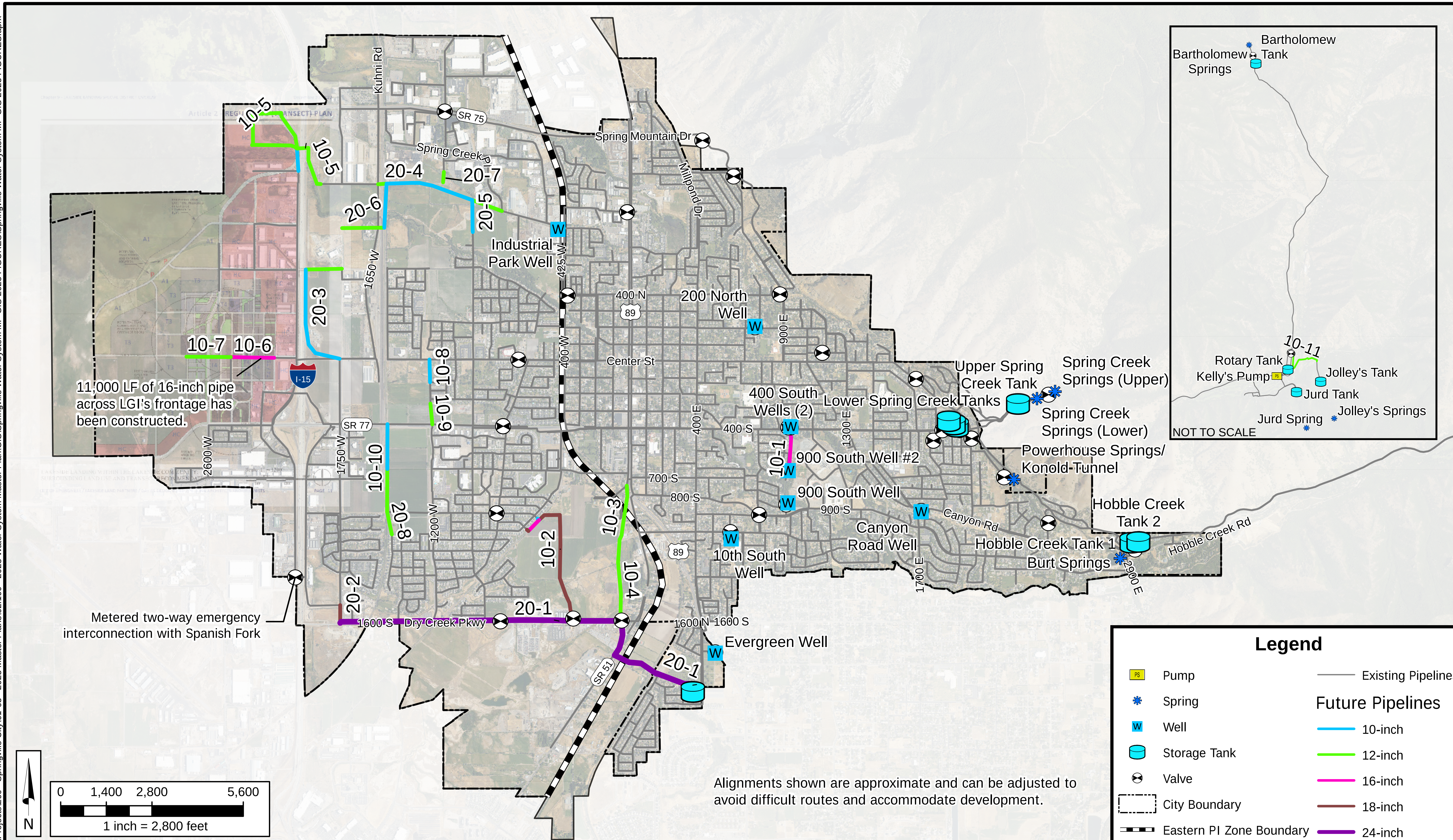
The tank is 3,600 feet away from the 400 South wells and 4,500 feet from the 200 North well. The tank could be filled from either of these sources, with a new transmission line from the well to the tank, or a new source could be located near the tank.

Evergreen Cemetery/Big Hollow Park – 400 East 2000 South
A tank in the eastern portion of the city-owned property at the cemetery would provide sufficient pressure in the Westfields zone. Big Hollow Park, located just south of the cemetery near 400 East Evergreen Road, is another possible tank location. Either location would require about 12,000 feet transmission piping to reach 1750 West in the Westfields zone via Evergreen Road and 1600 South.

The tank could be partially filled from the existing Evergreen well, but customers supplied from this well have experienced aesthetic concerns. Another source should be used to fill the tank, or to dilute water from the Evergreen well. It is likely that a new well drilled near the existing well would experience the same concerns. The tank site is 5,300 feet away from the existing 1000 South well, which is low producing, and about 8,500 feet from the 900 South well, which has a higher production rate. It is assumed that another well can be drilled near the 900 South well and that source from the Lower Spring Creek zone can be used to supply the tank along with Evergreen well.

Table 4-8: Transmission Line Distance to Service Zones

Tank Location		Distance to Westfields Zone (ft)
Child Park/Nebo/Springville Junior High	200-300 South 1470 East	12,500
Evergreen Cemetery/Big Hollow Park	400 East 2000 South	12,600



HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
DRINKING WATER SYSTEM MASTER PLAN

CAPITAL FACILITY PROJECTS

FIGURE 4-1

Date: 1/8/2026
Document Path: H:\Projects\260 - Springville City\61-63 - 2025 Master Plans\62.100 - 2025 Water System Master Plan\GIS\Springville Water System MP GIS 2025 FIGURES\Springville Water System MP GIS 2025 FIGURES.aprx

CHAPTER 5 WATER DISTRIBUTION

HYDRAULIC MODEL

Development

A computer model of the City's drinking water distribution system was developed to analyze the performance of the existing and future distribution system and to prepare solutions for existing facilities not meeting the distribution system requirements. The model was developed with the software InfoWater Pro 2026.1 (Innovyze, 2025). InfoWater simulates the hydraulic behavior of pipe networks. Sources, pipes, tanks, valves, controls, and other data used to develop the model were obtained from GIS data of the city's drinking water system and other updated information supplied by the City.

HAL developed models for two phases of drinking water system development. The first phase was a model representing the existing system (existing model). This model was used to calibrate the model and identify deficiencies in the existing system. Calibration was performed by comparing model results to system information gathered by City personnel. Calibration data is included in Appendix B.

The second phase was a model representing future conditions and the improvements necessary to accommodate growth. The future model represents the level of growth projected to be reached by 2070 (Planning Horizon model) and includes 35,572 ERCs and 1,102 irrigated acres.

Model Components

The two basic elements of the model are pipes and nodes. A pipe is described by its inside diameter, length, minor friction loss factors, and a roughness value associated with friction head losses. A pipe can contain elbows, bends, valves, pumps, and other operational elements. Nodes are the endpoints of a pipe and can be categorized as junction nodes or boundary nodes. A junction node is a point where two or more pipes meet, where a change in pipe diameter occurs, or where flow is added (source) or removed (demand). A boundary node is a point where the hydraulic grade is known (a reservoir, tank, or PRV). Other components include tanks, reservoirs, pumps, valves, and controls.

The model is not an exact replica of the actual water system. Pipeline locations used in the model are approximate and not every pipeline may be included in the model, although efforts were made to make the model as complete and accurate as possible. Moreover, it is not necessary to include all of the distribution system pipes in the model to accurately simulate its performance. The model includes all known distribution system pipes of all sizes, as well as all sources, storage facilities, pump stations, pressure reducing valves, control valves, controls, and settings.

<u>Pipe Network</u>

The pipe network layout originated from GIS data provided by the City. Elevation information was obtained from the GIS data provided by the City. Smaller 8-inch and 10-inch pipes are generally PVC. Hazen-Williams roughness coefficients for pipes in this model ranged from 130 - 150, which is typical for these pipe materials in modeling software (Rossman 2000, 31).

The existing water system contains approximately 221 miles of pipe with diameters of 4 inches to 30 inches. Figure 5-1 presents a summary of pipe length by diameter.

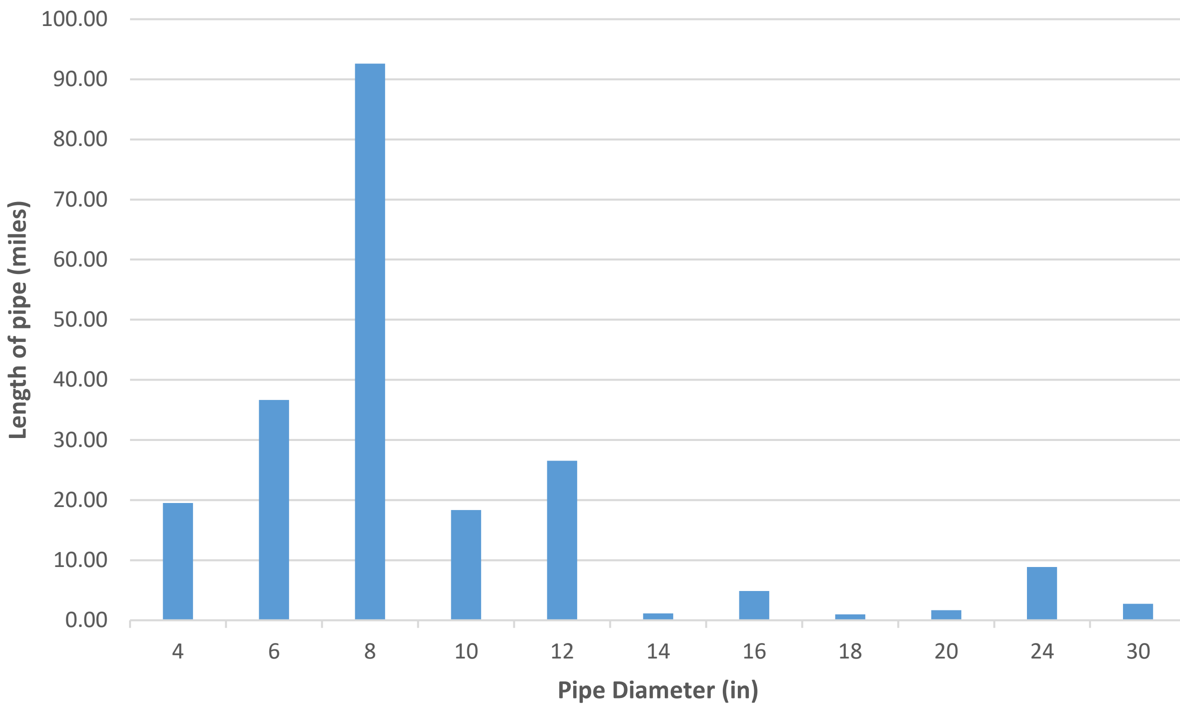


Figure 5-1: Summary of Pipe Length by Diameter

Water Demands

Water demands were allocated in the model based on billed usage and billing locations. Peak month demand was determined for each billing location and linked to the geocoded physical locations for each customer. The geocoded demands were then assigned to the closest model node. With the proper spatial distribution, demands were scaled to reach the peak day demand determined in Chapter 3. For the 2070 model, future demands were estimated according to current zoning and densities and the established level of service, as described previously in this report. Future demands were assigned to new nodes representing the expected location of new development in each pressure zone.

The pattern of water demand over a 24-hour period is called the diurnal curve or daily demand curve. The diurnal curve for this master plan was taken from a system optimization study done in 2014 and is the same diurnal curve used in the City's 2018 Drinking Water Master Plan. This curve was validated using current SCADA data. The diurnal curve for this study has a peaking factor of 1.5. The diurnal curve was input into the model to simulate changes in the water system throughout the day.

In summary, the spatial distribution of demands followed geocoded water use data, the flow and volume of demands followed the level of service standards described in Chapter 1, and the temporal pattern of demand followed a diurnal curve developed from SCADA data.

Water Sources and Storage Tanks

The sources of water in the model are the wells and springs. A well is represented by a reservoir and pump. A spring is represented by a reservoir and a flow control valve, or a reservoir and a pump in cases where that is more appropriate. Tank location, height, diameter, and volume are represented in the model. The extended-period model predicts water levels in the tanks as they fill from sources and as they empty to meet demand in the system.

ANALYSIS METHODOLOGY

HAL used extended-period and steady-state modeling to analyze the performance of the water system with current and projected future demands. An extended-period model represents system behavior over a period of time: tanks filling and draining, pumps turning on or off, pressures fluctuating, and flows shifting in response to demands. A steady-state model represents a snapshot of system performance. The peak day extended period model was used to set system conditions for the steady-state model, calibrate zone to zone water transfers, analyze system controls and the performance of the system over time, and to analyze system recommendations for performance over time. The steady-state model was used for analyzing the peak day plus fire flow conditions.

Two operating conditions were analyzed with the extended period model: peak day conditions and peak instantaneous conditions. Peak day plus fire flow conditions were analyzed using a static model. Each of these conditions is a worst-case situation so the performance of the distribution system may be analyzed for compliance with DDW standards and City preferences.

Existing Peak Day Conditions

The DDW requires that a minimum pressure of 40 psi must be maintained during peak day demand (Subsection R309-105-9(2)). Springville City's designated level of service indicates that 50 psi should be maintained. Peak day demand was evaluated at the level of service of 0.18 gpm/ERC for indoor use and 8.5 gpm/irr-ac for outdoor use, as shown in Table 1-1. This amounts to an existing peak day demand of 14,320 gpm. The hydraulic model indicates that the system is capable of providing at least 40 psi at nearly every point of connection in the system at this level of demand. The paragraphs below describe all locations not meeting Springville's current designated level of service.

Peak Day Pressure < 50 psi

Canyon Road, 2175 East to 2900 East – These points of connection are at the top of the Hobble Creek pressure zone. Each point achieves 29-34 psi. Peak Day pressure meets State Code R309-105-9(1) which requires points of connection constructed before 2007 to achieve a minimum of 20 psi. While pressures meet requirements, customers could be served from the northern Rotary Zone line in Canyon Road to provide higher pressures.

Spring Oaks Drive – Points of connection on the highest switchback in the Spring Oaks subdivision achieve a minimum of 48 psi. No projects are recommended to improve pressure, though possible improvements are discussed in the fire flow section below.

Existing High Pressure Conditions

Some areas in the system experience high pressures, which are greatest during the lowest demand times. The lower (typically downhill/westerly) portions of several zones experience pressures over 110 psi during typical operating conditions, as shown in Table 5-2. None of these locations exceed the DDW maximum pressure of 150 psi.

Table 5-2: High Pressure Conditions

Pressure Zone	Maximum Pressure
Hobble	125 psi
Upper Spring Creek	140 psi
Nestlé	133 psi
Lower Spring Creek	124 psi

The City should continue to require individual PRVs for each new customer connection, particularly in these areas. No pressure changes are recommended for the zones experiencing high pressures, because this would reduce pressures in the upper portions of those zones to levels below the minimum desired. No capital projects are recommended to mitigate high pressures.

Existing Peak Instantaneous Conditions

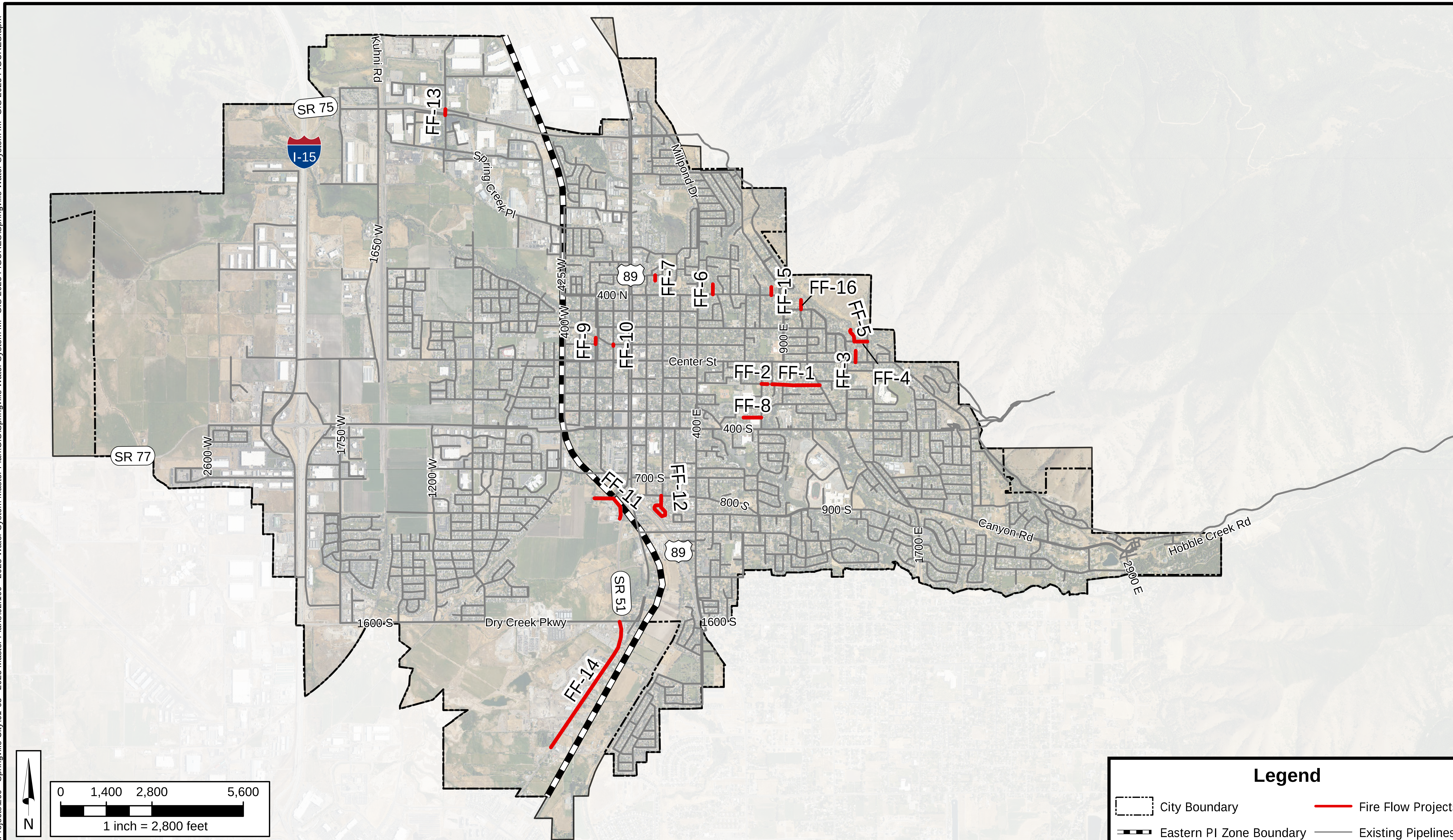
A minimum pressure of 30 psi must be maintained during peak instantaneous demand (Subsection R309-105-9(2)). Peak instantaneous demand was defined based on SCADA data for the peak day demand in Springville. The highest peaking factor present on the peak day was 1.5, resulting in a peak instantaneous demand of 21,050 gpm. The hydraulic model indicates that the system is capable of providing at least 30 psi at every point of connection in the system at this level of demand. There are no existing deficiencies in the system for this demand condition.

Existing Peak Day plus Fire Flow Conditions

A minimum pressure of 20 psi must be maintained while delivering fire flow to a particular location within the system and supplying the peak day demand to the entire system (Subsection R309-105-9(2)). As specified by the Springville Fire Marshal, a minimum fire flow of 1,000 gpm is required for all fire hydrants in residential areas east of 400 West, and 1,500 gpm is required for all residential areas west of 400 West. A fire flow of 2,000 gpm is required for all commercial and industrial areas.

The Available Fire Flow map in Appendix C shows fire flow available at nodes throughout the entire system. Identifying every pipe which is not capable of supplying the required fire flow is beyond the scope of this study. The computer analysis should not replace physical fire flow tests at fire hydrants as the primary method of determining fire flow capacity. The following locations did not meet the desired flows.

Residential <1,000 or 1,500 gpm; Non-Residential < 2,000 gpm
Locations throughout the City experiencing fire flows below desired level of service (less than 1,000 for residential areas east of 400 West, less than 1,500 gpm for residential areas west of 400 West, or less than 2,000 gpm for commercial/industrial areas) are shown on the Available Fire Flow map. The majority of these are cul-de-sacs or long dead-end lines with 4-inch or 6-inch pipe sizes. Projects to increase fire flow at these locations are shown in Table 5-3 and numbered on Figure 5-2. The costs for projects shown as alternates are not included in table totals.



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HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
DRINKING WATER SYSTEM MASTER PLAN

FIRE FLOW PROJECTS

FIGURE 5-2

Table 5-3: Projects to Resolve Low Fire Flow
Residential East of 400 West < 1,000 gpm
Residential West of 400 West < 1,500 gpm
Non-Residential < 2,000 gpm

Location		Description	Solution	Length	Cost
Projects 1 or 2 mitigate several locations between 800 East and 1300 East, from Center Street to 400 South					
FF-1	100 South, 860 East to Canyon Avenue	4-inch line	Upsize to 8-inch	1500	$ 530,000
Project 2 is an alternative to Project 1. Costs for project 2 are not included in the total.					
FF-2	100 South 800 East	4-inch line	Add check valve to allow flow from lower zone during fire.	Valve	$30,000
FF-3	1360 East, Center Street to 90 North	4-inch cul-de-sac	Upsize to 8-inch if hydrant is installed	360	$130,000
FF-4	130 North, 1350 East to 1440 East	4-inch line	Upsize to 8-inch	400	$150,000
FF-5	1350 East, 130 North to 220 North	4-inch cul-de-sac	Upsize to 8-inch if hydrant is installed	410	$150,000
FF-6	500 East, 400 North to 450 North	4-inch cul-de-sac	Upsize to 8-inch if hydrant is installed	310	$110,000
FF-7	150 East, 500 North to 530 North	4-inch line	Upsize to 8-inch if hydrant is installed	170	$60,000
FF-8	330 South (Chase Lane), 700 East to 800 East	4-inch dead end	Upsize to 8-inch if hydrant is installed	550	$200,000
Projects 9-10 increase flow to hydrants where higher flow is available nearby. However, it is ideal to upgrade every hydrant so the fire department can use any hydrant.					
FF-9	200 West, 100 North to fire hydrant	4-inch line	Upsize to 8-inch	200	$80,000
FF-10	100 West, 100 North to fire hydrant	4-inch line	Upsize to 8-inch	50	$20,000
FF-11	800 South and 50 West	No hydrants on lines	Upsize to 8-inch if hydrants are installed	1290	$460,000
FF-12	Artistic Circle	4-inch lines	Upsize to 8-inch	1370	$490,000
FF-15	850 E, 400 N to 450 N	4-inch line	Upsize to 8-inch if hydrant is installed.	260	$100,000
FF-16	1040 E, 300 N to 400 N	4-inch cul-de-sac	Upsize to 8-inch if hydrant is installed.	290	$110,000
Cost for Fire Flow Projects (Up to 1,000 gpm or 1,500 gpm required for residential and 2,000 gpm for non-residential)			**$2,620,000**		

Locations Requiring Fire Flow Greater Than 2,000 gpm

The City fire marshal has identified selected buildings in each pressure zone requiring the largest fire flows. This does not include an exhaustive analysis of all large buildings in the City but is intended to be representative of maximum needs in each area. Required flows range from 1,500 gpm for relatively smaller buildings with sprinkler systems to 5,000 gpm for large warehouse or industrial buildings. This includes a reduction of 75% for buildings with approved fire sprinkler systems. The locations that did not meet the desired fire flow are shown in Table 5-4 along with a discussion of possible projects to meet the desired flow.

Table 5-4: Projects to Resolve Low Fire Flow
Locations Requiring > 2,000 gpm

<table>
<tr><th colspan="2">Location</th><th>Required Flow (gpm)</th><th>Available Flow (gpm)</th><th>Solution</th><th>Length</th><th>Cost</th></tr>
<tr><td rowspan="2">FF-13</td><td>1400 North Mountain Springs Parkway</td><td>2,000</td><td>1,750</td><td>Add PRV or check valve from Westfields Zone to Nestlé</td><td>PRV</td><td>$390,000</td></tr>
<tr><td colspan="6">A small area within the Nestlé pressure zone does not achieve a fire flow of 2,000 gpm. The remainder of the required flow can be met by installing a PRV or check valve from the Westfields zone to the Nestlé zone at 1400 North Mountain Springs Parkway. This project provides a minimum of 2,000 gpm level at all locations in the Nestlé pressure zone. Future buildings must be constructed to meet available flows. An individual analysis can be performed for new buildings to determine the fire flow available at each location.</td></tr>
<tr><td rowspan="2">FF-14</td><td>1990 South State, Intermountain Lift</td><td>5,000</td><td>1,400</td><td>12-inch loop from end of dead end back to 1600 South</td><td>4,510</td><td>$2,070,000</td></tr>
<tr><td colspan="6">The transmission line on 1600 South is a 10-inch line, which limits flow in the pipe to less than 5,000 gpm. To achieve maximum flows, the 8-inch pipe on SR-51 should be upsized to a 12-inch. Additionally, flow will increase as development provides additional connectivity in the area. Other solutions would likely be more feasible and include compartmentalizing buildings, adding fire sprinklers, or constructing a private tank and pump. However, it is cautioned that other buildings on SR-51 also require high fire flows and must be considered. An emergency/fire flow interconnection with Spanish Fork City at the south City limit of SR-51 would benefit all development along SR-51.</td></tr>
<tr><td colspan="4">Cost for Fire Flow Projects
(Locations requiring >2,000 gpm)</td><td colspan="3">$2,460,000</td></tr>
</table>

Summary of Recommended Projects

Table 5-5 is a summary of costs for recommended projects to mitigate existing fire flow deficiencies in the drinking water system.

Table 5-5: Fire Flow Projects Summary

Project Type	Cost
Fire to 1,500-2,000 gpm	$2,620,000
Fire > 2,000 gpm	$2,460,000
Total Cost for Fire Flow Projects	**$5,080,000**

Emergency interconnections with Mapleton City and Spanish Fork City would help increase fire flows in some areas of the City system, and would provide benefit to all three cities. No costs for these interconnections were included in the recommended projects.

Replacement

In addition to completing projects to resolve deficiencies, the City should continue replacing aging pipes throughout the city on a regular basis. Table 5-6 shows the cost of all pipes in the city (not including pipes previously recommended for replacement), and the cost to replace all of them over its service life.

Table 5-6: Replacement Program for All Existing Pipes

Pipe Diameter (inches)	Length of Pipe (feet)	Cost
4	102,000	$28,440,000
6	181,000	$50,620,000
8	444,000	$124,440,000
10	98,000	$30,690,000
12	144,000	$47,900,000
14	6,000	$2,120,000
16	24,000	$9,660,000
18	5,000	$2,160,000
20	15,000	$6,800,000
24	47,000	$25,350,000
30	14,000	$10,060,000
	Subtotal	$338,980,000
	Contingency (20%) & Engineering (10%)	$101,690,000
	Total Cost for Replacement of All Existing Pipes	**$440,670,000**
	Annual Cost for Replacement of All Pipes Over Service Life	**$4,900,000**

FUTURE (2070) WATER DISTRIBUTION SYSTEM

2070 Peak Day Conditions

A minimum pressure of 40 psi must be maintained at all connections during peak day demand (Subsection R309-105-9(2)). Future peak day demand is discussed in Chapter 3 of this report. With 35,572 ERCs projected, the system's 2070 peak day demand is estimated at 15,790 gpm. Hydraulic modeling indicated that the future system can meet this requirement with the future pipelines shown on the Master Plan Map, Figure 4-1. Alignments shown are approximate and can be adjusted to avoid difficult routes and accommodate development.

The majority of growth in the city is occurring in the western portion of the city. The deficiencies listed above for the existing system are primarily east of 400 West and will not be affected by future growth. The areas of lower than desired pressure listed above for the existing system will persist if the suggested projects are not constructed.

2070 Peak Instantaneous Conditions

Peak instantaneous demands were calculated in a similar manner to existing conditions. The peak day to peak instantaneous peaking factor is 1.5 and the total peak instantaneous demand is 23,120 gpm. Hydraulic modeling indicated that the future system can meet this requirement with the future pipelines shown on the Figure 4-1. As with the 2070 peak day conditions, the existing areas of lower than desired pressure during peak instantaneous conditions will persist if the suggested projects are not constructed.

2070 Peak Day plus Fire Flow Conditions

A minimum pressure of 20 psi must be maintained while delivering fire flow to a particular location within the system and supplying the peak day demand to the entire system (Subsection R309-105-9(2)). The same fire requirements of 1,000 – 1,500 gpm for residential areas and 2,000 gpm for commercial areas are used for future conditions. Hydraulic modeling indicated that new areas of the future system can meet the future fire flow requirements with the 2070 pipelines shown on Figure 4-1. All of the fire flow deficiencies listed above for existing residential areas are located in areas that will experience little growth in the future. These deficiencies will persist if the suggested projects are not constructed.

WATER DISTRIBUTION SYSTEM RECOMMENDATIONS

The model output primarily consists of the computed pressures at nodes and flow rates through pipes. The model also provides additional data related to pipeline flow velocity and head loss to help evaluate the performance of the various components of the distribution system. Due to the large number of pipes and nodes in the model, it is impractical to prepare a figure which illustrates pipe numbers and node numbers.

Recommendations for distribution improvement projects were based on the modeling, as outlined above, guidance provided by Springville personnel, and the 2014 Drinking Water System Optimization Analysis. HAL still recommends implementing the distribution and operational recommendations given in the 2014 Analysis, including:

- Pump the future 900 South well into the Lower Spring Creek zone
- Set PRVs connecting Hobble Creek and Lower Spring Creek zones so that no flow is allowed through during normal operating conditions

In addition to these recommendations, it is also recommended that the city avoid using Canyon Road Well to fill Lower Spring Creek tanks via the 4th South valve. With the new 400 South Well #2 capacity added to the system, it will be more efficient to fill the tanks from the 400 South wells. If the City desires to continue filling the tanks via the 4th South valve, a pressure sustaining valve should be installed to prevent pressures in the Hobble Creek zone from dropping too low during tank filling operations.

The I-15 freeway corridor is a major bottleneck for transmission lines. There are currently three transmission lines under I-15. The system functions well with these lines, but level of service would be compromised if one of the transmission lines was out of service. A fourth transmission line under I-15 for redundancy is recommended in the northerly part of the city, near 1000 to 1400 North.

Major future distribution projects associated with providing transmission capacity to and from future storage tanks and sources may be required depending on the locations chosen for tanks and sources. It is expected that these projects may change somewhat as compared to current projections depending on the availability of land and other considerations that may affect the final locations of the proposed storage tanks.

Additional localized transmission pipelines are expected to be installed as the City develops. The locations and lengths of these transmission pipelines will vary depending on the final location of future streets and the majority will be minimum sized pipes constructed by developers (8-inch in residential zones and 10-inch in non-residential zones). Anticipated future pipes larger than the minimum required size have been located following proposed road alignments and pipes expected to be needed within 20 years are illustrated on the Drinking Water Master Plan Map, Figure 4-1. The City will continue to review individual developments through the Development Review Committee (DRC) process, including analyzing transmission line size requirements, particularly for developments located in areas where the water system is not well connected. Pipe sizes in these developments may need to be increased for initial service, even if the ultimate size requirement (when developments are well connected) is smaller.

Fire Suppression Flow

As discussed in the storage and water distribution chapters of this report, minimum available fire flow typically ranges from 1,000 gpm to 2,000 gpm, though higher flows are available in many locations. A site-specific analysis of available fire flow should be performed for each new development early during the development review process. New buildings should be constructed with appropriate materials or approved fire sprinkler systems so that their fire flow requirement does not exceed the available flow.

CHAPTER 6 WATER RIGHTS

EXISTING WATER RIGHTS

Springville City currently owns water rights designated for municipal use in the drinking water system. Table 6-1 is a summary of the drinking water rights owned by the City with assumed flow and volume capacities.

Table 6-1: Existing Drinking Water System Municipal Water Rights

Water Right Number(s)	Flow (gpm)	Volume (ac-ft)	Source
51-111 (a26443) Includes 51-6666, 51-6990, 51-7242	198	103	City Wells
51-1455 (a28365) Includes 51-1486, 51-1493	4,937	7,964*	City Wells
51-2530 (a29656) Includes 51-3679	2,703	144	City Wells
51-2780 (a28366)	1,346	439	City Wells
51-5450 (a40919)	1,333	14[#]	City Wells
51-6970 (a28367) Includes 51-1024, 51-1025, 51-1088	1,472	1,746	City Wells
51-8641	35	33	City Wells
51-8793 (a43986)	9	14	City Wells
51-5329	1,300	2,069**	Burt Springs
51-5330	180	290*	Konold Springs
51-5520	662	1,068[##]	Bartholomew Springs
51-6027	1,200	1,947***	Spring Creek Canyon Springs
Total	**15,375**	**15,831**	

* Potential volume if sources are able to produce designated flow rate year-round. Actual volume may be limited by either source capacity (i.e. a spring may not be able to produce the designated flow rate year round) or by demand.

** W.U.C. indicates that 8 cfs is diverted 24 hours for 5 days out of each 8-1/3 days from April 1 to October 31. This would equal 128.45 days with an estimated volume of 2,038.24 ac-ft.

Springville Irrigation Company water right used by Springville City based on City ownership of 267 shares. Each share equals 4 ac-ft resulting in an annual volume of 1,068 ac-ft.

*** 10-year average yield of the spring from 1999 – 2009

Springville City has a total of 15,831 ac-ft of water rights available for use in its drinking water system. Compared to the existing level of service water requirement of 11,070 ac-ft, the City currently owns a surplus of 4,761 ac-ft in municipal water rights.

By 2070, the City will require a minimum of 14,900 ac-ft of water rights to meet requirements for the drinking water system. Compared to the existing water rights available, the City currently owns a surplus of 931 ac-ft; however, buildout requirements for the City could be significantly higher than the predicted 2070 requirements. Similar to other components of the water system, water rights should have redundancy. Typically, some water rights cannot be used as planned or do not yield the allowed flow, and the City will need to acquire more than the minimum rights calculated in order to have the usable flow and volume required. Table 6-2 is a summary of unapproved change applications that propose converting water from City owned irrigation shares to drinking water municipal water rights in the City wells. If these water rights are approved the City would have additional redundancy recommended for the predicted 2070 requirements. However, it is recommended that the City commission a groundwater capacity study to determine the physically available flow and volume of the water rights the City owns. Other studies in southern Utah Valley have indicated that the physical capacity can be lower than the allowable water right flow or volume. It is also recommended that the City pursue opportunities to move the diversion point for Springville Irrigation Company Hobble Creek water rights to Bartholomew Springs where the water can be used in the drinking water system.

Table 6-2: Potential Drinking Water System Municipal Water Rights

Water Right Number	Flow * (gpm)	Volume (ac-ft)	Irrigation Company	Proposed Source
51-8368 (a35091)	800	834	Springville	City Wells
51-8369 (a35092)	300	322	Mill Pond	City Wells
51-8366 (a35086)	200	205	Wood Springs	City Wells
51-8367 (a35088)	100	24	Coffman Springs	City Wells
51-5790 (a44540)	2,400	2,471	Springville	City Wells
51-8791 (a43637)	400	357	Mill Pond	City Wells
51-8792 (a44541)	200	211	Wood Springs	City Wells
Total	**4,400**	**4,424**		

* Flow assumption based on existing well water rights.

CHAPTER 7 CAPITAL FACILITY PLAN

GENERAL

The purpose of this section is to identify the drinking water facilities that are required, for the 20-year planning period, to meet the demands placed on the system by future development. Projects required to meet existing level of service criteria, including desired fire flow, are not included in this section. Proposed facility capacities were sized to adequately meet the 20-year growth projections and were compared to current master planned facilities. A detailed design analysis will need to be provided before construction of the facilities to ensure that the location and sizing is appropriate for the actual growth that has taken place since this capital facility plan (CFP) was developed. Specific projects with costs are presented at the end of this chapter.

METHODOLOGY

The future water demands were added incrementally by year to the facility analysis. For facilities reaching capacity at any time within 20 years, a solution was identified that will accommodate growth for the 20-year planning period. A hydraulic model was developed for the purpose of assessing the system operation and capacity with future demands added to the system. The model was used to identify problem areas in the system and to identify the most efficient way to make improvements to transmission pipelines, sources, pumps, and storage facilities. The future system was evaluated in the same manner as the existing system, by modeling (1) Peak Instantaneous Demands and (2) Peak Day Demands plus fire flow conditions.

Currently, some customers in the pressurized irrigation service area are borrowing capacity from the drinking water system for their outdoor watering. Customers adjacent to active and dry portions of the PI system should all be connected to the PI system within 20 years. The drinking water system CFP was analyzed assuming that all customers in the PI service area have connected to the PI system within 20 years and no capacity from the drinking water system is used for outdoor watering in the PI service area.

FUTURE WATER SOURCE

Future growth projections indicate that the City will require additional drinking water sources to meet future demands, for redundancy, and to replace aging wells. The following source project is prioritized to meet the source requirements for future growth:

- Move water rights to Bartholomew Springs to allow the City to utilize the full flow available

If efforts to transfer water rights to Bartholomew Springs are unsuccessful or insufficient redundancy is provided through a transfer, the following source project is selected as an alternative to meet source requirements for future growth:

- 900 South well, with 200 North or other suitable location as an alternate

It is recommended that the City continue to budget for well development to replace aging wells. It is also recommended that the City provide backup power for each source, using a portable generator or permanent generators installed at each site.

FUTURE WATER STORAGE

The future 20-year growth projection requires approximately 3 MG additional storage in one or more tanks to supply storage for future growth. One 3+ MG tank is recommended. A 3 MG tank is anticipated to meet future demands through 2070.

The new tank may be located to serve the Westfields zone, with associated transmission piping to a source and to the service zone. It is recommended that the tank be located at the following location:

- Evergreen Cemetery/Big Hollow Park, 400 East 2000 South (3 MG+)

A different location may be required for the tank due to constraints at the chosen sites. Additional investigation should be performed to determine the suitability of the site for the new tank. As discussed in the Storage section of this report, other tank locations are possible to fulfill necessary storage requirements.

FUTURE TRANSMISSION PIPING

A significant portion of the major transmission lines in the growth areas of the City (west of 400 West) are already constructed. A few additional transmission lines would need to be constructed to allow for future growth in these areas. Recommended projects are listed in Table 7-1.

The majority of the waterline projects in the growth areas will be constructed by developers. Only lines larger than 8 inches in residential zones or larger than 10 inches in non-residential zones are included. See Figure 4-1 for future transmission lines.

MASTER PLANNING

Throughout the master planning process, the three main components of the City's water system (source, storage, and distribution) were analyzed to determine the system's ability to meet existing demands and also the anticipated future demands. This section of the report will specifically detail development over the next 20 years. System deficiencies identified in the master planning process and described previously in this report were presented and discussed in an alternatives workshop with City staff. After the workshop, HAL studied the feasibility of the solution alternatives and developed conceptual costs.

One important method of paying for system improvements is through impact fees. Impact fees are collected from new development and should only be used to pay for system improvements related to new development. For this reason, it is important to identify which projects are related to resolving existing deficiencies, and which projects are related to providing anticipated future capacity for new development.

PRECISION OF COST ESTIMATES

When considering cost estimates, there are several levels or degrees of precision, depending on the purpose of the estimate and the percentage of detailed design that has been completed. The following levels of precision are typical:

Type of Estimate	Precision
Master Planning	-50% to +100%
Preliminary Design	±30%
Final Design or Bid	±10%

For example, at the master planning level (or conceptual or feasibility design level), if a project is estimated to cost $1,000,000, then the precision or reliability of the cost estimate would typically be expected to range between approximately $500,000 and $2,000,000. While this may seem very imprecise, the purpose of master planning is to develop general sizing, location, cost, and scheduling information on a number of individual projects that may be designed and constructed over a period of many years. Master planning also typically includes the selection of common design criteria to help ensure uniformity and compatibility among future individual projects. Details such as the exact capacity of individual projects, the level of redundancy, the location of facilities, the alignment and depth of pipelines, the extent of utility conflicts, the cost of land and easements, the construction methodology, the types of equipment and material to be used, the time of construction, interest and inflation rates, permitting requirements, etc., are typically developed during the more detailed levels of design.

At the preliminary or 10% design level, some of the aforementioned information will have been developed. Major design decisions such as the size of facilities, selection of facility sites, pipeline alignments and depths, and the selection of the types of equipment and material to be used during construction will typically have been made. At this level of design the precision of the cost estimate for a $1,000,000 project would typically be expected to range between approximately $700,000 and $1,300,000.

After the project has been completely designed, and is ready to bid, all design plans and technical specifications will have been completed and nearly all of the significant details about the project should be known. At this level of design, the precision of the cost estimate for the same $1,000,000 project would typically be expected to range between approximately $900,000 and $1,100,000.

SYSTEM IMPROVEMENT PROJECTS

As discussed in previous chapters, source, storage and distribution system capacity expansion will be needed to meet the demands of future growth. The City's Drinking Water Master Plan Map and Capital Facilities Plan, Figure 4-1 includes recommended projects over the period from existing conditions through 20 years into the future. The recommended projects that are expected to be needed through 2045 are presented in Table 7-1.

Cost estimates have been prepared for the recommended projects and are included in Table 7-1. Unit costs for the construction cost estimates are based on conceptual level engineering and are shown in the unit costs table in Appendix D. Sources used to estimate construction costs include:

1. “Means Heavy Construction Cost Data, 2025"
2. Price quotes from equipment suppliers
3. Recent construction bids for similar work
4. Springville City records of past project bids/costs

All costs are presented in 2025 dollars. Costs shown below include 20% for contingency and 10% for design. Recent price and economic trends indicate that future costs are difficult to predict with certainty. Engineering cost estimates provided in this study should be regarded as conceptual level for use as a planning guide. Only during final design can a definitive and more accurate estimate be provided for each project.

Table 7-1: Recommended 10-Year and 20-Year Projects

Type	Map ID[1]	Recommended Project	Total Cost[3]	% Impact Fee Eligible	Impact Fee Eligible Cost
Growth Projects, 0-10 Year Phasing (2025-2035)					
Source	10-1	Drill and develop 4,000 gpm well at 900 S Install 1,300 LF 16-inch PVC pipe	$8,430,000	100%	$8,430,000
Transmission	10-2	400 West, 900 South to 1600 South 70 LF 10-inch PVC pipe, 560 LF 16-inch PVC pipe and 4,010 LF 18-inch PVC pipe bored under railroad [cost includes boring]	$3,450,000	100%	$3,450,000
Transmission	10-3	State Street, 700 South to 1060 South 1,690 LF 12-inch PVC pipe across UDOT ROW [cost includes boring]	$780,000	100%	$780,000
Transmission	10-4	State Street, 1600 South 2,520 LF 12-inch PVC pipe across UDOT ROW	$1,160,000	100%	$1,160,000
Transmission	10-5	West of I-15, 1000 North to 1400 North 700 LF 10-inch PVC pipe and 6,060 LF 12-inch PVC pipe bored under I-15 [cost includes boring]	$4,150,000	12%	$510,000
Transmission	10-6	Center Street, 2250 West to 2400 West 490 LF 16-inch PVC pipe	$236,000	22%	$51,000
		Center Street, 2100 West to 2250 West (LGI frontage) 1,100 LF 16-inch PVC pipe[4]	$107,670	-	$107,670 (100%)
Transmission	10-7	Center Street, 2400 West to 2700 W 1,370 LF 12-inch PVC pipe bored under canal [cost includes boring]	$730,000	12%	$90,000

Type	Map ID[1]	Recommended Project	Total Cost[3]	% Impact Fee Eligible	Impact Fee Eligible Cost
Transmission	10-8	1200 West, Center Street to 100 South 700 LF 10-inch PVC pipe bored under canal [cost includes boring]	$390,000	10%	$39,000
Transmission	10-9	1200 West, 200 South to 400 South 650 LF 12-inch PVC pipe	$280,000	16%	$50,000
Transmission	10-10	1500 West, 400 South to 900 South 1,380 LF 10-inch PVC pipe and 1,320 LF 12-inch PVC pipe bored under canal [cost includes boring]	$1,200,000	12%	$150,000
Transmission	10-11	Transmission to Jolley Tank 3,520 LF 12-inch PVC pipe	$1,470,000	0%	$0
Total Cost, Growth Projects, 0-10 Year Phasing (2025-2035)			**$22,390,000**	**66%**	**14,820,000**
Growth Projects, 10-20 Year Phasing (2035-2045)					
Storage	20-1	Big Hollow Park Site – 3 MG tank 2 pressure sustaining valves	$8,840,000	100%	$8,840,000
Transmission	20-1	Big Hollow Park to Westfields zone 160 LF 16-inch PVC pipe and 12,610 LF 24-inch PVC pipe bored under railroad [cost includes boring]	$10,000,000	100%	$10,000,000
Transmission	20-2	1750 West, 1600 South to 1450 S 550 LF 18-inch PVC pipe bored under canal [cost includes boring]	$510,000	100%	$510,000
Transmission	20-3	1950 West/ Wavetronix Drive, Center Street to Wavetronix Drive; 1950 West to 1750 West 3,410 LF 10-inch PVC pipe and 1,120 LF 12-inch PVC pipe	$1,760,000	2%	$50,000

Type	Map ID[1]	Recommended Project	Total Cost[3]	% Impact Fee Eligible	Impact Fee Eligible Cost
Transmission	20-4	1000 North, 1650 West to Spring Creek Road 2,720 LF 10-inch PVC pipe and 1,230 LF 12-inch PVC pipe bored under railroad and canal [cost includes boring]	$2,870,000	11%	$320,000
Transmission	20-5	950 West, 800 North to 1000 North 990 LF 10-inch PVC pipe	$380,000	0%	$0
Transmission	20-6	1650 West/ 750 North, 1000 North to 750 North; 1650 West to 1750 West 1,360 LF 10-inch PVC pipe and 1,300 LF 12-inch PVC pipe bored under railroad	$2,230,000	13%	$290,000
Transmission	20-7	1100 West, 1150 North to 1000 N 320 LF 12-inch PVC pipe bored under canal	$290,000	15%	$50,000
Transmission	20-8	1500 West, 900 South to 1025 South 710 LF 12-inch PVC pipe	$300,000	16%	$50,000
Total Cost, Growth Projects, 10-20 Year Phasing (2035-2045)			**$27,180,000**	**74%**	**$20,110,000**
Total Cost, Growth Projects, 0-20 Year Phasing (2025-2045)			**$49,570,000**	**70%**	**$34,930,000**

1. The Map ID corresponds to the project number on the Master Plan Map and Capital Facilities Plan, Figure 4-1.
2. Costs include 20% for contingency and 10% for design.
3. All costs were rounded consistently for presentation. The impact fee eligible percentages were calculated from unrounded values and totals may not sum exactly due to rounding.
4. This cost is for the impact fee eligible cost of upsizing pipe that has been constructed in Center Street by LGI. Cost information was provided by the City.

ADDITIONAL PROJECTS THROUGH 2070

If source, storage, and transmission projects are constructed as shown in the 0-20 year phasing, no additional source or storage projects are anticipated to be required through 2070.

SUMMARY OF COSTS

Table 7-2 includes projects shown in Table 7-1 and is a summary of project costs attributed to future growth through 2070. This cost represents a best estimate for total cost in 2025 dollars to the City to maintain the desired level of service while accommodating future growth through 2070 conditions. This table does not include any financing costs associated with funding options.

Table 7-2: Summary of Costs

Project Type	Cost
Source	$7,800,000
Storage	$8,840,000
Transmission	$32,930,000
Total	**$49,570,000**

REFERENCES

Drinking Water System Operating Requirements, R309-105 *Utah Administrative Code* (2019). http://www.rules.utah.gov/publicat/code/r309/r309-105.htm.

Facility Design and Operation: Minimum Sizing Requirements, R309-510 *Utah Administrative Code* (2015). http://www.rules.utah.gov/publicat/code/r309/r309-510.htm.

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Impact Fees Act § 11-36a Utah Code Annotated (2025). http://le.utah.gov/UtahCode/section.jsp?code=11-36a.

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APPENDIX A
Water System Data and Calculations

Table A-1
Growth Projections and Projected ERCs

Year	Projected ERCs				Annual ERC Growth
	Residential	Other	Nestlé	Total	
2025	11,397	4,555	4,842	20,794	0.6%
2026	11,699	4,676	4,842	21,216	2.6%
2027	12,008	4,799	4,842	21,650	2.6%
2028	12,326	4,926	4,842	22,095	2.6%
2029	12,652	5,057	4,842	22,551	2.6%
2030	12,987	5,191	4,842	23,020	2.6%
2031	13,291	5,312	4,842	23,445	2.3%
2032	13,601	5,436	4,842	23,880	2.3%
2033	13,919	5,563	4,842	24,324	2.3%
2034	14,245	5,693	4,842	24,780	2.3%
2035	14,578	5,826	4,842	25,246	2.3%
2036	14,883	5,948	4,842	25,673	2.1%
2037	15,194	6,073	4,842	26,109	2.1%
2038	15,512	6,200	4,842	26,554	2.1%
2039	15,837	6,329	4,842	27,008	2.1%
2040	16,168	6,462	4,842	27,472	2.1%
2041	16,461	6,579	4,842	27,882	1.8%
2042	16,759	6,698	4,842	28,299	1.8%
2043	17,063	6,819	4,842	28,724	1.8%
2044	17,372	6,943	4,842	29,157	1.8%
2045	17,687	7,069	4,842	29,598	1.8%
2046	18,007	7,197	4,842	30,046	1.8%
2047	18,334	7,327	4,842	30,503	1.8%
2048	18,666	7,460	4,842	30,968	1.8%
2049	19,004	7,595	4,842	31,442	1.8%
2050	19,349	7,733	4,842	31,924	1.8%
2051	19,471	7,782	4,842	32,095	0.6%
2052	19,595	7,831	4,842	32,268	0.6%
2053	19,719	7,881	4,842	32,442	0.6%
2054	19,844	7,931	4,842	32,617	0.6%
2055	19,970	7,981	4,842	32,793	0.6%
2056	20,096	8,032	4,842	32,970	0.6%
2057	20,224	8,083	4,842	33,148	0.6%
2058	20,352	8,134	4,842	33,328	0.6%
2059	20,481	8,186	4,842	33,508	0.6%
2060	20,611	8,237	4,842	33,690	0.6%
2061	20,741	8,290	4,842	33,873	0.6%
2062	20,873	8,342	4,842	34,057	0.6%
2063	21,005	8,395	4,842	34,242	0.6%
2064	21,138	8,448	4,842	34,429	0.6%
2065	21,272	8,502	4,842	34,616	0.6%
2066	21,407	8,556	4,842	34,805	0.6%
2067	21,543	8,610	4,842	34,995	0.6%
2068	21,679	8,665	4,842	35,186	0.6%
2069	21,817	8,719	4,842	35,378	0.6%
2070	21,955	8,775	4,842	35,572	0.6%

Table A-3
Existing System Source Mass Balance by Pressure Zone

Pressure Zone	ERCs	Irrigated Acres	Indoor Peak Day Source Required Flow (gpm)	Outdoor Peak Day Source Required Flow (gpm)	Total Peak Day Source Required Flow (gpm)	Source and Available Flow (ac-ft)										
						Bartholomew Springs	Burt Springs	Konold Springs	Spring Creek Springs	200 North Well	400 South Well #1	400 South Well #2	900 South Well	Canyon Road Well	1000 South Well	Evergreen Well
						1000	760	160	620	2400	3000	3900	3000	1500	550	350
Cherrington Pressure Zone	186	34	34	289	323	250	0	0	0	0	0	72	0	0	0	0
Crandall Pressure Zone	125	16	23	136	159	0	0	0	16	0	0	142	0	0	0	0
Hobble Creek Pressure Zone	2388	356	431	3026	3457	0	760	0	0	0	0	0	2129	568	0	0
Klauck Pressure Zone	218	28	39	238	277	0	0	0	28	0	0	249	0	0	0	0
Nestles Pressure Zone	4974	39	898	332	1230	0	0	0	126	0	0	0	871	233	0	0
Rotary Pressure Zone*	202	80	36	680	716	556	0	0	0	0	0	160	0	0	0	0
Upper Spring Creek Pressure Zone	51	7	9	60	69	0	0	0	7	0	0	62	0	0	0	0
Westfields Pressure Zone	6081	247	1098	2100	3197	0	0	67	0	1072	1341	717	0	0	0	0
Lower Spring Creek Pressure Zone**	6346	384	1146	3264	4410	0	0	93	442	1328	1659	888	0	0	0	0
Kelly/Jurd	167	13	30	111	141	141	0	0	0	0	0	0	0	0	0	0
Bartholomew	56	5	10	43	53	53	0	0	0	0	0	0	0	0	0	0
Total	20794	1209	3754	10277	**14,031**	1000	760	160	620	2400	3000	2290	3000	801	0	0
Remaining in Source (ac-ft)					**3,209**	0	0	0	0	0	0	1610	0	699	550	350

* Includes Highline Canal
** Does not include Plat A

Legend	Most Preferred	Next Preferred	Least Preferred	Not Connected

Future System Source Mass Balance by Pressure Zone

Pressure Zone	ERCs	Irrigated Acres	Indoor Peak Day Source Required Flow (gpm)	Outdoor Peak Day Source Required Flow (gpm)	Total Peak Day Source Required Flow (gpm)	Source and Available Flow for Lowest Month on Record (ac-ft)										
						Bartholomew Springs	Burt Springs	Konold Springs	Spring Creek Springs	200 North Well	400 South Well #1	400 South Well #2	900 South Well	Canyon Road Well	1000 South Well	Evergreen Well
						1000	760	160	620	2400	3000	3900	3000	1500	550	350
Cherrington Pressure Zone	187	34	34	289	323	232	0	0	0	0	0	91	0	0	0	0
Crandall Pressure Zone	135	18	24	153	177	0	0	0	17	0	0	161	0	0	0	0
Hobble Creek Pressure Zone	2469	364	446	3094	3540	0	760	0	0	0	0	0	2311	469	0	0
Klauck Pressure Zone	249	32	45	272	317	0	0	0	30	0	0	287	0	0	0	0
Nestles Pressure Zone	4974	2	898	17	915	0	0	0	87	0	0	0	689	140	0	0
Rotary Pressure Zone*	238	84	43	714	757	544	0	0	0	0	0	213	0	0	0	0
Upper Spring Creek Pressure Zone	51	7	9	60	69	0	0	0	6	0	0	62	0	0	0	0
Westfields Pressure Zone**	18227	74	3291	629	3920	0	0	69	0	1094	1368	1389	0	0	0	0
Lower Spring Creek Pressure Zone	8787	421	1587	3580	5167	0	0	91	480	1306	1632	1658	0	0	0	0
Kelly/Jurd	180	14	33	119	152	152	0	0	0	0	0	0	0	0	0	0
Bartholomew	75	7	14	60	73	73	0	0	0	0	0	0	0	0	0	0
Total	35572	1057	6423	8986	15409	1000	760	160	620	2400	3000	3861	3000	608	0	0
Remaining in Source (gpm)						0	0	0	0	0	0	39	0	892	550	350

* Includes Highline Canal
** Includes Plat A

Legend	Most Preferred	Next Preferred	Least Preferred	Not Connected

Table A-4
Existing System Storage Mass Balance by Pressure Zone

Pressure Zone	ERCs	Irrigated Acres	Indoor Required Equalization Storage (MG)	Outdoor Required Equalization Storage (MG)	Total Required Equalization Storage (MG)	Tank and Capacity (MG)								
						Bartholomew	Rotary	Jurd	Hobble Creek 1	Hobble Creek 2	Upper Spring Creek	Lower Spring Creek 1	Lower Spring Creek 2	Lower Spring Creek 3
						1.5	2	0.25	2	2	2	1	2	3
Cherrington Pressure Zone	186	34	0.04	0.21	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crandall Pressure Zone	125	16	0.03	0.10	0.13	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00
Hobble Creek Pressure Zone	2388	356	0.55	2.18	2.73	0.00	0.00	0.00	2.00	0.73	0.00	0.00	0.00	0.00
Klauck Pressure Zone	218	28	0.05	0.17	0.22	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Nestles Pressure Zone	4974	39	1.14	0.24	1.38	0.00	0.29	0.00	0.00	0.25	0.00	0.17	0.26	0.41
Rotary Pressure Zone*	202	80	0.05	0.49	0.54	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Spring Creek Pressure Zone	51	7	0.01	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
Westfields Pressure Zone	6081	247	1.40	1.51	2.91	0.01	0.57	0.00	0.00	0.00	0.62	0.36	0.55	0.80
Lower Spring Creek Pressure Zone**	6346	384	1.46	2.35	3.81	0.01	0.55	0.00	0.00	0.68	0.60	0.47	0.72	0.77
Kelly/Jurd	167	13	0.04	0.08	0.12	0.01	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Bartholomew	56	5	0.01	0.03	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equalization Total (MG)	20794	1209	4.78	7.40	12.18	0.86	1.40	0.11	2.00	1.66	1.63	1.00	1.54	1.98
Fire Suppression Total (MG)						0.24	0.30	0.12	0.00	0.24	0.27	0.00	0.06	0.09
Emergency Total (MG)						0.40	0.30	0.02	0.00	0.10	0.10	0.00	0.40	0.70
Remaining in Tank (MG)						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23

* Includes Highline Canal
** Does not include Plat A

Legend	Most Preferred	Next Preferred	Least Preferred	Not Connected

Future System Storage Mass Balance by Pressure Zone

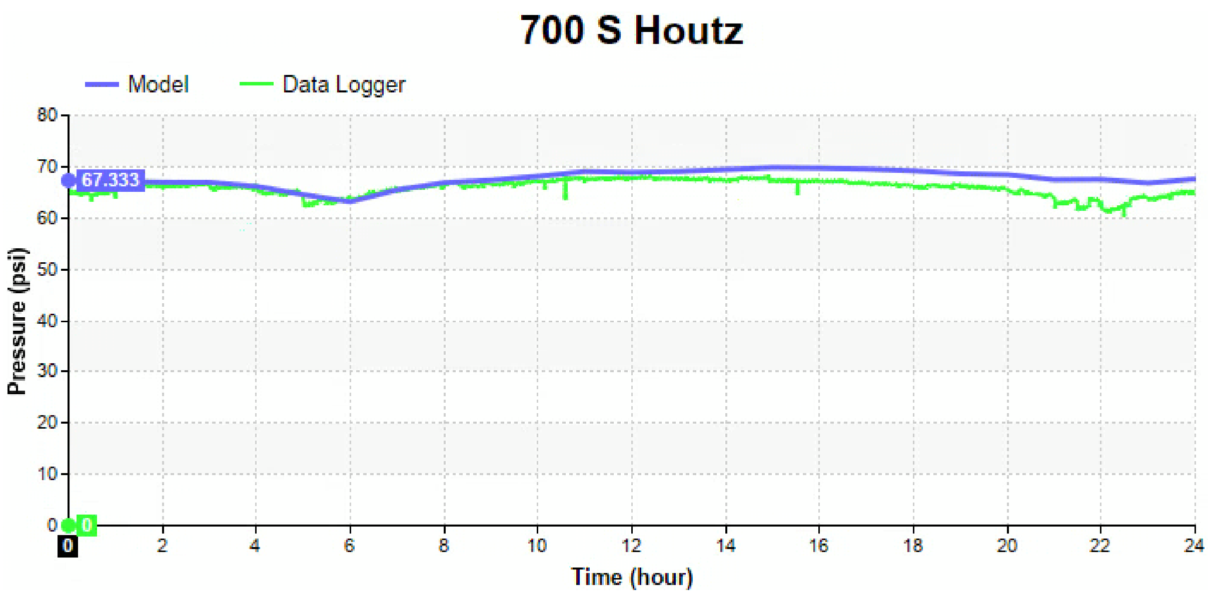
Pressure Zone	ERCs	Irrigated Acres	Indoor Required Equalization Storage (MG)	Outdoor Required Equalization Storage (MG)	Total Required Equalization Storage (MG)	Tank and Capacity (MG)								
						Bartholomew	Rotary	Jurd	Hobble Creek 1	Hobble Creek 2	Upper Spring Creek	Lower Spring Creek 1	Lower Spring Creek 2	Lower Spring Creek 3
						1.5	2	0.25	2	2	2	1	2	3
Cherrington Pressure Zone	187	34	0.04	0.21	0.25	0.24	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crandall Pressure Zone	135	18	0.03	0.11	0.14	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00
Hobble Creek Pressure Zone	2469	364	0.57	2.23	2.80	0.00	0.00	0.00	2.00	0.80	0.00	0.00	0.00	0.00
Klauck Pressure Zone	249	32	0.06	0.20	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Nestles Pressure Zone	4974	2	1.14	0.01	1.16	0.00	0.16	0.00	0.00	0.17	0.00	0.11	0.17	0.27
Rotary Pressure Zone*	238	84	0.05	0.51	0.57	0.55	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Spring Creek Pressure Zone	51	7	0.01	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
Westfields Pressure Zone**	18227	74	4.19	0.45	4.65	0.00	0.67	0.00	0.00	0.00	0.66	0.45	0.69	1.08
Lower Spring Creek Pressure Zone	8787	421	2.02	2.58	4.60	0.00	0.53	0.00	0.00	0.69	0.52	0.44	0.68	0.86
Kelly/Jurd	180	14	0.04	0.09	0.13	0.00	0.02	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Bartholomew	75	7	0.02	0.04	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equalization Total (MG)	35572	1057	8.18	6.47	14.65	0.86	1.40	0.11	2.00	1.66	1.63	1.00	1.54	2.21
Fire Suppression Total (MG)						0.24	0.30	0.12	0.00	0.24	0.27	0.00	0.06	0.09
Emergency Total (MG)						0.40	0.30	0.02	0.00	0.10	0.10	0.00	0.40	0.70
Remaining in Tank (MG)						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

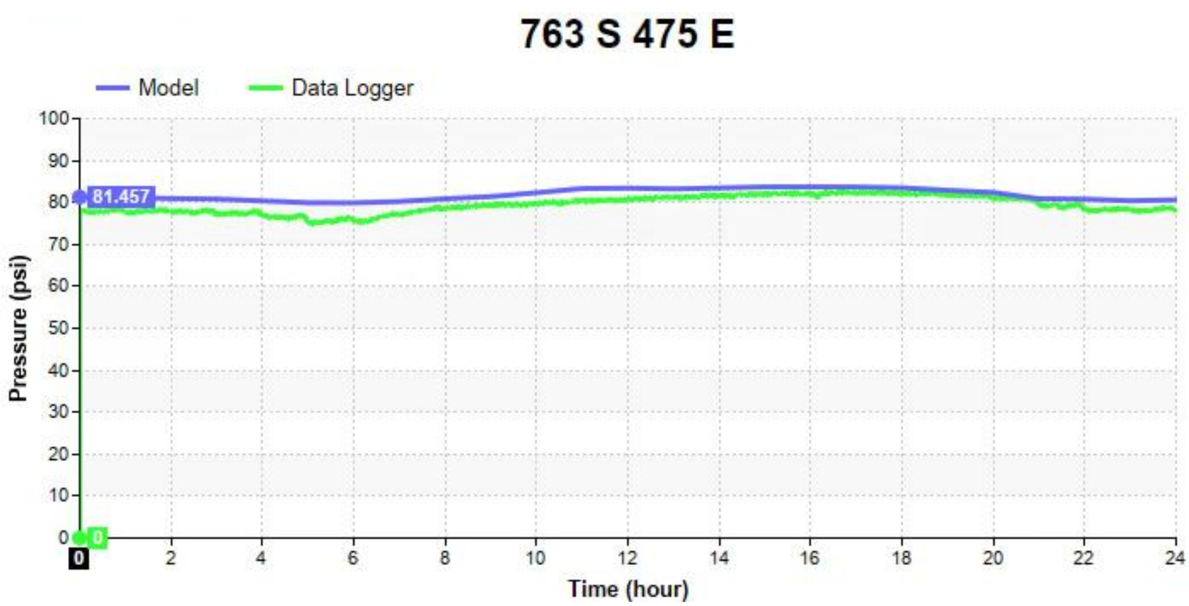
* Includes Highline Canal
** Includes Plat A

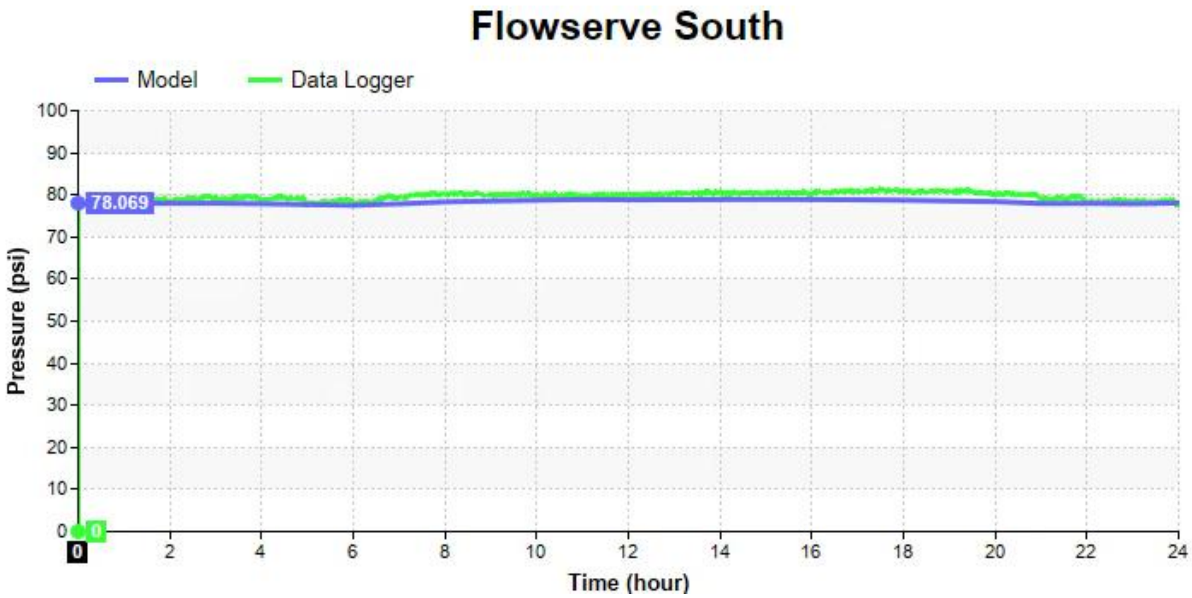
Legend	Most Preferred	Next Preferred	Least Preferred	Not Connected

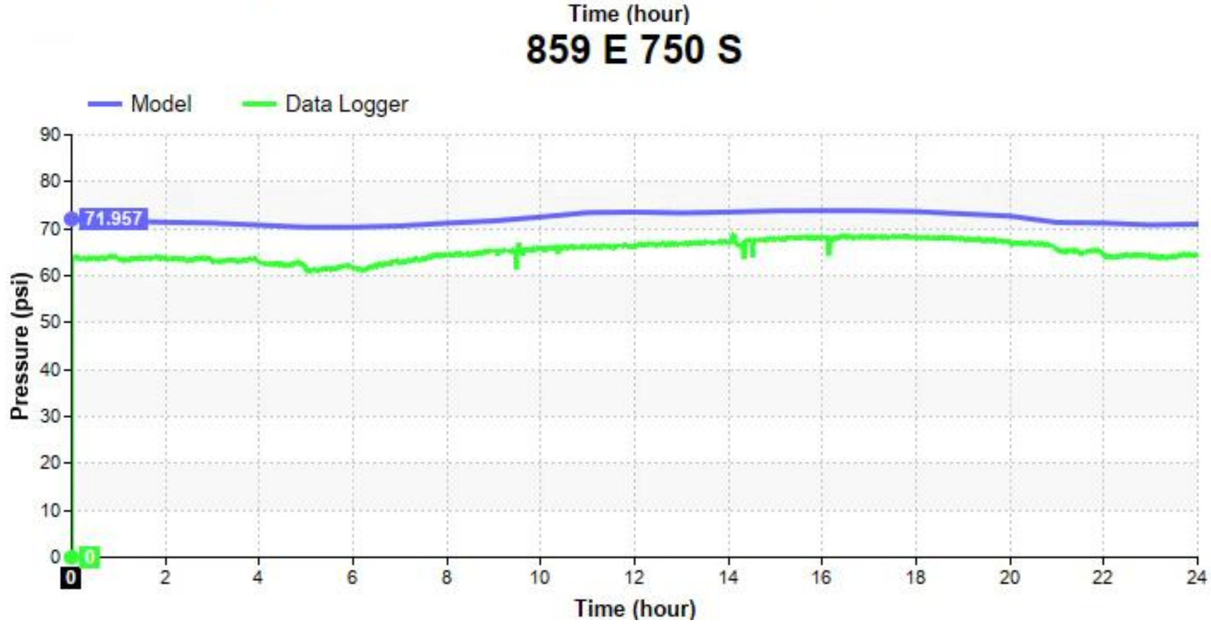
APPENDIX B
Calibration Data

Pressure Logger Calibration Charts



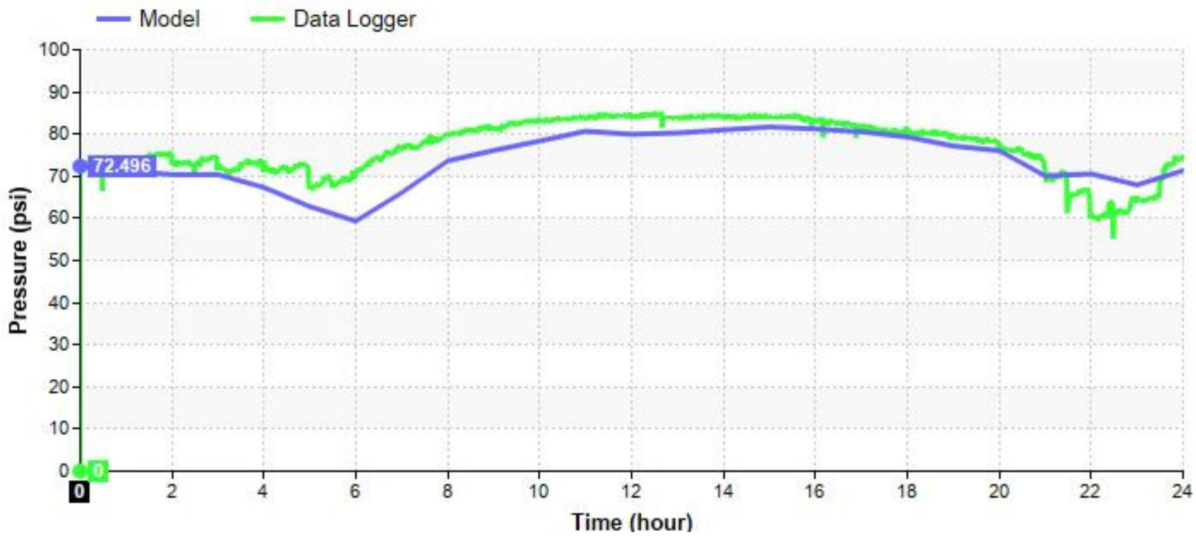




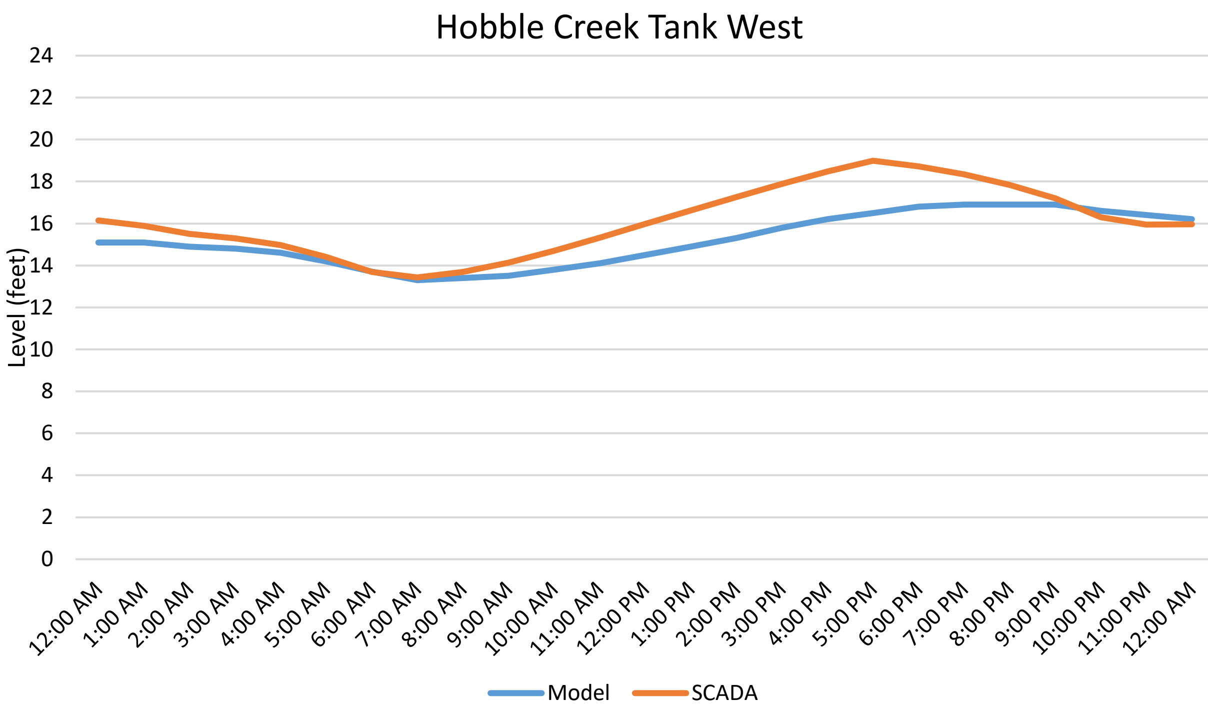


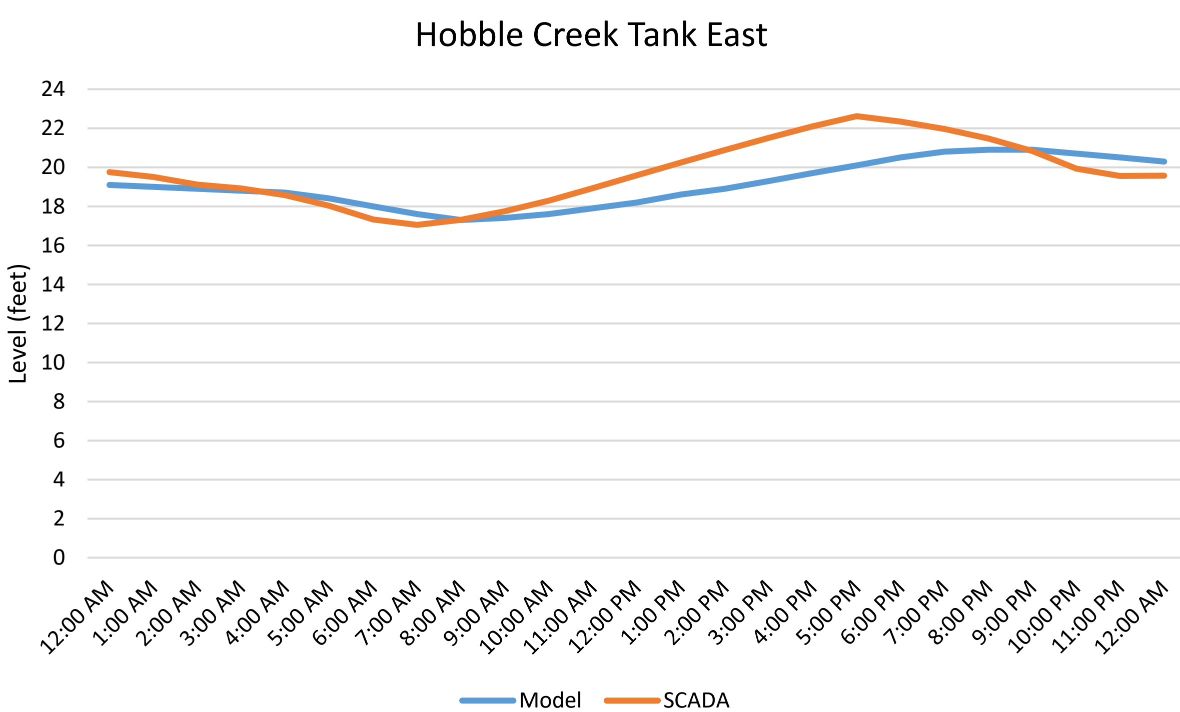
Notes on 859 E 750 S: Tank levels were checked, and Lower Spring Creek Tanks were functioning at the correct levels. PRVs from Hobble Creek Zone to Lower Spring Creek Zone were also checked. PRVs either have no flows or periods of very small flows. Pumps were checked as well. Only a small increase in pressure when the 4th South well turned on. Elevations were also verified and seem reasonable. The data logger at 763 S and 475 E is just a few blocks away and seems to match much better, so likely there is a localized issue that is causing the difference between the model and the data logger.

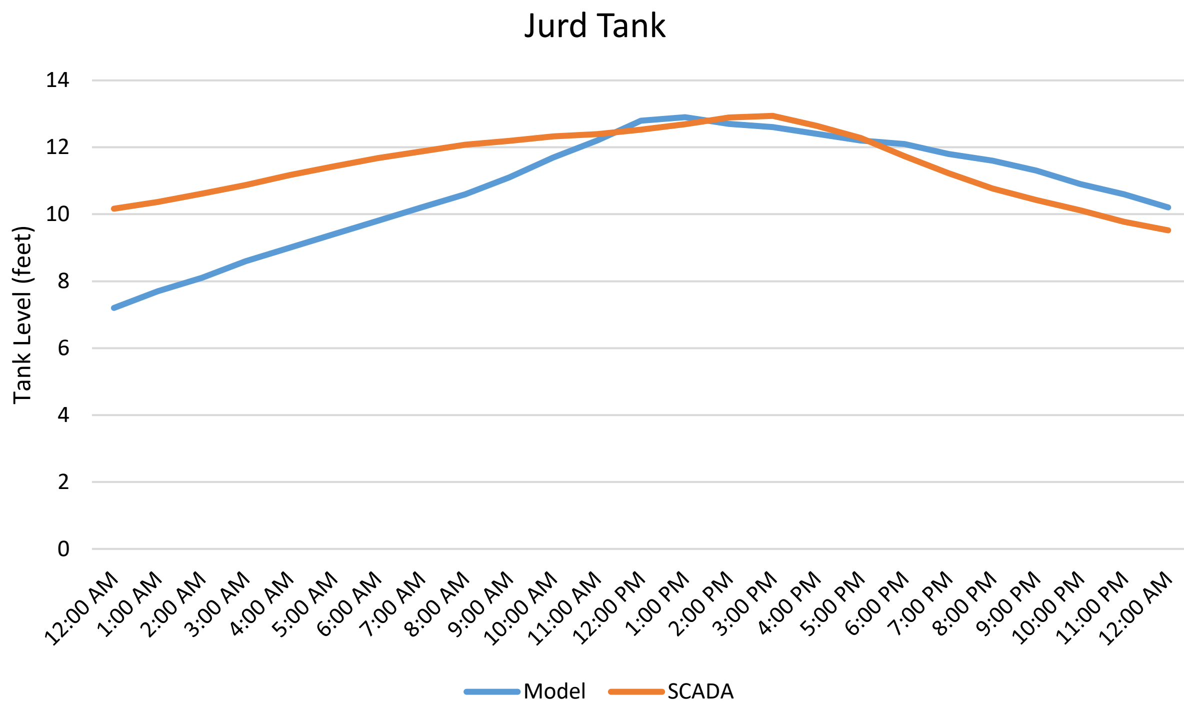
193 E 2650 S (Santa Fe Dr)



Tank Calibration Charts






Jurd Tank
Tank Level (feet)
14
12
10
8
6
4
2
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
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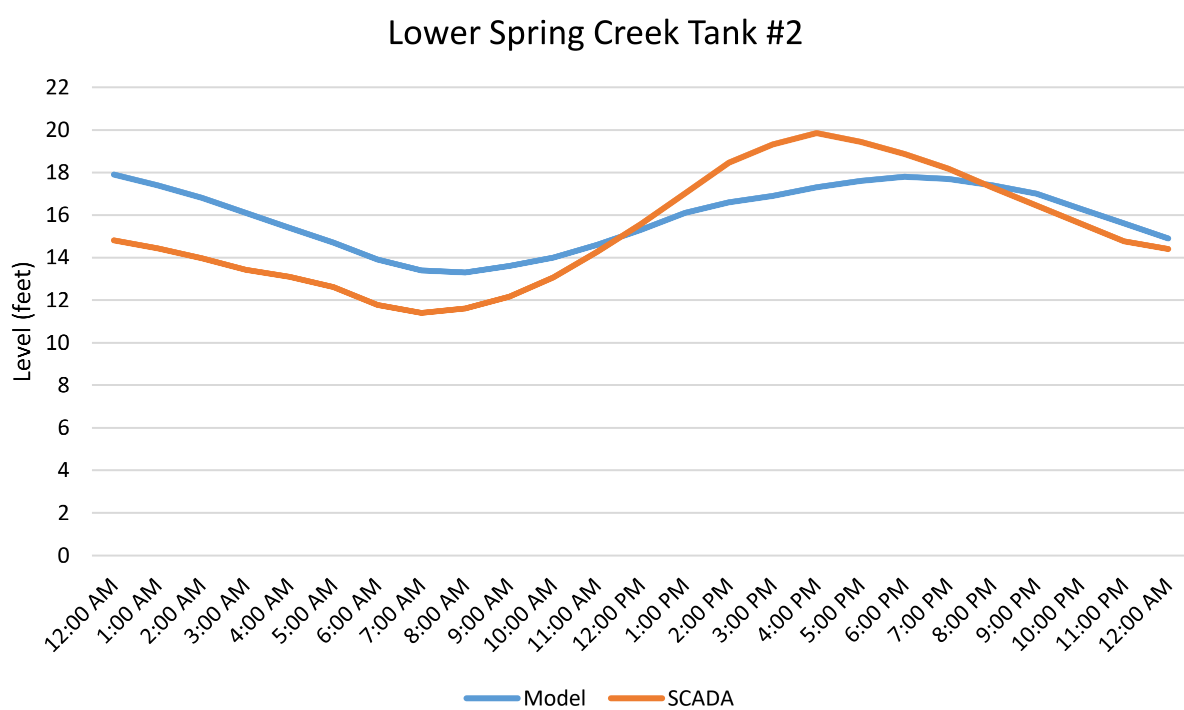
12:00 AM
Model
SCADA


Lower Spring Creek Tank #2
Level (feet)
22
20
18
16
14
12
10
8
6
4
2
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
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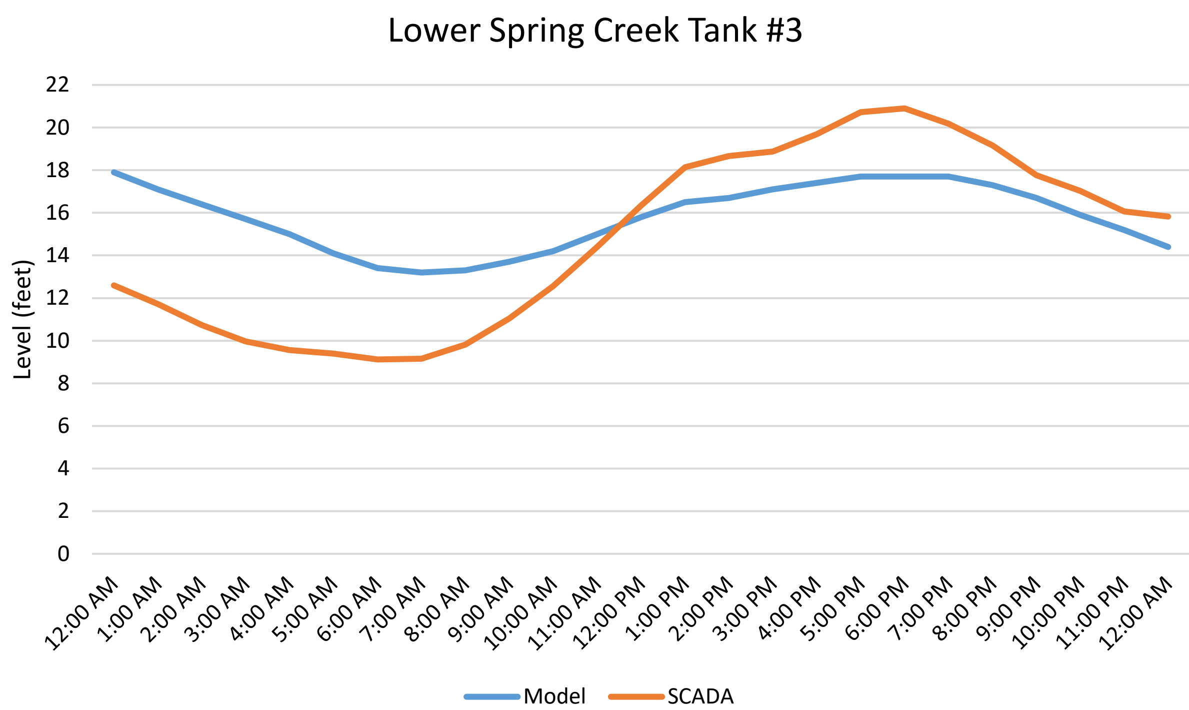
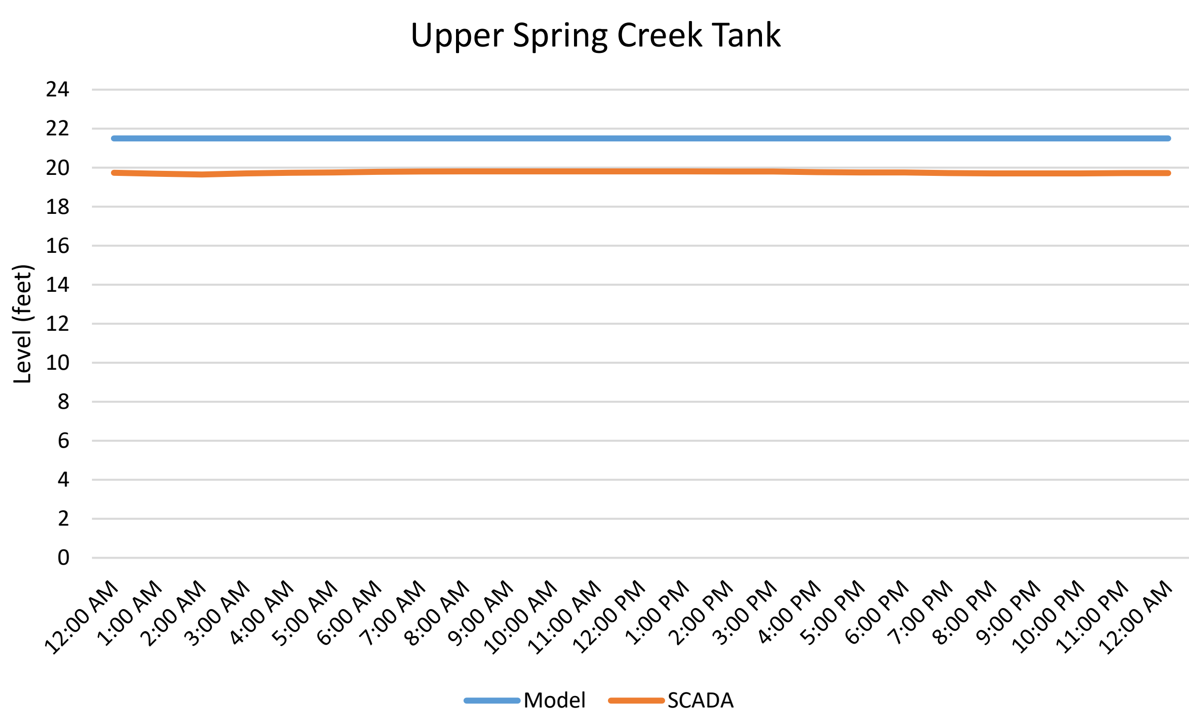
12:00 AM
Model
SCADA


Lower Spring Creek Tank #3
Level (feet)
22
20
18
16
14
12
10
8
6
4
2
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Model
SCADA


Upper Spring Creek Tank
Level (feet)
24
22
20
18
16
14
12
10
8
6
4
2
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
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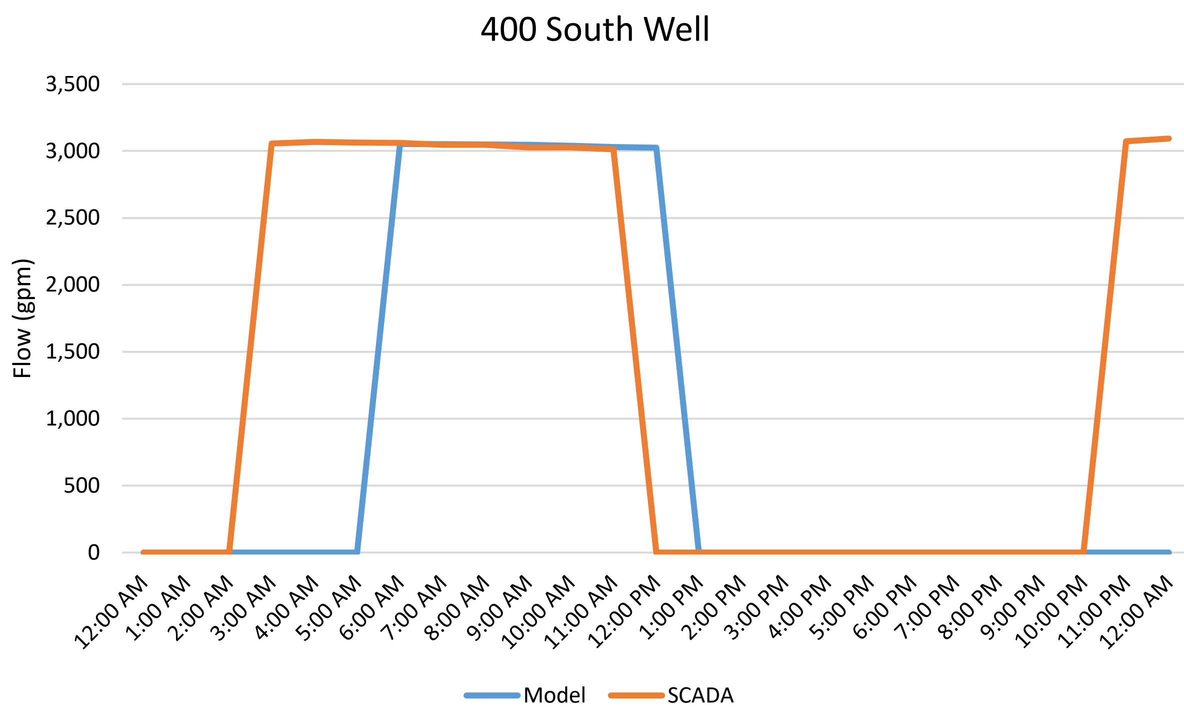
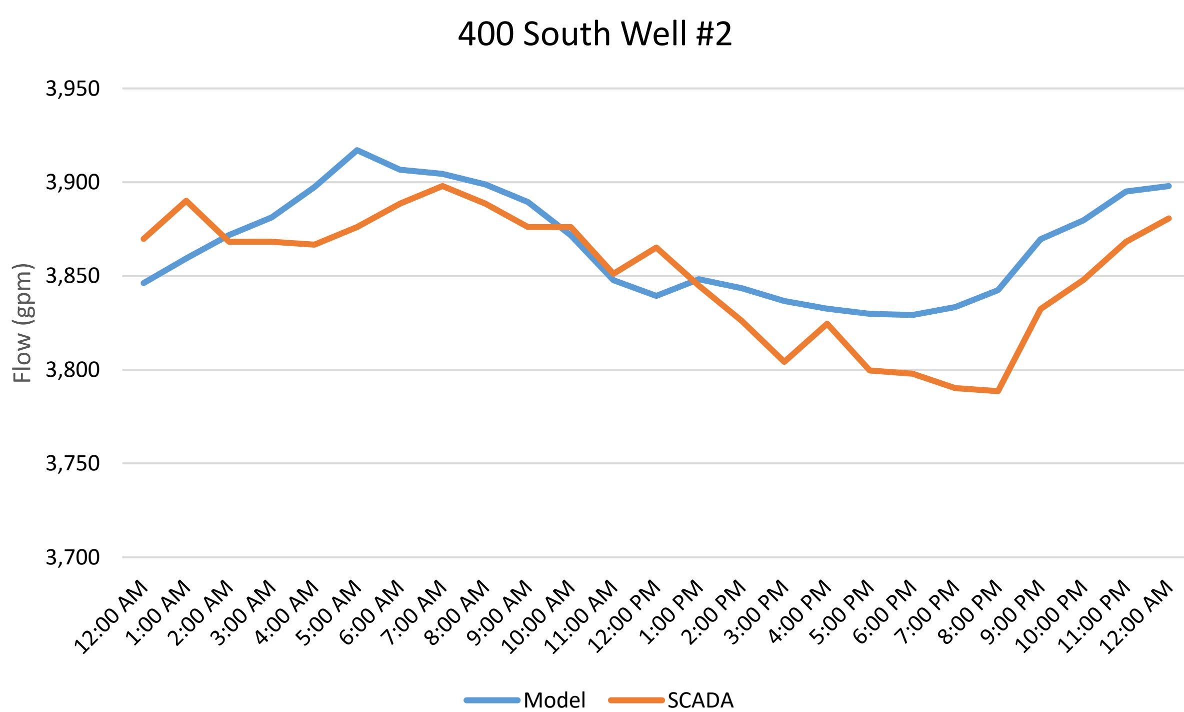
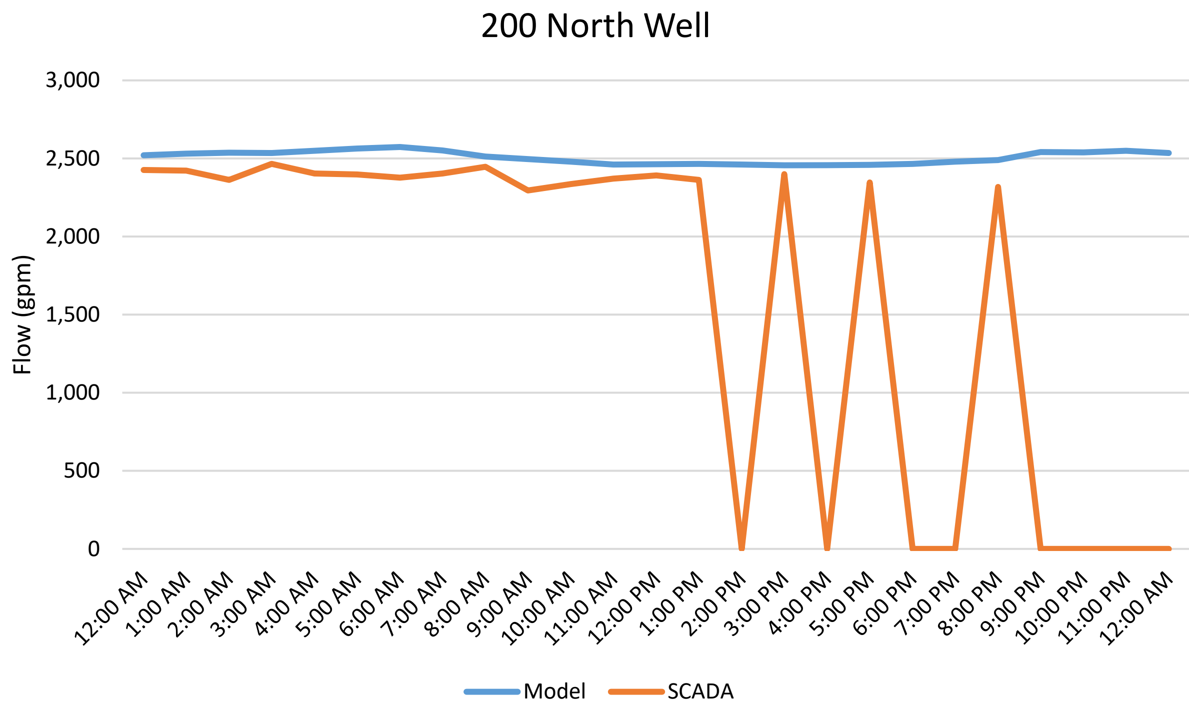
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Model
SCADA

Well Calibration Charts






200 North Well
Flow (gpm)
3,000
2,500
2,000
1,500
1,000
500
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
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2:00 PM
3:00 PM
4:00 PM
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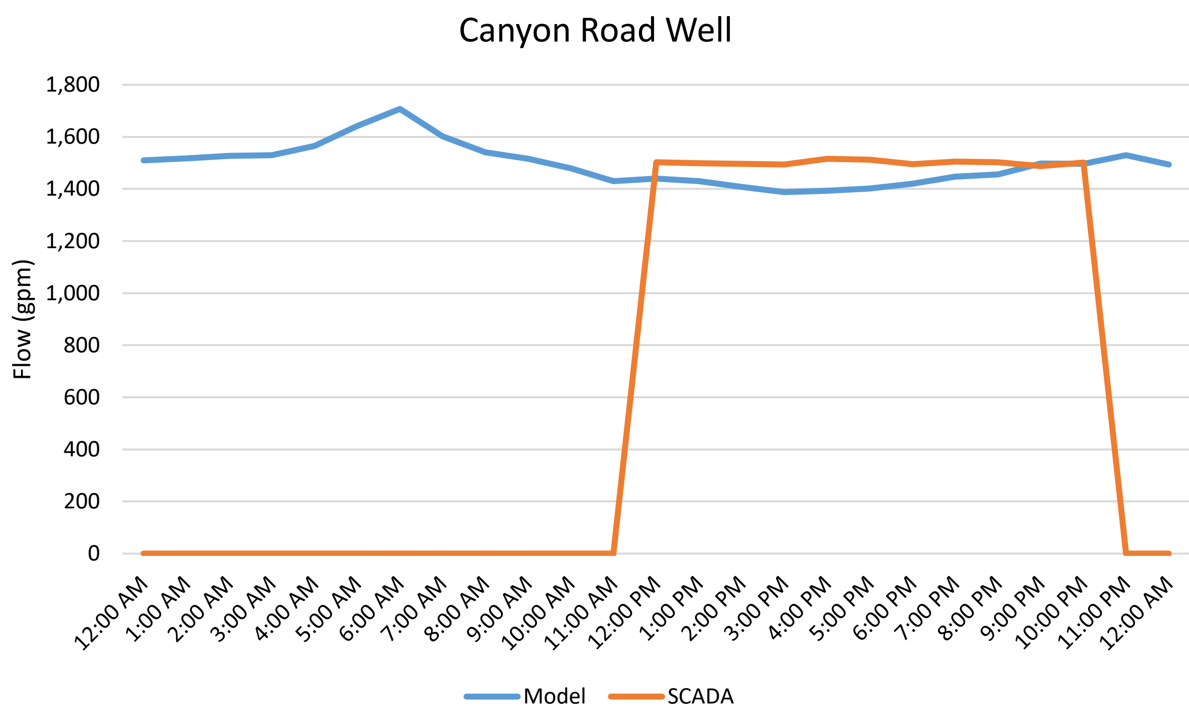
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Model
SCADA


Canyon Road Well
Flow (gpm)
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
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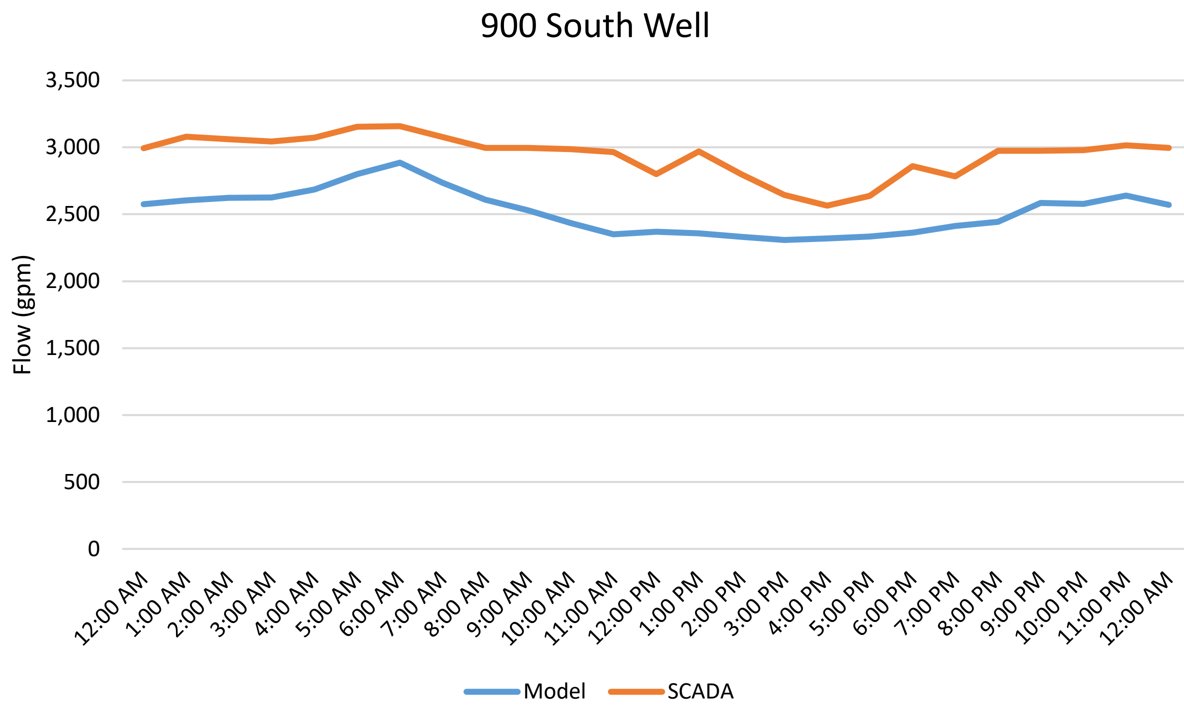
Model
SCADA



900 South Well
Flow (gpm)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
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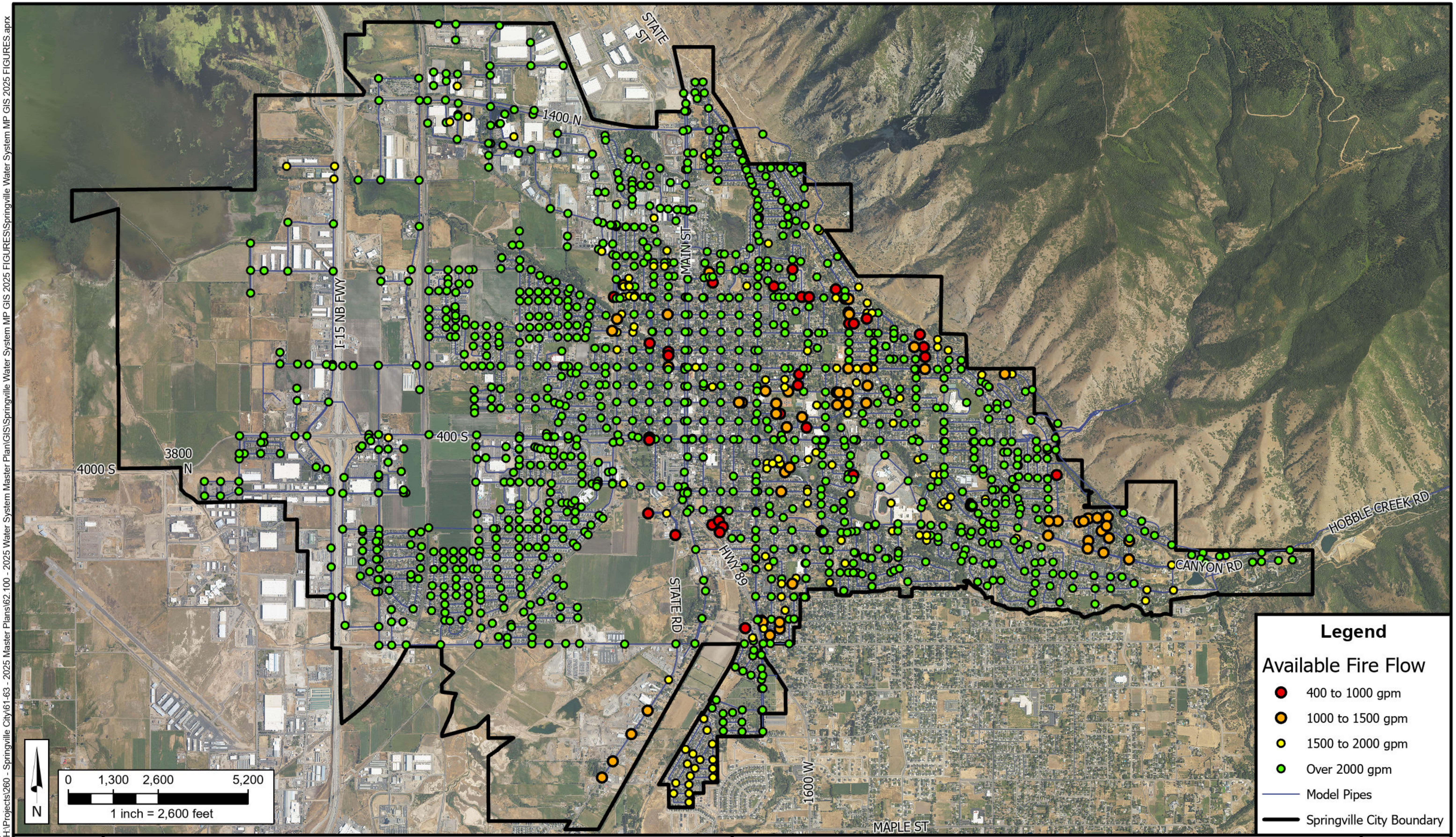
Model
SCADA

APPENDIX C

Available Fire Flow



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HANSEN ALLEN & LUCE inc ENGINEERS

SPRINGVILLE CITY 2025 MASTER PLANS	EXISTING DRINKING WATER SYSTEM FIRE FLOW - HYDRANT DESIGN FLOWS	APPENDIX C

APPENDIX D
Unit Costs

Springville City Drinking Water Master Plan - Capital Facility Plan Project Cost Estimates
Springville City
by Hansen, Allen & Luce, Inc.
DRAFT
AACE Class: 5

Parts of Project 10-6 have already been constructed. The costs shown for these projects reflect the bid or reimbursement agreement amounts provided by the City.
10-6: Reimbursement agreement - Center Street culinary water lines

Scenario	Project ID	Item Type	Location/Description	Diameter	Quantity	Rounded Quantity	Units	Unit Cost	Base Cost	Contingency (20%)	Engineering (10%)	Project Total Cost	Project Total Cost *Rounded*	Impact Fee Eligible Cost	Impact Fee Eligible Cost *Rounded*	% Impact Fee Eligible
DW Project 10-1																
10-Year	10-1	Pipe	16-inch diameter pipe	16	1290	1300	LF	$ 370	$ 481,000	$ 96,200	$ 48,100	$ 625,300	$ 626,000	$ 625,300	$ 626,000	100%
10-Year	10-1	Well	New well on 9th S		1	1	LF	$ 3,000,000	$ 3,000,000	$ 600,000	$ 300,000	$ 3,900,000	$ 3,900,000	$ 3,900,000	$ 3,900,000	100%
10-Year	10-1	Well House	Well House for new well on 9th S		1	1	LF	$ 3,000,000	$ 3,000,000	$ 600,000	$ 300,000	$ 3,900,000	$ 3,900,000	$ 3,900,000	$ 3,900,000	100%
												DW Project 10-1 Total	**$ 8,430,000**	**10-1 Total**	**$ 8,430,000**	**100%**
DW Project 10-2																
10-Year	10-2	Pipe	10-inch diameter pipe	10	64	70	LF	$ 290	$ 20,300	$ 4,060	$ 2,030	$ 26,390	$ 27,000	$ 26,390	$ 27,000	100%
10-Year	10-2	Pipe	16-inch diameter pipe	16	559	560	LF	$ 370	$ 207,200	$ 41,440	$ 20,720	$ 269,360	$ 270,000	$ 269,360	$ 270,000	100%
10-Year	10-2	Pipe	18-inch diameter pipe	18	4007	4010	LF	$ 400	$ 1,604,000	$ 320,800	$ 160,400	$ 2,085,200	$ 2,086,000	$ 2,085,200	$ 2,086,000	100%
10-Year	10-2	Bore-10	Bore (2) 10-inch diameter pipes across railroad (100')	10	200	200	LF	$ 2,400	$ 480,000	$ 96,000	$ 48,000	$ 624,000	$ 624,000	$ 624,000	$ 624,000	100%
10-Year	10-2	Bore-18	Bore 18-inch diameter pipe across (2) canals (40')	18	80	80	LF	$ 4,200	$ 336,000	$ 67,200	$ 33,600	$ 436,800	$ 437,000	$ 436,800	$ 437,000	100%
												DW Project 10-2 Total	**$ 3,450,000**	**10-2 Total**	**$ 3,450,000**	**100%**
DW Project 10-3																
10-Year	10-3	Pipe	12-inch diameter pipe	12	1683	1690	LF	$ 320	$ 540,800	$ 108,160	$ 54,080	$ 703,040	$ 704,000	$ 703,040	$ 704,000	100%
10-Year	10-3	UDOT	UDOT ROW (SR 51)		1	1	LS	10% project	$ 54,080	$ 10,816	$ 5,408	$ 70,304	$ 71,000	$ 70,304	$ 71,000	100%
												DW Project 10-3 Total	**$ 780,000**	**10-3 Total**	**$ 780,000**	**100%**
DW Project 10-4																
10-Year	10-4	Pipe	12-inch diameter pipe	12	2517	2520	LF	$ 320	$ 806,400	$ 161,280	$ 80,640	$ 1,048,320	$ 1,049,000	$ 1,048,320	$ 1,049,000	100%
10-Year	10-4	UDOT	UDOT ROW (SR 51)		1	1	LS	10% project	$ 80,640	$ 16,128	$ 8,064	$ 104,832	$ 105,000	$ 104,832	$ 105,000	100%
												DW Project 10-4 Total	**$ 1,160,000**	**10-4 Total**	**$ 1,160,000**	**100%**
DW Project 10-5																
10-Year	10-5	Pipe	10-inch diameter pipe	10	696	700	LF	$ 290	$ 203,000	$ 40,600	$ 20,300	$ 263,900	$ 264,000	$ -	$ -	0%
10-Year	10-5	Pipe	12-inch diameter pipe	12	6060	6060	LF	$ 320	$ 1,939,200	$ 387,840	$ 193,920	$ 2,520,960	$ 2,521,000	$ 236,340	$ 237,000	9%
10-Year	10-5	Bore-12	Bore 12-inch diameter pipe under I-15 (350')	12	350	350	LF	$ 3,000	$ 1,050,000	$ 210,000	$ 105,000	$ 1,365,000	$ 1,365,000	$ 273,000	$ 273,000	20%
												DW Project 10-5 Total	**$ 4,150,000**	**10-5 Total**	**$ 510,000**	**12%**
DW Project 10-6 *(Center Street culinary water lines, portion constructed)*												**Total**	**Rounded**			
10-Year	10-6	Pipe	16-inch diameter pipe (constructed)	16	1100	(-)	(-)	(-)	(-)	(-)	(-)	**$ 107,670**	**$ 108,000**	$ 107,670	$ 108,000	100%
10-Year	10-6	Pipe	16-inch diameter pipe	16	489	490	LF	$ 370	$ 181,300	$ 36,260	$ 18,130	$ 235,690	$ 236,000	$ 50,960	$ 51,000	22%
												DW Project 10-6 Total	**$ 350,000**	**10-6 Total**	**$ 160,000**	**46%**
DW Project 10-7															**$ 60,000**	
10-Year	10-7	Pipe	12-inch diameter pipe	12	1365	1370	LF	$ 320	$ 438,400	$ 87,680	$ 43,840	$ 569,920	$ 570,000	$ 53,430	$ 54,000	9%
10-Year	10-7	Bore-12	Bore 12-inch diameter pipe across canal (40')	12	40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 31,200	$ 32,000	20%
												DW Project 10-7 Total	**$ 730,000**	**10-7 Total**	**$ 90,000**	**12%**
DW Project 10-8																
10-Year	10-8	Pipe	10-inch diameter pipe	10	699	700	LF	$ 290	$ 203,000	$ 40,600	$ 20,300	$ 263,900	$ 264,000	$ 18,200	$ 19,000	7%
10-Year	10-8	Bore-10	Bore 10-inch diameter pipe across canal (40')	10	40	40	LF	$ 2,400	$ 96,000	$ 19,200	$ 9,600	$ 124,800	$ 125,000	$ 20,800	$ 21,000	17%
												DW Project 10-8 Total	**$ 390,000**	**10-8 Total**	**$ 40,000**	**10%**
DW Project 10-9																
10-Year	10-9	Pipe	12-inch diameter pipe	12	642	650	LF	$ 320	$ 208,000	$ 41,600	$ 20,800	$ 270,400	$ 271,000	$ 42,250	$ 43,000	16%
												DW Project 10-9 Total	**$ 280,000**	**10-9 Total**	**$ 50,000**	**16%**
DW Project 10-10																
10-Year	10-10	Pipe	10-inch diameter pipe	10	1380	1380	LF	$ 290	$ 400,200	$ 80,040	$ 40,020	$ 520,260	$ 521,000	$ 35,880	$ 36,000	7%
10-Year	10-10	Pipe	12-inch diameter pipe	12	1315	1320	LF	$ 320	$ 422,400	$ 84,480	$ 42,240	$ 549,120	$ 550,000	$ 85,800	$ 86,000	16%
10-Year	10-10	Bore-10	Bore 10-inch diameter pipe across canal (40')	10	40	40	LF	$ 2,400	$ 96,000	$ 19,200	$ 9,600	$ 124,800	$ 125,000	$ 20,800	$ 21,000	17%
												DW Project 10-10 Total	**$ 1,200,000**	**10-10 Total**	**$ 150,000**	**12%**
DW Project 10-11																
10-Year	10-11	Pipe	12-inch diameter pipe	12	3520	3520	LF	$ 320	$ 1,126,400	$ 225,280	$ 112,640	$ 1,464,320	$ 1,465,000	$ -	$ -	0%
												DW Project 10-11 Total	**$ 1,470,000**	**10-11 Total**	**$ -**	**0%**
DW Project 20-1																
20-Year	20-1	Pipe	16-inch diameter pipe	16	152	160	LF	$ 370	$ 59,200	$ 11,840	$ 5,920	$ 76,960	$ 77,000	$ 76,960	$ 77,000	100%
20-Year	20-1	Pipe	24-inch diameter pipe	24	12607	12610	LF	$ 510	$ 6,431,100	$ 1,286,220	$ 643,110	$ 8,360,430	$ 8,361,000	$ 8,360,430	$ 8,361,000	100%
20-Year	20-1	Tank	3 MG Tank		3	3	MG	$ 2,000,000	$ 6,000,000	$ 1,200,000	$ 600,000	$ 7,800,000	$ 7,800,000	$ 7,800,000	$ 7,800,000	100%
20-Year	20-1	PSV-16	16-inch pressure sustaining valve	16	1	1	LF	$ 400,000	$ 400,000	$ 80,000	$ 40,000	$ 520,000	$ 520,000	$ 520,000	$ 520,000	100%
20-Year	20-1	PSV-16	16-inch pressure sustaining valve	16	1	1	LF	$ 400,000	$ 400,000	$ 80,000	$ 40,000	$ 520,000	$ 520,000	$ 520,000	$ 520,000	100%
20-Year	20-1	Bore-24	Bore 24-inch diameter pipe across (2) railroads (100')	24	200	200	LF	$ 6,000	$ 1,200,000	$ 240,000	$ 120,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	100%
												DW Project 20-1 Total	**$ 18,840,000**	**20-1 Total**	**$ 18,840,000**	**100%**
DW Project 20-2																
20-Year	20-2	Pipe	18-inch diameter pipe	18	544	550	LF	$ 400	$ 220,000	$ 44,000	$ 22,000	$ 286,000	$ 286,000	$ 286,000	$ 286,000	100%
20-Year	20-2	Bore-18	Bore 18-inch diameter pipe across canal (40')	18	40	40	LF	$ 4,200	$ 168,000	$ 33,600	$ 16,800	$ 218,400	$ 219,000	$ 218,400	$ 219,000	100%
												DW Project 20-2 Total	**$ 510,000**	**20-2 Total**	**$ 510,000**	**100%**
DW Project 20-3																
20-Year	20-3	Pipe	10-inch diameter pipe	10	3407	3410	LF	$ 290	$ 988,900	$ 197,780	$ 98,890	$ 1,285,570	$ 1,286,000	$ -	$ -	0%
20-Year	20-3	Pipe	12-inch diameter pipe	12	1112	1120	LF	$ 320	$ 358,400	$ 71,680	$ 35,840	$ 465,920	$ 466,000	$ 43,680	$ 44,000	9%
												DW Project 20-3 Total	**$ 1,760,000**	**20-3 Total**	**$ 50,000**	**2%**
DW Project 20-4																
20-Year	20-4	Pipe	10-inch diameter pipe	10	2714	2720	LF	$ 290	$ 788,800	$ 157,760	$ 78,880	$ 1,025,440	$ 1,026,000	$ -	$ -	0%
20-Year	20-4	Pipe	12-inch diameter pipe	12	1229	1230	LF	$ 320	$ 393,600	$ 78,720	$ 39,360	$ 511,680	$ 512,000	$ 47,970	$ 48,000	9%
20-Year	20-4	Bore-12	Bore 12-inch diameter pipe across railroad (300')	12	300	300	LF	$ 3,000	$ 900,000	$ 180,000	$ 90,000	$ 1,170,000	$ 1,170,000	$ 234,000	$ 234,000	20%
20-Year	20-4	Bore-12	Bore 12-inch diameter pipe across canal (40')	12	40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 31,200	$ 32,000	20%
												DW Project 20-4 Total	**$ 2,870,000**	**20-4 Total**	**$ 320,000**	**11%**

Springville City Drinking Water Master Plan - Capital Facility Plan Project Cost Estimates
Springville City
by Hansen, Allen & Luce, Inc.
DRAFT
AACE Class: 5

Parts of Project 10-6 have already been constructed. The costs shown for these projects reflect the bid or reimbursement agreement amounts provided by the City.
10-6: Reimbursement agreement - Center Street culinary water lines

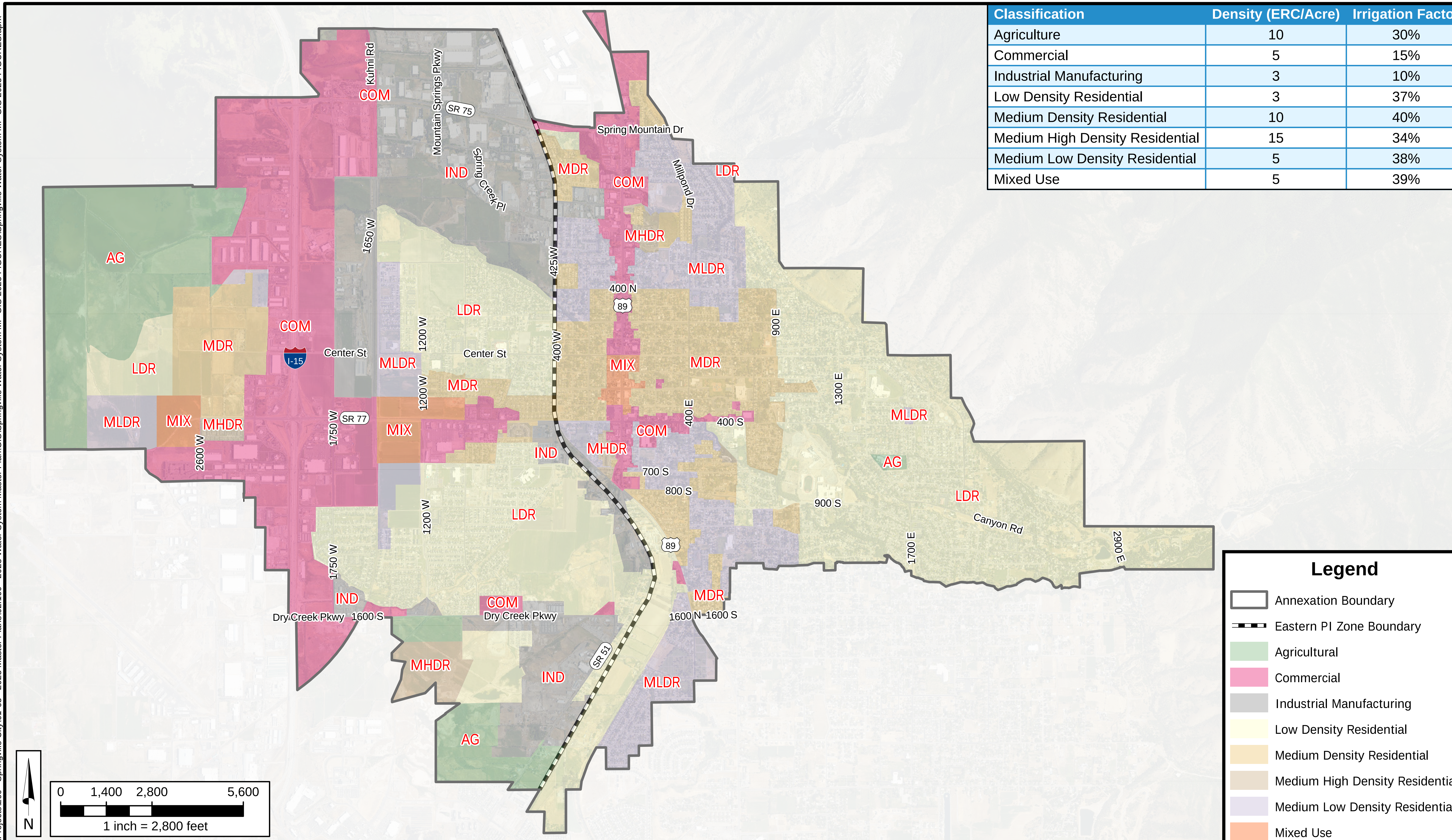
Scenario	Project ID	Item Type	Location/Description	Diameter	Quantity	Rounded Quantity	Units	Unit Cost	Base Cost	Contingency (20%)	Engineering (10%)	Project Total Cost	Project Total Cost *Rounded*	Impact Fee Eligible Cost	Impact Fee Eligible Cost *Rounded*	% Impact Fee Eligible
DW Project 20-5																
20-Year	20-5	Pipe	10-inch diameter pipe	10	982	990	LF	$ 290	$ 287,100	$ 57,420	$ 28,710	$ 373,230	$ 374,000	$ -	$ -	0%
												DW Project 20-5 Total	**$ 380,000**	**20-5 Total**	**$ -**	**0%**
DW Project 20-6																
20-Year	20-6	Pipe	10-inch diameter pipe	10	1352	1360	LF	$ 290	$ 394,400	$ 78,880	$ 39,440	$ 512,720	$ 513,000	$ -	$ -	0%
20-Year	20-6	Pipe	12-inch diameter pipe	12	1297	1300	LF	$ 320	$ 416,000	$ 83,200	$ 41,600	$ 540,800	$ 541,000	$ 50,700	$ 51,000	9%
20-Year	20-6	Bore-12	Bore 12-inch diameter pipe across railroad (300')	12	300	300	LF	$ 3,000	$ 900,000	$ 180,000	$ 90,000	$ 1,170,000	$ 1,170,000	$ 234,000	$ 234,000	20%
												DW Project 20-6 Total	**$ 2,230,000**	**20-6 Total**	**$ 290,000**	**13%**
DW Project 20-7																
20-Year	20-7	Pipe	12-inch diameter pipe	12	318	320	LF	$ 320	$ 102,400	$ 20,480	$ 10,240	$ 133,120	$ 134,000	$ 12,480	$ 13,000	9%
20-Year	20-7	Bore-12	Bore 12-inch diameter pipe across canal (40')	12	40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 31,200	$ 32,000	20%
												DW Project 20-7 Total	**$ 290,000**	**20-7 Total**	**$ 50,000**	**15%**
DW Project 20-8																
20-Year	20-8	Pipe	12-inch diameter pipe	12	705	710	LF	$ 320	$ 227,200	$ 45,440	$ 22,720	$ 295,360	$ 296,000	$ 46,150	$ 47,000	16%
												DW Project 20-8 Total	**$ 300,000**	**20-8 Total**	**$ 50,000**	**16%**

	Totals		Impact Fee Eligible	
10-Year	**$ 22,390,000**	**10-Year**	**$ 14,820,000**	**66%**
20-Year	**$ 27,180,000**	**20-Year**	**$ 20,110,000**	**74%**
Total	**$ 49,570,000**	**Total**	**$ 34,930,000**	**70%**

APPENDIX E

Future Growth Projections

Classification	Density (ERC/Acre)	Irrigation Factor
Agriculture	10	30%
Commercial	5	15%
Industrial Manufacturing	3	10%
Low Density Residential	3	37%
Medium Density Residential	10	40%
Medium High Density Residential	15	34%
Medium Low Density Residential	5	38%
Mixed Use	5	39%



Legend

- Annexation Boundary
- Eastern PI Zone Boundary
- Agricultural
- Commercial
- Industrial Manufacturing
- Low Density Residential
- Medium Density Residential
- Medium High Density Residential
- Medium Low Density Residential
- Mixed Use

Date: 11/4/2025
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HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
DRINKING WATER SYSTEM MASTER PLAN

FUTURE GROWTH PROJECTIONS

APPENDIX E

APPENDIX F

Checklist for Hydraulic Model Design Elements Report

Hydraulic Analysis Certification for DDW Project

This portion of the Hydraulic Analysis Certification must be completed and sealed by a Professional Engineer. It certifies that the project's hydraulic modeling and analysis comply with Utah Administrative Rules R309. Note: This certification is not required on a project that is only installing water lines up to and including 16 inches in diameter and if the system has approved standards per R309-500-7(1).

PE in charge of Hydraulic Model of this Project	
State of Utah P.E. License No.	
Signature	
Date	

I hereby certify that the hydraulic modeling analysis for:

Project Name	Springville City Drinking Water Master Plan and Capital Improvement Plan
Hydraulic Modeling Software and Version Used	InfoWater
Water System Name	Springville City Water Department (Culinary)
Water System Number	25005
DDW File Number	

meets all requirements as set forth in *R309-511* (*Hydraulic Modeling Rule*) and complies with the provisions thereof, as well as the sizing requirements of *R309-510*, and the minimum water pressures of *R309-105-9*. Where applicable the proposed additions to the distribution system will not cause the pressures at any new or existing connections to be less than those specified in *R309-105-9*. The model is sufficiently calibrated and accurate to represent the conditions within this water system. The velocities in the model are not excessive and are within industry standards.

This portion of the Hydraulic Analysis Certification must be completed by the P.E. designated to oversee the system's hydraulic model.

P.E. Designated to Oversee System's Hydraulic Model	
Signature concurring with incorporation of this project's hydraulic model into system's master hydraulic model	
Date	

HYDRAULIC MODEL DESIGN ELEMENTS & SYSTEM CAPACITY EXPANSION REPORT

HYDRAULIC ANALYSIS CERTIFICATION

I hereby certify that the hydraulic modeling analysis for:

Springville City Drinking Water Master Plan and Capital Improvement Plan

(Project Name or Description)

Springville City Water Department (Culinary)

(Water System Name)

25005

(Water System Number)

____

(DDW File Number, If Available)

Meets all requirements as set forth in *R309-511* (*Hydraulic Modeling Requirements*) and complies with the provisions thereof, as well as the sizing requirements of *R309-510*, and the minimum water pressures of *R309-105-9*. Where applicable the proposed additions to the distribution system will not cause the pressures at any new or existing connections to be less than those specified in *R309-105-9*. The model is sufficiently calibrated and accurate to represent the conditions within this water system. The velocities in the model are not excessive and are within industry standards. The hydraulic modeling method is *[e.g., use of computer software or hand calculations]*, **and the computer software used was** *[software name and version]*.

Signature _______________

Print Name _______________

State of Utah P.E. License No. _______________

Date _______________

APPENDIX

CHECKLIST FOR HYDRAULIC MODEL DESIGN ELEMENTS REPORT

The hydraulic model checklist below identifies the components included in the Hydraulic Model Design Elements Report for

Springville City Drinking Water Master Plan and Capital Improvement Plan
(Project Name or Description)

25005
(Water System Number)

Springville City Water Department (Culinary)
(Water System Name)

November 4, 2025
(Date)

The checkmarks and/or P.E. initials after each item indicate the conditions supporting P.E. Certification of this Report.

1. The Report contains:

   (a) A listing of sources including: the source name, the source type (i.e., well, spring, reservoir, stream etc.) for both existing sources and additional sources identified as needed for system expansion, the minimum reliable flow of the source in gallons per minute, the status of the water right and the flow capacity of the water right. *[R309-110-4 "Master Plan" definition]* ☒ ______

   (b) A listing of storage facilities including: the storage tank name, the type of material (i.e., steel, concrete etc.), the diameter, the total volume in gallons, and the elevation of the overflow, the lowest level (elevation) of the equalization volume, the fire suppression volume, and the emergency volume or the outlet. *[R309-110-4 "Master Plan" definition]* ☒ ______

   (c) A listing of pump stations including: the pump station name and the pumping capacity in gallons per minute. Under this requirement one does not need to list well pump stations as they are provided in requirement (a) above. *[R309-110-4 "Master Plan" definition]* ☒ ______

   (d) A listing of the various pipeline sizes within the distribution system with their associated pipe materials and, if readily available, the approximate length of pipe in each size and material category. A schematic of the distribution piping showing node points, elevations, length and size of lines, pressure zones, demands, and coefficients used for the hydraulic analysis required by (h) below will suffice. *[R309-110-4 "Master Plan" definition]* ☒ ______

(e) A listing by customer type (i.e., single family residence, 40 unit condominium complex, elementary school, junior high school, high school, hospital, post office, industry, commercial etc.) along with an assessment of their associated number of ERCs. *[R309-110-4 "Master Plan" definition]* ☒ ______

(f) The number of connections along with their associated ERC value that the public drinking water system is committed to serve, but has not yet physically connected to the infrastructure. *[R309-110-4 "Master Plan" definition]* ☒ ______

(g) A description of the nature and extent of the area currently served by the water system and a plan of action to control addition of new service connections or expansion of the public drinking water system to serve new development(s). The plan shall include current number of service connections and water usage as well as land use projections and forecasts of future water usage. *[R309-110-4 "Master Plan" definition]* ☒ ______

(h) A hydraulic analysis of the existing distribution system along with any proposed distribution system expansion identified in (g) above. *[R309-110-4 "Master Plan" definition]* ☒ ______

(i) A description of potential alternatives to manage system growth, including interconnections with other existing public drinking water systems, developer responsibilities and requirements, water rights issues, source and storage capacity issues and distribution issues. *[R309-110-4 "Master Plan" definition]* ☒ ______

2. At least 80% of the total pipe lengths in the distribution system affected by the proposed project are included in the model. *[R309-511-5(1)]* ☒ ______

3. 100% of the flow in the distribution system affected by the proposed project is included in the model. If customer usage in the system is metered, water demand allocations in the model account for at least 80% of the flow delivered by the distribution system affected by the proposed project. *[R309-511-5(2)]* ☒ ______

4. All 8-inch diameter and larger pipes are included in the model. Pipes smaller than 8-inch diameter are also included if they connect pressure zones, storage facilities, major demand areas, pumps, and control valves, or if they are known or expected to be significant conveyers of water such as fire suppression demand. *[R309-511-5(3)]* ☒ ______

5. All pipes serving areas at higher elevations, dead ends, remote areas of a distribution system, and areas with known under-sized pipelines are included in the model. *[R309-511-5(4)]* ☒ ______

6. All storage facilities and accompanying controls or settings applied to govern the open/closed status of the facility for standard operations are included in the model. *[R309-511-5(5)]* ☒ ______

7. Any applicable pump stations, drivers (constant or variable speed), and accompanying controls and settings applied to govern their on/off/speed status for various operating conditions and drivers are included in the model. *[R309-511-5(6)]* ☒ ______

8. Any control valves or other system features that could significantly affect the flow of water through the distribution system (i.e. interconnections with other systems, pressure reducing valves between pressure zones) for various operating conditions are included in the model. *[R309-511-5(7)]* ☒ ______

9. Imposed peak day and peak instantaneous demands to the water system's facilities are included in the model. The Hydraulic Model Design Elements Report explains which of the Rule-recognized standards for peak day and peak instantaneous demands are implemented in the model (i.e., (i) peak day and peak instantaneous demand values per *R309-510, Minimum Sizing Requirements*, (ii) reduced peak day and peak instantaneous demand values approved by the Director per *R309-510-5, Reduction of Sizing Requirements*, or (iii) peak day and peak instantaneous demand values expected by the water system in excess of the values in *R309-510, Minimum Sizing Requirements*). The Hydraulic Model Design Elements Report explains the multiple model simulations to account for the varying water demand conditions, or it clearly explains why such simulations are not included in the model. The Hydraulic Model Design Elements Report explains the extended period simulations in the model needed to evaluate changes in operating conditions over time, or it clearly explains (e.g., in the context of the water system, the extent of anticipated fire event, or the nature of the new expansion) why such simulations are not included in the model. *[R309-511-5(8) & R309-511-6(1)(b)]* ☒ ______

10. The hydraulic model incorporates the appropriate demand requirements as specified in *R309-510, Minimum Sizing Requirements*, and *R309-511, Hydraulic Modeling Requirements*, in the evaluation of various operating conditions of the public drinking water system. The Report includes:
    - the methodology used for calculating demand and allocating it to the model;
    - a summary of pipe length by diameter;

- a hydraulic schematic of the distribution piping showing pressure zones, general pipe connectivity between facilities and pressure zones, storage, elevation, and sources; and
- a list or ranges of values of friction coefficient used in the hydraulic model according to pipe material and condition in the system. In accordance with Rule stipulation, all coefficients of friction used in the hydraulic analysis are consistent with standard practices.

  [R309-511-7(4)] ☒ ______

11. The Hydraulic Model Design Elements Report documents the calibration methodology used for the hydraulic model and quantitative summary of the calibration results (i.e., comparison tables or graphs). The hydraulic model is sufficiently accurate to represent conditions likely to be experienced in the water delivery system. The model is calibrated to adequately represent the actual field conditions using field measurements and observations. *[R309-511-4(2)(b), R309-511-5(9), R309-511-6(1)(e) & R309-511-7(7)]* ☒ ______

12. The Hydraulic Model Design Elements Report includes a statement regarding whether fire hydrants exist within the system. Where fire hydrants are connected to the distribution system, the model incorporates required fire suppression flow standards. The statement that appears in the Report also identifies the local fire authority's name, address, and contact information, as well as the standards for fire flow and duration explicitly adopted from *R309-510-9(4), Fireflow*, or alternatively established by the local fire suppression agency, pursuant to *R309-510-9(4), Fireflow.* The Hydraulic Model Design Elements Report explains if a steady-state model was deemed sufficient for residential fire suppression demand, or acknowledges that significant fire suppression demand warrants extended model simulations and explains the run time used in the simulations for the period of the anticipated fire event. *[R309-511-5(10) & R309-511-7(5)]* ☒ ______

13. If the public drinking water system provides water for outdoor use, the Report describes the criteria used to estimate this demand. If the irrigation demand map in *R309-510-7(3), Irrigation Use,* is not used, the report provides justification for the alternative demands used in the model. If the irrigation demands are based on the map in *R309-510-7(3), Irrigation Use,* the Report identifies the irrigation zone number, a statement and/or map of how the irrigated acreage is spatially distributed, and the total estimated irrigated acreage. The indicated irrigation demands are used in the model simulations in accordance with Rule stipulation. The model accounts for outdoor water use, such as irrigation, if the drinking water system supplies water for outdoor use. *[R309-511-5(11) & R309-511-7(1)]* ☒ ______

14. The Report states the total number of connections served by the water system including existing connections and anticipated new connections served by the water system after completion of the construction of the project. *[R309-511-7(2)]*

    ☒ ______

15. The Report states the total number of equivalent residential connections (ERC) including both existing connections as well as anticipated new connections associated with the project. In accordance with Rule stipulation, the number of ERC's includes high as well as low volume water users. In accordance with Rule stipulation, the determination of the equivalent residential connections is based on flow requirements using the anticipated demand as outlined in *R309-510, Minimum Sizing Requirements*, or is based on alternative sources of information that are deemed acceptable by the Director. *[R309-511-7(3)]* ☒ ______

16. The Report identifies the locations of the lowest pressures within the distribution system, and areas identified by the hydraulic model as not meeting each scenario of the minimum pressure requirements in *R309-105-9, Minimum Water Pressure*. *[R309-511-7(6)]* ☒ ______

17. The Hydraulic Model Design Elements Report identifies the hydraulic modeling method, and if computer software was used, the Report identifies the software name and version used. *[R309-511-6(1)(f)]* ☒ ______

18. For community water system models, the community water system management has been provided with a copy of input and output data for the hydraulic model with the simulation that shows the worst case results in terms of water system pressure and flow. *[R309-511-6(2)(c)]* ☒ ______

19. The hydraulic model predicts that new construction will not result in any service connection within the new expansion area not meeting the minimum distribution system pressures as specified in *R309-105-9, Minimum Water Pressure. [R309-511-6(1)(c)]* ☐ ______

20. The hydraulic model predicts that new construction will not decrease the pressures within the existing water system such that the minimum pressures as specified in *R309-105-9, Minimum Water Pressure* are not met. *[R309-511-6(1)(d)]* ☒ ______

21. The velocities in the model are not excessive and are within industry standards. ☒ ______

springville

SPRINGVILLE CITY

PRESSURIZED IRRIGATION MASTER PLAN AND CAPITAL FACILITY PLAN

January 2026

HANSEN ALLEN & LUCE INC
ENGINEERS

SPRINGVILLE CITY

PRESSURIZED IRRIGATION MASTER PLAN
AND CAPITAL FACILITY PLAN

(HAL Project No.: 260.61.100)

DRAFT

Tyler Daynes, P.E.
Project Engineer

Recommended By: ______________________________
Katie Gibson Jacobsen, P.E., Project Manager

HANSEN ALLEN & LUCE INC
ENGINEERS

January 2026

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ABBREVIATIONS AND UNITS

ac	acre [area]
ac-ft	acre-foot (1 ac-ft = 325,851 gal) [volume]
CIP	Capital Improvement Plan
CFP	Capital Facilities Plan
CUWCD	Central Utah Water Conservancy District
CWP	Central Water Project
DW	Drinking Water
EPA	U.S. Environmental Protection Agency
ERC	Equivalent Residential Connection
ft	foot [length]
ft/s	feet per second [velocity]
gal	gallon [volume]
gpd	gallons per day [flow rate]
gpm	gallons per minute [flow rate]
HAL	Hansen, Allen & Luce, Inc.
hp	horsepower [power]
hr	hour [time]
IFA	Impact Fee Analysis
IFFP	Impact Fee Facilities Plan
in	inch [length]
irr-ac	irrigated acre(s)
kW	kilowatt [power]
kWh	kilowatt hour [energy]
MG	million gallons [volume]
mi	mile [length]
PI	Pressurized Irrigation
PRV	Pressure Reducing Valve
psi	pounds per square inch [pressure]
s	second [time]
SCADA	Supervisory Control And Data Acquisition
SUVMWA	South Utah Valley Municipal Water Association
ULS	Utah Lake Drainage Basin Water Delivery System
yr	year [time]

CHAPTER 1 INTRODUCTION

PURPOSE AND SCOPE

The purpose of this master plan is to provide direction to the City of Springville regarding decisions that will be made to provide an adequate pressurized irrigation (PI) water system for its customers at the most reasonable cost. Recommendations are based on demand data, growth projections, and standard engineering practices. The planning horizon for the master plan is approximately 2070. Buildout occurs beyond 2070 and refers to the time period when all parcels are developed within the annexation declaration boundary according to the current General Plan.

The master plan is a study of the City's PI water system and customer water use. The following topics are addressed herein: growth projections, source requirements, storage requirements, and distribution system requirements. Operational parameters for the City's PI water system were reviewed and optimized based on stability, ease of use, and cost. Based on this study, needed capital improvements have been identified and conceptual-level cost estimates for the recommended improvements have been provided. This master plan includes a Capital Facility Plan (CFP) to identify the PI facilities that are required to meet the demands placed on the system by future development for the 10-year and 20-year planning period.

The results of the study are limited by the accuracy of growth projections, data provided by the City, and other assumptions used in preparing the study. It is expected that the City will review and update this master plan every 5–10 years as new information about development, system performance, or water use becomes available. This master plan updates the previous plan completed by the City of Springville and adopted in August 2020.

BACKGROUND

Springville was originally settled in 1850 and had an estimated population of 36,500 in 2024 (provided by the City). It is located in central Utah County and has an area of 14.4 square miles. As a result of its location along the I-15 corridor and in the rapidly growing Provo-Orem metropolitan area, Springville has experienced rapid growth and is expected to grow into the future. Growth rates were determined based on future population estimates produced by Mountainland Association of Governments (MAG) and average annual growth rates produced by Kem C. Gardner. See population estimates in Figure 1-1. In 2011, Springville obtained nine million dollars of federal funding to build its PI system to service residents and businesses west of the railroad. The PI system was available to customers beginning in approximately 2014.

The City provides water service via a drinking water system and a PI system. While the drinking water system is available throughout the City, the PI system only serves the central-western portion of the City, approximately west of 400 West (see Figure 1-2). Areas of the City without access to the PI system use drinking water for outdoor water use. There are also some customers located within the PI system service area that have not connected to the PI system yet. These customers are considered to be borrowing capacity in the drinking water system. The drinking water system is addressed in a separate master plan.

In 2020, the City prepared a Capital Facilities Plan, with an Impact Fee Facilities Plan (IFFP) and Impact Fee Analysis (IFA) following and updated in 2024 for its PI water system. This master plan will provide the bases for updating those studies and provide a basic full system layout design to guide new development.

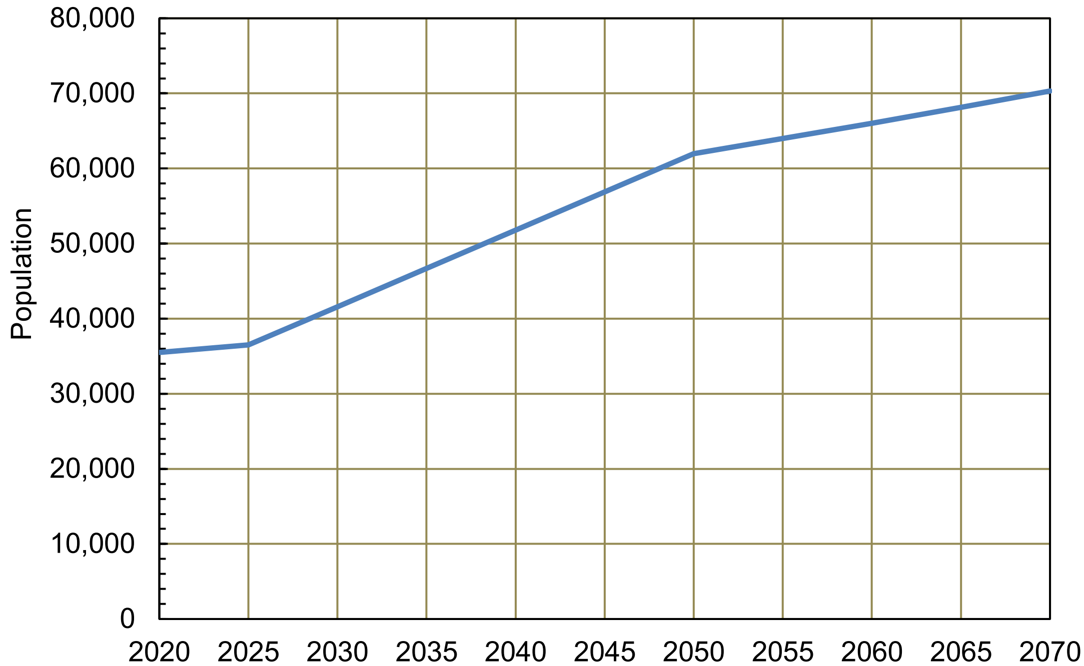


Figure 1-1: Springville Projected Population

The system is serviced by Bartholomew Pond, which is supplied by canyon water from Hobble Creek/Highline Canal, the North and South Springs, and the Mapleton Springville Lateral Canal Pipeline. The existing PI water system includes a 36-inch transmission pipeline running approximately 3 miles from the PI sources and pond, followed by a 30-inch pipeline that extends another half mile. The existing distribution system contains approximately 41 miles of active pipe ("wet") with diameters ranging from 4 to 36 inches. An additional 21 miles of pipe are currently disconnected ("dry") from the PI system. The current PI system has one pressure zone and there are no plans for future pressure zones. The City recognizes that its continued growth necessitates proactively planning additional PI water facilities to maintain the current level of service for outdoor water use.

MASTER PLANNING METHODOLOGY

Pressurized irrigation water systems consist of water sources, storage facilities, distribution pipes, pump stations, and other components. Design and operation of the individual components must be coordinated so that they operate efficiently under a range of demands and conditions. The system must be capable of responding to daily variations in demand.

Identifying present and future water system needs is essential in the management and planning of a water system. For this study, existing water demands are based on billing data and the level of service established by the City. Future water demands were predicted using this level of service, current zoning and densities provided by the City, and estimated future population growth. Computer models of the City's PI water system were prepared to simulate the performance of facilities under existing and future conditions. System improvement recommendations were prepared from the analysis and are presented in this report.

The report addresses water sources, storage, distribution, minimum pressures, hydraulic modeling, capital improvements, and other topics pertinent to Springville's PI water system.

LEVEL OF SERVICE (LOS)

To propose a level of service for the PI water system, HAL analyzed production and billing data provided by Springville City for the previous three years. Once water production and demand patterns were well understood, HAL and the City met to discuss an appropriate level of service considering the water use data, variability and uncertainty within this data, standard engineering practices, and anticipated future conservation. The City ultimately selected a level of service which is below current usage, but which is sufficient for landscape irrigation including losses and inefficiencies. The City anticipates that water use will decrease as it continues to promote conservation. A summary of the level of service selected by the City is included in Table 1-1.

Table 1-1
System Level of Service

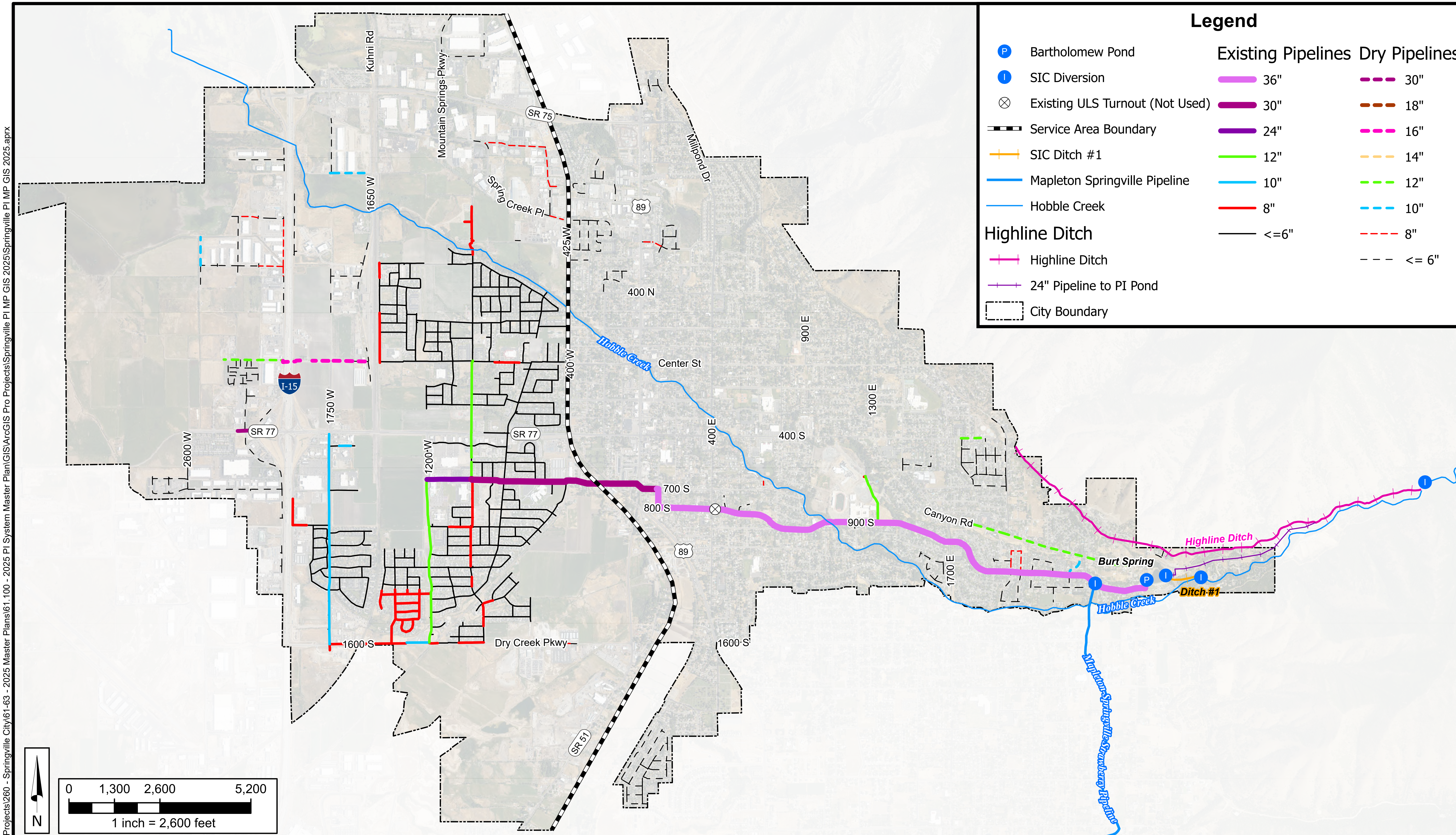
Criteria	Level of Service Per Irrigated Acre
Average Yearly Demand	4.0 ac-ft
Peak Day Demand	8.5 gpm
Peak Instantaneous Demand	17.0 gpm
Storage	6,120 gal

DESIGN AND PERFORMANCE CRITERIA

Summaries of the key design criteria and demand requirements for the PI water system are included in Table 1-2. The design criteria were used in evaluating system performance and recommending future improvements. Criteria development is described in later chapters.

Table 1-2
Key System Design Criteria

	Criteria	Existing Requirements	Estimated Requirements		
			10-year	20-year	Planning Horizon (2070)
Acreage Irrigated by PI System	Existing and Planned Irrigated acreage	362	788	1,093	1,331
Source					
Peak Day Demand	Level of Service	3,077 gpm	6,698 gpm	9,291 gpm	11,314 gpm
Average Yearly Demand	Level of Service	1,448 acre-ft	3,152 ac-ft	4,371 ac-ft	5,324 ac-ft
Storage	Level of Service	6.8 ac-ft	14.8 ac-ft	20.5 ac-ft	25.0 ac-ft
Distribution					
Peak Instantaneous	2.0 × Pk Day demand	6,154 gpm	13,396 gpm	18,581 gpm	22,627 gpm
Max. Operating Pressure	Level of Service	125 psi	125 psi	125 psi	125 psi
Min. Operating Pressure	Level of Service	50 psi	50 psi	50 psi	50 psi



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SPRINGVILLE CITY
PRESSURIZED IRRIGATION SYSTEM MASTER PLAN

EXISTING SYSTEM

FIGURE 1-2

CHAPTER 2 IRRIGATED ACREAGE

EXISTING IRRIGATED ACREAGE

Outdoor water demands are based on actual usage on irrigated acreage (irr-ac). The existing irrigated acreage was determined using customer billing data, the City's level of service, and PI system SCADA records. The irrigated acreage presented in this report for the existing system then refers not to actual areas, rather a calculated value based on actual usage from customers, similar to equivalent residential connections (ERC) which are commonly used for drinking water systems. The estimated irrigated acreage for the existing PI system is 362 acres.

Currently, there are customers within the existing PI system service area that are not connected to the system and use drinking water for outdoor watering. These customers may be near available "wet" pipelines but never connected to the system, or may be unable to connect to the system as they are located near "dry" pipelines or areas without any PI pipelines at all. It is estimated that these connections account for approximately 257 irrigated acres. This estimate was produced by analyzing differences between summer and winter billing data for these customers. After discussions with the City, it was determined that customers within the existing service area with wet pipelines, plus the customers west of I-15 with dry pipelines, would be connected to the system within 10 years. Customers within the industrial park near the Nestle facility north of the existing service area are anticipated to be connected to the system within 20 years.

FUTURE IRRIGATED ACREAGE

Growth projections for the PI system were estimated based on an irrigation factor. This factor represents the portion of land that is irrigated on a parcel. Irrigated factors were assigned to General Plan designations. Irrigated factors were estimated by using aerial imagery from the National Agricultural Imagery Program (NAIP) and billing data. The irrigation factors used for the PI system growth projections are presented in Table 2-1. The irrigation factors presented in this table account for road areas which may take up around 20% of any land use designations. Figure 2-1 shows a map of the land classifications used in this study.

Table 2-1
Irrigation Factors by Land Classification

Land Classification	Irrigation Factor
Agriculture (Placeholder for Future Development)	30%
Commercial	15%
Industrial Manufacturing	10%
Low Density Residential	37%
Medium Density Residential	40%
Medium High Density Residential	34%
Medium Low Density Residential	38%
Mixed Use	39%

Additionally, the average irrigated area for various lot sizes were determined based on several factors including City code, aerial imagery, and historical PI usage. These irrigated areas are presented in Table 2-2.

Table 2-2
Irrigated Acreage by Lot Size

Minimum Lot Size (ft^2)	Maximum Lot Size (ft^2)	Irrigated Area		Annual Volume (Acre-ft)
		(ft^2)	(acre)	
0	2,000	1,000	0.03	0.09
2,000	3,999	1,100	0.03	0.10
4,000	5,999	2,500	0.06	0.23
6,000	7,999	3,600	0.09	0.33
8,000	10,889	4,400	0.11	0.40
10,990	21,779	6,300	0.15	0.58
≥ 21,780		14,900	0.35	1.37

Future irrigated acreage was calculated by starting with the existing irrigated acreage and adding the area of additional land that is expected to be irrigated by the PI system in 10 years, 20 years, and the planning horizon (2070).

The acreage irrigated by the PI system in 2024 was calculated to be 362 acres. Based on the irrigation factors shown in Table 2-1, the total 2070 irrigated acreage was calculated to be 1,331 acres. This total includes the customers which are currently within the service area but are not connected to the PI system.

Many customers are located within the service area of the PI system but are not currently connected to it for outdoor watering. These customers may have been "grandfathered" into the PI system and never connected or are unable to connect to the system due to infrastructure requirements. These customers may be near "dry" or "wet" pipelines. These customers account for approximately 257 irrigated acres of outdoor demand. The City has a goal to connect all these potential customers to the PI system within the next 20 years. To represent this goal, 173 irrigated acres were added to the 10-year projection to represent the customers near "wet" pipelines and the customers near "dry" pipelines west of I-15. The remaining 84 irrigated acres associated with the industrial park near the Nestle facility were added to the 20-year projection. Table 2-3 shows the total growth projections, including these potential customers, for each scenario.

Table 2-3
Projected Irrigated Acres

Scenario	Projected Irrigated Acres	Potential Existing Customers*	Total Irrigated Acres
Existing	362		362
10-year	615	173	788
20-year	836	257	1,093
Planning Horizon	1,074	257	1,331

* The value in this column represents the total amount of additional customers added to the growth projections. The values in this column are <u>not</u> additive.

To improve water conservation, it is recommended that all customers that can connect to the pressurized irrigation are connected and all customers be billed for use with an allocation-based tiered rate structure to conserve water and meet the City's selected level of service.

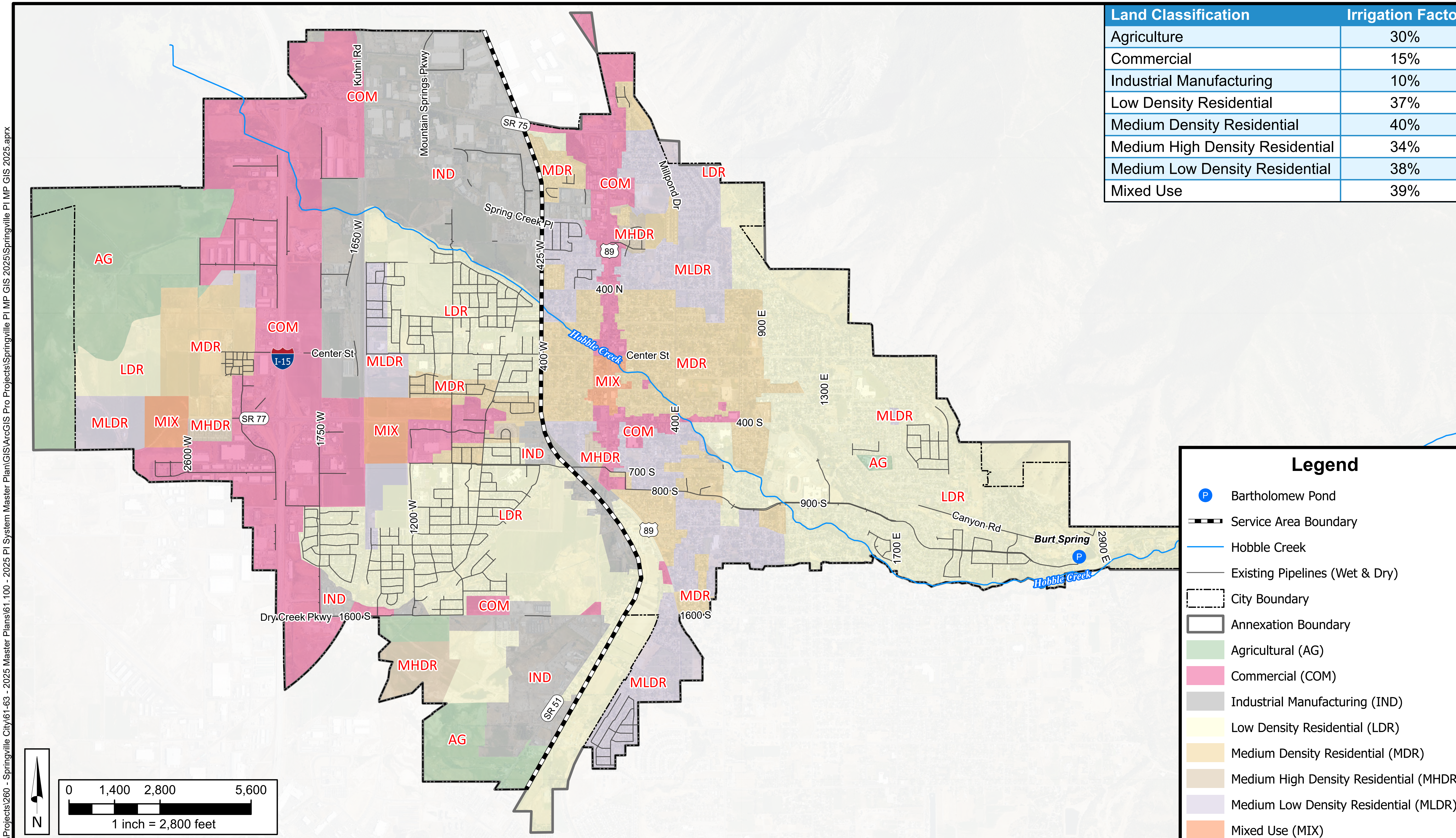
GROWTH PROJECTIONS

The development of impact fees requires growth projections over the next ten years. In addition to impact fee projects, this report will also highlight anticipated projects required in the next 10 to 20 years in the Capital Facilities Plan section of this report. Growth projections for the City were made as part of the City's strategic, general, and master planning efforts by HAL.

Growth of the PI system was determined by establishing the areas that would be irrigated by the PI system for the existing, 10 year, 20 year, and planning horizon (2070) time frames. The acreage that could be served by the PI system if customers connected today and the acreage that is adjacent to dry PI pipes was not added to the existing irrigated acreage, rather to the 10-year and 20-year projections as discussed previously. The projected irrigated acreages for scenario can be found in Table 1-2.

The City's General Plan land use classifications were used to determine densities and allocate demands across the City. As these classifications were prepared in 2011, updates to these classifications were made by HAL based on community plans for large developments, city zoning, and nearby development. The land classifications used in this study are shown on Figure 2-1.

Land Classification	Irrigation Factor
Agriculture	30%
Commercial	15%
Industrial Manufacturing	10%
Low Density Residential	37%
Medium Density Residential	40%
Medium High Density Residential	34%
Medium Low Density Residential	38%
Mixed Use	39%



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SPRINGVILLE CITY
PRESSURIZED IRRIGATION SYSTEM MASTER PLAN

FUTURE GROWTH PROJECTIONS

FIGURE 2-1

CHAPTER 3 WATER SOURCES

Water sources need to be available to supply the PI system with enough water for the entire irrigation season and supply the PI system with enough water to meet demand on the day of greatest water use (peak day demand). The PI water source requirements are based on existing and future irrigated acres and the City's level of service.

EXISTING PI SOURCES

The Springville City PI system is supplied by Hobble Creek through the Highline Ditch and Springville Irrigation Ditch #1 (see Figure 1-2). The PI system is also supplied by water from Strawberry Reservoir (Strawberry water) through the Mapleton-Springville Lateral Canal Pipeline (see Figure 1-2). Burt Springs can supply water to the PI system when not being used in the drinking water system, but for this study it is considered a drinking water source only and is not included in any source water calculations.

For planning purposes, the City has requested that the analysis consider the lowest flows on record as the reliable supply to plan for low water years. The flows from City owned PI sources presented in Table 3-1 represent water available in a low flow year. Minor water sources that cannot be relied on in a low flow year such as Bartholomew Pond Springs are not included in Table 3-1. It is important to note that source capacity requires both the physical water and the water rights to be able to provide water to the system. Water rights are discussed in Chapter 6.

Table 3-1
Existing Pressurized Irrigation System Water Sources

Source	Flow Capacity (gpm)*	Flow Capacity (cfs)	Annual Capacity (ac-ft)*
Hobble Creek/ Highline Ditch	2,245	5	500
Springville Irrigation Ditch #1	0**	0**	5,000
Mapleton-Springville Strawberry Pipeline	5,835***	13***	1,600
Total	**8,080**	**18**	**7,100**

* Denotes physical facility capacity. See Chapter 6 for water rights capacity.
** Ditch #1 provides an important supply of water, but is typically dry by the time peak day demand occurs. As such, its peak day capacity was assumed to be 0.
***Turnout capacity to Springville City/SIC is 35 cfs.

EXISTING SOURCE REQUIREMENTS

Existing Peak Day Demand

Peak day demand is the water demand on the day of the year with the highest water use. It is used to determine required source capacity under existing and future conditions. Since the drinking water system provides water for indoor use, only outdoor demand is allocated to the PI system. Outdoor peak day demand was calculated based on a level of service of 8.5 gpm/irr-ac.

Under existing conditions, the City serves 362 irr-ac, requiring 3,077 gpm peak day demand. There are approximately 257 irr-ac of additional demand that could be added to the PI system from customers which are located within the service area but are not connected to the PI system. The City has expressed a desire to connect all these potential connections to the PI system within 10 to 20 years. The total peak day demand of these additional customers is approximately 2,185 gpm. Table 3-2 compares the available source capacity with the peak day demand of the existing system without the additional 257 irr-ac of additional demand from potential drinking water customers.

Table 3-2
Existing PI Peak Day Water Demand and Source Capacity

Parameter	Peak Day (gpm)
Demand	3,077
Capacity*	8,080
Surplus	**5,003**

* Denotes physical facility capacity.
See Chapter 6 for water rights capacity.

Existing Average Yearly Demand

Average yearly demand is the volume of water used during an entire year, and is used to ensure the sources have enough annual volume to meet demand under existing and future conditions. Since the drinking water system provides water for indoor use, only outdoor demand in the PI system service area is allocated to the PI system. Average yearly demand was determined based on irrigated acreage and a level of service of 4.0 ac-ft/irr-ac.

Based on the existing irrigated acreage of 362, the average yearly demand is 1,448 ac-ft. The 257 irr-ac of potential customers equates to an average yearly demand of 1,028 ac-ft. Table 3-3 compares the capacity of the existing sources with the demand of the existing system. The 257 irr-ac of potential customers are not included in the demand shown in Table 3-3.

Table 3-3
Existing PI Average Yearly Water Demand and Source Capacity

Parameter	Average Yearly (ac-ft)
Demand	1,448
Capacity*	7,100
Surplus	**5,652**

* Denotes physical facility capacity.
See Chapter 6 for water rights capacity.

FUTURE SOURCE REQUIREMENTS

As with existing PI source requirements, future PI source requirements were evaluated on two criteria. First, sufficient water source capacity is needed to meet peak day flow. Second, the PI sources must also be capable of supplying the average yearly demand.

Future Peak Day Demand

Following the methodology described for existing conditions and the City's selected level of service, projected irrigated acres and peak day demand was projected for 10 years, 20 years, and for the planning horizon (2070). Table 3-4 compares the future PI peak day demands with the existing peak day source capacity.

Table 3-4
Future PI Peak Day Water Demand and Source Capacity

Time	Projected Irrigated Acres	Peak Day Demand (gpm)	Peak Day Capacity* (gpm)	Surplus/ Deficit (gpm)
10-years	788	6,698	8,080	1,385
20-years	1,093**	9,291	8,080	**-1,211**
2070	1,331**	11,314	8,080	**-3,234**

* Denotes physical facility capacity. See Chapter 6 for water rights capacity.
** These projections include irrigated acres from the "potential customers." Refer to Table 2-3 for details on projected irrigated acres.

Table 3-4 indicates that the City will not have sufficient source capacity for the peak day demand for the 20-year timeframe. The source capacity listed in Table 3-4 does not include the additional capacity that will be brought into the system by piping the Highline Canal. This project is currently underway and is expected to bring up to 1,300 gpm of additional peak day capacity once complete. This project will provide sufficient source water for the PI system through the next 20 years. Additionally, flow from the Mapleton-Strawberry Pipeline could be increased; however, the City would not be able to utilize the full capacity of the pipeline due to capacity limitations in the 36-inch pipeline in 900 South.

Future Average Yearly Demand

Following the methodology described for existing conditions and the City's selected level of service, irrigated acres and average yearly demand was projected for 10 years, 20 years, and for the planning horizon. Table 3-5 compares the future PI average yearly water demands with the average yearly source capacity.

Table 3-5
Future PI Average Yearly Water Demand and Source Capacity

Time	Projected Irrigated Acres	Average Yearly Demand (ac-ft)	Average Yearly Capacity* (ac-ft)	Surplus (ac-ft)
10-years	788	3,152	7,100	3,948
20-years	1,093**	4,372	7,100	2,728
2070	1,331**	5,324	7,100	1,776

* Denotes physical facility capacity. See Chapter 6 for water rights capacity.
** These projections include irrigated acres from the "potential customers." Refer to Table 2-3 for details on projected irrigated acres.

As shown in Table 3-5, the existing PI sources will have excess annual capacity through 2070, unlike the peak day capacity. Rather than developing additional sources, the City may desire to implement water conservation measures to encourage outdoor water conservation from residents. Measures such as allocation-based tiered water rates, restricting outdoor watering times, or requiring water-efficient landscaping for new developments may help improve water conservation. Doing so may reduce the peak day demand for the PI system which could delay or remove the requirement to develop additional PI sources to meet the anticipated peak day demand.

The City's Water Conservation Plan, adopted in 2022, explores some "Best Management Practices" the City can implement to improve water conservation (Hansen, Allen & Luce, 2022). This report was written for the drinking water system, however, many of the recommendations may be applicable for the PI system. A copy of the Water Conservation Plan is provided in Appendix D.

FUTURE SOURCE RECOMMENDATIONS

As indicated in Table 3-5, the City has a surplus of average yearly PI source capacity through 2070 if all sources continue to remain available and to produce as they have in the past. The existing peak day source capacity, however, is insufficient to meet future demands within 20 years. Additional capacity will be introduced once the Highline Canal has been piped. The City will also be obligated to utilize water from the Utah Lake Drainage Basin Water Delivery System of the Bonneville Unit of the Central Utah Project (ULS) within the next 10 years. This water could also be utilized to bolster existing sources.

Possible changes in water rights, transfer of water rights to the drinking water system, climate change, or other unforeseen circumstances could also make it necessary to plan for additional water sources for the PI system much earlier than 2070. It is recommended that the City promote conservation, potentially with an allocation-based tiered rate structure. The following is a list of potential water sources for the PI system. Proposed locations are shown on Figure 3-1. Any locations shown on Figure 3-1 are approximate and can be adjusted to avoid difficult routes and accommodate development.

The Dry Creek Pump Stations are included in the capital improvement plan due to limitations in the transmission capacity of the PI system. The additional sources listed below may also be considered and pursued as resources allow, surrounding land develops, and the projects make sense.

- <u>ULS Water</u> – Springville City is obligated to purchase 5,448 of ULS water through a petition agreement between Central Utah Water Conservancy District (CUWCD) and South Utah Valley Municipal Water Association (SUVMWA). This is the amount remaining after the 3,500 ac-ft given back to fund the construction of the pressurized irrigation system, see Appendix E for details.

  The City could look into the possibility of allowing another SUVMWA city to have a portion or all of Springville City's ULS Water allotment. More detail on the ULS water is discussed in Chapter 6. The source capacity equates to a flow rate of at least 6,000 gpm. A proposed location for a turnout to connect the PI system to ULS water is shown on Figure 3-1.

- <u>Piping the Highline Ditch</u> – Piping the Highline Ditch will allow more efficient conveyance of Hobble Creek water to the PI system, especially in the high runoff season in the spring. This would also allow the City to save Strawberry water for use later in the irrigation season. No pumping would be required. Source capacity could be increased by as much as 1,300 gpm. However, the possibility of moving Hobble Creek water rights up to Bartholomew Springs to use in the drinking water system should be pursued first. This project is currently underway.

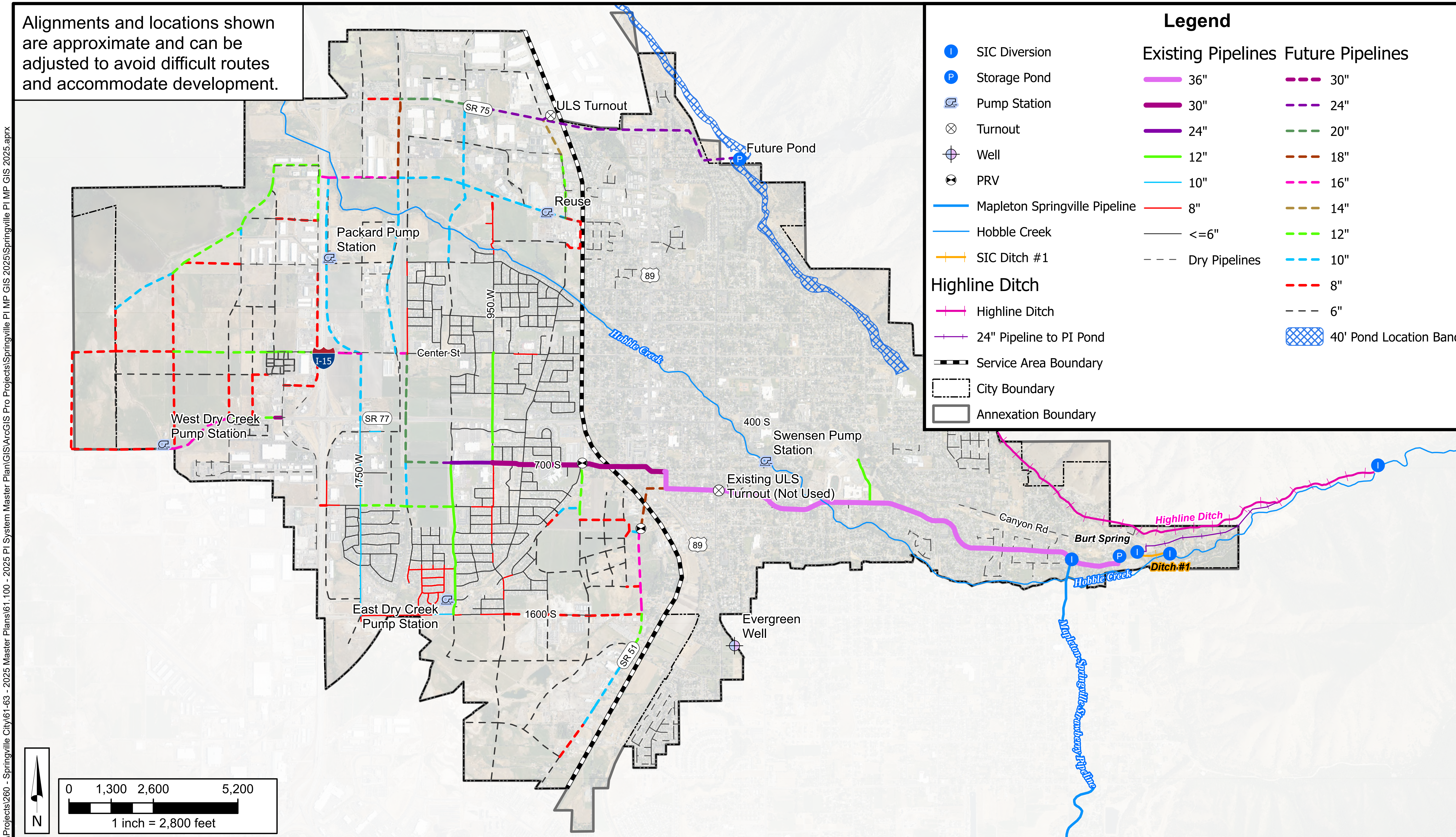
- Dry Creek Pump Stations (East and West) – Hobble Creek, Strawberry, underground drains, Fulmer Springs, Big Hollow Irrigation, Wash Creek, and Roundy Spring can all be diverted from Dry Creek. Also, a land owner in the Dry Creek area has a water right to use a portion of Spanish Fork City's wastewater effluent which is discharged into Dry Creek. Source capacity could be increased by 2,000 gpm or more. Two locations are proposed for future pump stations, the East and West Dry Creek Pump Stations, as shown on Figure 3-1. Construction of each facility will be dependent on the development of nearby property. These facilities are both included in the capital improvements plan in Chapter 7.

- Swenson Pump Station – Hobble Creek, Strawberry, Highline, Wheeler Springs can be pumped into the PI system at this location. Source capacity could be increased by as much as 3,000 gpm.

- Packard Pump Station – Coffman Springs, Wood Springs, Hobble Creek, and underground drains can be pumped into the PI system at this location. Source capacity could be increased by as much as 900 gpm.

- Reuse of Effluent – The City does not deplete all of its water rights because the City returns excess water to Hobble Creek through the effluent of the wastewater treatment plant. Using the excess water the City has the right to use may be a costly and complicated process. The water would need to be pumped into the PI system adding additional ongoing cost. Developing other new sources of water first is recommended.

- Evergreen Well – The Evergreen Well is equipped for use on the drinking water system but is not currently used. The City has expressed desire to equip this well for use on the PI system. Doing so would require the construction of an 8-12 inch transmission line from the well to future pipelines west of State Street. Upgrades to the existing pump and motor may also be necessary to equip the well for use in the PI system. The current capacity of the Evergreen Well is approximately 350 gpm. Upgrades to the well pump and motor may allow the well to produce more water, though further study would be required to make the determination.



HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
PRESSURIZED IRRIGATION SYSTEM MASTER PLAN

FUTURE SYSTEM

FIGURE 3-1

Date: 1/8/2026
Document Path: H:\Projects\260 - Springville City\61-63 - 2025 Master Plans\61.100 - 2025 PI System Master Plan\GIS\ArcGIS Pro Projects\Springville PI MP GIS 2025\Springville PI MP GIS 2025.aprx

CHAPTER 4 WATER STORAGE

EXISTING WATER STORAGE

The purpose of water storage within the PI water system is to provide equalization for when peak demand exceeds the source supply and to provide operational redundancy. The City's existing PI water system includes one irrigation pond (Bartholomew Pond) with a total capacity of 30 ac-ft. The location of Bartholomew Pond is shown on Figure 1-2. The City is interested in maintaining a minimum water depth of six feet to reduce the vegetation and improve water quality. Based on the design plans and stage-storage curve provided by the City, the available water storage with a water depth of six feet is 19.4 acre-feet. See Table 4-1.

Table 4-1
Existing Storage Capacity

Pond	Capacity (ac-ft)
Bartholomew Pond – total	30.3
Bartholomew Pond – 6 feet depth	19.4

EXISTING WATER STORAGE REQUIREMENTS

Existing equalization storage requirements were based on irrigated acreage and the level of service of 6,120 gallons per irr-ac. Therefore, under existing conditions, with an existing irrigated acreage of 362 acres, the required storage is 6.8 ac-ft. Table 4-2 compares the available storage with the required storage for the existing system.

Table 4-2
Existing Storage Requirements

Irrigated Acreage	Storage Requirement (ac-ft)	Existing Capacity (ac-ft)	Surplus (ac-ft)
362.0	6.8	19.4	12.6

FUTURE WATER STORAGE REQUIREMENTS

Table 4-3 compares the 10-year, 20-year, and planning horizon (2070) storage requirements based on irrigated acreage projections with the available storage of the pond with a six-foot minimum water depth.

Table 4-3
Future Storage Requirements

Time	Irrigated Acreage	Storage Requirement (ac-ft)	Existing Capacity (ac-ft)	Deficiency (-) or Surplus (+) (ac-ft)
10-Years	788	14.8	19.4	+4.6
20-Years	1,093*	20.5	19.4	**-1.2**
2070	1,331*	25.0	19.4	**-5.6**

* These projections include irrigated acres from the "potential customers." Refer to Table 2-3 for details on projected irrigated acres.

As shown in Table 4-3, beginning in 20 years, the storage requirement for the PI system will exceed the available capacity of Bartholomew Pond with a six-foot minimum depth. If the City were to allow the storage level of the pond to drop to 3 feet of water depth, the available storage of the pond would be 25.4 ac-ft and would meet the requirements for the planning horizon (2070) of this study.

Additionally, a secondary overflow structure is constructed one foot higher than the primary overflow structure. This structure is not currently utilized by system operators. Raising the maximum pond level to utilize the secondary overflow structure would bring an additional 3.5 ac-ft of storage capacity to the pond, bringing the total storage capacity up to 22.8 ac-ft while keeping the same minimum water depth of 6 feet. Lastly, a minimum water depth of 5 feet, coupled with the secondary overflow structure, provides a total storage volume of 25 ac-ft, which meets the requirements for the planning horizon for this study. Operational constraints may still require an additional pond.

WATER STORAGE RECOMMENDATIONS

Based on the growth projections, level of service, pond stage-storage curve, and maximum pond drawdown assumptions, almost enough storage is already available to maintain the desired six foot minimum pond depth in 20 years. Increasing the daily pond level fluctuations by one foot would increase the available volume to 21.5 ac-ft, which would meet the 20-year storage requirements. Another one foot of drawdown would likely not affect recreation at the pond even during peak PI system usage hours.

Another alternative to increasing the capacity of the Bartholomew Pond is to utilize the existing secondary overflow structure. This structure is currently constructed one foot higher than the existing primary overflow structure. This additional foot of storage provides an additional 3.5 ac-ft of storage capacity, which increases the total storage capacity of the pond to 22.8 ac-ft while maintaining the six-foot minimum water depth. Increasing the maximum water depth by one foot will provide enough storage to meet the 20-year storage requirements.

An option beyond 20 years would be to construct a second storage pond in the northern end of the City. Installing PRVs to reduce the high pressure in the system would also allow this second pond to be constructed at a lower elevation than Bartholomew Pond, approximately 4725 to 4730 feet. A proposed location for this second pond is shown on Figure 3-1. This pond would not only reduce the storage requirement of Bartholomew Pond, but it would also allow system operators to more efficiently store ULS water from the proposed connection shown on Figure 3-1.

No storage projects are included in the capital improvement plan in this master plan because no additional storage is projected to be needed within the next 20 years if the City allows Bartholomew pond to maintain a five-foot water depth or utilizes the secondary overflow structure.

CHAPTER 5 WATER DISTRIBUTION

PEAK WATER DISTRIBUTION SYSTEM DEMANDS

Springville's PI water distribution system consists of all pipelines, valves, fittings, and other appurtenances used to convey water from sources and storage to water users. The existing water system contains approximately 41 miles of wet pipelines (in use) with diameters of 4 to 36 inches with approximately 21 miles of dry pipelines disconnected to the system. The PI system has one pressure zone (see Figure 1-2). Figure 5-1 shows the distribution of wet pipeline sizes throughout the PI system.

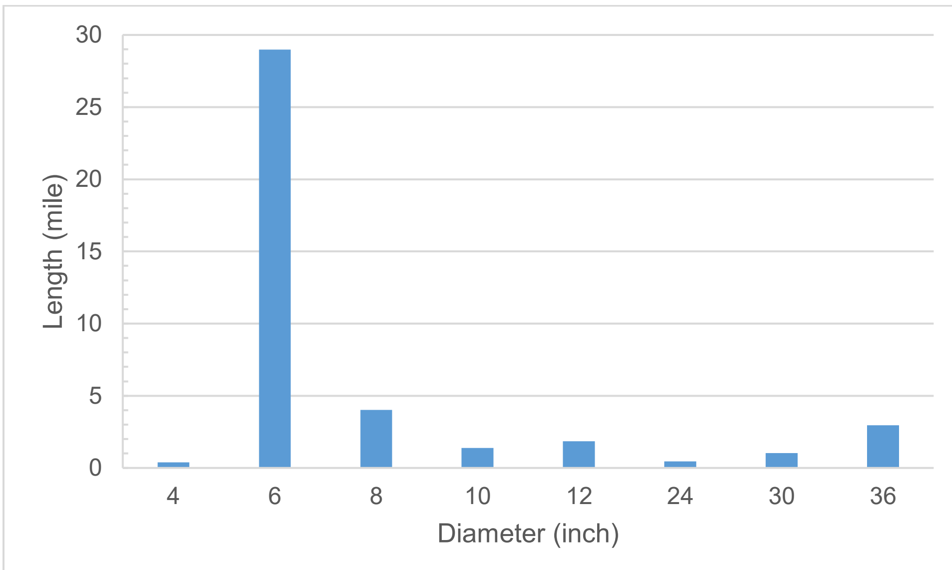


Figure 5-1: Existing Pipeline Diameters

Existing Peak Instantaneous Demand

Peak instantaneous demand was calculated based on irrigated acreage and the level of service defined by analysis of usage data. The selected level of service was 17.0 gpm per irrigated acre; therefore, the total peak instantaneous is 6,148 gpm under existing conditions. This <u>does not</u> include the 257 acres currently irrigated by the drinking water system.

Future Peak Instantaneous Demand

Future peak instantaneous demand in 2070 was calculated based on the same level of service as defined for existing conditions. The total future irrigated acreage estimated at 2070 is 1,331 acres. Therefore, the future peak instantaneous demand was calculated as 22,626 gpm.

HYDRAULIC MODEL

Development

A computer model of the City's PI water distribution system was developed to analyze the performance of the existing and future distribution system and to prepare solutions for existing facilities not meeting the distribution system requirements. The model was developed with the software InfoWater Pro, published by Autodesk. InfoWater Pro simulates the hydraulic behavior of pipe networks as an ArcGIS Pro extension. Sources, pipes, tanks, valves, controls, and other data used to develop the model were obtained from GIS data of the city's PI water system and other updated information supplied by the City.

HAL developed models for each development phase discussed in this report (10-year, 20-year, 2070) plus an existing system model and a buildout model. The first phase of modeling was a model representing the existing system (existing model). This model was used to calibrate the model and identify if any deficiencies were present in the existing system. The second phase of modeling included all future scenario models (10-year, 20-year, 2070, and buildout) which represent future conditions and the improvements necessary to accommodate growth (future models).

Model Components

The two basic elements of the model are pipes and nodes. A pipe is described by its inside diameter, length, minor friction loss factors, and a roughness value associated with friction head losses. A pipe can contain elbows, bends, valves, pumps, and other operational elements. Nodes are the endpoints of a pipe and can be categorized as junction nodes or boundary nodes. A junction node is a point where two or more pipes meet, where a change in pipe diameter occurs, or where flow is added (source) or removed (demand). A boundary node is a point where the hydraulic grade is known (a reservoir, tank, or PRV). Other components include tanks, reservoirs, pumps, valves, and controls.

The model is not an exact replica of the actual system. Pipeline locations used in the model are approximate and not every pipeline may be included in the model, although efforts were made to make the model as complete and accurate as possible. Moreover, it is not necessary to include all the distribution system pipes in the model to accurately simulate its performance.

<u>Pipe Network</u>

The pipe network layout originated from GIS data provided by the City. HAL verified its accuracy by reviewing maps and drawings provided by the City, as well as a model prepared for the previous master plan. Elevation information was obtained from AGRC 0.5 Meter 2013-2014 LiDAR Data. Hazen-Williams roughness coefficients for pipes in this model ranged from 130 - 150, which are typical for common pipe materials in PI systems.

<u>Water Demands</u>

Water demands were allocated in the model based on billing data and billing address. The peak day demand was determined for each billing address, and then the billing addresses were geocoded to link the demands to a physical location. The geocoded demands were then assigned to the closest model node. Future demand was assigned to nodes in the future model which best represented the location of anticipated development.

The pattern of water demand over a 24 hour period is called the diurnal curve or daily demand curve. HAL developed a diurnal curve for peak day conditions using SCADA data and a peak factor of 2.3 (the ratio of peak instantaneous demand to peak day average demand). The diurnal curve used in this study is presented in Figure 5-2. The diurnal curve was input into the model to simulate changes in the water system throughout the day.

Using a peaking factor of 2.3 provided very good calibration for the existing system models but created extreme pressure swings and maximum velocities in future system models. The 2.3 peaking factor accurately simulates the existing conditions. High water use occurs around 5 am across the PI system when many residents turn on automated sprinkler systems. Existing model calibration reports are provided in Appendix A.

After evaluating previous planning documents, the City's accepted level of service, and discussing with the City, a responsible peaking factor of 2.0 was recommended for use with future modeling. This lower peaking factor represents a "spreading out" of water demand across the system to reduce the demand incurred on the system at 5 am. The City has also previously adopted a 2.0 peaking factor as the level of service for the PI system. Both the 2.0 and 2.3 peaking factor demand patterns are provided in Figure 5-2 for comparison.

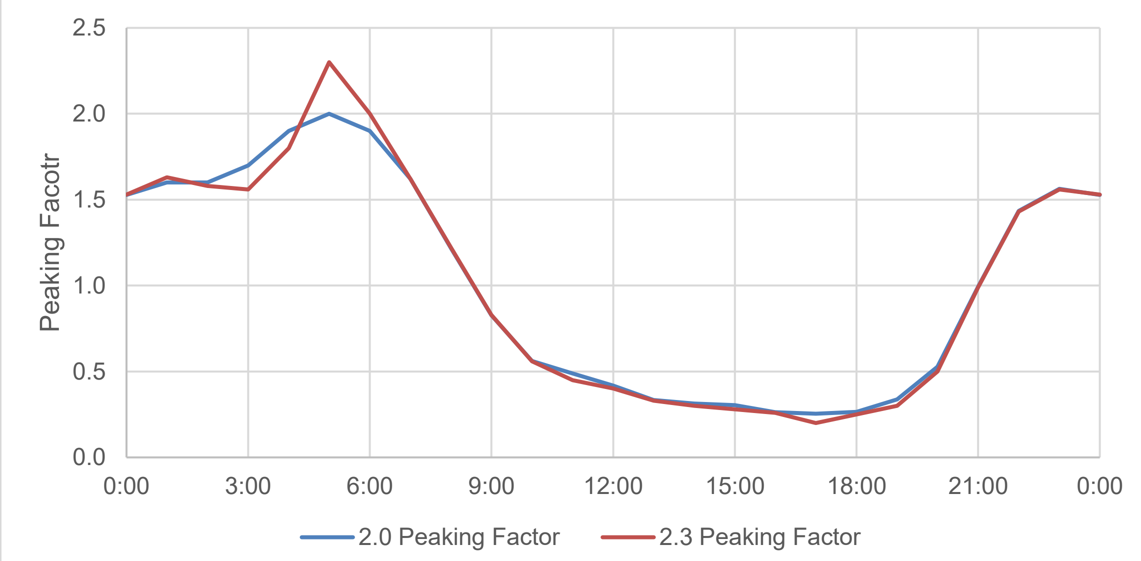


Figure 5-2: Springville PI Diurnal Curve

<u>Water Sources and Storage Pond</u>

The existing sources include water provided by Springville's existing shares in Springville Irrigation Company. The main two diversion locations include the "City Diversion" which is located on Hobble Creek a short distance above the existing debris basin and the Mapleton Springville Lateral Canal Pipeline which connects to the 36" main pipeline out of the pond. The pond location, elevation, and volume are represented in the model. The extended-period models predicts water levels in the pond as they fill from sources and as they empty to meet demand in the system.

ANALYSIS METHODOLOGY

HAL used extended-period models to analyze the performance of the water system with current and projected future demands. An extended-period model represents system behavior over a period of time: pond filling and draining, pressures fluctuating, and flows shifting in response to demands. The models were used to analyze flow conditions, controls, operation, and performance. Recommendations for existing and future conditions were checked with the extended-period models to confirm adequacy.

Two extreme operating conditions analyzed with the model were high pressure conditions and peak instantaneous demand conditions. Peak day plus fire flow conditions were not analyzed because water for fire flow will come from the drinking water system. Each of these conditions is a worst-case situation so the performance of the distribution system may be analyzed for compliance with City requirements. Each operating condition is discussed in more detail below.

High Pressure Conditions

Low flow conditions are usually the worst case for high pressures in a PI system. Before the evening irrigation begins, storage is typically nearly full, and movement of water through the system is minimal. Similar conditions may also occur early and late in the irrigation season and on rainy days. Under these conditions, the system approaches a static condition where water pressures are dictated only by elevation differences and pressure-regulating devices. This high-pressure condition was simulated with the model to analyze the system's existing and future conformance to pressure requirements.

Peak Instantaneous Demand Conditions

Peak instantaneous demand conditions are the worst-case for low pressures in a PI system. The PI system reaches peak instantaneous demand conditions when irrigation is the highest, such as hot summer days or holidays. For PI systems, peak instantaneous demand typically occurs around 4 to 6 am, when residents turn on automatic sprinkler systems. The high demand causes high velocities and increased losses in the distribution pipes, resulting in reduced pressure.

WATER DISTRIBUTION RECOMMENDATIONS

The existing model calibration indicates that the PI system experiences high peak demands around 5 am. When applying this high demand pattern to future models, the PI system experienced pressure swings greater than 30 to 40 psi. <u>Implementing water conservation measures such as allocation-based tiered water rates or restricting outdoor watering times can help to "smooth out" the high peak demands experienced at 5 am and improve system performance</u>. Additional recommendations from the 2022 Water Conservation Plan may also be effective at reducing high peak demands. A copy of the 2022 Water Conservation Plan is included in Appendix D.

<u>It is recommended that the City install a PRV on the existing 30-inch pipeline in 700 South to control high pressure conditions. A second PRV on the proposed 18-inch pipeline in 800 South is also recommended</u>. Installing these PRVs will reduce the high-pressure conditions experienced during low flow periods while maintaining adequate pressures during peak instantaneous demand conditions.

All existing distribution pipelines are sufficient to meet the existing level of service. It is recommended that sufficiently sized pipelines continue to be installed as development continues. Recommended pipeline projects anticipated in the next 20 years are detailed in the capital facility plan in Chapter 7. Pipeline projects anticipated beyond 20 years are displayed in Figure 3-1. Recommended pipes are intended to accomplish the following objectives:

- Provide transmission capacity to developing areas west of I-15
- Connect areas to the system which currently rely on drinking water to meet irrigation demands
- Provide acceptable service pressures and pressure swings
- Reserve sufficient capacity for future demands

CHAPTER 6 WATER RIGHTS

EXISTING WATER RIGHTS

Springville City currently owns water rights for use in the PI system. Some water rights are owned directly by the City and the remaining water rights are Springville Irrigation Company Shares owned by the City. Table 6-1 is a summary of the water rights used in the PI system delivered to Bartholomew Pond by the PI system sources list in Table 3-1.

Table 6-1: Existing Water Rights Used in the PI System

Water Right	Flow* (gpm)	Volume* (ac-ft)	PI Source
Strawberry Water Shares (Springville Irrigation Company)	3,000	1,970	Mapleton-Springville Strawberry Pipeline
Springville Irrigation Company Shares (Non-Strawberry Water)	645	855	Springville Irrigation Ditch #1
51-6025	627	490	Hobble Creek/ Highline Ditch
51-6219	145	103	Hobble Creek/ Highline Ditch
TOTAL	**4,417**	**3,418**	

* Flow and volume for each water right is estimated based on the State of Utah water right database and City records.

Springville City has a total of 3,418 ac-ft of water rights available for use in PI water system. Compared to the existing level of service water requirement of 1,448 ac-ft, the City currently owns a surplus of 1,970 ac-ft of water rights currently available for use in the PI water system (see Table 6-2).

Table 6-2
Existing PI Average Yearly Water Demand and Water Right Capacity

Parameter	Average Yearly (ac-ft)
Demand	1,448
Capacity	3,418
Surplus	1,970

FUTURE WATER RIGHTS

By 2070, the City will require a minimum of 5,324 ac-ft of water rights to meet requirements for the PI water system. Compared to the existing water rights available in the PI system, the City currently is short 1,906 ac-ft (see Table 6-3). Buildout requirements for the City will be higher than the predicted 2070 requirements. Similar to other components of the PI water system, water rights should have redundancy. Typically, some water rights cannot be used as planned or do not yield the allowed flow, and the City will need to acquire more than the minimum rights calculated in order to have the usable flow and volume required.

Table 6-3
Future PI Average Yearly Water Demand and Water Right Capacity

Time	Irrigated Acreage	Average Yearly Demand (ac-ft)	Average Yearly Capacity (ac-ft)	Surplus (ac-ft)
10-years	788	3,152	3,418	266
20-years	1,093	4,372	3,418	**-954**
2070	1,331	5,324	3,418	**-1,906**

Water rights are independent of physical source capacity in this study. For example, the Mapleton-Springville Strawberry Pipeline has a physical capacity of more than 6,000 gpm, but the City currently does not own enough water rights to supply the PI system at this rate throughout irrigation season. Other water rights and Springville Irrigation Company shares the City owns are used for irrigation in small independent City-owned irrigation systems not connected to the PI system or are not currently used by the City. These water rights are summarized in Table 6-4. It is recommended that the City file change applications to change the use of these water rights to municipal use for better protection and ease of management of the water rights. It is recommended that the City file a change application to add a point of diversion on the Plat A water right (51-5224) at the City Dam to use the water in the PI system.

Table 6-4
Potential Water Rights for Use in the PI System

Water Right	Flow (gpm)	Volume (ac-ft)	Current Use	Water Source
51-5328	450	724	Hobble Creek Golf Course	Jurd Springs
Springville Irrigation Shares	245	195	Jolly's Park, Kelly Park, and Hobble Creek Golf Course	Hobble Creek
51-5224	1,571	2,000	Plat A Irrigation System	Hobble Creek
51-5230	25	20	Irrigation at Westroc	Roundy Springs
51-7463 (a24494)	50	37	Industrial Park	Little Spring Creek
Total	**2,341**	**2,976**		

* Flow and volume for each water right is estimated based on the State of Utah water right database and City records.

ULS AND SUVMWA WATER

The City is obligated to purchase 5,448 ac-ft of ULS water through a petition agreement between CUWCD and SUVMWA, see Appendix E for details. It is recommended that the City plan for how the ULS water will be used.

There is important information in the contract between SUVMWA and CUWCD for delivery of ULS water that the City should consider about the proper timing, cost, payment, and potential options to avoid the purchase of the ULS water. It is recommended that the City start discussions with the Department of Interior, CUWCD and SUVMWA immediately to fully understand the contract and negotiate potential options so the City can make informed and timely decisions for the ULS water. The City could consider discussing the possibility of purchasing a portion of the water, purchasing an increasing portion of the water over time, or allowing another SUVMWA city to have a portion or all of Springville City's ULS Water allotment.

The ULS water would be the most expensive water in the City's entire portfolio currently estimated at around $350 per acre-foot per year for 50 years. This would be a yearly cost of $1.9 Million and a total cost of $95.3 Million. After 50 years the City would pay operation and maintenance costs for the water, currently estimated at about $40 an acre-foot in today's dollars. If the full cost of the ULS water is delayed for up to 10 years, the annual payment will be higher at the end of the deferral because the amortization period will be shorter. For example, if the annual cost for the 5,448 ac-ft allotment without deferment is $1.9 Million based on a 50-year period, it will be near $2.4 Million for a 10-year deferment based on a 40-year period. However, there is no interest assessed for delaying and the total cost remains the same.

It is important to note that there are conservation requirements in the contract that the City will be immediately subject to when the City starts to take ULS water. If the conservation requirements are not met, the City will be surcharged 5%. The City should confirm conservation documentation to be ready to prove the required reductions of 12.5% by 2020 and 25% by 2050. It is also important to note that no debt can be used to pay for the ULS water and none of the return flows of the ULS water may be claimed or used.

The feasibility of a drinking water treatment plant in Salem supplied by ULS water is being studied by CUWCD. It is recommended that the City participate and provide input in the study.

Springville also owns 95 ac-ft of East Jordan Canal water through the City's approximate 23.7 percentage of SUVMWA. It is recommended that the City sell the SUVMWA East Jordan Canal water right.

WATER RIGHT RECOMMENDATIONS

In summary, although the City has sufficient water rights to meet existing demands in the PI system, several actions with regards to PI water rights are recommended to ensure future demands have sufficient water rights. They include:

- Work with the Utah Division of Water Rights to aid in a decision being finalized in the water right adjudication.
- File change applications for all water rights based on shares to municipal use.
- File a change application to add a point of diversion on the Plat A water right (51-5224) at the City Dam to use the water in the PI system.
- Sell the City's SUVMWA portion of an East Jordan Canal water right.
- Start discussions with the Department of Interior, CUWCD, and SUVMWA to understand the contract between the SUVMWA and CUWCD for delivery of ULS water. The City should plan for the best options for meeting the obligation and using the water.

CHAPTER 7 CAPITAL FACILITY PLAN

GENERAL

The purpose of this section is to identify the PI facilities that are required to meet the demands placed on the system by future development for the 10-year planning period (impact fee) and the 20-year planning period (capital facility plan). Proposed facility capacities were sized to adequately meet the planning horizon growth projections and were compared to current master planned facilities. A detailed design analysis will be required before construction of the facilities to ensure that the location and sizing is appropriate for the actual growth that has taken place since this CFP was developed.

METHODOLOGY

Future water demands were based on the growth projections converted into irrigated acreage projections as discussed in Chapter 2. The 20-year growth projection was used to identify the capital projects listed in this chapter. While capital projects are selected for the 20-year growth projection, the facilities were sized to service future growth projections through the planning horizon. A hydraulic model was developed for the purpose of assessing the system operation and capacity with future demands added to the system. This model was used to identify problem areas in the system and to identify the most efficient way to make improvements.

MASTER PLANNING

Throughout the master planning process, the three main components of the PI system (source, storage, and distribution) were analyzed to determine the system's ability to meet existing demands and also the anticipated future demands. Each of the system deficiencies identified in the master planning process and described previously in this report were presented in an alternatives workshop with City staff. Possible alternatives for future growth and facilities were discussed. After the workshop, HAL studied the feasibility of the alternatives and developed conceptual level cost estimates.

One important method of paying for system improvements is through impact fees. Impact fees are collected from new development and should only be used to pay for system improvements related to new development. For this reason, it is important to identify which projects are related to resolving existing deficiencies, and which projects are related to providing anticipated future capacity for new development.

PRECISION OF COST ESTIMATES

When considering cost estimates, there are several levels or degrees of precision, depending on the purpose of the estimate and the percentage of detailed design that has been completed. The following levels of precision are typical:

Type of Estimate	Precision
Master Planning	-50% to +100%
Preliminary Design	-30% to +30%
Final Design or Bid	-10% to +10%

For example, at the master planning level (or conceptual or feasibility design level), if a project is estimated to cost $1,000,000, then the precision or reliability of the cost estimate would typically be expected to range between approximately $500,000 and $2,000,000. While this may seem very imprecise, the purpose of master planning is to develop general sizing, location, cost, and scheduling information on a number of individual projects that may be designed and constructed over a period of many years. Master planning also typically includes the selection of common design criteria to help ensure uniformity and compatibility among future individual projects. Details such as the exact capacity of individual projects, the level of redundancy, the location of facilities, the alignment and depth of pipelines, the extent of utility conflicts, the cost of land and easements, the construction methodology, the types of equipment and material to be used, the time of construction, interest and inflation rates, permitting requirements, etc., are typically developed during the more detailed levels of design.

At the preliminary design level, some of the aforementioned information will have been developed. Major design decisions such as the size of facilities, selection of facility sites, pipeline alignments and depths, and the selection of the types of equipment and material to be used during construction will typically have been made. At this level of design, the precision of the cost estimate for a $1,000,000 project would typically be expected to range between approximately $700,000 and $1,300,000.

After the project has been completely designed and is ready to bid, all design plans and technical specifications will have been completed and nearly all of the significant details about the project should be known. At this level of design, the precision of the cost estimate for the same $1,000,000 project would typically be expected to range between approximately $900,000 and $1,100,000.

SYSTEM IMPROVEMENT PROJECTS

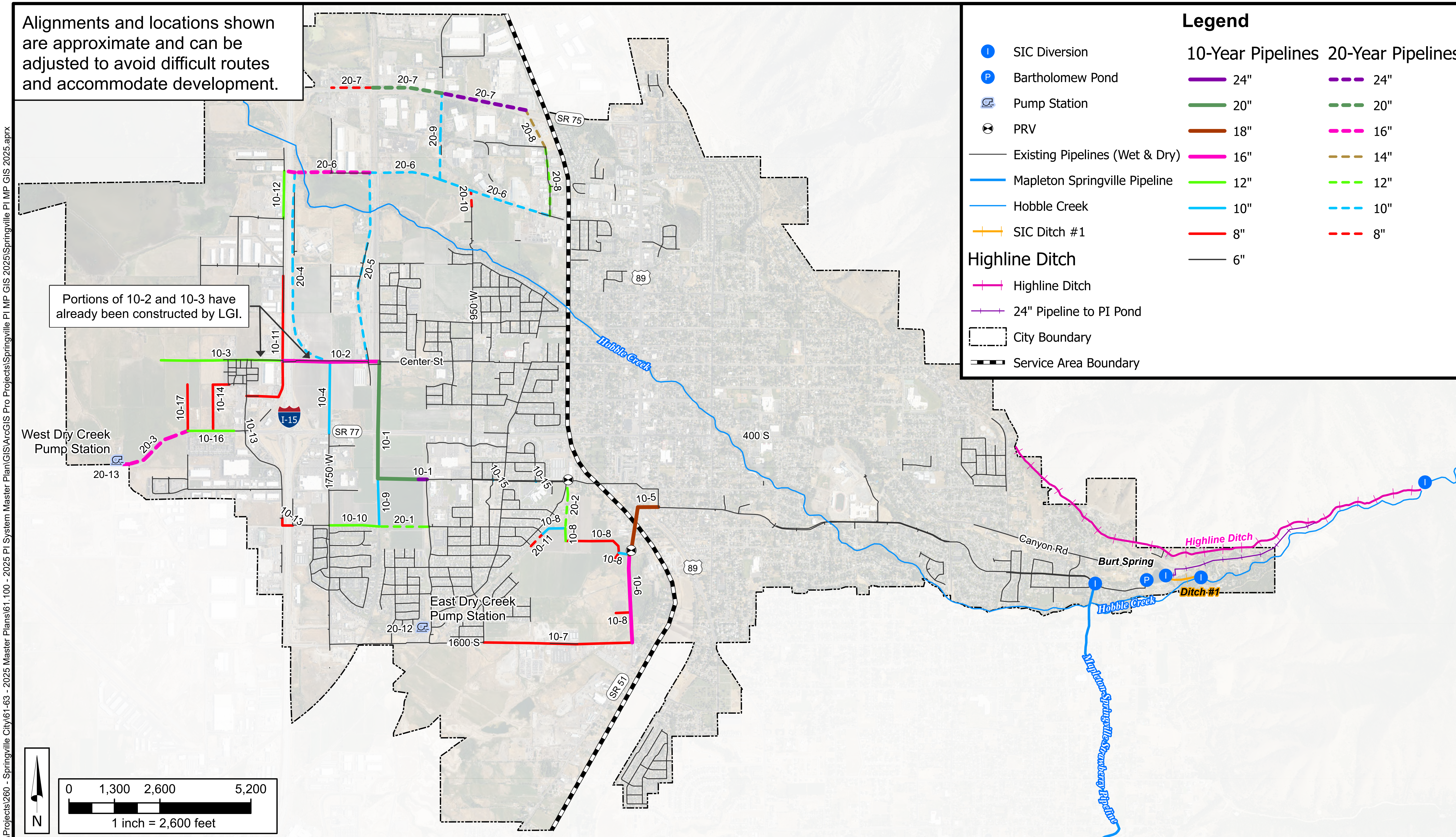
As discussed in previous chapters, source, storage and distribution system capacity expansion will be needed to meet the demands of future growth. Project descriptions for PI system improvements are presented in Chapters 3, 4 and 5 with the location of each project shown on Figure 3-1. Each recommendation includes a conceptual cost estimate for construction and year needed.

Unit costs for the construction cost estimates are based on conceptual level engineering. Sources used to estimate construction costs include:

1. “Means Heavy Construction Cost Data, 2025”
2. Price quotes from equipment suppliers
3. Recent construction bids for similar work

All costs are presented in 2025 dollars. Recent price and economic trends indicate that future costs are difficult to predict with certainty. Engineering cost estimates provided in this study should be regarded as conceptual level for use as a planning guide. Only during final design can a definitive and more accurate estimate be provided for each project.

The recommended system improvement projects for the next 20 years through 2045 are summarized in Tables 7-1 and 7-2 and shown on Figure 7-1. A cost estimate calculation for each recommended project is provided in Appendix B The estimated cost for the recommended system capital improvement projects for the next 10 years is **$17,243,000**. In the 10-20 year planning window, there is another **$33,634,000** in estimated cost for capital improvement projects.



HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE CITY
PRESSURIZED IRRIGATION SYSTEM MASTER PLAN

CAPITAL FACILITIES PLAN

FIGURE 7-1

Date: 1/8/2026 Document Path: H:\Projects\260 - Springville City\61-63 - 2025 Master Plans\61.100 - 2025 PI System Master Plan\GIS\ArcGIS Pro Projects\Springville PI MP GIS 2025\Springville PI MP GIS 2025.aprx

Table 7-1
Recommended 0-10 Year Transmission Projects

Project ID*	Recommendation	Impact Fee Eligible Cost	% Impact Fee Eligible	Total Cost Estimate
10-1	20-inch diameter pipe in 1500 W - from Center St to 700 S - and 24-inch diameter pipe east of 700 S	$4,370,000	100%	$4,370,000
10-2**	16-inch diameter pipe in Center Street - from 1200 W to 1500 W	$2,271,000	100%	$2,271,000
10-3**	12-inch diameter pipe Center Street – West of 2000 W. This cost is for the remaining portion of pipeline not constructed by LGI	$280,000	25%	$1,120,000
	This cost is for the impact fee eligible cost of upsizing the 1,160 LF of pipe that has already been constructed by LGI.	$73,000	100%	$73,000
10-4	10-inch diameter pipe in 1750 W - from Center St to 400 S	$230,000	15%	$1,460,000
10-5	18-inch diameter pipe in State St (near 1000 S) and PRV to 18" pipe	$3,470,000	100%	$3,470,000
10-6	16-inch diameter pipe in State St	$1,440,000	100%	$1,440,000
10-7	8-inch diameter pipe in 1600 S - from State St to 950 W	$1,890,000	100%	$1,890,000
10-8	8-inch, 10-inch, and 12-inch diameter pipes across Dry Creek area	$210,000	13%	$1,560,000
10-9	10-inch diameter pipe in 1700 W - from 700 S to 900 S	$80,000	14%	$530,000
10-10	12-inch diameter pipe in 900 S - from 1750 W to 1700 W	$230,000	25%	$880,000
10-11	8-inch diameter pipe in 2000 W - from about 500 N to Sweetwater Dr and 6-inch diameter pipe in 500 N - from 2400 W to 2250 West	$1,560,000	100%	$1,560,000
10-12	12-inch diameter pipe in 2000 W - from 1000 N to 800 N	$570,000	100%	$570,000
10-13	8-inch diameter pipe in 900 S under I-15 and 6-inch diameter pipe in 2200 West under 400 South	$990,000	100%	$990,000
10-14	8-inch diameter pipe off 2250 W	$50,000	7%	$640,000
10-15	10-inch diameter pipe across 700 S road to connect 30" pipe to 6" pipe and a PRV to 30" pipe near 400 W 700 S	$550,000	100%	$550,000
10-16	12-inch diameter pipe in 400 S - from 2400 W to 2600 W	$180,000	24%	$710,000
10-17	8-inch diameter pipe in 2600 W to connect to 400 S pipeline	$40,000	6%	$580,000
	Total	**$18,484,000**	**75%**	**$24,664,000**

* See Figure 7-1
** Projects 10-2 and 10-3 are currently under construction by developers. Cost information was provided by the City and is included in Appendix B.

Table 7-2
Recommended 10-20 Year Transmission Projects

Project ID*	Recommendation	Impact Fee Eligible Cost	% Impact Fee Eligible	Total Cost Estimate
20-1	12-inch diameter pipe in 900 S - from 1700 W to 1200 W	$190,000	24%	$760,000
20-2	12-inch diameter pipe in 400 W - from 700 S to about 900 S	$220,000	26%	$850,000
20-3	16-inch diameter pipe in 400 S - from West Dry Creek PS to 100 W	$1,210,000	100%	$1,210,000
20-4	10-inch diameter pipe parallel to I-15 - from 1000 N to Center St	$360,000	14%	$2,500,000
20-5	10-inch diameter pipe in 1650 W - from to 1000 N to Center St	$340,000	14%	$2,380,000
20-6	10-inch diameter pipe in Spring Creek Rd - from 950 W to 400 W and 16-inch diameter pipe in 1000 N - from I-15 to 950 W	$2,300,000	36%	$6,320,000
20-7	8-inch, 20-inch, and 24-inch diameter pipes in State Route 75 - from 1750 W to ULS Turnout	$4,120,000	100%	$4,120,000
20-8	12-inch diameter pipe in 450 W St - from 1200 N to Spring Creek Rd and 14-inch diameter pipe in 450 W - from ULS Turnout to 1200 N	$1,810,000	100%	$1,810,000
20-9	10-inch diameter pipe in Mtn Springs Pkwy - from State Route 75 to 1000 N/Spring Creek Rd	$1,060,000	100%	$1,060,000
20-10	8-inch diameter pipe in 950 W - from Spring Creek Rd to about 900 N	$20,000	5%	$270,000
20-11	8-inch diameter pipe parallel to Spring Canyon Way (to connect to 10" pipe proposed in Project 10-8)	$20,000	7%	$180,000
20-12	East Dry Creek PS and Holding Pond along Dry Creek and near 1200 W	$8,060,000	100%	$8,060,000
20-13	West Dry Creek PS and Holding Pond along Dry Creek and near 4000 South	$8,060,000	100%	$8,060,000
	Total	**$27,770,000**	**74%**	**$37,580,000**

* See Figure 7-1

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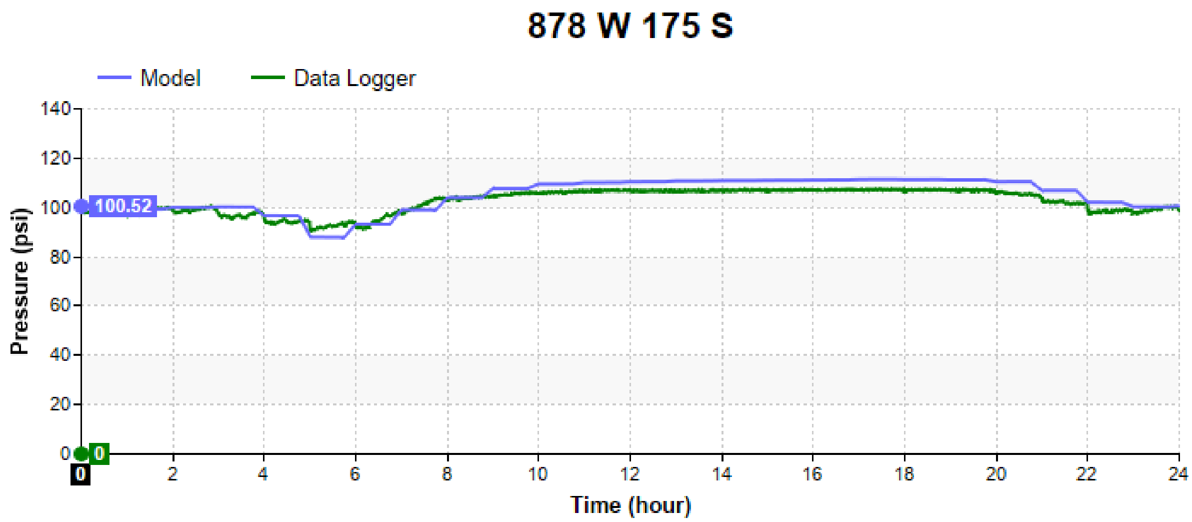
APPENDIX A
Model Calibration Reports


878 W 175 S
Model
Data Logger
Pressure (psi)
Time (hour)
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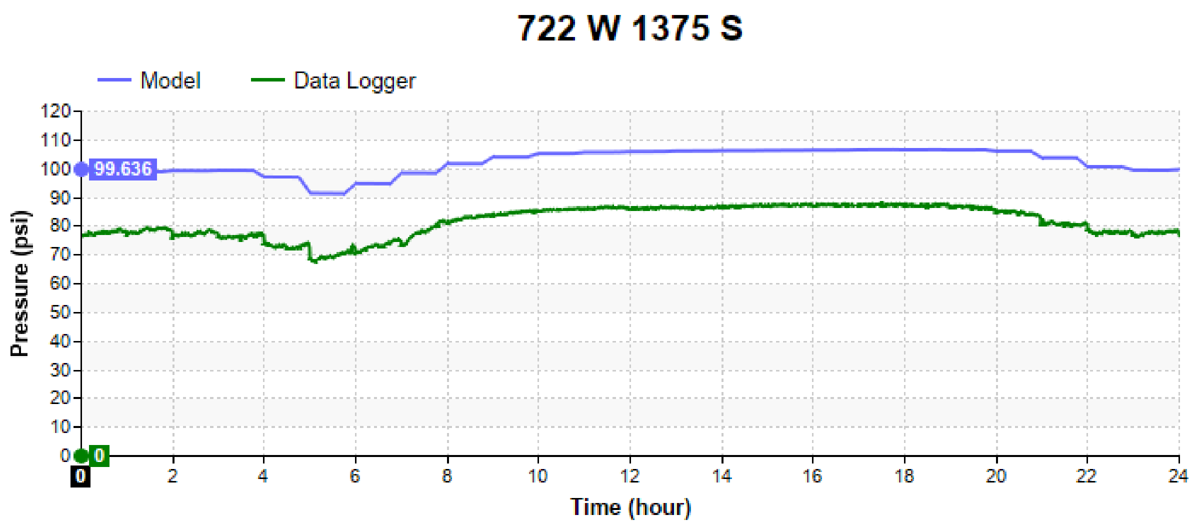
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Data Logger
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Time (hour)
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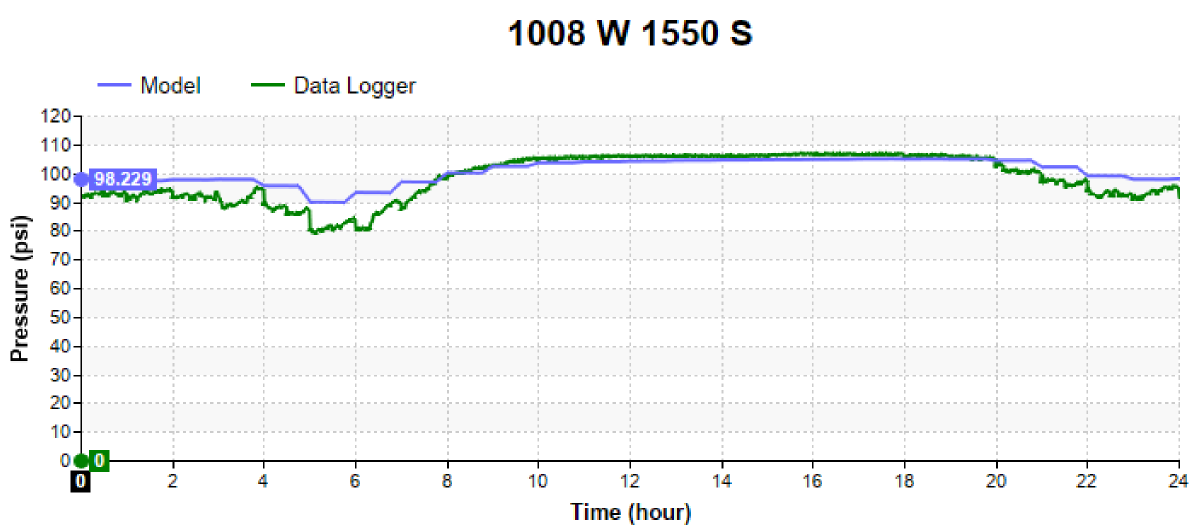
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Time (hour)
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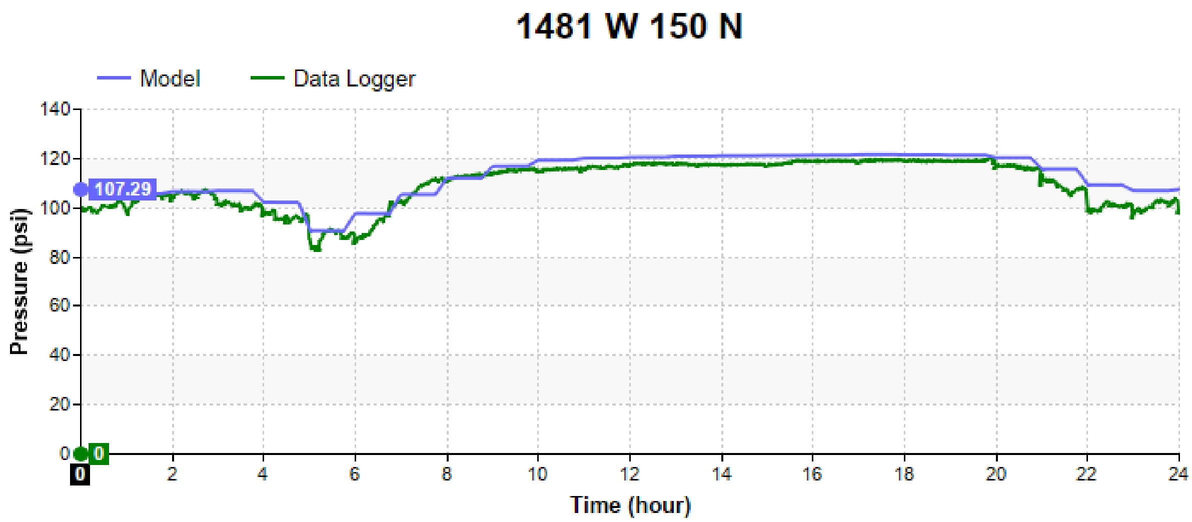
1481 W 150 N
Model
Data Logger
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Pressure (psi)
Time (hour)
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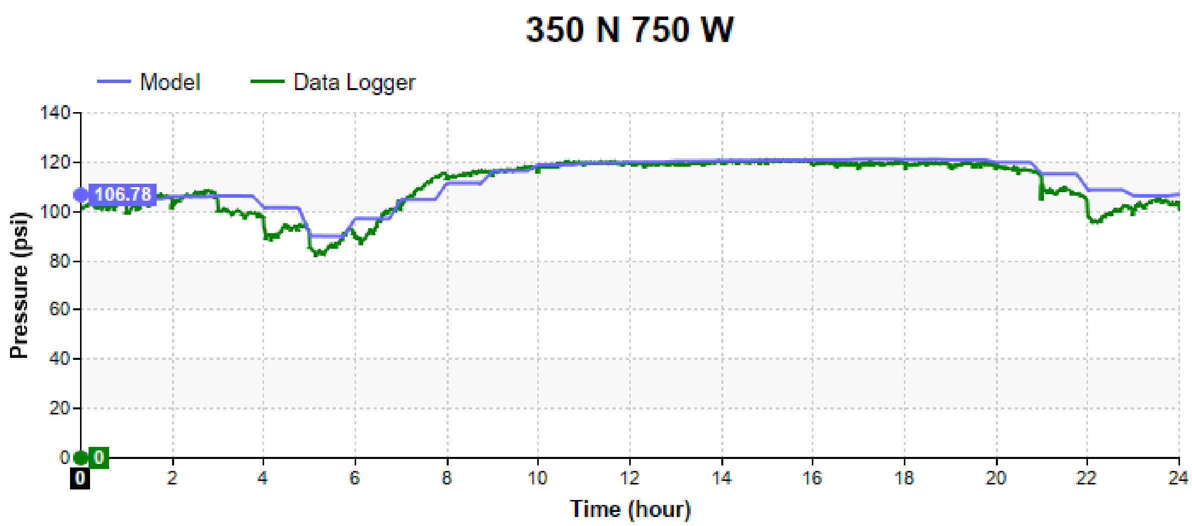
0 2 4 6 8 10 12 14 16 18 20 22 24


350 N 750 W
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Data Logger
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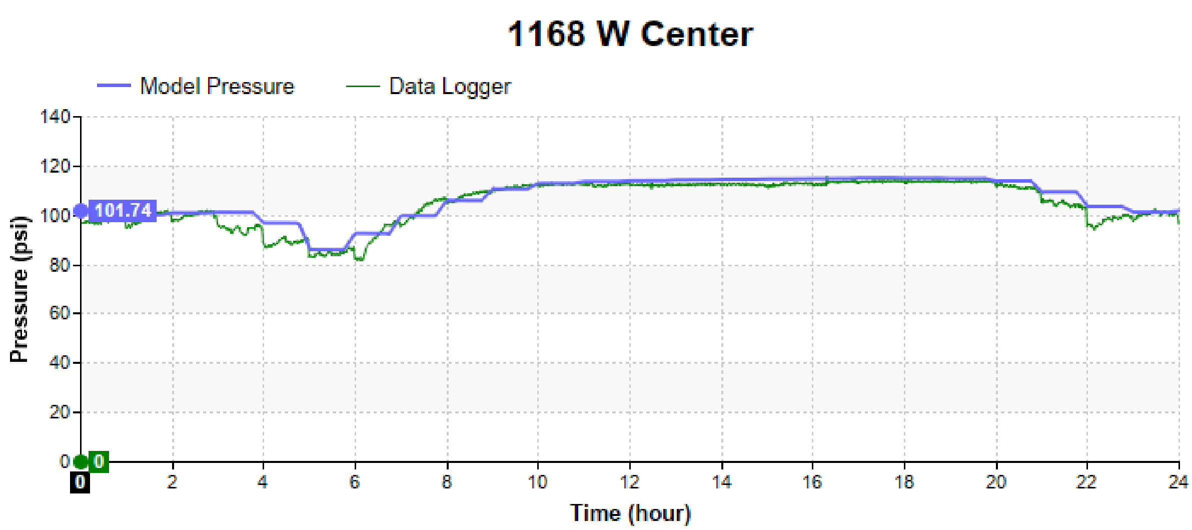
1168 W Center
Model Pressure
Data Logger
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Pressure (psi)
Time (hour)
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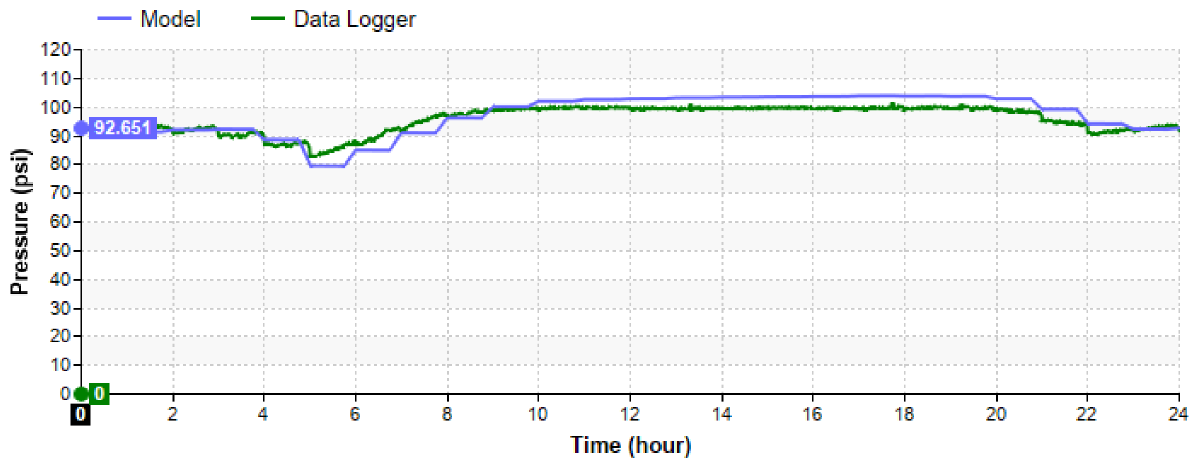
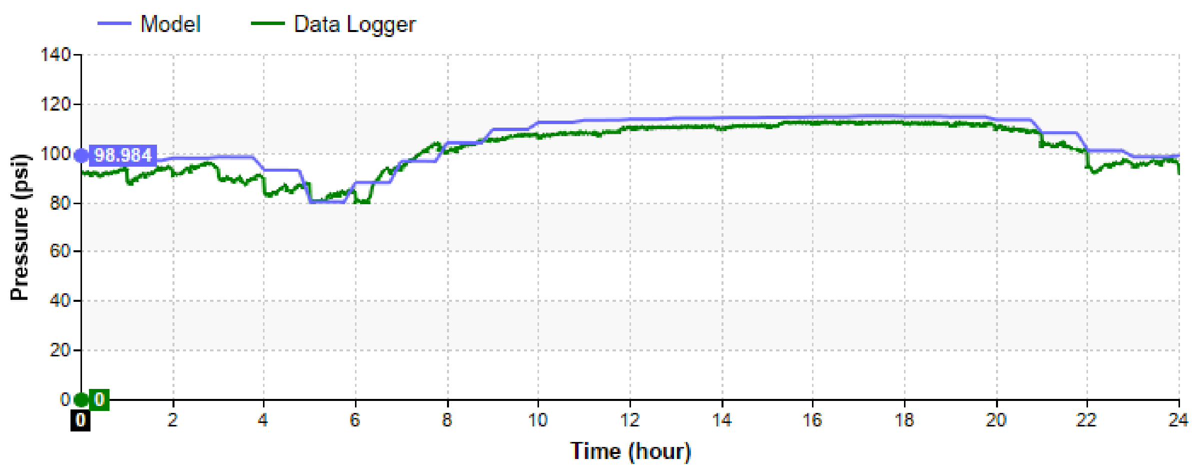
0 2 4 6 8 10 12 14 16 18 20 22 24

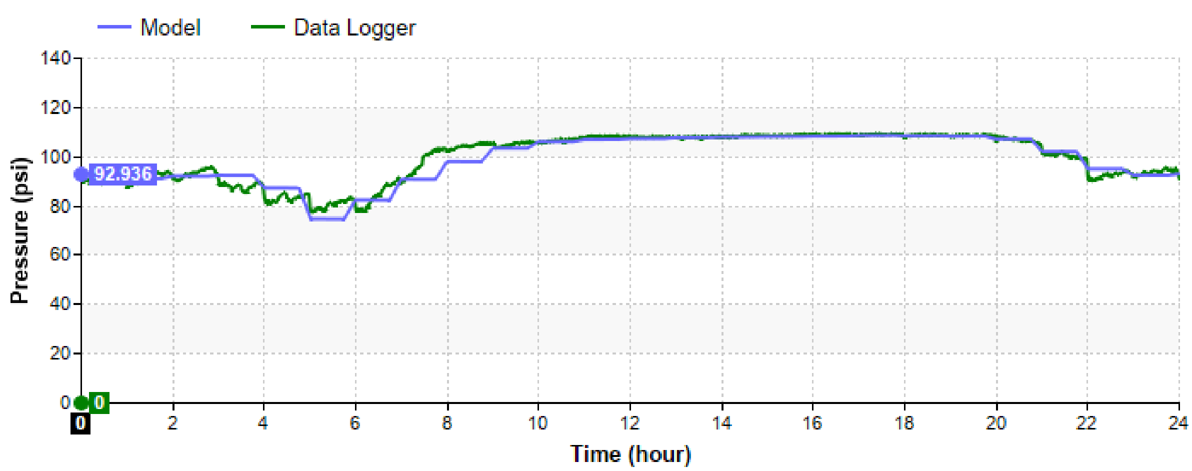
543 W 200 S



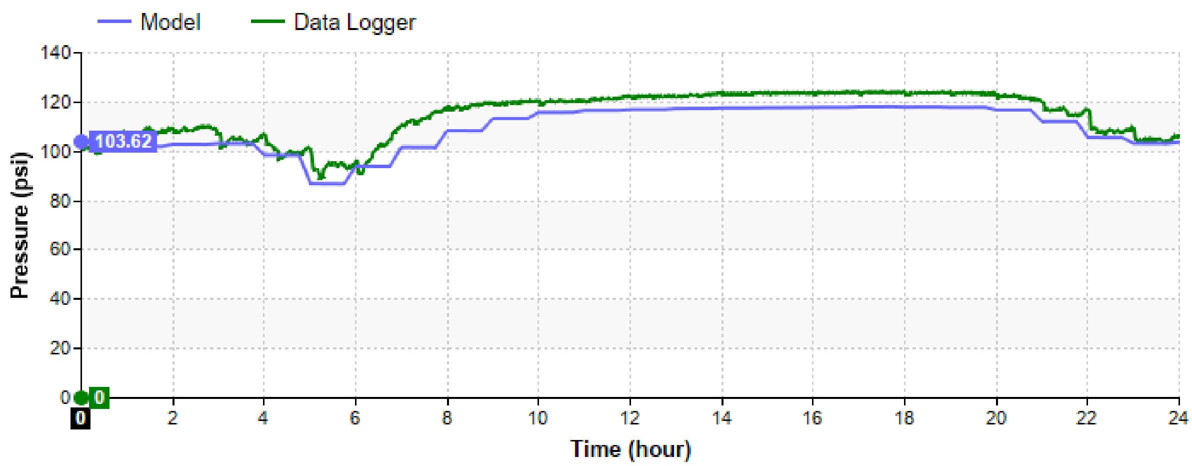
556 N 950 W



780 W 250 N



1433 W 550 N



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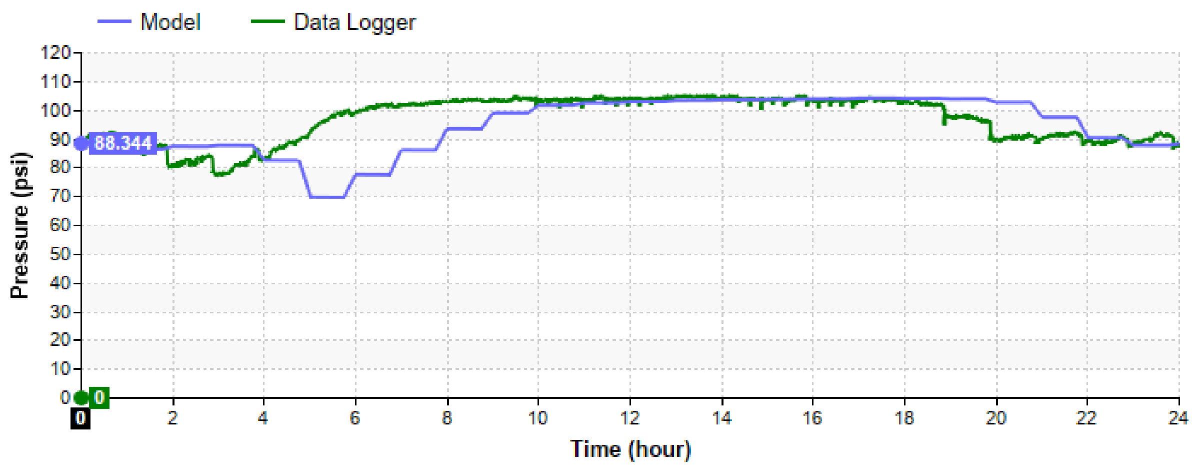
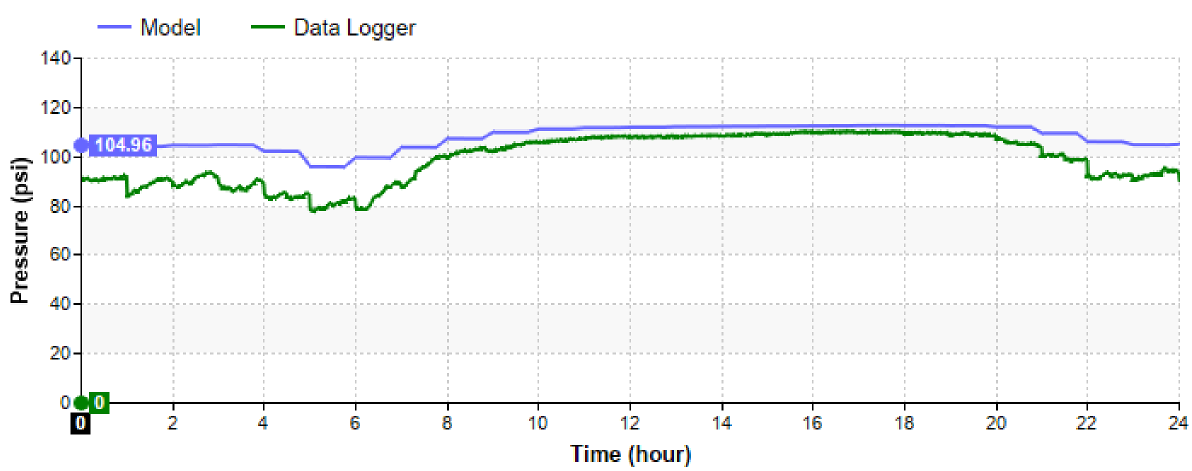


1418 S Avalon



APPENDIX B

Cost Estimate Calculations

Springville City Pressurized Irrigation Water Master Plan - Capital Facility Plan Project Cost Estimates
Springville City
by Hansen, Allen & Luce, Inc.
DRAFT
AACE Class: 5

Project 10-2 and 10-3 have been or are currently under construction. The costs shown for these projects reflect the bid or reimbursement agreement amounts provided by the City.
10-2: Bid document - Lakeside-Landing Offsite PI Improvements by Landmark Excavating
10-3: Reimbursement agreement - Center Street pressurized irrigation water system improvements

Scenario	Project ID	Item Type	Location/Description	Diameter	Quantity	Rounded Quantity	Unit	Unit Cost	Base Cost	Contingency (20%)	Engineering (10%)	Project Total Cost	Project Total Cost *Rounded*	Impact Fee Eligible Cost	Impact Fee Eligible Cost *Rounded*	% Impact Fee Eligible
PI Project 10-1																
10-Year	10-1	Pipe	20-inch diameter pipe	20	4507	4510	LF	$ 440	$ 1,984,400	$ 396,880	$ 198,440	$ 2,579,720	$ 2,580,000	$ 2,579,720	$ 2,580,000	100%
10-Year	10-1	Pipe	24-inch diameter pipe	24	241	250	LF	$ 510	$ 127,500	$ 25,500	$ 12,750	$ 165,750	$ 166,000	$ 165,750	$ 166,000	100%
10-Year	10-1	Bore-20	Bore 20-inch diameter pipe across SR77/400 S (180')	20	180	180	LF	$ 4,800	$ 864,000	$ 172,800	$ 86,400	$ 1,123,200	$ 1,124,000	$ 1,123,200	$ 1,124,000	100%
10-Year	10-1	Bore-20	Bore 20-inch diameter pipe across (2) canals (40')	20	80	80	LF	$ 4,800	$ 384,000	$ 76,800	$ 38,400	$ 499,200	$ 500,000	$ 499,200	$ 500,000	100%
												PI Project 10-1 Total	**$ 4,370,000**	**10-1 Total**	**$ 4,370,000**	**100%**
PI Project 10-2 *(Lakeside Offsite PI, under construction)*									**Bid Cost**	**Contingency (10%)**	**Engineering (5%)**	**Total**	**Rounded**			
10-Year	10-2	Pipe	16-inch along Center St from 1500 W to 2000 W	16	(-)	(-)	(-)	(-)	$ 1,973,978	$ 197,398	$ 98,699	$ 2,270,075	$ 2,271,000	$ 2,271,000	$ 2,271,000	100%
												PI Project 10-2 Total	**$ 2,271,000**	**10-2 Total**	**$ 2,271,000**	**100%**
PI Project 10-3 *(LGI Center Street Offsite PI, West of I-15, portion constructed)*												**Total**	**Rounded**			
10-Year	10-3	Pipe	12-inch along Center St (constructed)	12	1160	1160	LF	(-)	(-)	(-)	(-)	$ 72,945	$ 73,000	$ 72,945	$ 73,000	100%
												PI Project 10-3 Subtotal	**$ 73,000**	**10-3 Subtotal**	**$ 73,000**	**100%**
10-Year	10-3	Pipe	12-inch diameter pipe	12	1916	1920	LF	$ 320	$ 614,400	$ 122,880	$ 61,440	$ 798,720	$ 799,000	$ 174,720	$ 175,000	22%
10-Year	10-3	Bore-12	Bore 12-inch diameter pipe across (2) canals (40')	12	80	80	LF	$ 3,000	$ 240,000	$ 48,000	$ 24,000	$ 312,000	$ 312,000	$ 104,000	$ 104,000	33%
												PI Project 10-3 Subtotal	**$ 1,120,000**	**10-3 Subtotal**	**$ 280,000**	**25%**
PI Project 10-4																
10-Year	10-4	Pipe	10-inch diameter pipe	10	2049	2050	LF	$ 290	$ 594,500	$ 118,900	$ 59,450	$ 772,850	$ 773,000	$ 106,600	$ 107,000	14%
10-Year	10-4	Bore-10	Bore 10-inch diameter pipe across SR77 (180')	10	180	180	LF	$ 2,400	$ 432,000	$ 86,400	$ 43,200	$ 561,600	$ 562,000	$ 93,600	$ 94,000	17%
10-Year	10-4	Bore-10	Bore 10-inch diameter pipe across canal (40')	10	40	40	LF	$ 2,400	$ 96,000	$ 19,200	$ 9,600	$ 124,800	$ 125,000	$ 20,800	$ 21,000	17%
												PI Project 10-4 Total	**$ 1,460,000**	**10-4 Total**	**$ 230,000**	**15%**
PI Project 10-5																
10-Year	10-5	Pipe	18-inch diameter pipe	18	1971	1980	LF	$ 400	$ 792,000	$ 158,400	$ 79,200	$ 1,029,600	$ 1,030,000	$ 1,029,600	$ 1,030,000	100%
10-Year	10-5	PRV-18	PRV to 18" pipe on 1000 S State St.	18	1	1	Each	$ 400,000	$ 400,000	$ 80,000	$ 40,000	$ 520,000	$ 520,000	$ 520,000	$ 520,000	100%
10-Year	10-5	Bore-18	Bore 18-inch diameter pipe across US 89 (300')	18	300	300	LF	$ 4,200	$ 1,260,000	$ 252,000	$ 126,000	$ 1,638,000	$ 1,638,000	$ 1,638,000	$ 1,638,000	100%
10-Year	10-5	Bore-18	Bore 18-inch diameter pipe across railroad (50')	18	50	50	LF	$ 4,200	$ 210,000	$ 42,000	$ 21,000	$ 273,000	$ 273,000	$ 273,000	$ 273,000	100%
												PI Project 10-5 Total	**$ 3,470,000**	**10-5 Total**	**$ 3,470,000**	**100%**
PI Project 10-6																
10-Year	10-6	Pipe	16-inch diameter pipe	16	2516	2520	LF	$ 370	$ 932,400	$ 186,480	$ 93,240	$ 1,212,120	$ 1,213,000	$ 1,212,120	$ 1,213,000	100%
10-Year	10-6	Bore-16	Bore 16-inch diameter pipe across Dry Creek (40')	16	40	40	LF	$ 4,200	$ 168,000	$ 33,600	$ 16,800	$ 218,400	$ 219,000	$ 218,400	$ 219,000	100%
												PI Project 10-6 Total	**$ 1,440,000**	**10-6 Total**	**$ 1,440,000**	**100%**
PI Project 10-7																
10-Year	10-7	Pipe	8-inch diameter pipe	8	4245	4250	LF	$ 270	$ 1,147,500	$ 229,500	$ 114,750	$ 1,491,750	$ 1,492,000	$ 1,491,750	$ 1,492,000	100%
10-Year	10-7	Bore-8	Bore 8-inch diameter pipe across SR51 (150')	8	150	150	LF	$ 2,000	$ 300,000	$ 60,000	$ 30,000	$ 390,000	$ 390,000	$ 390,000	$ 390,000	100%
												PI Project 10-7 Total	**$ 1,890,000**	**10-7 Total**	**$ 1,890,000**	**100%**
PI Project 10-8																
10-Year	10-8	Pipe	8-inch diameter pipe	8	2464	2470	LF	$ 270	$ 666,900	$ 133,380	$ 66,690	$ 866,970	$ 867,000	$ 64,220	$ 65,000	7%
10-Year	10-8	Pipe	10-inch diameter pipe	10	1006	1010	LF	$ 290	$ 292,900	$ 58,580	$ 29,290	$ 380,770	$ 381,000	$ 52,520	$ 53,000	14%
10-Year	10-8	Pipe	12-inch diameter pipe	12	361	370	LF	$ 320	$ 118,400	$ 23,680	$ 11,840	$ 153,920	$ 154,000	$ 33,670	$ 34,000	22%
10-Year	10-8	Bore-12	Bore 12-inch diameter pipe across canal (40')		40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 52,000	$ 52,000	33%
												PI Project 10-8 Total	**$ 1,560,000**	**10-8 Total**	**$ 210,000**	**13%**
PI Project 10-9																
10-Year	10-9	Pipe	10-inch diameter pipe	10	1375	1380	LF	$ 290	$ 400,200	$ 80,040	$ 40,020	$ 520,260	$ 521,000	$ 71,760	$ 72,000	14%
												PI Project 10-9 Total	**$ 530,000**	**10-9 Total**	**$ 80,000**	**14%**
PI Project 10-10																
10-Year	10-10	Pipe	12-inch diameter pipe	12	1435	1440	LF	$ 320	$ 460,800	$ 92,160	$ 46,080	$ 599,040	$ 600,000	$ 131,040	$ 132,000	22%
10-Year	10-10	Bore-12	Bore 12-inch diameter pipe across railroad (70')		70	70	LF	$ 3,000	$ 210,000	$ 42,000	$ 21,000	$ 273,000	$ 273,000	$ 91,000	$ 91,000	33%
												PI Project 10-10 Total	**$ 880,000**	**10-10 Total**	**$ 230,000**	**25%**
PI Project 10-11																
10-Year	10-11	Pipe	8-inch diameter pipe	8	4403	4410	LF	$ 270	$ 1,190,700	$ 238,140	$ 119,070	$ 1,547,910	$ 1,548,000	$ 1,547,910	$ 1,548,000	100%
10-Year	10-11	Bore-8	Bore 8-inch diameter pipe across canal structure (20')		1	1	LF	$ 2,000	$ 2,000	$ 400	$ 200	$ 2,600	$ 3,000	$ 2,600	$ 3,000	100%
												PI Project 10-11 Total	**$ 1,560,000**	**10-11 Total**	**$ 1,560,000**	**100%**
PI Project 10-12																
10-Year	10-12	Pipe	12-inch diameter pipe	12	1365	1370	LF	$ 320	$ 438,400	$ 87,680	$ 43,840	$ 569,920	$ 570,000	$ 569,920	$ 570,000	100%
												PI Project 10-12 Total	**$ 570,000**	**10-12 Total**	**$ 570,000**	**100%**
PI Project 10-13																
10-Year	10-13	Pipe	8-inch diameter pipe	8	502	510	LF	$ 270	$ 137,700	$ 27,540	$ 13,770	$ 179,010	$ 180,000	$ 179,010	$ 180,000	100%
10-Year	10-13	Pipe	6-inch diameter pipe	6	73	80	LF	$ 250	$ 20,000	$ 4,000	$ 2,000	$ 26,000	$ 26,000	$ 26,000	$ 26,000	100%
10-Year	10-13	Bore-8	Bore 8-inch diameter pipe across I-15 (300')		300	300	LF	$ 2,000	$ 600,000	$ 120,000	$ 60,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	100%
												PI Project 10-13 Total	**$ 990,000**	**10-13 Total**	**$ 990,000**	**100%**
PI Project 10-14																
10-Year	10-14	Pipe	8-inch diameter pipe	8	1793	1800	Each	$ 270	$ 486,000	$ 97,200	$ 48,600	$ 631,800	$ 632,000	$ 46,800	$ 47,000	7%
												PI Project 10-14 Total	**$ 640,000**	**10-14 Total**	**$ 50,000**	**7%**
PI Project 10-15																
10-Year	10-15	Pipe	10-inch diameter pipe	10	62	70	LF	$ 290	$ 20,300	$ 4,060	$ 2,030	$ 26,390	$ 27,000	$ 26,390	$ 27,000	100%
10-Year	10-15	PRV-30	PRV to 30" pipe on 400 W 700 S	30	1	1	Each	$ 400,000	$ 400,000	$ 80,000	$ 40,000	$ 520,000	$ 520,000	$ 520,000	$ 520,000	100%
												PI Project 10-15 Total	**$ 550,000**	**10-15 Total**	**$ 550,000**	**100%**
PI Project 10-16																
10-Year	10-16	Pipe	12-inch diameter pipe	12	1323	1330	LF	$ 320	$ 425,600	$ 85,120	$ 42,560	$ 553,280	$ 554,000	$ 121,030	$ 122,000	22%
10-Year	10-16	Bore-12	Bore 12-inch diameter pipe across canal (40')	12	40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 52,000	$ 52,000	33%
												PI Project 10-16 Total	**$ 710,000**	**10-16 Total**	**$ 180,000**	**24%**
PI Project 10-17																
10-Year	10-17	Pipe	8-inch diameter pipe	8	1327	1330	LF	$ 270	$ 359,100	$ 71,820	$ 35,910	$ 466,830	$ 467,000	$ 34,580	$ 35,000	7%
10-Year	10-17	Bore-8	Bore 8-inch diameter pipe across canal (40')	8	40	40	LF	$ 2,000	$ 80,000	$ 16,000	$ 8,000	$ 104,000	$ 104,000	$ -	$ -	0%
												PI Project 10-17 Total	**$ 580,000**	**10-17 Total**	**$ 40,000**	**6%**
PI Project 20-1																
20-Year	20-1	Pipe	12-inch diameter pipe	12	1428	1430	LF	$ 320	$ 457,600	$ 91,520	$ 45,760	$ 594,880	$ 595,000	$ 130,130	$ 131,000	22%
20-Year	20-1	Bore-12	Bore 12-inch diameter pipe across canal structure (40')	12	40	40	LF	$ 3,000	$ 120,000	$ 24,000	$ 12,000	$ 156,000	$ 156,000	$ 52,000	$ 52,000	33%

Springville City Pressurized Irrigation Water Master Plan - Capital Facility Plan Project Cost Estimates
Springville City
by Hansen, Allen & Luce, Inc.
DRAFT
AACE Class: 5

Project 10-2 and 10-3 have been or are currently under construction. The costs shown for these projects reflect the bid or reimbursement agreement amounts provided by the City.
10-2: Bid document - Lakeside-Landing Offsite PI Improvements by Landmark Excavating
10-3: Reimbursement agreement - Center Street pressurized irrigation water system improvements

Scenario	Project ID	Item Type	Location/Description	Diameter	Quantity	Rounded Quantity	Unit	Unit Cost	Base Cost	Contingency (20%)	Engineering (10%)	Project Total Cost	Project Total Cost *Rounded*	Impact Fee Eligible Cost	Impact Fee Eligible Cost *Rounded*	% Impact Fee Eligible
												PI Project 20-1 Total	**$ 760,000**	**20-1 Total**	**$ 190,000**	**24%**
PI Project 20-2																
20-Year	20-2	Pipe	12-inch diameter pipe	12	1367	1370	LF	$ 320	$ 438,400	$ 87,680	$ 43,840	$ 569,920	$ 570,000	$ 124,670	$ 125,000	22%
20-Year	20-2	Bore-12	Bore 12-inch diameter pipe across railroad (70')	12	70	70	LF	$ 3,000	$ 210,000	$ 42,000	$ 21,000	$ 273,000	$ 273,000	$ 91,000	$ 91,000	33%
												PI Project 20-2 Total	**$ 850,000**	**20-2 Total**	**$ 220,000**	**26%**
PI Project 20-3																
20-Year	20-3	Pipe	16-inch diameter pipe	16	2265	2270	LF	$ 370	$ 839,900	$ 167,980	$ 83,990	$ 1,091,870	$ 1,092,000	$ 1,091,870	$ 1,092,000	100%
20-Year	20-3	UDOT	UDOT ROW (SR 77)		1	1	LS	10% project	$ 83,990	$ 16,798	$ 8,399	$ 109,187	$ 110,000	$ 109,187	$ 110,000	100%
												PI Project 20-3 Total	**$ 1,210,000**	**20-3 Total**	**$ 1,210,000**	**100%**
PI Project 20-4																
20-Year	20-4	Pipe	10-inch diameter pipe	10	5958	5960	LF	$ 290	$ 1,728,400	$ 345,680	$ 172,840	$ 2,246,920	$ 2,247,000	$ 309,920	$ 310,000	14%
20-Year	20-4	Bore-10	Bore 10-inch diameter pipe across canal (80')	10	80	80	LF	$ 2,400	$ 192,000	$ 38,400	$ 19,200	$ 249,600	$ 250,000	$ 41,600	$ 42,000	17%
												PI Project 20-4 Total	**$ 2,500,000**	**20-4 Total**	**$ 360,000**	**14%**
PI Project 20-5																
20-Year	20-5	Pipe	10-inch diameter pipe	10	5464	5470	LF	$ 290	$ 1,586,300	$ 317,260	$ 158,630	$ 2,062,190	$ 2,063,000	$ 284,440	$ 285,000	14%
20-Year	20-5	Bore-10	Bore 10-inch diameter pipe across Hobble Creek (100')	10	100	100	LF	$ 2,400	$ 240,000	$ 48,000	$ 24,000	$ 312,000	$ 312,000	$ 52,000	$ 52,000	17%
												PI Project 20-5 Total	**$ 2,380,000**	**20-5 Total**	**$ 340,000**	**14%**
PI Project 20-6																
20-Year	20-6	Pipe	10-inch diameter pipe	10	5355	5360	LF	$ 290	$ 1,554,400	$ 310,880	$ 155,440	$ 2,020,720	$ 2,021,000	$ 278,720	$ 279,000	14%
20-Year	20-6	Pipe	16-inch diameter pipe	16	2442	2450	LF	$ 370	$ 906,500	$ 181,300	$ 90,650	$ 1,178,450	$ 1,179,000	$ 382,200	$ 383,000	32%
20-Year	20-6	Bore-16	Bore 16-inch diameter pipe across railroad (170')	16	170	170	LF	$ 4,200	$ 714,000	$ 142,800	$ 71,400	$ 928,200	$ 929,000	$ 486,200	$ 487,000	52%
20-Year	20-6	Bore-16	Bore 16-inch diameter pipe across Hobble Creek (100')	16	100	100	LF	$ 4,200	$ 420,000	$ 84,000	$ 42,000	$ 546,000	$ 546,000	$ 286,000	$ 286,000	52%
20-Year	20-6	Bore-16	Bore 16-inch diameter pipe under I-15 (300')	16	300	300	LF	$ 4,200	$ 1,260,000	$ 252,000	$ 126,000	$ 1,638,000	$ 1,638,000	$ 858,000	$ 858,000	52%
												PI Project 20-6 Total	**$ 6,320,000**	**20-6 Total**	**$ 2,300,000**	**36%**
PI Project 20-7																
20-Year	20-7	Pipe	8-inch diameter pipe	8	1160	1160	LF	$ 270	$ 313,200	$ 62,640	$ 31,320	$ 407,160	$ 408,000	$ 407,160	$ 408,000	100%
20-Year	20-7	Pipe	20-inch diameter pipe	20	2010	2010	LF	$ 440	$ 884,400	$ 176,880	$ 88,440	$ 1,149,720	$ 1,150,000	$ 1,149,720	$ 1,150,000	100%
20-Year	20-7	Pipe	24-inch diameter pipe	24	2448	2450	LF	$ 510	$ 1,249,500	$ 249,900	$ 124,950	$ 1,624,350	$ 1,625,000	$ 1,624,350	$ 1,625,000	100%
20-Year	20-7	Bore-20	Bore 20-inch diameter pipe across railroad (150')	20	150	150	LF	$ 4,800	$ 720,000	$ 144,000	$ 72,000	$ 936,000	$ 936,000	$ 936,000	$ 936,000	100%
												PI Project 20-7 Total	**$ 4,120,000**	**20-7 Total**	**$ 4,120,000**	**100%**
PI Project 20-8																
20-Year	20-8	Pipe	12-inch diameter pipe	12	1955	1960	LF	$ 320	$ 627,200	$ 125,440	$ 62,720	$ 815,360	$ 816,000	$ 815,360	$ 816,000	100%
20-Year	20-8	Pipe	14-inch diameter pipe	14	1213	1220	LF	$ 330	$ 402,600	$ 80,520	$ 40,260	$ 523,380	$ 524,000	$ 523,380	$ 524,000	100%
20-Year	20-8	Bore-14	Bore 14-inch diameter pipe across SR75 (100')	14	100	100	LF	$ 3,600	$ 360,000	$ 72,000	$ 36,000	$ 468,000	$ 468,000	$ 468,000	$ 468,000	100%
												PI Project 20-8 Total	**$ 1,810,000**	**20-8 Total**	**$ 1,810,000**	**100%**
PI Project 20-9																
20-Year	20-9	Pipe	10-inch diameter pipe	10	2468	2470	LF	$ 290	$ 716,300	$ 143,260	$ 71,630	$ 931,190	$ 932,000	$ 931,190	$ 932,000	100%
20-Year	20-9	Bore-10	Bore 10-inch diameter pipe across canal (40')	10	40	40	LF	$ 2,400	$ 96,000	$ 19,200	$ 9,600	$ 124,800	$ 125,000	$ 124,800	$ 125,000	100%
												PI Project 20-9 Total	**$ 1,060,000**	**20-9 Total**	**$ 1,060,000**	**100%**
PI Project 20-10																
20-Year	20-10	Pipe	8-inch diameter pipe	8	460	460	LF	$ 270	$ 124,200	$ 24,840	$ 12,420	$ 161,460	$ 162,000	$ 11,960	$ 12,000	7%
20-Year	20-10	Bore-8	Bore 8-inch diameter pipe across canal (40')	8	40	40	LF	$ 2,000	$ 80,000	$ 16,000	$ 8,000	$ 104,000	$ 104,000	$ -	$ -	0%
												PI Project 20-10 Total	**$ 270,000**	**20-10 Total**	**$ 20,000**	**5%**
PI Project 20-11																
20-Year	20-11	Pipe	8-inch diameter pipe	8	489	490	LF	$ 270	$ 132,300	$ 26,460	$ 13,230	$ 171,990	$ 172,000	$ 12,740	$ 13,000	7%
												PI Project 20-11 Total	**$ 180,000**	**20-11 Total**	**$ 20,000**	**7%**
PI Project 20-12																
20-Year	20-12	PS	East Dry Creek PS		1	1	Each	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	100%
20-Year	20-12	Pond	East Dry Creek Holding Pond		3	3	ac-ft	$ 400,000	$ 1,200,000	$ 240,000	$ 120,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	100%
												PI Project 20-12 Total	**$ 8,060,000**	**20-12 Total**	**$ 8,060,000**	**100%**
PI Project 20-13																
20-Year	20-13	PS	West Dry Creek PS		1	1	Each	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000	100%
20-Year	20-13	Pond	West Dry Creek Holding Pond		3	3	ac-ft	$ 400,000	$ 1,200,000	$ 240,000	$ 120,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	$ 1,560,000	100%
												PI Project 20-13 Total	**$ 8,060,000**	**20-13 Total**	**$ 8,060,000**	**100%**

	Total		Impact Fee Eligible	
10-Year	**$ 24,664,000**	**10-Year**	**$ 18,484,000**	**75%**
20-Year	**$ 37,580,000**	**20-Year**	**$ 27,770,000**	**74%**

APPENDIX C

Water Right Summary

Springville City Water Rights DRAFT

Status[1]	Water Right #	Change or Exchange #	Change Priority Date	Type[2, 3]	Proof Due Date	Base Priority	Segregated From	Group #	Use[4]	Period of Use	Owner	Address[5]	Flow (cfs)	Reference Flow[6]	Quantity (AF)	Reference Quantity[6]	Quantity Used for Reuse Permit (AF)	Depletion (AF)	Reference Depletion Value[7] (AF)	Percent Depletion from Diversion (%)	Percent Return to Utah Lake (%)	Volume Return to Utah Lake (AF)	Prior Source	Source	Points of Diversion	Source #	Source Common Name	Irrigation Company	Number of Shares	Quantity based on Shares (AF)	Action Needed[8]	Notes
Well Water Rights (Municipal)																																
CERT	51-1024 51-1025 51-1088 51-6970	a28367(2003) certificated(2018)	2003	APPL APPL APPL APPL	Certificated	1925 1925 1950 1925	None	636971	M	01/01-12/31	Springville City Corporation	City	1.980 0.144 0.390 0.770	CERT (2018)	1433.52 104.26 282.36 557.62	CERT (2018)	2377.760	1433.52 104.26 47.06 557.62	APPL 1925 APPL 1925 PROOF 1954 Calculated from use	100% 100% 17% 100%	0.00 0.00 0.83 0.00	0.00 0.00 235.30 0.00	underground stream underground stream well wells?	Wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1105 feet E 392 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 666 feet E 83 feet from W4 corner, Sec 2 T 8S R 3E SLBM (5) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (6) N 122 feet W 397 feet from E4 corner, Sec 4 T 8S R 3E SLBM (7) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 31850 (WS012) 23334 (WS008) 433148 (WS006) 23335 (WS011)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well Canyon Road Well 900 South 1000 East Well 1000 South Well					
CERT	51-2530 51-3679	a29656(2004) certificated 2019	2004	UGWC DEC	Certificated	1900 1851	None	636971	M	01/01-12/31	Springville City Springville City	City	6.02	Proof(2022)	8.28 136.00	CERT (2019)	144.280	76.03	OSE(2005)	53%	47%	68.25	well Roundy Springs	Wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM	28851 (WS007) 428960 (WS005)	Industrial Park Well-Treatment Plant Well(inactive)					
CERT	51-2780	a28366(2003) certificated 2018	1992	DIL	Certificated	1874	None	636971	M	01/01-12/31	Springville City	City	3.00	CERT (2018)	439.03	CERT (2018)	439.03	240.37	OSE(2003)	55%	45%	198.66	springs	Wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1105 feet E 392 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 666 feet E 83 feet from W4 corner, Sec 2 T 8S R 3E SLBM (5) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (6) N 122 feet W 397 feet from E4 corner, Sec 4 T 8S R 3E SLBM (7) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 31850 (WS012) 23334 (WS008) 433148 (WS006) 23335 (WS011)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well Canyon Road Well 900 South 1000 East Well 1000 South Well Evergreen Well	N/A	N/A	N/A		Change Application a28366 changed quantity from 462.38 to 439.03.
APP	51-1111 51-6666 51-6990 51-7242	a26443	2002	APPL APPL APPL SHAR	4/30/2027	1944 1944 1935 1998	 51-1104 51-1035 None	227309	M	01/01-12/31	Springville City Corporation East Jordan Irrigation Co.	City	0.441	OSE(2002)	16.00 36.00 2.50 48.40	OSE(2002)	102.900	8.48 19.71 1.88 20.52	OSE(2002)	53% 55% 75% 42%	47% 45% 25% 58%	7.52 16.3 0.6 27.9	spring well well river	wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1105 feet E 392 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (5) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 23334 (WS008) 23335 (WS011)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well 1000 South Well Evergreen Well	East Jordan Irrigation Company	10.00	48.40		
APP	51-1455 51-1486 51-1493	a42209(2016)	2016	APPL APPL APPL	3/31/2031	1960	None	636971	M	01/01-12/31	Springville Municipal Corporation	City	11.000	OSE(2017)	7963.65	Calculated from Flow	7963.650	7963.65	Municipal in APPL (1960)	100%	0.00	0.00	wells	wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1105 feet E 392 feet from W4 corner, Sec 34 T 7S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well	N/A	N/A	N/A	Check POD Descriptions	Proof Filed 3/18/2022
APP	51-5450	a40919	2015	DIL PD	12/4/2023 File Now	1861	None	227551	M	01/01-12/31	Springville City	City	2.97	OSE	13.80	OSE	13.796	7.84	OSE(2015)	0.57	0.43	5.96	Little Spring Creek	wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 661 feet E 1462 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1076 feet E 369 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 666 feet E 83 feet from W4 corner, Sec 2 T 8S R 3E SLBM (5) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (6) N 122 feet W 397 feet from E4 corner, Sec 4 T 8S R 3E SLBM (7) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 31850 (WS012) 23334 (WS008) 433148 (WS006) 23335 (WS011)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well Canyon Road Well 900 South 1000 East Well 1000 South Well Evergreen Well	N/A	N/A	N/A	Check POD Descriptions	Proof Filed 3/18/2020 - Proof Returned 10/5/2023 but Extension will be accepted if filed by 12/4/2023.
APP	51-8641	a40920	2015	DIL	2/28/2030	1861	51-5454	N/A	M	01/01-12/31	Springville City	City	N/A	N/A	33.36	OSE(2016)	33.360	17.55	OSE(2016)	52.61%	47.39%	15.81	creek	wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 661 feet E 1462 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1076 feet E 369 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 666 feet E 83 feet from W4 corner, Sec 2 T 8S R 3E SLBM (5) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (6) N 122 feet W 397 feet from E4 corner, Sec 4 T 8S R 3E SLBM (7) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 31850 (WS012) 23334 (WS008) 433148 (WS006) 23335 (WS011)	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well Canyon Road Well 900 South 1000 East Well 1000 South Well Evergreen Well	N/A	N/A	N/A		
APP	51-8793	a43986	2018	SHAR	10/31/2032	2018	None	N/A	M	01/01-12/31	Springville City Corporation	City	N/A	N/A	15.00	OSE(2018)	15.000	11.28	OSE(2018)	75.20%	24.80%	3.72	creek	wells	(1) N 1400 feet W 485 feet from SE corner, Sec 29 T 7S R 3E SLBM (2) N 675 feet E 1452 feet from SW corner, Sec 34 T 7S R 3E SLBM (3) N 1105 feet E 392 feet from W4 corner, Sec 34 T 7S R 3E SLBM (4) N 666 feet E 83 feet from W4 corner, Sec 2 T 8S R 3E SLBM (5) N 957 feet W 3964 feet from E4 corner, Sec 3 T 8S R 3E SLBM (6) N 122 feet W 397 feet from E4 corner, Sec 4 T 8S R 3E SLBM (7) N 1350 feet W 825 feet from E4 corner, Sec 9 T 8S R 3E SLBM (8) N 1125 ft E 1425 ft from SW corner, Sec 34 T 7S R 3E SLBM	28851 (WS007) 428960 (WS005) 428961 (WS004) 31850 (WS012) 23334 (WS008) 433148 (WS006) 23335 (WS011) 440770	Industrial Park Well-Treatment Plant Well(inactive) 400 South 900 East Well 200 North 800 East Well Canyon Road Well 900 South 1000 East Well 1000 South Well Evergreen Well New Well	Wash Creek Irrigation Company	5.00	15.00		
Subtotal																	11,089.78	10,509.76		94.77%												10953.516
													SubTotal:				**2,961.07** 11027.620															
Spring Water Rights (Municipal)																																
DEC	51-5328	N/A	N/A	DIL PD	Decreed	1903	None				Springville Municipal Corporation	City	1.00	PD(1986)	723.97	Calculated from Flow	0.0000	0.00					spring	spring	(1) S 2590 feet E 198 feet from W4 corner, Sec 33 T 7S R 4E SLBM	Secondary System	Jurd Springs	N/A	N/A	N/A		Producton data reported shows from 2018 to 2022, use of 75 to 113 acre-feet. Not included for reuse (doesn't return to their treatment plant)
DEC	51-5329	N/A	N/A	DIL PD	Decreed	1890	None	231296 231297 231377 631867 631893 631909 631910 631911 631912 636652	M I S	01/01-12/31 04/01-10/31 01/01-12/31	Springville Municipal Corporation	City	5.50	PD(1986)	3981.820	Calculated from Flow	3981.8200	3981.82	Assumed from Original Municipal Use	100%	0.00	0.00	spring	spring	(1) S 800 feet E 840 feet from W4 corner, Sec 1 T 8S R 3E SLBM	WS003	Burt Springs	N/A	N/A	N/A		Producton data reported shows from 2018 to 2022, use of 1,017 to 1,969 acre-feet. Should reuse diversion be cut back based on reported use? **Diligence Claim(1981)** - Claimed to have been a municipal source prior to 1903.
DEC	51-5330	N/A	N/A	UGWC PD	Decreed	1890	None				Springville Municipal Corporation	City	0.40	PD(1986)	289.587	Calculated from Flow	289.5870	289.59	Assumed from Original Municipal Use	100%	0.00	0.00	spring	spring	(1) S 969 feet E 295 feet from N4 corner, Sec 2 T 8S R 3E SLBM	WS009	Konold Spring	N/A	N/A	N/A		
DEC	51-6027	N/A	N/A	DIL PD	Decreed	1851	None				Springville Municipal Corporation	City	5.50	PD(1986)	3981.820	Calculated from Flow	3981.8200	3981.82	Assumed from Original Municipal Use	100%	0.00	0.00	spring	spring	(1) N 1459 feet E 1530 feet from S4 corner, Sec 35 T 7S R 3E SLBM (2) N 1495 feet E 1032 feet from S4 corner, Sec 35 T 7S R 3E SLBM	WS002	Spring Creek Canyon Springs	N/A	N/A	N/A		Producton data reported shows from 2018 to 2022, use of 1,076 to 2,377 acre-feet. Should reuse diversion be cut back based on reported use?
DEC	51-5520	N/A	N/A	SHAR PD	Decreed	1851	None				Springville City Corporation Springville Irrigation Company	City	4.00	PD(1986)	1068.000	Calculated from Shares	1068.000	534.00	Based off Irrigation use	50%	534.00	0.00	spring	spring	(1) N 1546 feet E 207 feet from S4 cor Sec 08 T7S R4E SL or (1) N 1504 feet W 2321 feet from SE corner, Sec 8 T 7S R 4E SLBM	WS001	Lower Bartholomew Spring	Springville Irrigation Company (SIC)	267	1068.00		Quantity - Calculated from 1986 PD statement that the right has a total irrigated acreage for all claims of 35.69 acres. A flow of 4 cfs is 2,895.87 acre-feet per year. This is the only consumptive City water right for this spring. Production data reported shows from 2018 to 2022, use of 1,027 to 1,064 acre-feet. To be consisten with Springville Irrigation company (SIC) - depletion is assumed to be 50%
Subtotal																	9,321.23	8,787.23		94%	534.00											
													Subtotal				**20,348.85**															
River Water Rights (Municipal and/or Decreed)																																
APP	51-7463	a45344	2019	DIL	3/31/2030	1861	51-4541	232966	M	01/01-12/31	Springville City	City	N/A	N/A	37.20	OSE	0.00	0.00		#DIV/0!			creek	creek	(1) N 1024 feet W 3766 feet from SE corner, Sec 20 T 7S R 3E SLBM	None Assigned	Little Spring Creek Industrial Pump Station (Stouffers)	N/A	N/A	N/A		**Springville City a24494(2000)** Filed to be used in City's secondary system but system not built (withdrawn) **Springville City a45344(2019)** municipal. POD where stream can be used as municipal irrigation. **Removed from reuse application based on City's input**
DEC	51-5224	N/A	N/A	PD	Decreed	1851	None	231296 231297 231377 631867 631893 631909 631910 631911 631912	M I S	01/01-12/31 04/01-10/31 01/01-12/31	Springville Municipal Corporation	City	8.00	PD(1986)?	5,791.74	Calculated from Flow	5,791.74	5,791.74		100%			creek	creek	(1) S 2590 feet E 198 feet from W4 corner, Sec 33 T 7S R 4E SLBM		Hobble Creek	N/A	N/A	N/A		
DEC	51-6025	N/A	N/A	WUC PD	Decreed	1851	None	231705 631859 631864 631912	I S	04/01-10/31 01/01-12/31	Springville Municipal Corporation	City	6.50	PD(1986)	490.12	PD(1986)	490.12	490.12		100%			creek	creek	(1) S 800 feet E 3150 feet from NW corner, Sec 6 T 8S R 4E SLBM		Hobble Creek (through Highline Canal)	N/A	N/A	N/A		**Deliverd through Highline Canal**
Subtotal													**Subtotal**				6,281.86	6,281.86														
Total Approved																	**26,692.86** 18564.157	**25,578.85**														
Perfected Water Rights																						580.01										
City Water Rights Not Approved for Municipal Use																																
Pending APP	51-8792	a44541	2019	SHAR	N/A	1890-1934	None	724481	I	4/01-10/31	Springville City Corporation Wood Springs Irrigation Company	City Wood Springs	N/A	N/A	233.784	Share Statement (2018)	233.784	116.89					well drain	well drain	(1) N 28 feet W 5025 feet from E4 corner, Sec 32 T 7S R 3E SLBM (2) S 670 feet W 1370 feet from E4 corner, Sec 32 T 7S R 3E SLBM (3) S 570 feet W 1350 feet from E4 corner, Sec 32 T 7S R 3E SLBM (4) S 793 feet W 2635 feet from E4 corner, Sec 32 T 7S R 3E SLBM (5) S 33 feet W 2403 feet from E4 corner, Sec 32 T 7S R 3E SLBM	(1) 3421		Wood Springs Irrigation Company	64.94	108.19	Share Value was updated	2/20/2025 - Regional Office (Jacob Wright) said there were no notes on why these applications were deferred. He recommended sending a letter from the City asking that the application be reactivated. It appears however that the hang-up is changing them to municipal status for

Pending APP	51-8366	a35086	2008	SHAR	N/A	1890-1934	None	631934	I	4/01-10/31	Springville City Corporation Wood Springs Irrigation Company	City Wood Springs	N/A	N/A	252.000	Share Statement (2008)	252.000	126.00					drain	drain	(1) S 670 feet W 1370 feet from E4 corner, Sec 32 T 7S R 3E SLBM			Wood Springs Irrigation Company	63	104.958	Request to Activate	drinking water use. Applications have been approved recently but are irrigation rights that state the strawberry portion will not be used for domestic use.
Pending APP	51-8791	a43637	2018	SHAR	N/A	1861	None	724480	I	4/01-10/31	Springville City Corporation Mill Pond Irrigation Company	City Mill Pond Irrigation	N/A	N/A	387.855	Share Statement (2018)	387.855	193.93					springs creek	springs creek	(1) S 3030 feet E 20 feet from N4 corner, Sec 28 T 7S R 3E SLBM (2) S 150 feet W 1320 feet from NE corner, Sec 32 T 7S R 3E SLBM (3) S 860 feet W 1050 feet from E4 corner, Sec 30 T 7S R 3E SLBM (4) N 790 feet W 480 feet from SE corner, Sec 29 T 7S R 3E SLBM		(1) Mill Pond (2) Hobble Creek (3) Mill Pond Irrigation Well (4) Mendenahl Spring	Mill Pond Irrigation Company	99.45	396.8055	Check Share Value	12/04/2008 - Change Application filed on 89.63 12/14/2011 - Mill Pond Irrigation Company - States 89.63 shares, 391.68 AF, 39.17 AF carrier losses, and 352.51 AF available to transfer out of the system. 4.37 AF, 10% losses, 3.933 AF 04/26/2012 - 06/29/2020 - OSE, PD 535.28 acres irrigation and 504.21 shares, Company stated 3.99 AF per share. 6/2011 Franson Civil Engineers states 1660 AF delivery. DWRi concludes 3.304 AF per share, 0.826 acre/share, depletion 1.863 AF per share. Approved 89.63 shares for 266.5238 AF and 166.98 AF. 7/20/2020 - Request for Reconsideration granted to the City on 7/22/2020 In light of the critical nature of the share calculations, the City respectfully requests that you grant this Request for Reconsideration and revert the Change Applications to unapproved status in order to give the City and the irrigation companies the necessary time to research the key information, provide the Division with the requested information and documentation, and to review the share calculations with the **Division. J. Craig Smith and Jeffry R. Gittins.**
Pending APP	51-8639	a40922	2015	SHAR	N/A	1890-1934	None	637325	I	4/01-10/31	Springville City Corporation Springville Irrigation Company	City Springville Irrigation	N/A	N/A	259.400	Share Statement (2015)	259.400	129.70					creek spring well	creek spring well	All SIC diversions, etc			Springville Irrigation Company (SIC)	64.85	259.4	Not listed on Company Page	
Pending APP Objection in PD	51-8368	a35091	2008	SHAR WUC	N/A	1890-1934	None	231366	I	4/01-10/31	Springville City Corporation Springville Irrigation Company	City	N/A	N/A	1236.080	Share Statement (2008)	1236.080	618.04					creek	creek	(1) N 1770 feet E 1860 feet from SW corner, Sec 1 T 8S R 3E SLBM (2) N 1048 feet W 1368 feet from SE corner, Sec 2 T 8S R 3E SLBM (3) N 964 feet E 715 feet from SW corner, Sec 2 T 8S R 3E SLBM (4) S 582 feet E 53 feet from NW corner, Sec 3 T 8S R 3E SLBM (5) S 800 feet E 3150 feet from NW corner, Sec 6 T 8S R 4E SLBM		Hobble Creek: '#1 Diversion Island Dam Diversion Sage Creek Diversion Swenson Dam Diversion City Dam Diversion	Springville Irrigation Company (SIC)	309.02	1236.08	Objection in PD	
Pending APP	51-8790	a44540	2019	SHAR	N/A	1890-1934	None	724479	I	4/01-10/31	Springville City Corporation Springville Irrigation Company	City	N/A	N/A	3660.000	Share Statement (2018)	3660.000	1830.00					creek spring well	creek spring well	See SIC points of diversion		Hobble Creek Dry Creek Left Fork Hobble Creek Burt Springs Well	Springville Irrigation Company (SIC)	915	3660		
Pending APP	51-8367	a35088	2008	SHAR	N/A	1861	None	230402	I S	4/01-10/31 01/01-12/31	Springville City Corporation Coffman Springs Irrigation Company	City Coffman Springs	N/A	N/A	46.560	Share Statement (2008)	46.560	23.28					spring	spring	(1) S 1220 feet W 670 feet from N4 corner, Sec 32 T 7S R 3E SLBM		Coffman Springs	Springville Irrigation Company (SIC)	11.64	26.72544	Check Share Value	
None	51-8794	N/A	N/A	SHAR	N/A	1851-1953	None	724483	I	4/01-10/31	Springville City Corporation Mapleton Irrigation Company	City Mapleton Irrigation	N/A	N/A	0.380	Share Statement (2018)	0.380	0.19					creeks springs	creeks springs	See MIC points of diversion		Hobble Creek Maple Canyon Creek Fullmer Spring Red Pine Spring Grindstone Spring	Mapleton Irrigation Company (MIC)	0.38	0.38		Not Included in total amount for reuse (include for pending amount)
Pending APP	51-1322	a28531(pending)	2003	APPL	N/A	1955	None	227541-227544 227546-227560	I S	4/01-10/31 01/01-12/31	Springville Municipal Corporation	City	4.57	CERT (1969)	Unevaluated Sole Supply	CERT (1969)	909.710	454.86					drain	wells	(1) S 592 feet W 135 feet from NE corner, Sec 32 T 7S R 3E SLBM	Drain	Abandoned Sewer Drain	N/A	N/A	N/A	File Declaration of Beneficial Use Process Change Application	Not included in total amount for reuse (include for pending amount) Beneficial Use Groups have multiple other owners and no sole supply of this right.
WUC	51-5453	none	N/A	DIL	N/A	1861	None	227546	I S	4/01-10/31 01/01-12/31	Springville City	City	2.97	PD(1986)	Unevaluated Sole Supply	N/A	0.000	0.00							(1) N 250 feet E 2365 feet from SW corner, Sec 28 T 7S R 3E SLBM (2) S 300 feet W 800 feet from NE corner, Sec 33 T 7S R 3E SLBM	Creek	Little Spring Creek	N/A	N/A	N/A	File Declaration of Beneficial Use Change Application to municipal	Not included for reuse. **ROC(2020) -** To Springville City Beneficial Use Groups have multiple other owners and no sole supply of this right. Supplemental Use to 51-1322 and 51-2778 (owned by Corp of Presiding Bishop) Groups total 38.86 acre-feet
Pending Totals													**SubTotal:**				**6,985.77**	**3,492.88**		**50%**												

APPENDIX D

2022 Water Conservation Plan

CITY COUNCIL OF SPRINGVILLE CITY

RESOLUTION NUMBER: #2022-52

SHORT TITLE: A RESOLUTION BY THE SPRINGVILLE CITY COUNCIL ADOPTING THE SPRINGVILLE CITY WATER CONSERVATION PLAN 2022.

PASSAGE BY THE CITY COUNCIL
ROLL CALL

NAME	MOTION	SECOND	FOR	AGAINST	OTHER
Liz Crandall		✓	✓		
Craig Jensen			✓		
Chris Sorensen			✓		
Jason Miller	✓		✓		
Mike Snelson			✓		
	TOTALS		5	—	—

This resolution was passed by the City Council of Springville City, Utah, on the 20th day of December 2022; on a roll call vote as described above.

Approved and signed by me this 20th day of December 2022.

Matt Packard, Mayor

CORPORATE SEAL SPRINGVILLE, UTAH

ATTEST:

Kim Crane, City Recorder

RESOLUTION #2022-52

A RESOLUTION BY THE SPRINGVILLE CITY COUNCIL ADOPTING THE SPRINGVILLE CITY WATER CONSERVATION PLAN 2022.

WHEREAS, Springville City recognizes the need to conserve water within *Springville City*; and

WHEREAS, Springville City has participated in the creation of a water conservation plan, hereby known as the Springville City Water Conservation Plan 2022 in accordance with State Code 73-10-32; and

WHEREAS, the Springville City Water Conservation Plan 2022 identifies water conservation goals and actions to reduce water on property in Springville City as required by State law; and

WHEREAS, adoption by Springville City demonstrates their commitment to conserve water and achieve the goals outlined in the Springville City Water Conservation Plan 2022; and

WHEREAS, after providing the 14-day public notice as required by Utah State law, the Springville City Council held a public hearing and found that the Springville City Water Conservation Plan 2022 meets the requirements of Utah State law and is in the best interests of Springville City's water conservation efforts moving forward.

NOW THEREFORE, BE IT RESOLVED BY THE SPRINGVILLE CITY COUNCIL:

SECTION 1. Springville City approves and adopts the Springville City Water Conservation Plan 2022 and directs public works to submit to the Division of Drinking Water, with Utah State.

SECTION 2. This resolution shall be effective on the date it is adopted.

CORPORATE SEAL SPRINGVILLE, UTAH

Passed this 20th day of December, 2022

Matt Packard, Mayor
Springville City

Attest:

Kim Crane, City Recorder

EXHIBIT A

Springville City Water Conservation Plan 2022

springville
ART CITY

SPRINGVILLE CITY

2022 WATER CONSERVATION PLAN UPDATE

(HAL Project No.: 260.58.100

December 2022

HANSEN ALLEN & LUCE INC
ENGINEERS

SPRINGVILLE CITY

2022 WATER CONSERVATION PLAN UPDATE

(HAL Project No.: 260.58.100)

PROFESSIONAL ENGINEER
12/8/2022
No. 354085-2202
J. LANCE
NIELSEN
STATE OF UTAH

Lance Nielsen, P.E.
Principal, Project Engineer

HANSEN ALLEN & LUCE INC
ENGINEERS

December 2022

ACKNOWLEDGEMENTS

Successful completion of this water conservation plan update was made possible by the cooperation and assistance of many individuals, including the Mayor of Springville, City Council members, and City Staff as shown below. We sincerely appreciate the cooperation and assistance provided by these individuals.

Springville City

Mayor
Matt Packard

City Council
Liz Crandall
Craig Jensen
Jason Miller
Chris Sorensen
Michael Snelson

Public Works Department
Brad Stapley, Public Works Director

Water Department Staff
Shawn Barker, Water Supervisor

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LIST OF TABLES AND FIGURES

CHAPTER 1 – INTRODUCTION

PURPOSE

The purpose of this plan is to assess the water conservation alternatives available to Springville, Utah (the City), to set reasonable and achievable goals to conserve water, and to identify the methods and measures which the City will take to reach these goals. This plan will serve as a guide to maintaining the same level of service to Springville's residents into the future.

This plan addresses future water needs and the City's ability to meet these needs. The City may choose the presented alternatives that best suit their interests, while attaining the selected goals. Once the conservation measures are implemented, the water system will be monitored to ensure that the methods are effective in improving water conservation.

BACKGROUND

Historically, the City has consistently met its primary goal of meeting the water demands for its residents. Engineering, master planning, and good civic leadership have been the keys for keeping the City on track. This plan will serve as a guide to maintaining the same level of service to Springville Residents into the future.

The City of Springville recognizes the need for proactive planning to meet the water needs of its residents. The Utah State Legislature has passed legislation requiring public water suppliers to prepare and periodically update a Water Conservation Plan. This report is an update to the 2016 Water Conservation Plan for the City. Included in this document are descriptions of the drinking water and pressurized irrigation (PI) systems, summaries of water consumption rates, assessments of water conservation alternatives, goals for water conservation, and details for existing and proposed conservation measures for the City.

CHAPTER 2 – EXISTING WATER SYSTEMS

SYSTEM PROFILES

The City is located in southern Utah County, on the eastern side of Utah Lake. The City boundaries include approximately 15 square miles, with an additional annexation area of approximately 17 square miles planned for future acquisition. The City also services some residents in Hobble Creek Canyon, which is outside the City limits.

M&I Water Connections

The City owns and operates both a public drinking water system and a public pressurized irrigation system servicing 9,666 and 1,591 connections respectively (Utah Division of Water Rights, 2022). The City began service for the pressurized irrigation system in 2019 and is actively pursuing growth of the system. A summary of the drinking water system connections for 2005 to 2021 is included in Table 2-1 below.

Table 2-1: Drinking Water Connections

Year	Connection Distribution					Total Connections
	Residential	Commercial	Industrial	Institutional	Other	
2005	93.59%	4.96%	0.48%	0.86%	0.11%	**7,240**
2006	93.43%	5.09%	0.46%	0.90%	0.12%	**7,334**
2007	93.53%	5.04%	0.40%	0.90%	0.13%	**7,664**
2008	93.31%	5.19%	0.39%	0.98%	0.14%	**7,770**
2009	92.48%	5.16%	0.38%	0.99%	0.99%	**7,964**
2010	92.48%	5.16%	0.37%	0.98%	1.01%	**8,084**
2011	92.39%	5.23%	0.33%	1.02%	1.03%	**8,159**
2012	92.22%	5.23%	0.33%	1.16%	1.05%	**8,177**
2013	91.82%	5.42%	0.01%	1.70%	1.05%	**8,471**
2014	92.12%	5.59%	0.09%	1.78%	0.41%	**8,531**
2015	90.76%	5.97%	0.09%	3.18%	-	**8,765**
2016	92.08%	5.84%	0.09%	1.99%	-	**8,685**
2017	93.83%	4.01%	0.09%	2.06%	-	**8,673**
2018	92.43%	5.48%	0.09%	2.00%	-	**8,983**
2019	92.75%	4.91%	0.56%	1.78%	-	**9,099**
2020	92.74%	4.93%	0.62%	1.70%	-	**9,344**
2021	92.76%	4.98%	0.60%	1.67%	-	**9,666**

Source: Utah Division of Water Rights

As shown in Table 2-1, most of the drinking water system connections are residential; while not shown in any table or figure, this is also the case for the pressurized irrigation system. The "other" category of service connections in Table 2-1 includes stock, wholesale, miscellaneous, and unmetered connections. The City has made efforts to install meters on unmetered connections, and as of 2016, no unmetered connections have been reported to the Division of Water Rights. Water meters are read monthly, March through October, and are replaced on an as-needed basis.

In 2019, the City began reporting service for customers within the pressurized irrigation system to the Division of Water Rights. The pressurized irrigation system currently only serves the newer developments on the west side of the City. Since the PI service began, the City has expanded it rapidly, with the total number of connections growing from 894 in 2019 to 1,399 in 2021 (Utah Division of Water Rights, 2022). Figure 2-1 shows a chart of the total service connections for both the drinking water system and pressurized irrigation system from 2005 to 2021.

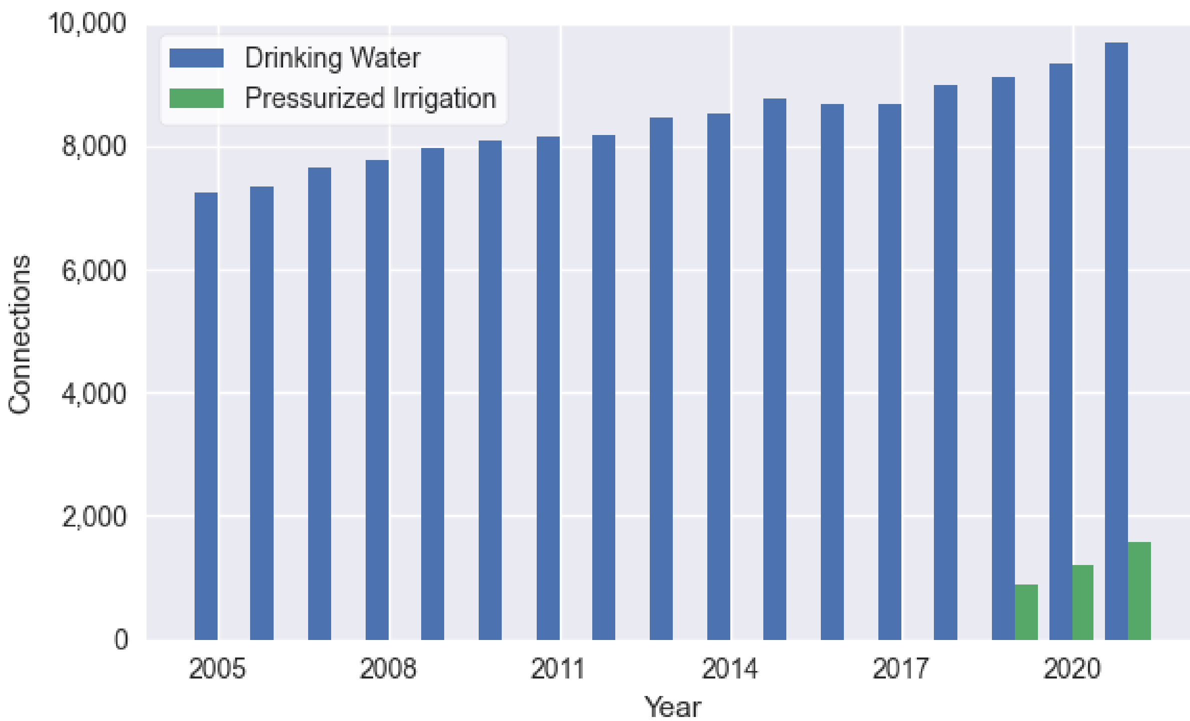
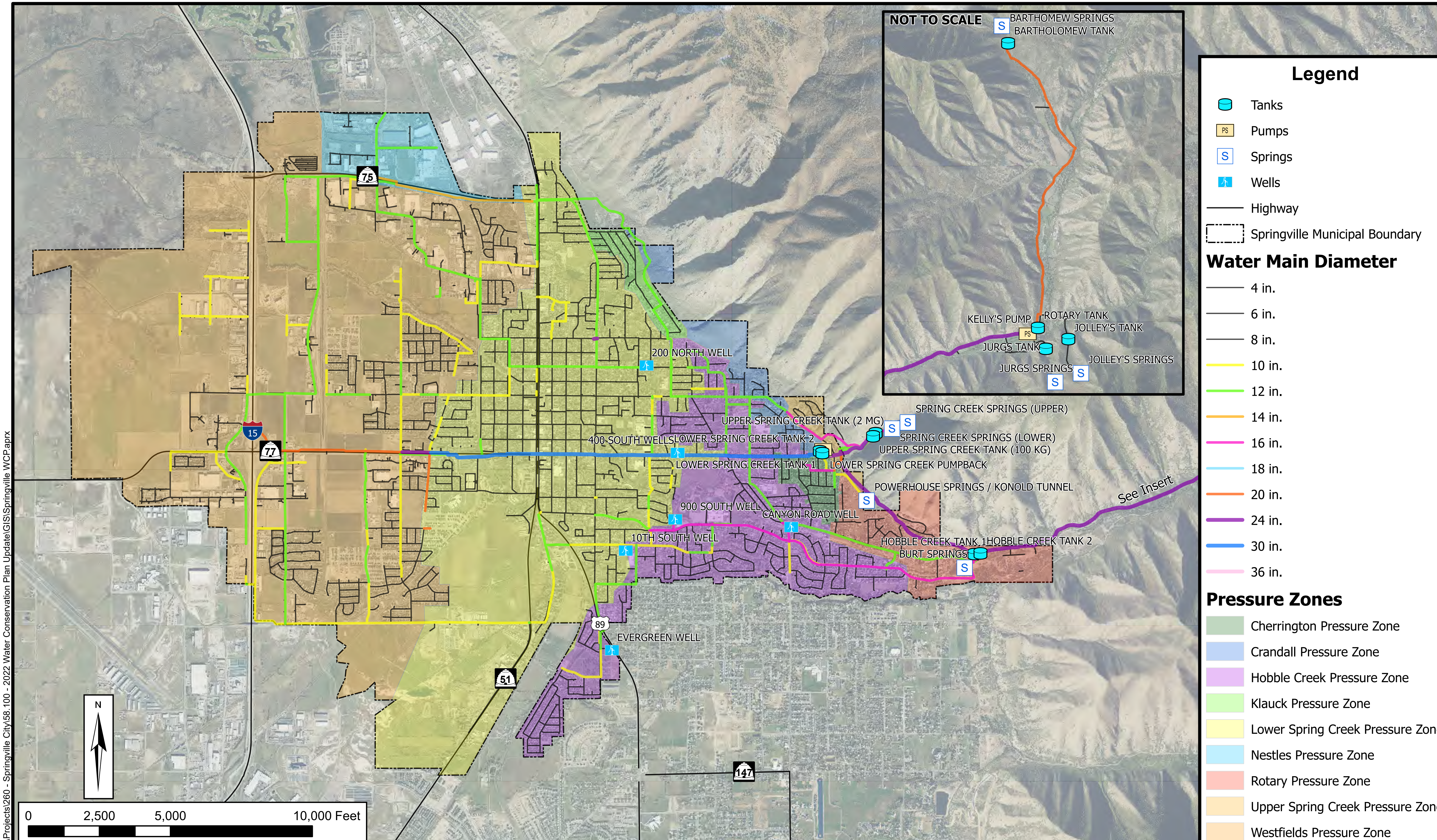


Figure 2-1: Total Service Connections

INVENTORY OF WATER RESOURCES

The drinking water system consists of nine main pressure zones and services the residents of Springville City and a small number of the residents in Hobble Creek Canyon. There is a total of seven wells and four springs which supply water for the drinking water system. The City uses eight storage tanks for drinking water storage. Figure 2-2 shows a map of the drinking water system.

The pressurized irrigation system primarily uses Hobble Creek, Burt Springs, and Strawberry Reservoir as water sources, with a small amount of water source coming from Jurd Spring (a.k.a. Jurg Spring), which flows into the middle reach of Hobble Creek. The Industrial Park Well (an artesian well) flows into little Spring Creek. The water from the Industrial Park Well is subsequently drawn from Little Spring Creek to service an industrial customer’s outdoor irrigation. Figure 2-3 shows a map of the pressurized irrigation system.

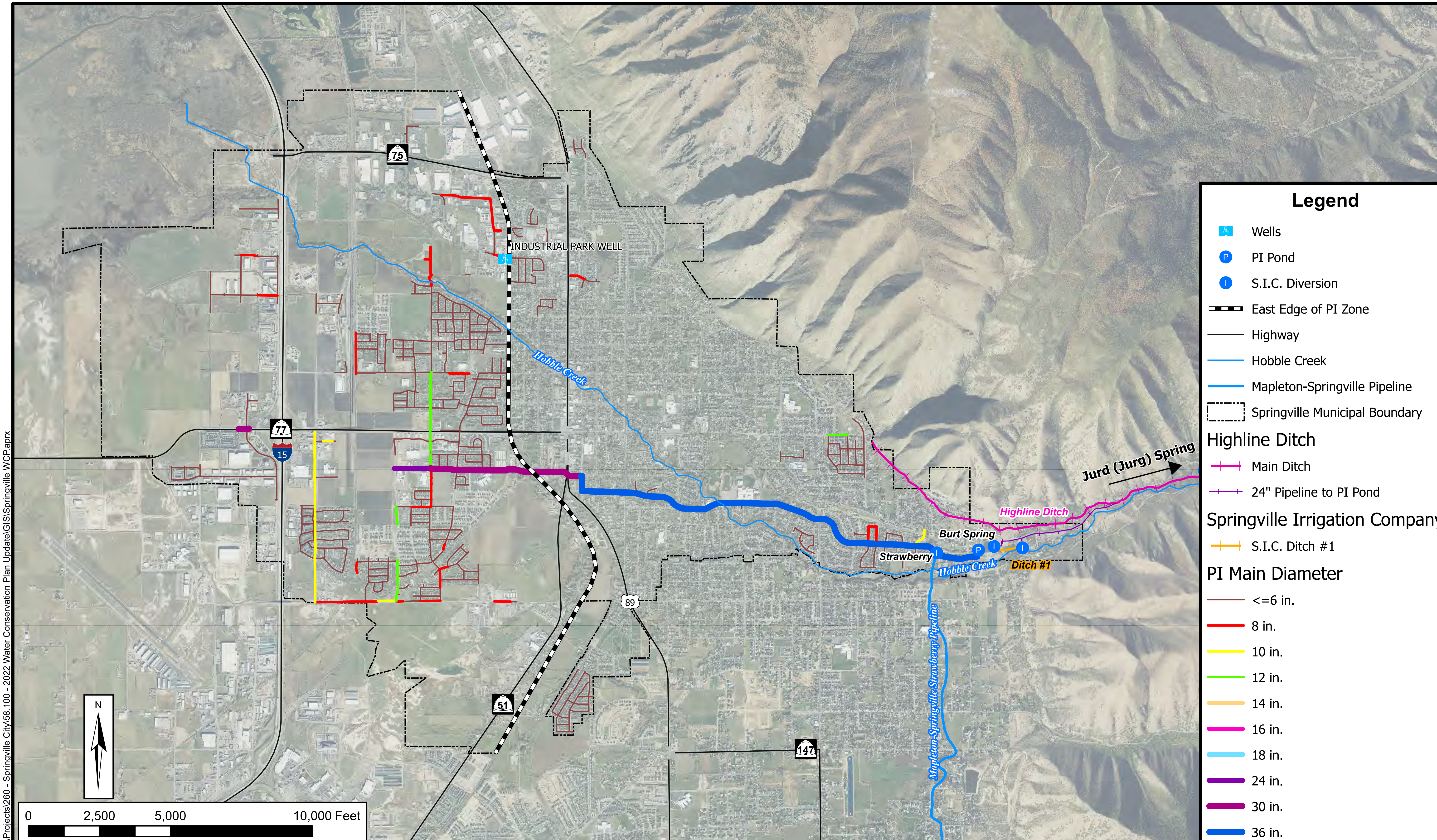


HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE
2022 WATER CONSERVATION PLAN UPDATE

DRINKING WATER SYSTEM

FIGURE 2-2



Date: 10/26/2022
Document Path: H:\Projects\260 - Springville City\58.100 - 2022 Water Conservation Plan Update\GIS\Springville WCP.aprx

HANSEN ALLEN & LUCE INC ENGINEERS

SPRINGVILLE
2022 WATER CONSERVATION PLAN UPDATE

PRESSURIZED IRRIGATION SYSTEM

FIGURE 2-3

WATER RIGHTS

The 2020 Drinking Water Master Plan identifies the water rights currently held by the City and potential water rights the City could acquire in the future. The City currently has a total of 15,831 acre-feet of water rights available for use in the drinking water system. Table 2-2 below is from the 2020 Drinking Water Master Plan and summarizes the drinking water rights currently owned by the City (Hansen, Allen & Luce, Inc. 2020). It should be noted that some of these water rights are used in the pressurized irrigation system as it uses a small amount of water from Jurd Spring and the Industrial Park Well.

Table 2-2: Culinary Water Rights

Water Right(s)	Flow (gpm)	Volume (Acre-feet)	Source
51-111 (a26443) Includes 51-6666, 51-6990, 51-7242	198	103	City Wells
51-1455 (a28365) Includes 51-1486, 51-1493	4,937	7,964*	City Wells
51-2530 (a29656) Includes 51-3679	2,703	144	City Wells
51-2780 (a28366)	1,346	439	City Wells
51-5450 (a40919)	1,333	14	City Wells
51-6970 (a28367) Includes 51-1024, 51-1025, 51-1088	1,472	1,746	City Wells
51-8641	35	33	City Wells
51-8793 (a43986)	9	14	City Wells
51-5329	1,300	2,069**	Burt Springs
51-5330	180	290*	Konold Springs
51-5520	662	1,068#	Bartholomew Springs
51-6027	1,200	1,947##	Spring Creek Canyon Springs
Total	**15,375**	**15,831**	

Source: 2020 Drinking Water Master Plan
* Potential volume if sources are able to produce designated flow rate year-round. Actual volume may be limited by either source capacity (i.e., a spring may not be able to produce the designated flow rate year-round) or by demand.
** W.U.C. indicates that 8 cfs is diverted 24 hours for 5 days out of each 8-1/3 days from April 1 to October 31. This would equal 128.45 days with an estimated volume of 2,038.24 ac-ft.
# Springville Irrigation Company water right used by Springville City based on City ownership of 267 shares. Each share equals 4 ac-ft resulting in an annual volume of 1,068 ac-ft.
10-year average yield of the spring from 1999 – 2009

Springville City, in conjunction with Springville Irrigation Company, own water rights for use in the pressurized irrigation system. There is a total of 3,097 acre-feet of water rights available for use in the pressurized irrigation system according to the 2020 Pressurized Irrigation Water Master Plan. Table 2-3 is taken from the 2020 Pressurized Irrigation Water Master Plan and shows a summary of the water rights used in the pressurized irrigation system (Hansen, Allen & Luce Inc., 2020).

Table 2-3: PI Water Rights

Water Right	Flow (gpm)	Volume (Acre-feet)	Source
Strawberry Water Shares (Springville Irrigation Company)	3,000	1,970	Springville/Mapleton Strawberry Pipeline
Springville Irrigation Company Shares (Non-Strawberry Water)	645	513	Springville Irrigation Ditch #1
51-6025	627	499	Hobble Creek/ Highline Ditch
51-6219	145	115	Hobble Creek/ Highline Ditch
Total	**4,417**	**3,097**	

Source: 2020 Pressurized Irrigation Water Master Plan
* Flow and volume for each water right is estimated based on the Division of Water Rights database and City records.

RELIABLE WATER SUPPLY

The City's annual reliable water supply is comprised of the combined volume of the drinking water and pressurized irrigation system water rights. In addition to the current water supply, additional water will become available to the City when the Utah Lake Drainage Basin Water Delivery System of the Bonneville Unit of the Central Utah Project (ULS) is complete. This additional water will be used in the pressurized irrigation system.

ULS Pipeline

Through a petition agreement between the Central Utah Water Conservancy District (CUWCD) and the South Utah Valley Municipal Water Association (SUVMWA), the City is obligated to purchase 4,945 acre-feet of ULS water. The pipeline to Springville is complete, with pipelines to the remaining SUVMWA cities finishing as early as 2025. When the remaining SUVMWA pipelines are completed, the City will be obligated to start purchasing water from the ULS pipeline. The 2020 Pressurized Irrigation Master Plan has more details regarding use of the ULS pipeline water (Hansen, Allen & Luce, 2020). Table 2-4 shows the reliable water supply for the City with the additional ULS water.

Table 2-4: Reliable Water Supply

System	Annual Capacity (Acre-feet)
Drinking Water System	15,831
Pressurized Irrigation System	3,097
Total	**18,928**
ULS Water	4,945
Total with ULS Water	**23,873**

HISTORICAL SUPPLY

The City uses seven wells and four springs to supply drinking water to the drinking water system. Over time, the production of well water has increased while the production of spring water has decreased. Prior to 2015, a majority of the water supplied to drinking water system was through springs. Currently, the majority of the water supplied to the drinking water system is from wells. Table 2-5 summarizes the historical water supply for the drinking water system.

Table 2-5: Historical Drinking Water Supply

Year	Water Supplied (Acre-feet)		Total
	Springs	Wells	
2005	8,142.93	2,136.61	**10,279.54**
2006	14,714.38	1,500.62	**16,215.00**
2007	6,719.66	5,895.96	**12,615.62**
2008	5,054.43	4,696.21	**9,750.64**
2009	4,786.38	1,899.80	**6,686.18**
2010	3,448.20	3,193.15	**6,641.35**
2011	5,269.03	1,905.68	**7,174.71**
2012	4,823.95	5,080.97	**9,904.92**
2013	4,344.91	5,746.27	**10,091.18**
2014	5,251.69	3,755.31	**9,007.00**
2015	3,484.88	4,818.24	**8,303.12**
2016	3,219.00	5,207.47	**8,426.47**
2017	3,338.00	3,906.00	**7,244.00**
2018	2,801.00	4,818.63	**7,619.63**
2019	3,278.86	3,218.00	**6,496.86**
2020	2,868.64	6,195.78	**9,064.42**
2021	2,578.00	6,020.73	**8,598.73**

Source: Utah Division of Water Rights

The majority of the water supplied to the pressurized irrigation system comes from Hobble Creek, Burt Springs, and Strawberry Reservoir, with some additional supply from Jurd Spring and the Industrial Park Well. Since the pressurized irrigation system is new, historical data for the system is limited to 2016. The water for the pressurized irrigation system is stored in the Bartholomew Pond which has a capacity of 32 acre-feet. Table 2-6 shows the historical water supply for the pressurized irrigation system.

Table 2-6: Historical PI Water Supply

Year	Water Supplied (Acre-feet)			Total
	Surface Water	Industrial Park Well*	Jurd Spring	
2016	1,120.94	0.00	0.00	**1,120.94**
2017	1,634.88	0.00	0.00	**1,634.88**
2018	1,902.87	0.00	0.00	**1,902.87**

Year	Water Supplied (Acre-feet)			Total
	Surface Water	Industrial Park Well*	Jurd Spring	
2019	1,647.38	0.00	0.00	**1,647.38**
2020	2,327.11	8.04	112.89	**2,448.04**
2021	2,328.31	8.04	82.75	**2,419.10**

Source: Utah Division of Water Rights

* The Utah Division of Water Rights refers to this well as the Treatment Plant Well

CHAPTER 3 – WATER USE

PER CAPITA WATER USE

A useful way of measuring water usage is in gallons per capita per day (gpcd). This expression is calculated by dividing annual water use by the service area population. Expressing water use in this manner gives an estimate for the average amount of water used by an individual on a daily basis. Since the City operates both a drinking water system and a pressurized irrigation system, the per-capita usage was calculated for both systems. The Division of Water Rights stores annual use data on their database. Per-capita usage rates were calculated for both systems from 2005 to 2021 (data for the pressurized irrigation system is only available from 2019 since service started that year). The combined per-capita usage rates from 2005 to 2021, along with the regional conservation goals are shown in Figure 3-1.

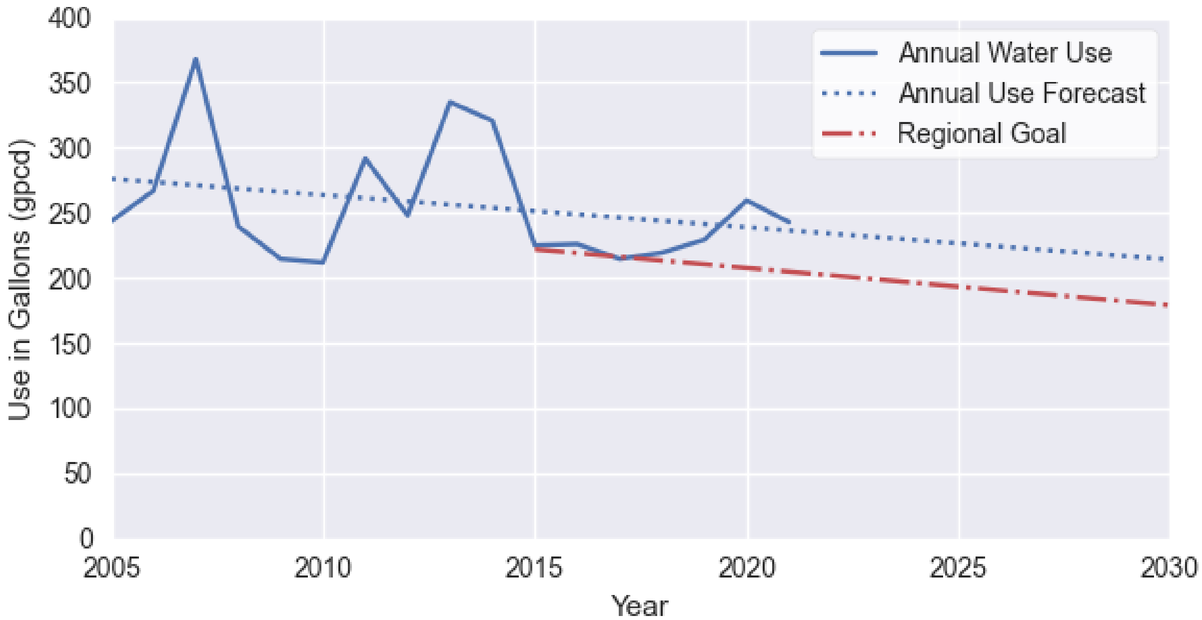


Figure 3-1: Historical Per-Capita Water Use

FUTURE WATER NEEDS

The City, much like the rest of Utah County, is expected to grow substantially over the next several years. The population in 2021 was 36,565 (Utah Division of Water Rights, 2022). The Drinking Water Master Plan projected that the population would reach approximately 45,000 by 2030 and 62,000 by 2060 (Hansen, Allen & Luce, 2020).

The 5-year average water use for 2016 to 2021 is 233.14 gallons per capita per day. This value was used to project the water demand for the City by multiplying it with the population projections from the Drinking Water Master Plan. Figure 3-2 compares the annual and projected water use from 2005 to 2060 with the reliable water supply (discussed in Chapter 2) and the efficient water use for the Provo River region. The efficient water use was calculated with the reduction goals included in Utah's Regional M&I Water Conservation Goals. This report establishes the Provo

River regional goals of 179 gpcd water use by 2030 and 162 gpcd by 2040 (HAL & BCA, 2019). These goals are discussed further in Chapter 5.

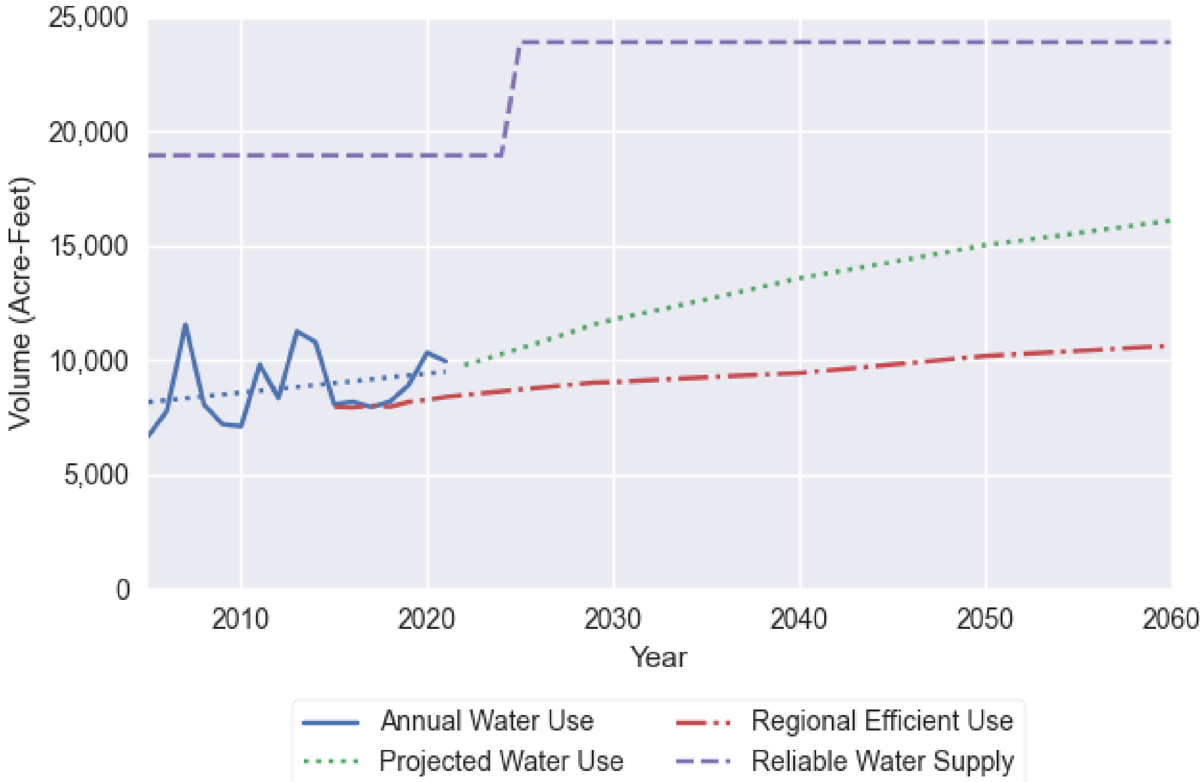


Figure 3-2: Water Use Projections

The regional efficient use as shown in Figure 3-2 was calculated by applying the Provo River regional conservation goals to the population projection for the City. The Provo River regional goals for 2015, 2030, and 2040 are 222, 179, and 162 gpcd, respectively. The raw data for the calculations shown in Figure 3-2 is included in Appendix A.

Although the per-capita water use rate for the City is trending downward, as shown in Figure 3-1, the annual water use volume has been steadily increasing since 2005. This is expected as the population of Springville has been growing rapidly. Figure 3-2 shows a diverging trend for the projected water use and regional efficient water use projection. The City should aim to have these curves converge so that future water use can meet the regional efficient water use goals.

Figure 3-2 also shows that the projected water use is not expected to exceed the City's reliable water supply. In the off-chance that demand does exceed water supply, the City has identified ways to acquire additional water rights in both the 2020 Drinking Water Master Plan and the Pressurized Irrigation Master Plan.

CHAPTER 4 – WATER & REVENUE LOSS CONTROL

WATER LOSS

Every water system experiences some type of water loss. Water is often lost through pipe leaks or breaks, hydrant flushing, construction water, waste pumping, and unmetered connections. According to a study done by the EPA, public water systems lose an average of 16%, and some Utah systems are known to lose 30% or more of their water (EPA, 2017). Water loss is not only a loss of a valuable resource, it also may lead to revenue and energy loss. Preventing and mitigating water loss should be a high priority for public water systems.

The Division of Water Rights reports estimated water loss on their database for public water suppliers. The reported data for the City's drinking water system shows that the estimated water loss has reduced since 2005. The City has made considerable efforts to reduce water loss by upgrading infrastructure and installing water meters on unmetered connections. Unfortunately, since the pressurized irrigation system is new, estimated water loss records are not available at this time. These records will become available as the City installs more water meters for the pressurized irrigation system. Table 4-1 and Figure 4-1 show the comparison of drinking water used with the amount produced from 2005 to 2021.

Table 4-1: Historical Drinking Water Loss

Year	Total Retail Use (Acre-feet)	Total From Sources (Acre-feet)	Estimated Water Loss
2005	6,682.35	12,274.54	**45.56%**
2006	7,774.74	18,162.25	**57.19%**
2007	11,545.60	14,455.42	**20.13%**
2008	8,052.75	11,317.17	**28.84%**
2009	7,196.46	8,802.04	**18.24%**
2010	7,107.06	8,403.86	**15.43%**
2011	9,800.03	9,829.24	**0.3%**
2012	8,330.18	11,896.04	**29.98%**
2013	11,253.91	11,285.67	**0.28%**
2014	10,776.99	10,563.13	**-2.02%**
2015	8,059.70	9,798.88	**17.75%**
2016	8,172.75	10,075.47	**18.88%**
2017	7,946.76	9,438.00	**15.8%**
2018	8,179.66	9,576.63	**14.59%**
2019	8,052.00	8,873.86	**8.92%**
2020	9,167.81	11,150.42	**17.5%**
2021	8,189.53	9,368.00	**12.33%**

Source: Utah Division of Water Rights

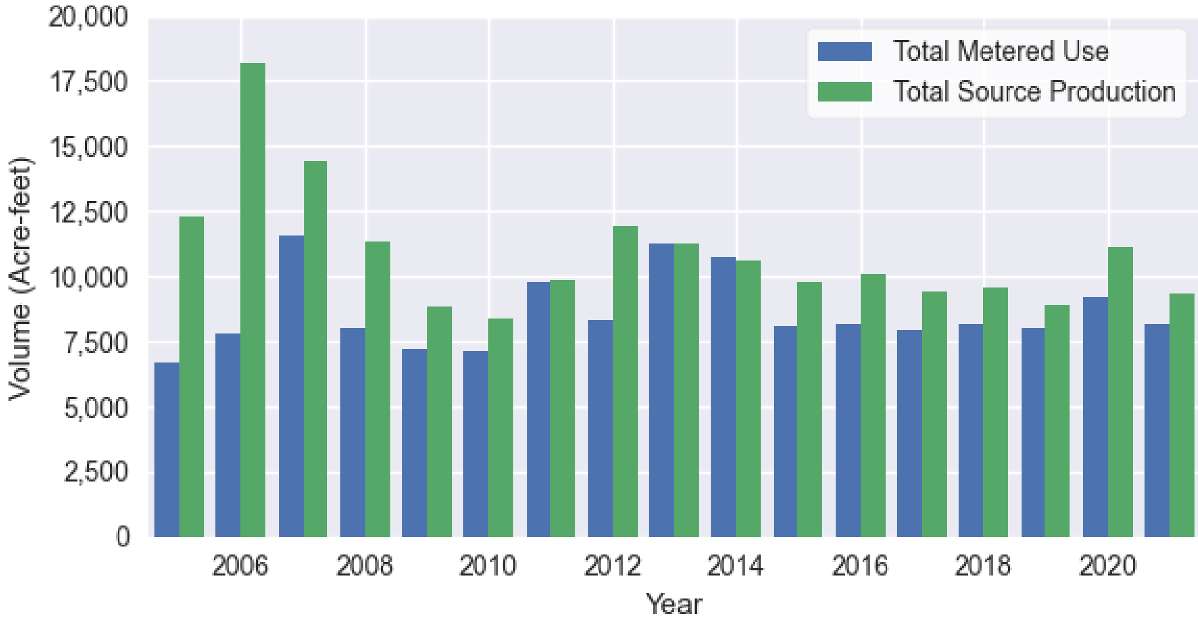


Figure 4-1: Historical Drinking Water Production & Use

BILLING RATES

To promote water conservation, the City has enforced tiered water rates for customers for both the drinking water system and the pressurized irrigation system. The City encourages customers to utilize the pressurized irrigation system, if they are able to, by slightly increasing drinking water rates and offering lower irrigation water rates for those customers. Tables 4-2 and 4-3 show the City's current water rates. Residential water meters are read in the months of March through October. All other months are billed at the minimum fee of $16.32 per month, with an additional fee of $1.21 for each 1,000 gallons used above 5,000 gallons.

Table 4-2: Drinking Water Rates

Fee		Description
If PI is Not Used	If PI is Used	
$16.32	$16.32	Minimum monthly fee.
$1.00	$1.13	For each 1,000 gallons or portion thereof between 5,001 and 12,000 gallons.
$1.32	$1.49	For each 1,000 gallons or portion thereof between 12,001 and 20,000 gallons.
$1.64	$1.85	For each 1,000 gallons or portion thereof between 20,001 and 40,000 gallons.
$1.95	$2.20	For each 1,000 gallons or portion thereof between 40,001 and 60,000 gallons.
$2.22	$2.50	For each 1,000 gallons or portion thereof between 60,001 and 100,000 gallons.
$3.01	$3.39	For each 1,000 gallons or portion thereof between 100,001 and 150,000 gallons

Fee		Description
If PI is Not Used	If PI is Used	
$3.43	$3.87	For each 1,000 gallons or portion thereof between 150,001 and 200,000 gallons
$4.22	$4.76	For each 1,000 gallons or portion above 200,000 gallons.

Source: Springville 2022-2023 Comprehensive Fee Schedule

Table 4-3: Pressurized Irrigation Rates

Fee	Description
No Charge	For the first 5,000 gallons
$0.91	For each 1,000 gallons or portion thereof between 5,001 and 20,000 gallons.
$1.43	For each 1,000 gallons or portion thereof between 20,001 and 60,000 gallons.
$1.90	For each 1,000 gallons or portion thereof between 60,001 and 100,000 gallons.
$2.38	For each 1,000 gallons or portion thereof between 100,001 and 150,000 gallons.
$2.85	For each 1,000 gallons or portion thereof between 150,001 and 200,000 gallons.
$3.80	For each 1,000 gallons or portion above 200,000 gallons.

Source: Springville 2022-2023 Comprehensive Fee Schedule

CHAPTER 5 – CONSERVATION GOALS & PRACTICES

The City is aware of the need for water conservation and is committed to improve water conservation efforts. City staff are aware of the water conservation goals and work to together to achieve them. The Public Works Director is responsible for overseeing water conservation efforts.

Brad Stapley
Public Works Director
801-489-2711

IDENTIFIED PROBLEMS

The following issues were identified in the 2016 Water Conservation Plan. These issues are still priorities for the City.

- "The City is seeing a change in demographics as their agricultural areas turn into residential subdivisions. This change emphasizes the need to inform all residents, but especially new residents, about indoor conservation practices. Residents lack information and understanding of landscaping water requirements and efficient water-use habits and practices.
- Along with indoor use, residential outdoor use is also a large concern. It is well documented that water used to irrigate turf grass drives summer water use to its peak during the summer months. Much of the City's clean culinary water is [not used efficiently] through over watering. Most residents' irrigation practices are based on convenience rather than plant needs.
- Springville City has many aging water lines that are contributing to the water losses seen in the City" (Springville City, 2016).

WATER CONSERVATION GOALS

Provo River Regional Goals

Utah's Regional M&I Water Conservation Goals establishes water conservation goals for the major river basins, referred to as regions, in the state. Since the Provo River Region is highly populated, it has some of the strongest conservation goals compared to the other regions. By 2030 the water conservation goal for the Provo River Region is 179 gpcd, which is a 20% reduction from the 2015 goal of 222 gpcd (HAL & BCA, 2019). Table 5-1 summarizes the regional conservation goals and the percentage reduction from the 2015 goal.

Table 5-1: Provo River Region Conservation Goals

Year	Conservation Goal (gpcd)	Reduction from 2015 Baseline
2015	222 (Baseline)	N/A
2030	179	20%
2040	162	27%
2065	152	32%

Source: *Utah's Regional M&I Water Conservation Goals*

Springville City Water Conservation Goals

The City has set a goal to continue current water conservation trends until 2030. Following the Annual Use Forecast series in Figure 3-1, the forecasted water use rate in 2030 is 214 gpcd which is a 4.89% reduction from the 2015 rate of 225 gpcd. This forecast is based on data provided by the Division of Water Rights. The City should periodically monitor water use rates to ensure that this water conservation goal is met. The City plans to reevaluate the 2030 and future goals in subsequent updates to this water conservation plan.

Table 5-2: Springville City Conservation Goals

Year	Conservation Goal (gpcd)	Reduction from 2015 Baseline
2015	225 (Baseline)	N/A
2030	214	4.89%

In addition to the water conservation goals listed in Table 5-2, the City has continued the following conservation goals from the 2016 Water Conservation Plan:

- “Continue to support the current conservation measures that have brought the City success in reducing the water used…
- Inform residents of water conservation practices for indoor and outdoor use.
- Conserve culinary water by using secondary water for irrigation per the City’s master plans.
- Continue the City’s existing aging water meter replacement program” (Springville City, 2016).

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are the practices adopted by public water suppliers and water conservation districts to conserve water use within their respective service areas.

Existing Best Management Practices

In previous water conservation plans, the City has implemented aggressive water conservation measures that have proven to be successful. The following BMPs have already been implemented by the City in previous water conservation plans:

- “Promoting the ‘Slow the Flow Program’ sponsored by the State, which includes educational brochures, free water audits and checks, and free water wise landscaping seminars…
- Requiring low flow indoor fixtures as required in the plumbing code on all new construction.
- Using, evaluating, and periodically refining the water rates structure that charges users using a tiered rate structure which both promotes water conservation and continues to keep the water system viable.
- Replacing galvanized steel water service lines with copper and polyethylene pipe.
- Performing leak-detection testing for all water lines prior to new overlays of asphalt.

- Performing annual leakage surveys to identify unsurfacing leaks on main pipelines and services, especially in older areas of the water system.
- Replacing water meters with new, more efficient meters.
- Implementing a pressurized irrigation (secondary water) system with metered services in the developing western portion of the community" (Springville City, 2016).
- Meter replacement program for aging water meters.

Since the 2016 Water Conservation Plan, the City has also implemented the following BMPs:

- Continue and expand leak detection efforts by hiring a leak detection company.
- Offer opportunities for residents to submit complaints about water waste.
- Receive a weekly water waste report from the Utah Division of Water Resources.
- Continue installing water meters for the pressurized irrigation system

Proposed Best Management Practice

The BMPs implemented in previous water conservation plans have helped the City achieve previous water conservation goals. The City will need to implement additional BMPs to meet the water conservation goal discussed previously. The following BMPs are proposed for the City to adopt, any combination of these BMPs can be adopted as the City sees fit. Additional BMPs which the City may also consider are included in Appendix B.

- Enact a time-of-day watering ordinance
- Enact a water-efficient landscape ordinance for new commercial developments

The City encourages residents to limit outdoor watering between 10 am and 6 pm; however, city ordinances do not currently restrict water use. Enacting a city ordinance that prohibits outdoor irrigation times during summer months would further enable the City to enforce water conservation for residents and commercial developments.

In addition to a time-of-day watering ordinance, the City may enact an ordinance which requires water-efficient landscaping for new commercial developments. While it is true that most of the water use is residential, reducing water use in all categories is critical for meeting water conservation goals. By requiring commercial developments to use water-efficient landscaping, the City may be able to reduce water use for commercial connections.

Table 5-2 shows a summary of all BMPs that the City has and can implement to reach their water conservation goals.

Table 5-2: Best Management Practices

Best Management Practice	Description
Existing BMPs	
Promote the "Slow the Flow Program"	Promote the "Slow the Flow Program" sponsored by the state to residents. Encourage them to take advantage of the opportunities the program provides.
Require Low Flow Indoor Fixtures	Require low flow indoor fixtures on all new construction in city code.

Best Management Practice	Description
Tiered Water Rate Structure	Continue to use and periodically refine the tiered water rates for both water systems.
Replace Galvanized Steel Lines	Continue replacing galvanized steel water service lines with copper and polyethylene pipe, as necessary.
Leak Testing	Continue to test for leaks in all water lines before overlaying asphalt.
Annual Leak Surveys	Perform annual leak surveys to test for unsurfacing leaks, especially in older parts of the water system.
Meter & Pipe Replacement Program	Continue to replace aging meters and pipelines throughout the drinking water system. Install more efficient water meters when replacing old meters which do not meet American Water Works Association Standards.
Pressurized Irrigation System	Continue to expand the pressurized irrigation system according to city master plans.
Professional Leak Detection	Continue to hire a leak detection company to expand leak detection efforts.
Water Waste Complaints	Encourage residents to notify the City of water waste. Respond to the complaints when possible.
Weekly Water Waste Report	Receive the weekly water waste report from the Division of Water Resources. Act on any recommendations or issues raised in the reports.
Pressurized Irrigation Meters	Continue installing efficient water meters in the pressurized irrigation system as the system expands.
Proposed BMPs	
Enact a Time-of-Day Watering Ordinance	Enact a city ordinance which restricts outdoor irrigation from 10 am to 6 pm during summer months.
Enact a Water-Efficient Landscape Ordinance	Enact a city ordinance which requires new commercial developments to use water-efficient landscaping.
Additional Water Conservation Measures	Consider implementing other conservation measures included in Appendix B.

CHAPTER 6 – IMPLEMENTATION PLAN

This Water Conservation Plan renews the existing water conservation measures for at least the next five years. Existing and proposed water conservation measures will be implemented according to Table 6-1. Additional conservation measures the city may choose to adopt are included in Appendix B.

Table 6-1: Implementation Plan

Conservation Measure	Implementation Plan
Existing Conservation Measures	
Promote the “Slow the Flow Program”	Continue promoting the “Slow the Flow Program” to city residents. • Print and deliver fliers during periods of high use. • Advertise classes and events on social media, city websites, and by email.
Require Low Flow Indoor Fixtures	Require low flow indoor fixtures in the pluming code on all new construction and developments. Require the following fixtures be fitted with low flow variants: • Shower heads • Sink faucets • Toilets
Tiered Water Rate Structure	Continue using and updating the tiered water rate structure for both the drinking water and pressurized irrigation systems. • Consider water conservation goals during annual review of water rates.
Leak Testing	Continue testing for leaks in all water lines before overlaying asphalt. • Perform annual leak surveys. • Continue hiring a professional leak detection company.
Meter & Pipe Replacement Program	Continue replacing galvanized steel lines with copper and polyethylene pipe. • Continue replacing aging meters and pipelines throughout the drinking water system. • Install efficient water meters when replacing old meters which do not meet City standards.
Pressurized Irrigation System	Expand the pressurized irrigation system by implementing master plan projects.
Water Waste Complaints	Continue providing means for residents to submit complaints about wasted water throughout the City. • Follow up with complaints to ensure that responsible parties are held accountable. • Consider imposing fines for repeated counts of wasted water.
Weekly Water Waste Report	Continue to review weekly water waste reports from the Division of Water Resources.

Conservation Measure	Implementation Plan
Pressurized Irrigation Meters	Continue to install efficient water meters throughout the pressurized irrigation system as it expands. • Replace existing meters on an as-needed basis.
Proposed Conservation Measures	
Time-of-Day Watering Ordinance	• Enact a city ordinance which restricts outdoor watering from 10 am to 6 pm during summer months. • Consider imposing fines for repeat violators.
Water-Efficient Landscape Ordinance	Enact a city ordinance which requires new commercial developments to use water-efficient landscaping. Examples include: • Providing a Pressurized Irrigation connection for eligible developments • Using native, low-water plants • Using drip irrigation • Xeriscaping when appropriate
Additional Water Conservation Measures	Consider implementing other conservation measures included in Appendix B.

REFERENCES

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APPENDIX A

WATER USE PROJECTIONS

Year	Population	(Acre-feet) DW Use	(Acre-feet) PI Use	(Acre-feet) Total Use	(GPCD) Per-Capita	(GPCD) 5-Year Avg.	(Acre-feet, using 2021 5-year average) Projected Use	(GPCD) Regional Goal	(Acre-feet) Efficient Use	(Acre-feet) Water Supply
2005	24,500	6,682.35		6,682.35	243.49					18,928
2006	26,000	7,774.74		7,774.74	266.96					18,928
2007	28,000	11,545.60		11,545.60	368.12					18,928
2008	30,000	8,052.75		8,052.75	239.63					18,928
2009	29,930	7,196.46		7,196.46	214.65	266.57				18,928
2010	29,930	7,107.06		7,107.06	211.99	260.27				18,928
2011	30,000	9,800.03		9,800.03	291.63	265.20				18,928
2012	30,000	8,330.18		8,330.18	247.89	241.16				18,928
2013	30,000	11,253.91		11,253.91	334.89	260.21				18,928
2014	30,000	10,776.99		10,776.99	320.70	281.42				18,928
2015	31,982	8,059.70		8,059.70	224.98	284.02		222	7,952	18,928
2016	32,286	8,172.75		8,172.75	225.99	270.89		219	7,924	18,928
2017	33,044	7,946.76		7,946.76	214.70	264.25		216	8,004	18,928
2018	33,294	8,179.66		8,179.66	219.33	241.14		213	7,957	18,928
2019	34,632	8,052.00	845.54	8,897.54	229.36	222.87		211	8,166	18,928
2020	35,504	9,167.81	1,150.09	10,317.90	259.44	229.76		208	8,258	18,928
2021	36,565	8,189.53	1,757.85	9,947.38	242.87	233.14		205	8,387	18,928
2022	37,448						9,778.17	202	8,469	18,928
2023	38,353						10,014.43	199	8,551	18,928
2024	39,280						10,256.40	196	8,631	18,928
2025	40,229						10,504.22	193	8,711	23,873
2026	41,201						10,758.02	190	8,789	23,873
2027	42,197						11,017.96	188	8,866	23,873
2028	43,216						11,284.18	185	8,941	23,873
2029	44,260						11,556.83	182	9,015	23,873
2030	45,078						11,770.31	179	9,037	23,873
2031	45,724						11,938.99	177	9,079	23,873
2032	46,379						12,110.08	176	9,121	23,873
2033	47,044						12,283.63	174	9,162	23,873
2034	47,718						12,459.67	172	9,203	23,873
2035	48,402						12,638.23	171	9,243	23,873
2036	49,096						12,819.34	169	9,282	23,873
2037	49,799						13,003.05	167	9,320	23,873
2038	50,513						13,189.40	165	9,357	23,873
2039	51,237						13,378.41	164	9,394	23,873
2040	51,971						13,570.14	162	9,429	23,873
2041	52,499						13,708.03	162	9,502	23,873
2042	53,033						13,847.32	161	9,574	23,873
2043	53,571						13,988.02	161	9,648	23,873
2044	54,116						14,130.16	160	9,722	23,873
2045	54,666						14,273.74	160	9,796	23,873
2046	55,221						14,418.78	160	9,871	23,873
2047	55,782						14,565.29	159	9,946	23,873
2048	56,349						14,713.29	159	10,022	23,873
2049	56,922						14,862.79	158	10,098	23,873
2050	57,500						15,013.82	158	10,175	23,873
2051	57,897						15,117.58	158	10,219	23,873
2052	58,298						15,222.07	157	10,264	23,873
2053	58,700						15,327.27	157	10,309	23,873
2054	59,106						15,433.21	156	10,353	23,873
2055	59,515						15,539.87	156	10,398	23,873
2056	59,926						15,647.28	156	10,443	23,873
2057	60,340						15,755.42	155	10,488	23,873
2058	60,757						15,864.32	155	10,534	23,873
2059	61,177						15,973.96	154	10,579	23,873
2060	61,600						16,084.37	154	10,625	23,873

APPENDIX B

ADDITIONAL WATER CONSERVATION MEASURES

Conservation Best Management Practices (BMP's)

Water Conservation Coordinator, Committee or Team
Hire or designate a Water Conservation Coordinator.
Create a committee/team/board with a chair that includes a combination of the following participants; Water Conservation Coordinator, Public Works Director, City Council Member, and/or applicable local advocacy group member to help research, coordinate, create and implement public information campaign(s), water conservation programs and incentives.
Water Conservation Plan (WCP)
Develop a WCP. More information at www.conservewater.utah.gov/wcp.html.
Provide contact information, system profile, water use history and detail specific ongoing and new conservation programs.
Public Awareness & Public Outreach
Develop or utilize existing messaging from Slow The Flow, Water Resources, CWEL and WaterSense.
Display educational materials & resources on agency website(s), social media & bills.
Offer agency materials and resources to community partners for distribution.
Hold or collaborate events, programs and/or presentations.
Education & Training
Provide adult efficient water use education and training. Or, direct them to available local training(s) such as Localscapes.
Provide or support youth education programs for elementary school students.
Provide or recommend a waterwise demonstration garden.
Educate customers about new water-saving technology. Example: weather based smart controllers.
Provide new homeowner water-efficient landscape information.
Participate and promote large efficient landscape training and programs: https://www.qwelutah.com/training/
Create and/or distribute "how to videos". Example: switching to drip.
Rebates | Incentives |Rewards
Offer or collaborate on rebates for high efficiency appliances, fixtures, irrigation smart controllers, drip irrigation, nozzles, shut off hose valves, and landscape conversions.
Promote rebates offered in your service area

Conservation Best Management Practices (BMP's)

Public Involvement
Offer or collaborate on residential water audit programs.
Offer or collaborate on landscape consultation programs.
Offer residential water budgeting programs.
Offer indoor and outdoor retrofit kits.
Perform outdoor high water use inquiries and resolution techniques.
Address water waste complaints
Identify structures built before 1992 and organize low efficiency fixture replacements.
Ordinances & Standards
Adopt a time-of-day watering ordinance. Example: no watering between 10-6pm and alternating watering days
Adopt an ordinance requiring a water-efficient landscaping in all new residential developments.
Review existing plumbing codes and revise them as necessary to ensure water-conserving measures in all new construction.
Adopt an ordinance requiring water-efficient landscaping in all new commercial development.
Change business license requirements to require water reuse and recycling in new facilities.
Mandate retrofit upon resale.
Water Pricing
Utah SB28 requires water rates to rise for higher tiers of consumption
Charge for secondary water based on individual use.
High water use notification.
Physical System
Install & maintain efficient irrigation, utilize water-wise landscaping & smart controller technology at agency facilities.
Perform agency water system audit and implement a leak detection program
Meter all connections (UT SCR 1), repair and replacement program, read meters on a regular basis.
Consider water reuse.

APPENDIX C

SPRINGVILLE CITY COUNCIL ADOPTION OF CONSERVATION PLAN

Utah Department of Natural Resources
Division of Water Resources

Certification of Adoption

We hereby certify that the attached Water Conservation Plan has been established and adopted by the Springville City Council on December 20, 2022

Matt Packard, Mayor

Attest:

Kim Crane, City Recorder

APPENDIX E

CUP Allotment

SOUTH UTAH VALLEY MUNICIPAL WATER ASSOCIATION
CUP 1590 AC-FT ALLOTMENT
AND JORDAN CANAL WATER

CITY	% 1998	CUP(1,590) ALLOTMENT	JORDAN CANAL	% 2003	CUP (30,000) ALLOTMENT	GIVEN BACK APR 2003*	GIVEN BACK FEB 2004*	GIVEN BACK JUNE 2007	GIVEN BACK MAY 2010	GIVEN BACK AUGUST 2013	TOTAL GIVEN BACK	REMAINDER CUP (30,000) ALLOTMENT	**TOTAL**	CITY
Springville	31.66%	503.39	126.64	28.15%	8,445			500		3,000	3,500	4,945	**5,575**	Springville
Mapleton	6.67%	106.05	26.68	8.01%	2,403			500	1,000		1,500	903	**1,036**	Mapleton
Spanish Fork	28.33%	450.45	113.32	27.90%	8,370	1,000					1,000	7,370	**7,934**	Spanish Fork
Salem	5%	79.50	20.00	6.03%	1,809			1,000			1,000	809	**909**	Salem
Woodland Hills	1.25%	19.88	5.00	1.30%	390						0	390	**415**	Woodland Hills
Elk Ridge	1.25%	19.88	5.00	2.53%	759						0	759	**784**	Elk Ridge
Payson	18.34%	291.61	73.36	17.53%	5,259		500				500	4,759	**5,124**	Payson
Santaquin	5%	79.50	20.00	6.03%	1,809			1,000			1,000	809	**909**	Santaquin
Goshen	1.25%	19.88	5.00	1.32%	396						0	396	**421**	Goshen
Genola	1.25%	19.88	5.00	1.20%	360						0	360	**385**	Genola
TOTAL	**100.00%**	**1,590.00**	**400.00**	**100.00%**	**30,000**	**1,000**	**500**	**3,000**	**1,000**	**3,000**	**8,500**	**21,500**	**23,490**	**TOTAL**

* This water was technically given back from the CUP 1,590 Allotment. However, because the individual entities didn't have the water to give back, SUVMWA handled the exchange at the time. For ease of calculation, it has been counted against the 30,000 AF allotment.