



FAIRFIELD TOWN

GENERAL PLAN

Review Draft 03 April 2025

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OVERVIEW

Utah law requires local governments to adopt a General Plan that meets minimum statutory criteria, which vary based on population size. For towns with fewer than 1,000 residents, like Fairfield, the Utah Land Use, Development, and Management Act (LUDMA) mandates two elements: a Land Use Element and a Transportation and Traffic Circulation Element (Utah Code § 10-9a-403). This General Plan includes both elements and outlines the town’s approach to land use patterns, street connectivity, and future trail planning.

Fairfield has also chosen to include additional elements that reflect the community’s values and long-term vision. These include Economic Development, Blueway and Greenway Connectivity, Local Food Production, and Community Character. The town addresses Moderate Income Housing by allowing accessory dwelling units (ADUs) throughout all zones and incorporates Water Resource Management into its broader land use strategy. Together, these elements form a comprehensive policy framework that guides local decisions and supports the work of the Planning Commission.

OUR VISION

THE ESSENCE OF FAIRFIELD AND THIS PLAN

Local Food & Agriculture

Fairfield wants to be a leader in rural food resilience. This plan envisions space in the town for year-round local food sales, support growers through a community food program, and plant fruit trees along greenways for all to enjoy. The Town wants to allow modern techniques like hydroponics while securing water for long-term agricultural use. This will ensure a strong local food system and keeps our rural character alive while strengthening our economy.

Infrastructure & Transportation

Fairfield wants infrastructure that fits the landscape and our quiet town. The Town will work with regional partners to route major roads away from our town core, calm traffic on Highway 73, and build trails for walking, biking, horses, and ATVs. Our vision prioritizes connections—to nature, to our neighbors, and to the land—without sacrificing peace and safety. We believe rural towns deserve thoughtful infrastructure that supports small-town living.

Conservation, Land Use & Open Space

Fairfield wants to conserve the open spaces, natural features, and scenic beauty that define the Town. This plan envisions a public space and blueway at Big Spring, conservation development in Manning Canyon, and productive greenways that combine recreation with food production. The Town will use land use tools that protect its views, preserve water, and maintain wildlife habitat. The land is part of the town’s identity—and this plan seeks to keep it that way.



Land Use & Development Strategy

Fairfield wants to grow slowly, thoughtfully, and in ways that match our rural setting. This plan envisions large-lot residential zoning, relying on private wells and septic systems, and limiting commercial development to specific areas that support rural life. Fairfield welcomes growth that fits its scale and respects its surroundings. This plan envisions that Fairfield can grow without giving up what makes it special.



Industrial & Economic Development

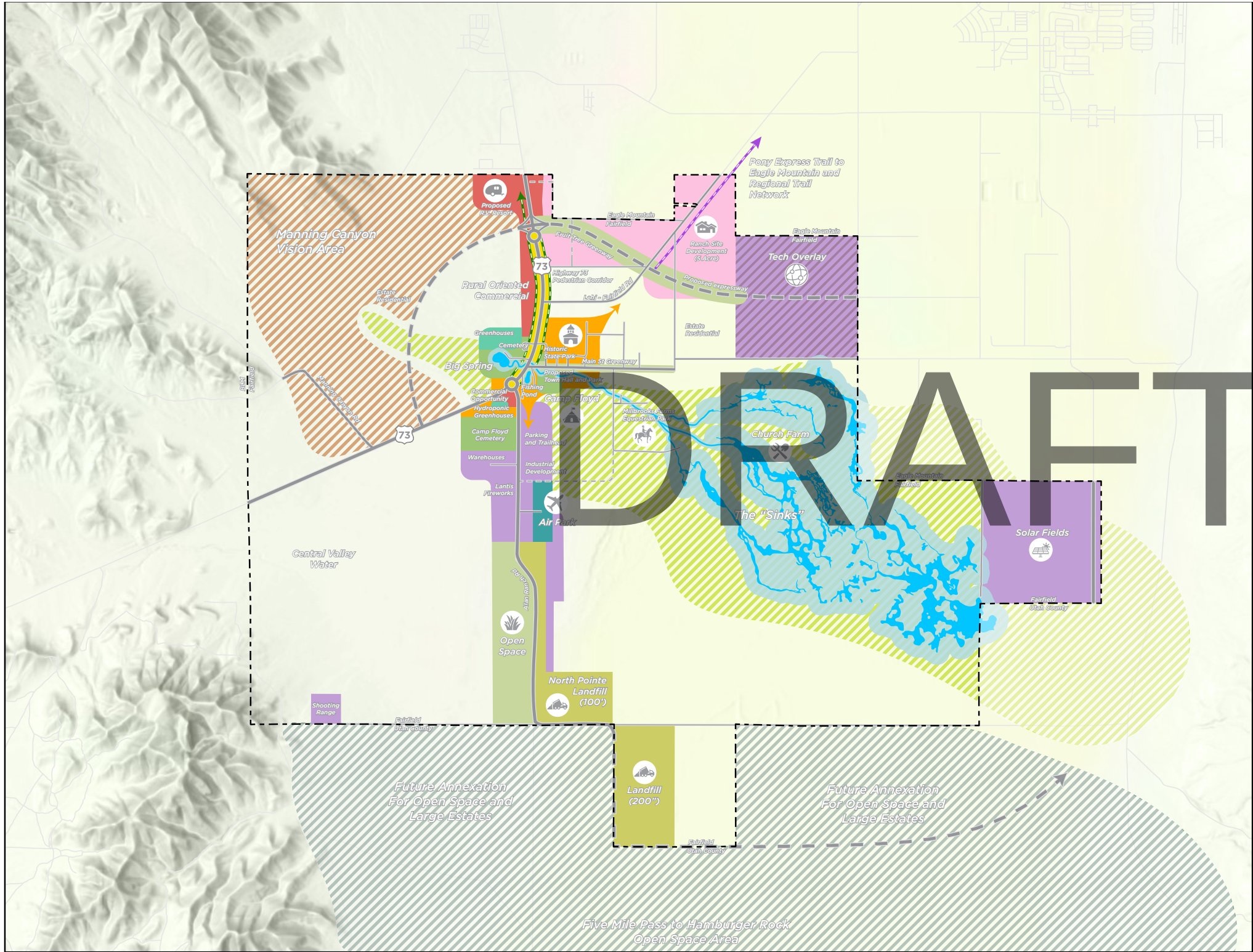
Fairfield wants economic opportunity without compromising its rural lifestyle. This plan guides tech and industrial development to designated corridors, supports regional partnerships like the Utah Inland Port Authority, and provides space for light manufacturing, warehousing, and innovation. At the same time, the Town will protect homes, farms, and open lands from incompatible uses. Fairfield’s economy should reflect its identity: resourceful, independent, and deeply connected to place.



Community Character & Design

Fairfield has a unique history and landscape. The town will enhance dark sky lighting standards, create wayfinding signage inspired by the Pony Express, and apply simple, consistent design guidelines across public and private spaces. The Town values authenticity, quiet beauty, and spaces are truly Fairfield. As the Town grows, Fairfield should look and feel like Fairfield—not anywhere else.





VISION MAP
FAIRFIELD

LEGEND

- CORE FAIRFIELD
- PUBLIC GREENSPACE
- OPEN SPACE
- COMMERCIAL
- INDUSTRY
- AIRPARK
- WASTE FACILITIES
- ESTATE DEVELOPMENT (5-ACRE)
- GREENHOUSE AGRICULTURE
- BIG SPRINGS HYDROLOGICAL SYSTEM
- BLUEWAY BUFFER AREA
- CONSERVATION OVERLAY
- SOUTHERN ANNEXATION OVERLAY
- MANNING CANYON OVERLAY
- TECH OVERLAY
- FAIRFIELD BOUNDARY
- HIGHWAY 73 PEDESTRIAN CORRIDOR
- HIGHWAY 73 TRAIL
- PONY EXPRESS REGIONAL TRAIL
- ROAD NETWORK
- PROPOSED ROADS AND EXPRESSWAY

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VISION MAP

THINKING STRATEGICALLY ABOUT THE TOWN'S ASSETS

The Vision Map inventories Fairfield's key land use categories, infrastructure assets, and development constraints. It shows where residential, commercial, industrial, conservation, and recreational uses make the most sense, based on current conditions, infrastructure capacity, and long-term planning goals. The planning team developed the map following the initial kick-off

meeting with the Mayor and to guide discussions with the Town Council, Planning Commission, and community members.

The map places large-lot residential areas along the town's outer edges, with typical lot sizes starting at five acres. These areas support rural living and depend on

private wells and septic systems. In contrast, the Town Core and Allen's Ranch Road corridor benefit from the town's water system, which allows for more compact development and civic uses.

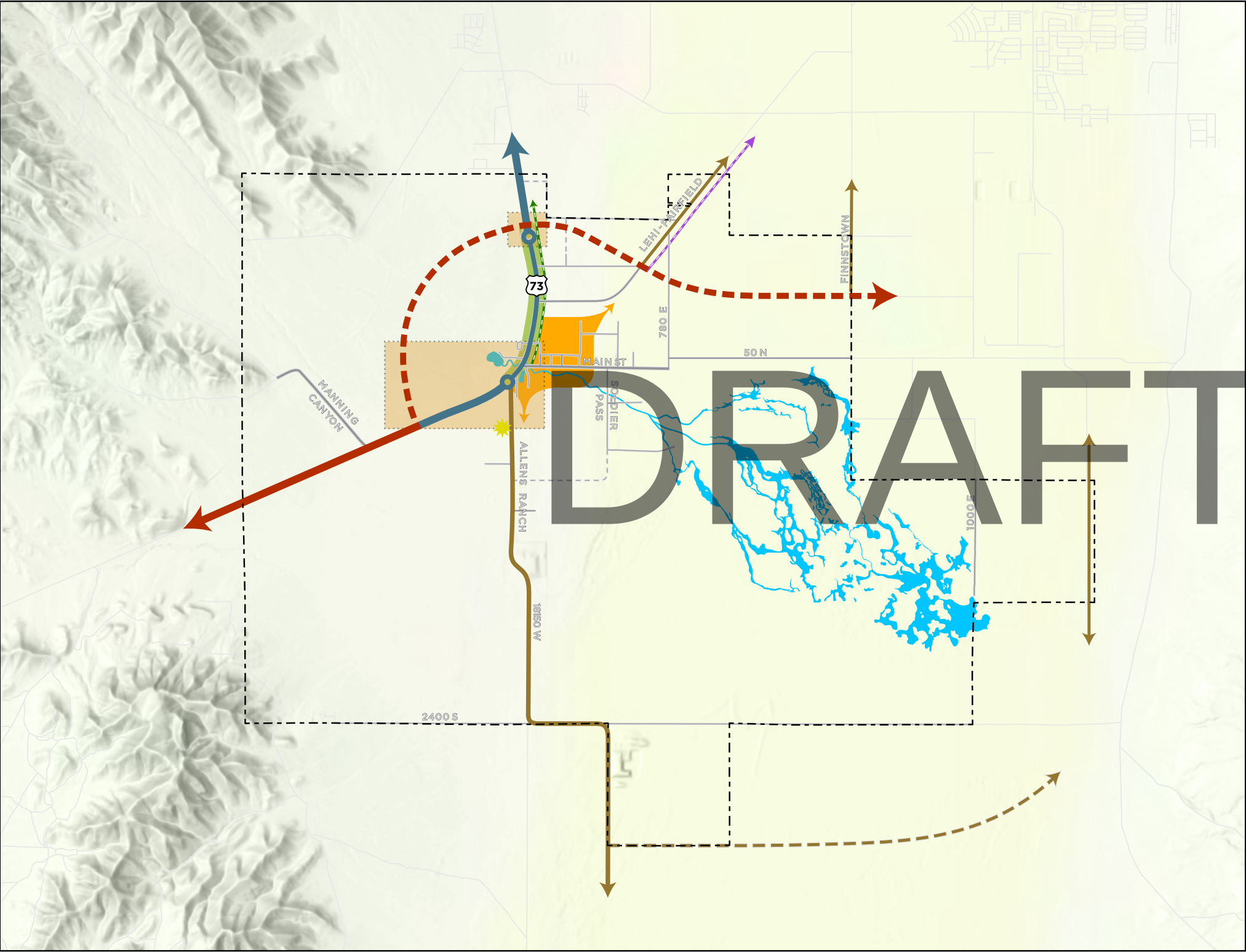
Fairfield concentrates commercial and industrial uses in specific corridors with direct access to regional roads.

The Tech Overlay and Allen's Ranch Road corridor offer appropriate sites for data centers, warehouses, and construction-related industries. These areas sit apart from residential and agricultural zones to reduce land use conflicts and to support targeted infrastructure investment, including MAG's planned east-west expressway.

Descriptions of Features

- Ranchette Area:** A master-planned development area with a minimum net density of 1 unit per 5 acres, possibly connecting to the Eagle Mountain sewer system.
- Tech Overlay:** Data centers and similar uses permitted by-right with specific development standards.
- Sinks Conservation Area:** 40-acre density with allowances for clustering in exchange for preserving wetlands and agricultural lands.
- Solar Fields:** Permitted solar farm.
- Landfills:** Regional landfill facilities serving Wasatch Front and Northern Utah.
- Allen's Ranch Road Industrial:** Warehousing and small-scale industrial uses.
- Camp Floyd Cemetery Area:** Recreation-based uses with a focus on RV camping and ATV activities.
- Allen's Ranch Road & Hwy 73 Intersection:** Possible location of a gas station and/or retail store on a small lot.
- Manning Canyon:** Conservation area with net 40-acre density, with units sensitively placed at the toe of the mountain.
- Big (Fairfield) Spring:** Location of Big Spring. Conservation area with Town-led dialogue about possible acquisition of access, conservation easement, or fee purchase for public park.
- Hydroponic Greenhouses:** Small industrial area focused on hydroponic agriculture.
- Town Core:** 1-5 acre densities with culinary water.





TRANSPORTATION VISION
FAIRFIELD

LEGEND

- CORE FAIRFIELD AND POTENTIAL TRAIL CONNECTIONS
- GATEWAY STUDY AREAS
- EXPRESSWAY
- PROPOSED EXPRESSWAY LOOP
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- PROPOSED ARTERIAL CONNECTOR
- LOCAL COLLECTORS
- HIGHWAY 73 PEDESTRIAN CORRIDOR
- HIGHWAY 73 TRAIL
- PONY EXPRESS REGIONAL TRAIL
- CAMP FLOYD CEMETERY TRAIL HEAD



TRANSPORTATION

The transportation plan reinforces the town's current scale while ensuring regional coordination, safe local circulation, and compatibility with Fairfield's rural setting. This vision prioritizes low-traffic roadways, non-motorized mobility, and rural-scale connectivity that reflects the town's identity. Working in coordination with agencies such as the Mountainland Association of Governments (MAG) and the Utah Department of Transportation (UDOT), the plan supports infrastructure improvements that enhance regional access without compromising Fairfield's quiet character or development patterns. The approach focuses on targeted connections, trail integration, and transportation solutions that serve both local needs and regional systems—without inviting urban intensity.

Goal 1: Preserve Fairfield's Low-Traffic, Rural Transportation Environment

Policy 1.1: Maintain a transportation system that reflects the town's rural scale and low-density development.

Strategy 1.1.1: Limit traffic volumes in the town core to allow pedestrians, cyclists, and equestrians to feel safe with vehicular traffic.

Strategy 1.1.2: Avoid road widening or design elements that encourage high-speed or high-volume traffic in the Town Core.

Strategy 1.1.3: Design roads to feel comfortable and safe for non-motorized users.

Goal 2: Coordinate with Regional Transportation Plans While Protecting Local Character

Policy 2.1: Align with regional transportation planning while advocating for solutions that preserve Fairfield's land use priorities.

Strategy 2.1.1: Support an expressway that bypasses the Town Core rather than following the Highway 73 alignment.

Strategy 2.1.2: Avoid widening Highway 73 through the Town Core and build trails on both sides of the roadway.

Strategy 2.1.3: Reduce speeds limit to 25 on Highway 73 through the Town Core after the bypass is built.

Goal 3: Improve Connectivity Through Context-Appropriate Infrastructure

Policy 3.1: Enhance east-west and north-south connectivity to support regional mobility and access to economic areas.

Strategy 3.1.2: Work with MAG and UDOT to a regional loop road connecting comprised of:

- MAG's envisioned East-West Expressway
- An upgrade of Allen's Ranch Road as an arterial, (as envisioned by MAG), with an arterial connection to the East-West Expressway,
- A new arterial or collector road connecting Allen's Ranch Road to the east with the proposed (north-south) Cedar Valley Expressway south of Town, connecting key sites including:
 - Tech Overlay Area
 - Ranchette Land Use Area
 - Allen's Ranch Road Industrial Corridor
 - Northpointe and Intermountain Regional Landfills

Goal 4: Expand Multi-Use Trail Access and Recreational Connectivity

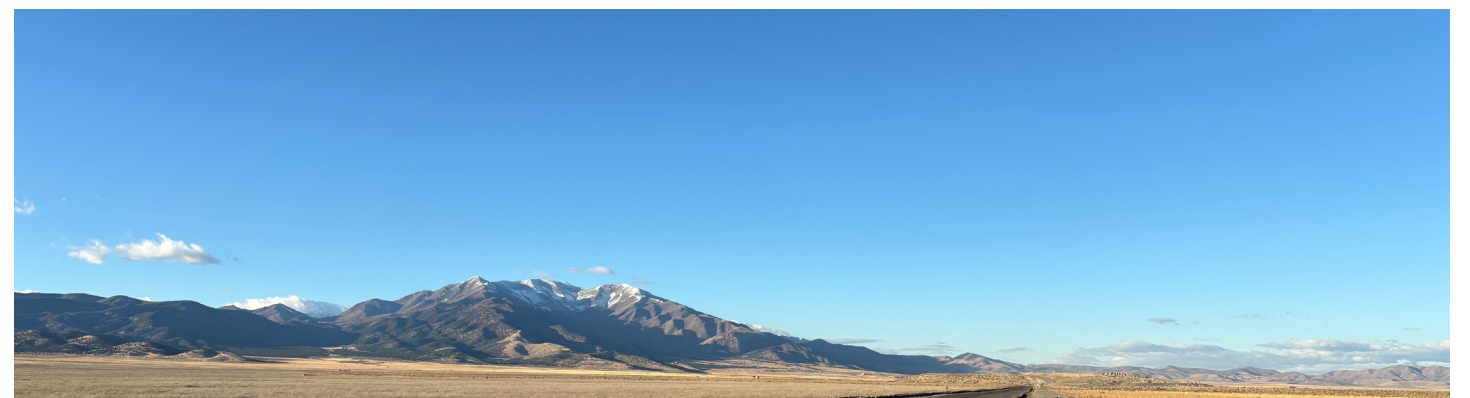
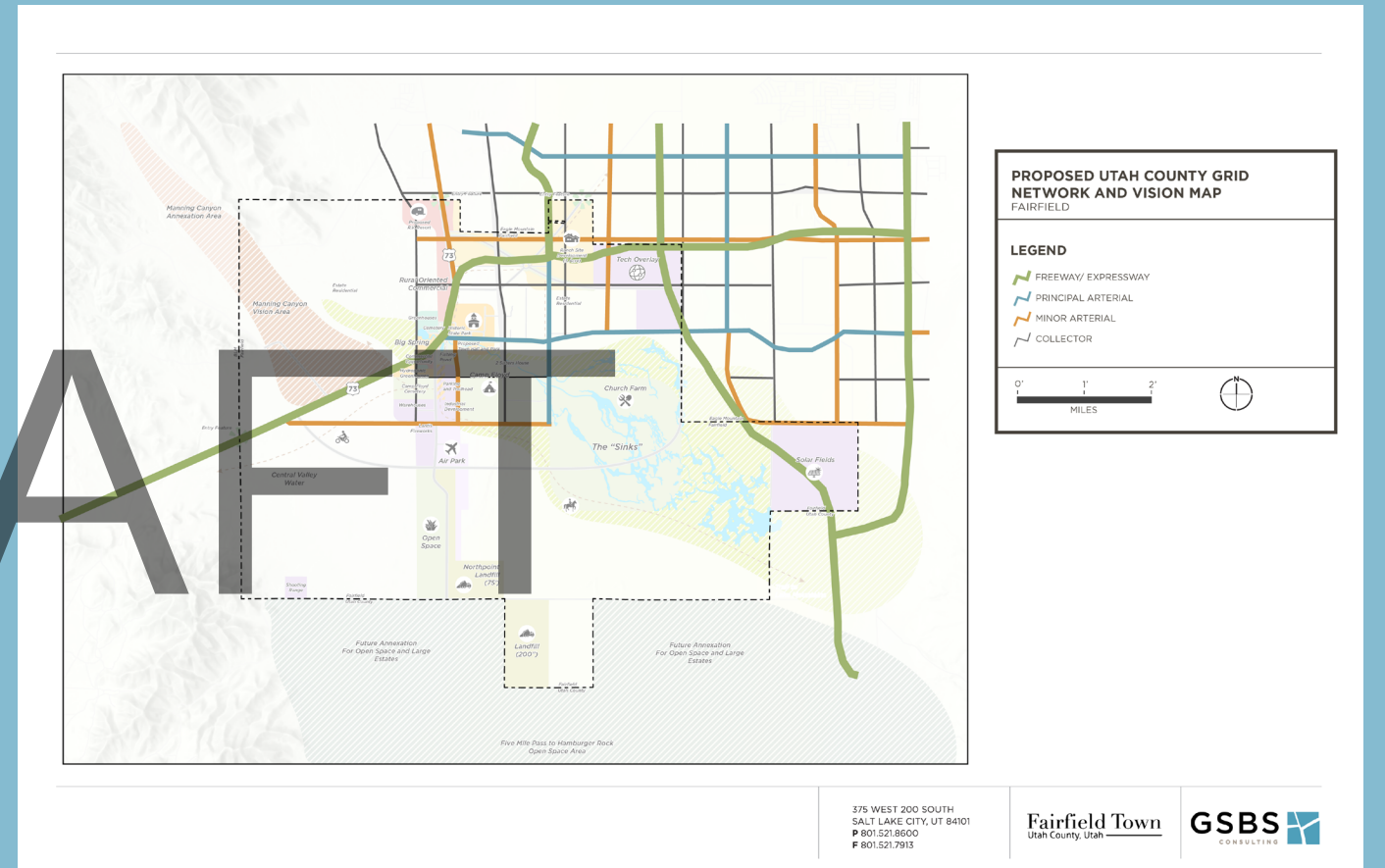
Policy 4.1: Incorporate trail infrastructure into the transportation network to promote non-motorized access and recreation.

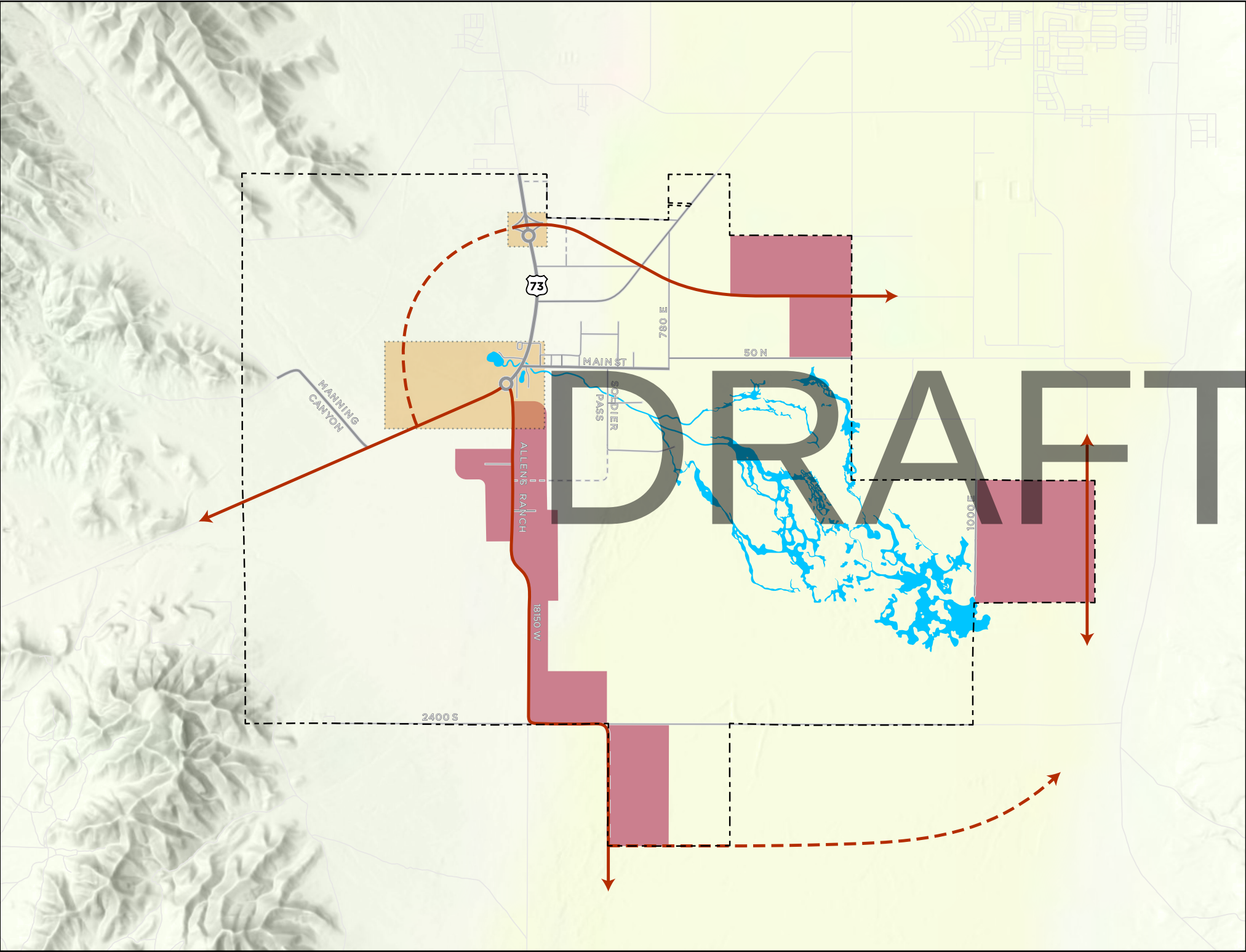
Strategy 4.1.1: Extend the Pony Express Regional Trail from Eagle Mountain to the Town Core.

Strategy 4.1.2: Develop an ATV trailhead near Camp Floyd Cemetery with connections to Five Mile Pass and public lands.

Strategy 4.1.3: Include multi-use trail corridors in new and upgraded roadway designs.

Fairfield modifies MAG's 2050 Utah County Grid Network and Vision Map (below) by shifting the east-west expressway away from the Town Core to preserve the town's rural character and walkability. Instead of widening Highway 73 through the center of town, Fairfield proposes a bypass route, trails on both sides of the existing highway, and a reduced speed limit of 25 mph once the bypass is in place (as shown in the map to the left). These strategies will implement Fairfield's Transportation Goals.





INDUSTRIAL AND ECONOMIC VISION
FAIRFIELD

LEGEND

-  ECONOMIC AND INDUSTRIAL CENTERS
-  TRANSITION ZONE STUDY AREAS
-  ECONOMIC TRANSIT NECKLACE
-  PROPOSED EXPRESSWAY LOOP
-  ROAD NETWORK
-  PROPOSED ROADS



ECONOMIC DEVELOPMENT

The transportation section reinforces the town’s intent to The Industrial and Economic Vision map identifies specific areas for industrial and commercial development that support Fairfield’s role in the regional economy. This section establishes a clear framework for land use, infrastructure, and investment in locations suitable for sustained economic activity. The plan focuses on the Tech Overlay and the Allen’s Ranch Road corridor as primary locations for job growth, tax base expansion, and infrastructure coordination. These areas have access to transportation networks and are appropriate for future utility extensions.

The strategy includes arterial road upgrades, integration with regional expressway plans, and alignment with state-level investment priorities. All economic development is intended to remain compatible with Fairfield’s rural land use pattern and overall scale.

Goal 1: Support Regionally Significant Economic Development While Maintaining Rural Compatibility

Policy 1.1: Focus economic activity in defined areas that support regional needs and align with Fairfield’s land use priorities.

Strategy 1.1.1: Concentrate high-tech and data center uses within the designated Tech Overlay area east of the Ranchette Area.

Strategy 1.1.2: Continue to support warehouse, industrial, and construction-related uses along the Allen’s Ranch Road corridor.

Strategy 1.1.3: Apply development standards that ensure economic uses do not conflict with residential or agricultural areas.

Goal 2: Establish a Functional Economic Infrastructure Network

Policy 2.1: Upgrade and align key transportation corridors to serve current and future economic activity.

Strategy 2.1.1: Upgrade Allen’s Ranch Road to an arterial to support increased freight, workforce, and service traffic.

Strategy 2.1.2: Connet Allen’s Ranch Road to a proposed east-west expressway bypassing Fairfield,

Strategy 2.1.3: Develop a connected loop road system linking the Tech Overlay, Ranchette Area, industrial areas, and regional landfills.

Goal 3: Attract Infrastructure Investment Through Strategic Partnerships

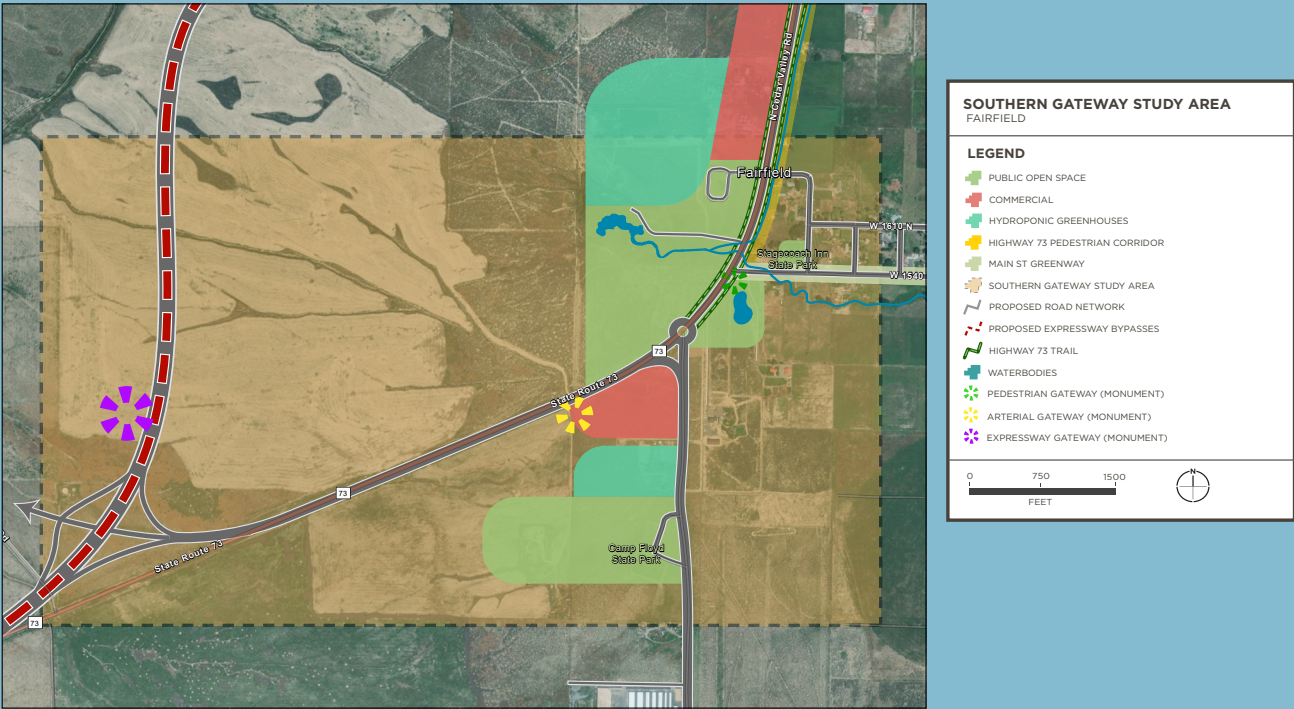
Policy 3.1: Align local economic planning with regional and state investment priorities.

Strategy 3.1.1: Collaborate with the Utah Inland Port Authority and similar agencies to secure funding for broadband, roads, and utilities in designated economic areas.

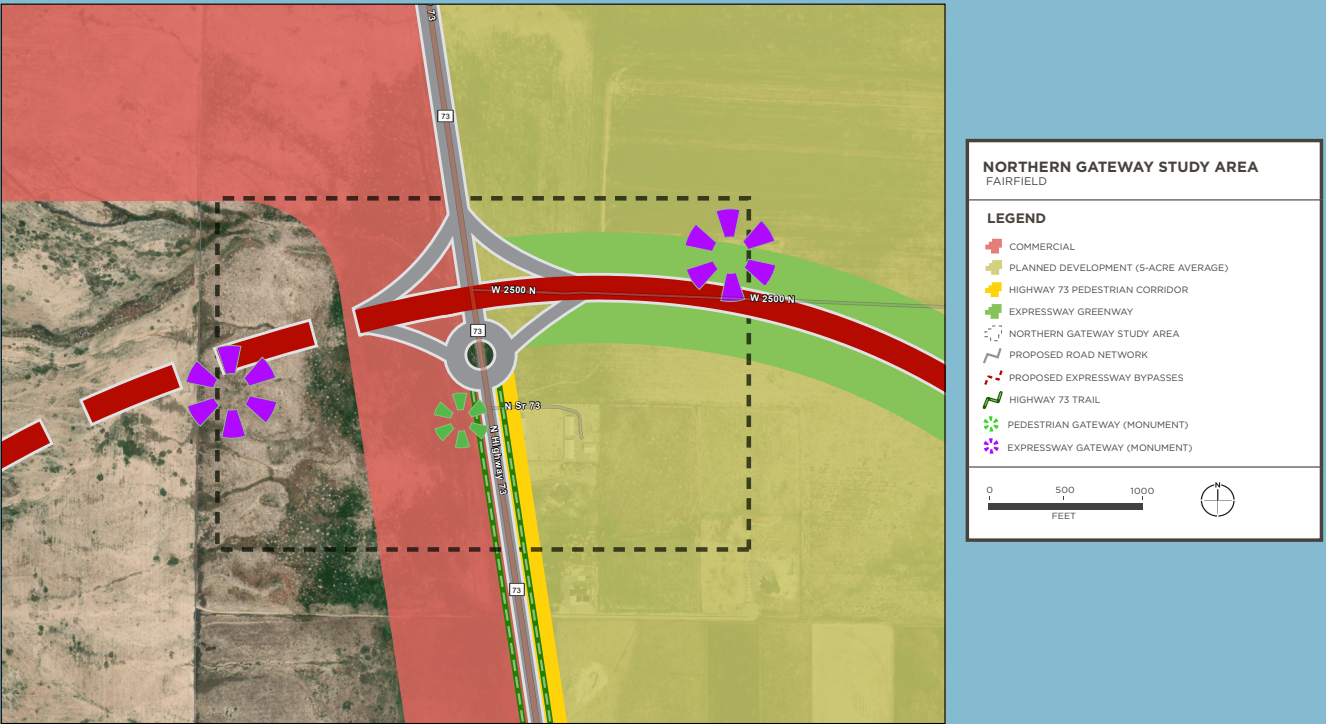
Strategy 3.1.2: Identify infrastructure projects that directly support job growth, tax base expansion, and long-term service capacity.

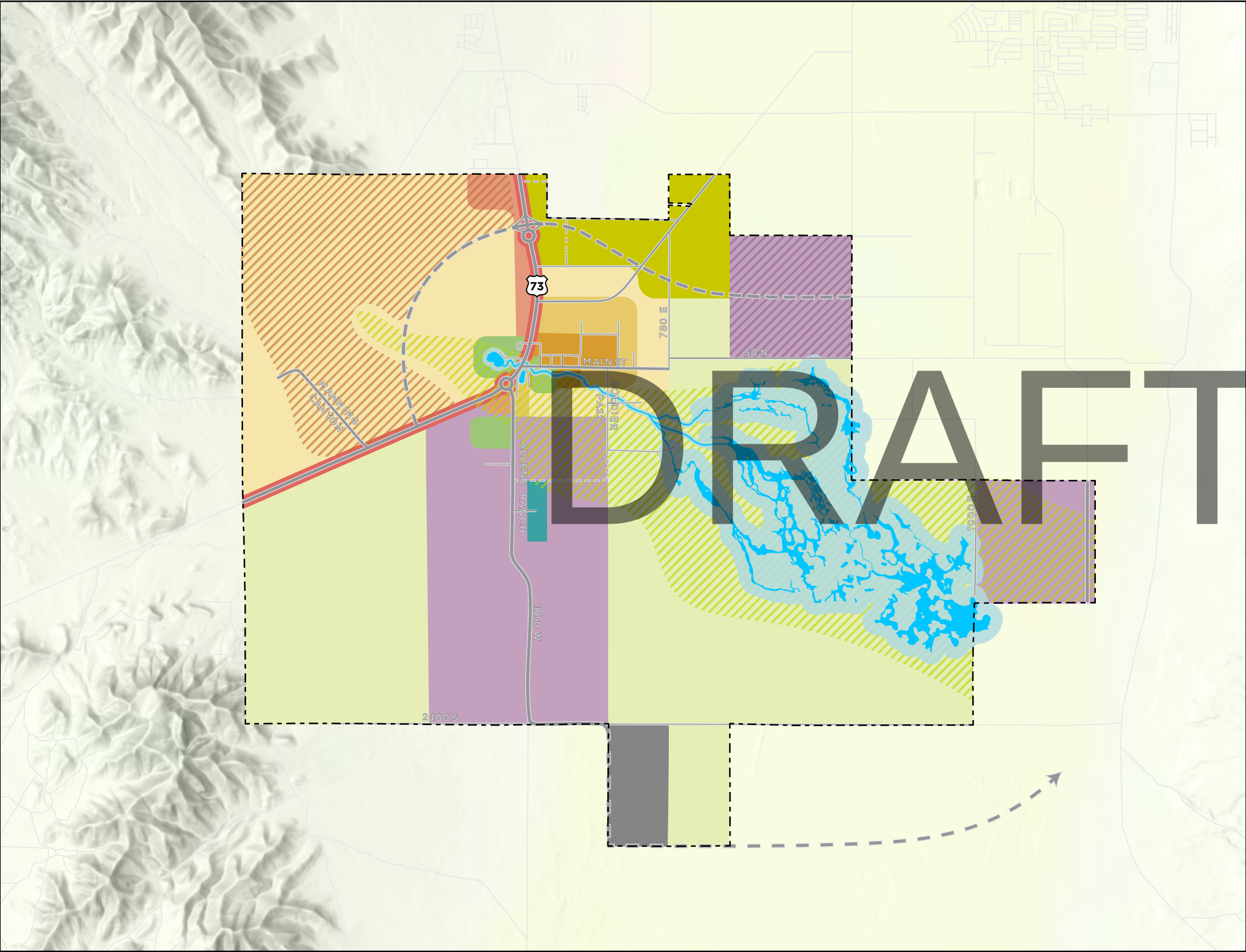
Strategy 3.1.3: Position Fairfield's economic corridors as critical assets within the broader regional logistics and innovation network.

The Southern Gateway will form part of a looped road necklace connecting the Tech Overlay, Allen’s Ranch Road corridor, and regional facilities. It will support freight and workforce traffic, strengthen Fairfield’s regional role, and divert regional traffic from the town center.



The Northern Gateway will direct traffic either north toward Eagle Mountain or south to the Southern Gateway and Allen’s Ranch Road corridor. This connection will improve regional access, reduce traffic through the town center, and strengthen Fairfield’s strategy for focused, corridor-based development.





FUTURE LAND USE VISION
FAIRFIELD

LEGEND

- A/R - 1
- A/R - 5
- A/R - 10
- A/R - 40
- HIGHWAY 73 COMMERCIAL CORRIDOR
- COMMERCIAL
- PLANNED DEVELOPMENT (5-ACRE AVERAGE)
- PUBLIC OPEN SPACE
- AIRPARK
- ESTATE DEVELOPMENT
- BIG SPRINGS HYDROLOGICAL SYSTEM
- BLUEWAY BUFFER AREA
- CONSERVATION OVERLAY
- TECH OVERLAY
- MANNING CANYON OVERLAY
- ROAD NETWORK
- PROPOSED ROADS AND EXPRESSWAY



LAND USE STRATEGY

The Land Use Strategy outlines a framework to preserve Fairfield’s rural character while allowing for low-impact, well-managed growth. The approach relies on large-lot residential development, minimal municipal infrastructure, and strict separation between land use types. The strategy supports continued reliance on private utility systems, limits commercial activity to appropriate areas, and reinforces the town’s intent to remain a statutory town. The land use pattern aligns with Fairfield’s capacity, protects long-term land value, and avoids pressure for suburban-style expansion. All policies and strategies are designed to ensure that growth remains consistent with the town’s scale, resources, and long-term vision.

Goal 1: Maintain Low-Density Rural Land Use Patterns

Policy 1.1: Establish minimum lot sizes that preserve open space and support rural lifestyles.

Strategy 1.1.1: Require minimum lot sizes of 5, 10, 20, or 40 acres outside the Town Core, based on location and context.

Strategy 1.1.2: Support land uses that include barns, equestrian facilities, and small-scale agriculture.

Strategy 1.1.3: Limit subdivision and higher-density development in rural areas not designated for conservation planning.

Goal 2: Preserve and Strengthen the Town Core

Policy 2.1: Allow modest-scale development in the Town

Core that is consistent with Fairfield’s rural character.

Strategy 2.1.1: Permit lot sizes between 1 and 5 acres in the Town Core.

Strategy 2.1.2: Provide culinary water service to support residential and civic uses in the Town Core

Strategy 2.1.3: Apply design standards to maintain compatibility with rural form, scale, and landscape.

Goal 3: Support Rural-Scale Commercial Activity

Policy 3.1: Limit commercial development to small-scale uses that serve local and agricultural needs.

Strategy 3.1.1: Require a minimum 5-acre lot size for commercial properties outside the Town Core.

Strategy 3.1.2: Focus commercial activity along Main Street and near existing road infrastructure.

Strategy 3.1.3: Apply simple, low-profile rural design standards for buildings, signage, and site layout.

Goal 4: Limit Urban Infrastructure and Preserve Local Governance

Policy 4.1: Maintain infrastructure systems and governance structures that reflect Fairfield’s rural scale.

Strategy 4.1.1: Continue reliance on private wells and septic systems for most residential and agricultural properties.

Strategy 4.1.2: Limit expansion of centralized sewer to the Ranchette and Tech Overlay areas.

Strategy 4.1.3: Limit culinary water service to the Town Core and Allen’s Ranch Road.

Strategy 4.1.4: Retain Fairfield’s status as a statutory town to allow for simple, efficient infrastructure planning and maintenance.

Policy 4.2: Prioritize the efficient use and limited expansion of existing water infrastructure to meet firefighting and public use standards.

Strategy 4.2.1: Add 500,000 gallons of storage in the near term and plan for an additional 1.5 million gallons to meet future demand and fire flow requirements.

Strategy 4.2.2: Upsize key pipelines to reduce pressure losses and support increased flow capacity.

Strategy 4.2.3: Create looped connections in the distribution system to eliminate dead ends and ensure adequate fire protection.

Strategy 4.2.4: Embrace low-density development, track system performance, and enhance data collection to guide future planning.

Goal 5: Ensure Land Use Compatibility and Long-Term Viability

Policy 5.1: Prevent incompatible uses and preserve

long-term land value through consistent land use regulation.

Strategy 5.1.1: Maintain clear land use categories that separate residential, agricultural, and industrial activity.

Strategy 5.1.2: Review proposed developments for compatibility with surrounding uses and infrastructure capacity.

Strategy 5.1.3: Apply development standards that protect property values and minimize land use conflicts.

Goal 6: Align Land Use Planning with Community Capacity and Resources

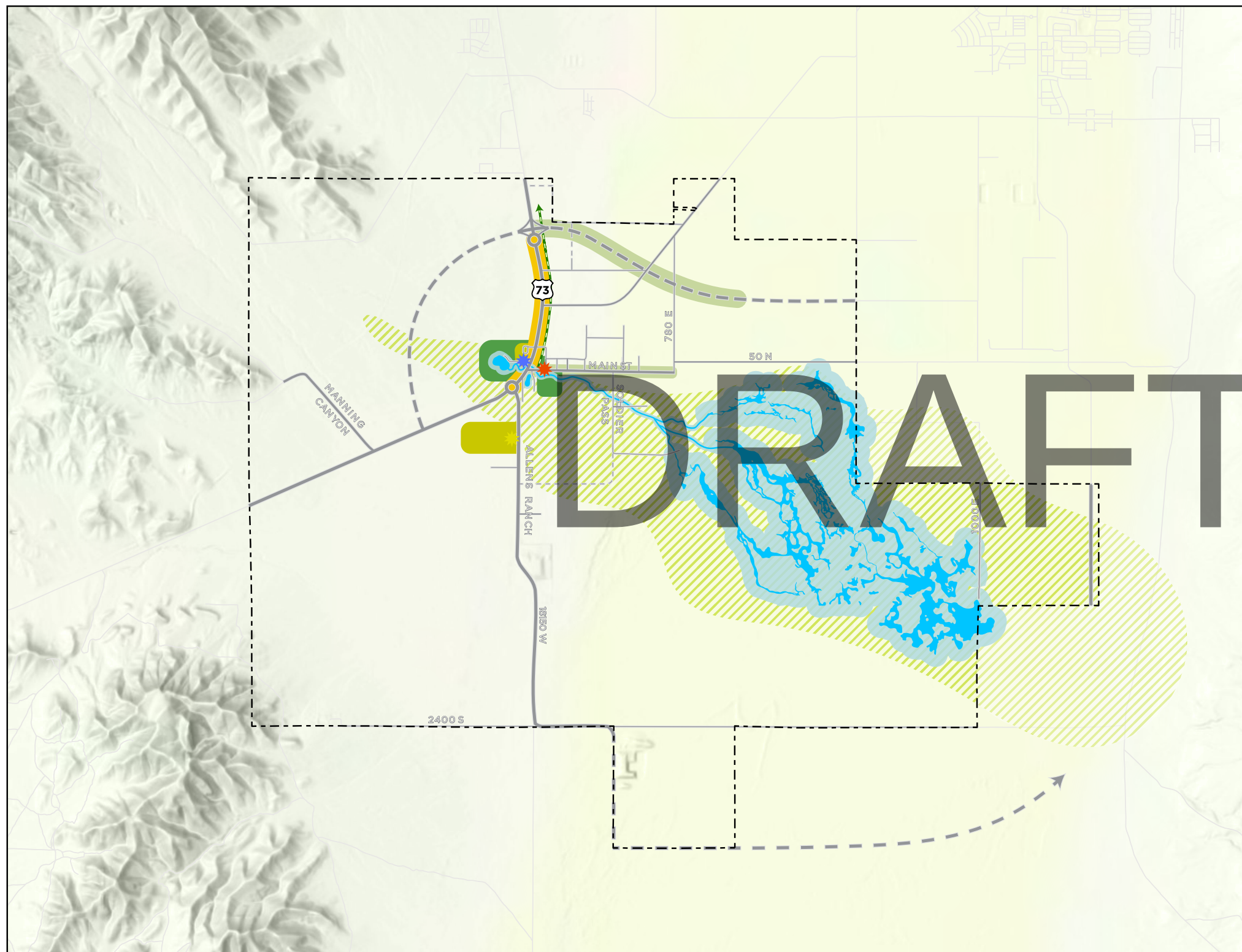
Policy 6.1: Match development patterns with Fairfield’s available infrastructure, staffing, and fiscal capacity.

Strategy 6.1.1: Avoid development types that require large-scale municipal staffing or ongoing service obligations.

Strategy 6.1.2: Use land use planning to manage service demand and capital improvement costs.

Strategy 6.1.3: Evaluate future land use changes based on long-term maintenance, infrastructure, and governance impact.

LAND USE DESCRIPTIONS			
A/R - 40 (Agricultural/Residential - 40-Acre Minimum): Very low-density land use intended for conservation, agricultural preservation, or limited residential development.	to culinary water, allowing modestly scaled lots while maintaining rural form.	Public Open Space: Town-designated lands reserved for recreation, parks, trailheads, conservation, or civic use; not intended for private development.	Blueway Buffer Area: Natural corridor identified to protect waterways, habitat, and landscape continuity; intended for minimal or no development.
A/R - 10 (Agricultural/Residential - 10-Acre Minimum): Rural residential or agricultural parcels requiring a minimum of 10 acres per unit, supporting low-density housing and working land uses.	Highway 73 Commercial Corridor: Targeted commercial development area along Highway 73, intended for rural-serving businesses and limited service-oriented retail.	Airpark: Land area set aside for aviation-related use, including private airstrips and accessory functions; governed by specific operational standards.	Tech Overlay: Area designated for high-tech and data-related industries; includes development standards to guide appropriate infrastructure and site design.
A/R - 5 (Agricultural/Residential - 5-Acre Minimum): Rural estate residential development pattern supporting equestrian uses, accessory structures, and small-scale farming.	Commercial: Designated commercial areas located primarily near the town core, with a focus on small-scale, low-intensity uses compatible with rural surroundings.	Estate Development: Larger-lot residential development areas consistent with rural character, supporting privacy, open space, and optional agricultural activity.	Conservation Overlay: Land use tool that allows clustered development in exchange for preserving open space, habitat, or scenic views; includes overlay-specific criteria.
A/R - 1 (Agricultural/Residential - 1-Acre Minimum): Residential development near the town core with access	Planned Development (5-Acre Average): Areas identified for clustered residential development that maintains an average density of 5 acres per unit, typically within a master-planned layout.	Big Springs Hydrological System: Area containing key water resources tied to Big Spring, prioritized for protection due to hydrological and ecological sensitivity.	Manning Canyon Overlay: Special planning area recognizing sensitive terrain and viewsheds; supports limited, carefully placed development with conservation emphasis.



GREENWAYS AND BLUEWAYS FAIRFIELD

- LEGEND**
- CONSERVATION OVERLAY
 - PARKS AND OPEN SPACE
 - CEMETERIES
 - HIGHWAY 73 PEDESTRIAN CORRIDOR
 - BIG SPRINGS HYDROLOGICAL SYSTEM
 - BLUEWAY BUFFER AREA
 - BIG SPRINGS ACCESS POINT
 - CAMP FLOYD CEMETERY TRAILHEAD
 - PROPOSED TOWN HALL
 - HIGHWAY 73 TRAIL
 - ROAD NETWORK
 - PROPOSED ROAD AND EXPRESSWAY



BLUEWAYS & GREENWAYS

The Blueways and Greenways map identifies key areas for land conservation, public access, and landscape connectivity. This section outlines strategies to protect hydrological systems, preserve open space, and apply low-impact development standards near sensitive areas. It also provides a framework for establishing greenway corridors that support non-motorized mobility and reinforce Fairfield’s agricultural character. The plan prioritizes long-term protection and access to Big Spring, creation of a continuous blueway corridor, implementation of a conservation overlay in the Manning Canyon foothills, and integration of productive landscaping along major corridors.

Goal 1: Protect Environmentally Sensitive Areas and Water Resources

Policy 1.1: Preserve hydrological systems, wetlands, and habitat corridors through long-term conservation strategies.

Strategy 1.1.1: Negotiate access, easements, or acquisition of the Big Spring area for public ownership and ecological protection.

Strategy 1.1.2: Consider blueway corridor buffer standards extending from Big Spring to the Sinks, prioritizing water quality, habitat preservation, and passive recreation.

Strategy 1.1.3: Coordinate with property owners and conservation organizations to implement land stewardship plans for ecologically significant areas.

Goal 2: Integrate Public Access with Resource Protection

Policy 2.1: Provide controlled public access to natural features while minimizing environmental impact.

Strategy 2.1.1: Explore a Town-managed public park at Big Spring that supports quiet recreation, interpretation, and ecological education pursuant to Strategy 1.1.1.

Strategy 2.1.2: Design trails and access points in conservation areas to minimize disturbance and maintain visual quality.

Strategy 2.1.3: Monitor and manage recreational use to protect the long-term health of sensitive landscapes.

Goal 3: Apply Conservation-Based Development in Environmentally Sensitive Areas

Policy 3.1: Use conservation overlays and clustering to guide development near foothills, springs, and other natural features.

Strategy 3.1.1: Implement a conservation subdivision overlay in the Manning Canyon foothills to allow clustered housing while preserving open space and viewsheds.

Strategy 3.1.2: Define standards for development location, open space configuration, and long-term maintenance responsibilities.

Strategy 3.1.3: Maintain rural-scale density in areas subject to the overlay to avoid overdevelopment near conserved lands.

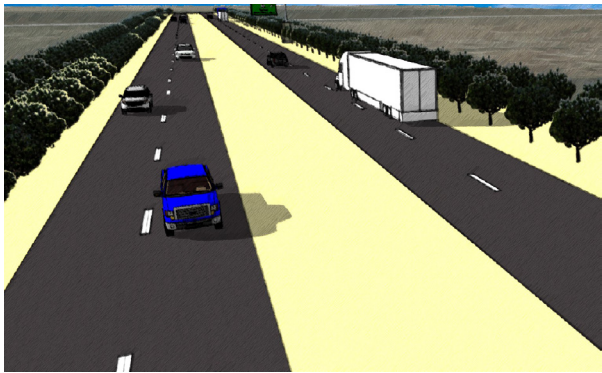
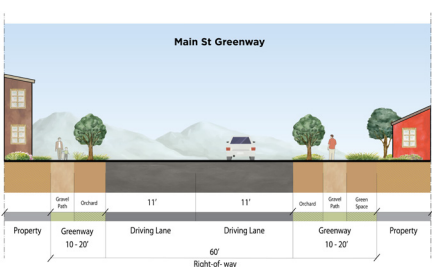
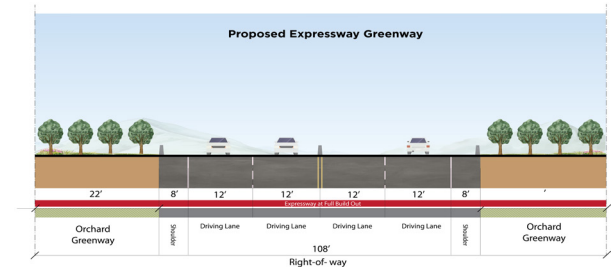
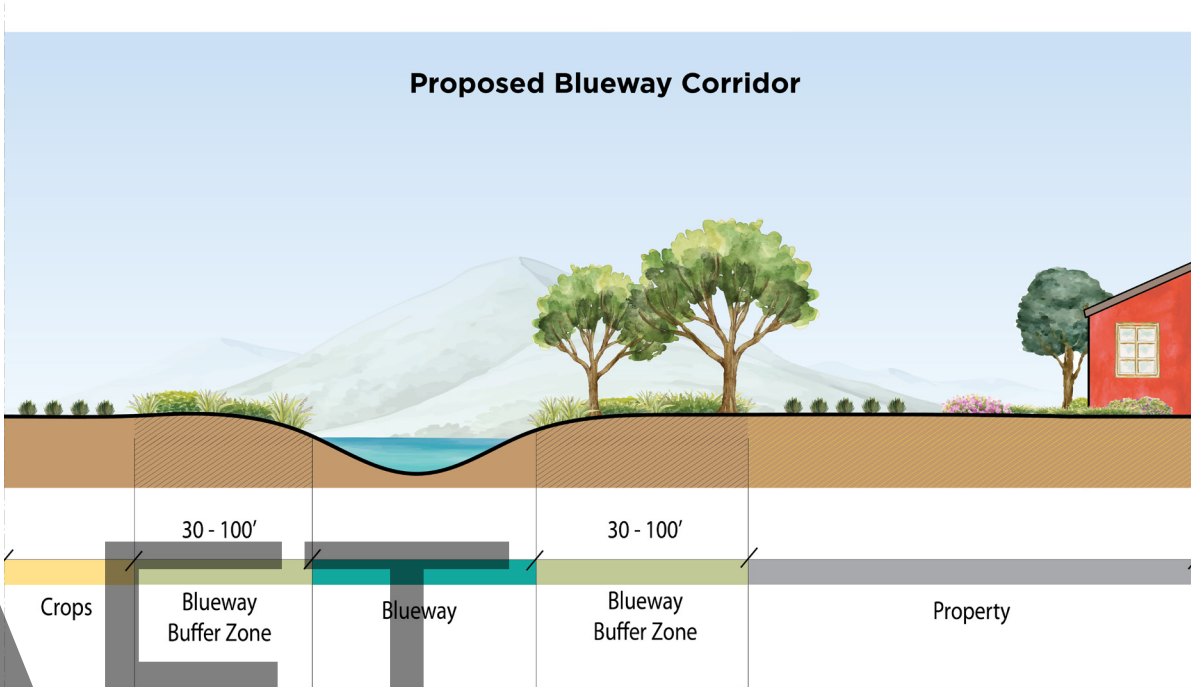
Goal 4: Establish Greenway Corridors to Support Mobility and Landscape Identity

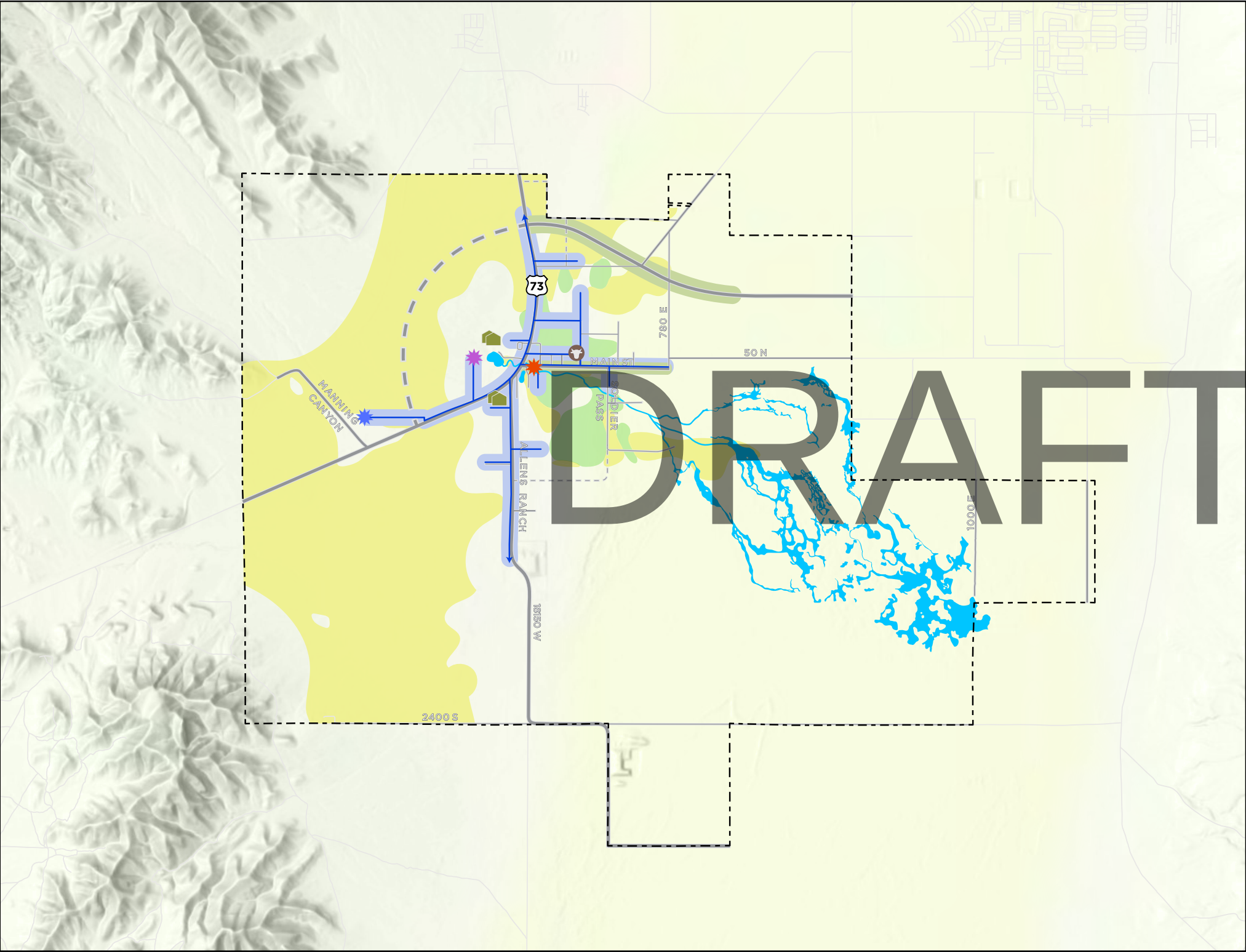
Policy 4.1: Create greenway connections that support walking, biking, and the visual integration of the town’s agricultural heritage.

Strategy 4.1.1: Develop greenway corridors along Main Street and the Cedar Valley Expressway, connecting neighborhoods, public spaces, and trail systems.

Strategy 4.1.2: Incorporate fruit trees, heritage crops, and other productive landscaping to reinforce Fairfield’s agricultural character.

Strategy 4.1.3: Design greenways as multi-functional spaces that support mobility, aesthetics, and community identity.





LOCAL FOOD VISION
FAIRFIELD

LEGEND

- IRRIGATED CROPLAND
- RAINFED CROPLAND
- WELL
- WATER VAULT
- PROPOSED TOWN MERCANTILE
- HYDROPONIC GREENHOUSES
- MEAT PRODUCER
- WATER LINES
- PROPOSED ROAD NETWORK
- PROPOSED ROADS AND EXPRESSWAY
- GREENWAYS



LOCAL FOOD

Fairfield recognizes the value of a functioning local food system as part of its rural identity and long-term resilience. The Town will support agricultural activity at every scale—from family gardens to community greenhouses—through land use policy, infrastructure planning, and public engagement. These strategies strengthen Fairfield’s food independence, preserve agricultural land, and provide residents with local access to food.

Goal 1: Expand Local Food Production Within the Community

Policy 1.1: Encourage year-round food production through greenhouse development and small-scale agriculture.

- Strategy 1.1.1:** Allow and support community greenhouses that are cooperatively managed, privately owned, or publicly operated.
- Strategy 1.1.2:** Promote small-scale food production as an allowed use on large residential and agricultural parcels.
- Strategy 1.1.3:** Identify suitable sites for year-round growing infrastructure and provide guidance on permitting.

Goal 2: Support Local Food Access and Small-Scale Sales

Policy 2.1: Enable local producers to sell food and farm goods directly to the public.

- Strategy 3.1.1:** Identify a location for a local mercantile or farmstand to operate seasonally or year-round.
- Strategy 3.1.2:** Allow farm product sales as a permitted accessory use on agricultural and large-lot residential properties.
- Strategy 3.1.3:** Support site development standards that ensure safe, clean, and visually compatible sales areas.

Goal 3: Reinforce Agricultural Identity Through Edible Landscaping

Policy 3.1: Integrate productive plantings into public greenways and civic spaces.

- Strategy 3.1.1:** Plant fruit and nut trees along trails, greenways, and key public corridors.
- Strategy 3.1.2:** Maintain trees and edible landscaping through Town operations or volunteer programs.
- Strategy 3.1.3:** Incorporate food-bearing plants into open space planning where feasible.

Goal 4: Improve Agricultural Infrastructure and Water Access

Policy 4.1: Ensure water systems and utility planning support small-scale farming and food production.

- Strategy 4.1.1:** Coordinate with water providers to improve irrigation and culinary access for agricultural properties.
- Strategy 4.1.2:** Avoid extension of urban-scale utilities that would increase development pressure on farmland.
- Strategy 4.1.3:** Encourage use of efficient irrigation systems to support long-term water availability.





A rendering of a pedestrianized Hwy 73/Main St Intersection



Datestone from the Camp Floyd school

DRAFT

Street Signage Concepts

Highway Gantry Sign

Arterial Monument Sign

Street Cairn Sign

Trail Cairn Sign



A drone show visible in the clear night sky

COMMUNITY CHARACTER

Fairfield looks like a rural town, and that’s exactly how residents want it to stay. This section ensures that all development—public and private—reinforces the Town’s visual identity. New buildings must reflect rural scale and form. Materials, fencing, and landscaping should fit the surrounding landscape. Lighting will remain dark-sky compliant, with standards in place to keep nights quiet, clear, and dark. The Town will invest in signage and entry features that highlight its history and define its edges. Everything from architectural guidelines to light fixtures to street signs will work together to preserve Fairfield’s look and feel.

Goal 1: Preserve Fairfield’s Rural Visual Character

Policy 1.1: Maintain rural design elements across all public-facing infrastructure and development.

- Strategy 1.1.1:** Apply simple, rural-scale architectural and site design standards to all new development.
- Strategy 1.1.2:** Use appropriate building materials, fencing, and landscaping that reflect the surrounding environment.
- Strategy 1.1.3:** Review proposed development for visual compatibility with adjacent land and public spaces.

Goal 2: Implement Dark Sky-Compliant Lighting Standards

- Policy 2.1: Reduce light pollution and preserve nighttime visibility through regulated outdoor lighting.**
- Strategy 2.1.1:** Enhance lighting standards that comply with Dark Sky principles across all zoning categories.
 - Strategy 2.1.2:** Prohibit excessive or unshielded outdoor lighting in residential and agricultural areas.
 - Strategy 2.1.3:** Support public education and community stargazing events that promote awareness of light pollution impacts.

Goal 3: Establish a Consistent Town Identity Through Signage and Markers

- Policy 3.1: Reinforce Fairfield’s sense of place through cohesive signage and entry features.**
- Strategy 3.1.1:** Install monument-style signs at major entry points that reflect the town’s history and rural character.
 - Strategy 3.1.2:** Use Pony Express-style cairns or other heritage-inspired markers at key intersections and public areas.
 - Strategy 3.1.3:** Standardize public signage for clarity, durability, and design consistency across the town.





CONCLUSION

The Fairfield General Plan sets a firm direction: protect the town’s rural character, support limited and intentional growth, and maintain local control over land use. The plan responds to community input and reflects Fairfield’s desire to remain a low-density, agricultural town—not a suburb. Rather than inviting rapid expansion, the plan identifies specific areas where growth can occur without compromising Fairfield’s identity, landscape, or infrastructure capacity.

Fairfield will concentrate future development in a few defined areas—the Tech Overlay and Allen’s Ranch Road corridor—where infrastructure investment, job creation, and regional transportation access align. These locations offer opportunities to grow Fairfield’s tax base and economic role while avoiding impacts on residential and agricultural zones. The rest of the town will continue to follow large-lot zoning, rely on private water and septic systems, and limit new development to what the land and community can support.

Transportation planning reinforces these land use choices. The Southern and Northern Gateways form a loop road system that directs freight, commuter, and industrial traffic around—not through—the Town Core. This protects Fairfield’s quiet, walkable center while supporting regional mobility and targeted economic investment. The plan also emphasizes trail development and traffic-calming strategies to enhance safety and rural livability.

Fairfield’s commitment to agricultural sustainability is also central to this plan. Programs for local food distribution, fruit tree planting, and hydroponic greenhouses support food resilience, strengthen the local economy, and reinforce the town’s identity as a working rural landscape.

This General Plan meets all requirements for towns under the Utah Land Use, Development, and Management Act (LUDMA), providing clear land use and transportation guidance. It also addresses housing and water within the context of Fairfield’s rural development strategy.

Above all, the plan preserves Fairfield’s way of life. Every goal, policy, and strategy reinforces the town’s long-term vision: stay rural, grow with intention, and make decisions that reflect the values of the people who live here.

DRAFT

Ordinance # 2025-_____. An Ordinance of the Fairfield Town Council of the Town of Fairfield, Utah, Amending Chapter 10.21. Signs.

Dated _____

Document Control Changes: Draft changes made March 4, 2025

WHEREAS, Utah Code 10-9a-102 grants the Town of Fairfield authority to enact ordinances that the Fairfield Town considers necessary or appropriate for the use and development of land within the Town; and

WHEREAS, the subject text amendment enacts provisions related to the regulation of signs; and

WHEREAS, the Town Council has held a public hearing and reviewed the subject text amendment; and

WHEREAS, the Town Council finds that the subject text amendment will enhance public safety and the rural aesthetics of the community, while minimizing visual clutter.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF FAIRFIELD, UTAH:

SECTION 1. Text Amendment. Fairfield Town Code Chapter 10.21 section, 10, 20, 30 is replaced with section 10–60, as shown in Exhibit A, is hereby amended.

SECTION 2. Severability. If any section, part, or provision of this Ordinance is held invalid or unenforceable, such invalidity or unenforceability shall not affect any other portion of this Ordinance, and all sections, parts, provisions, and words of this Ordinance shall be severable.

SECTION 3. Effective Date. This Ordinance shall become effective immediately upon publication or posting as required by law.

Passed and Adopted this _____ day of _____, 20_____

FAIRFIELD TOWN

Hollie McKinney, Mayor

RL Panek	Yes_____	No_____
Tyler Thomas	Yes_____	No_____
Michael Weber	Yes_____	No_____
Richard Cameron	Yes_____	No_____

Stephanie Shelley, Recorder

(SEAL)

EXHIBIT A

Section 10.21.10. Purpose

The purpose of this ordinance is to establish sign regulations that enhance the rural character of Fairfield, maintain aesthetic consistency, ensure public safety, and minimize visual clutter while allowing appropriate signage for businesses and developments.

Section 10.21.20. Applicability

Monument signs and wall signs are prohibited in all zones except for the Light Industrial West Zone, Light Industrial East Zone, and the Commercial Overlay Zone. All signs must comply with the regulations in this Chapter.

Section 10.21.30. General Sign Requirements.

A. Monument Signs.

1. Each development is permitted one (1) monument base sign per five hundred (500) feet. of frontage, which must comply with Fairfield Town's aesthetic and design standards in the general plan.
2. The maximum height shall not exceed eight (8) feet, and the maximum width shall not exceed ten (10) feet.
3. Materials shall be natural or complementary to the surrounding architecture, including stone, wood, or metal accents.
4. Monument signs shall be externally illuminated with downward-facing lighting. Internally lit or backlit signs are prohibited.
5. Placement must not obstruct visibility for traffic or pedestrians.
6. **RESIDENTIAL ZONES:** No advertising signs of any kind shall be allowed in any residential zone, except signs pertaining to the sale or lease of residential property and except for name plates or signs indicating the existence of an office or a professional person and a home occupation.
7. Exception: Temporary signs (not posted longer than 72 hours).

B. Wall Signs.

1. All wall signs must be included in the master development plan and reviewed as part of the site plan approval process.
2. Signs shall be proportional to the building's façade and may not exceed ten (10) percent of the wall area on which they are placed.
3. Lighting shall be non-intrusive, such as gooseneck or downward-facing fixtures.

4. Signs shall be made of high-quality, durable materials and must maintain a consistent aesthetic with the development.

C. Directional & Informational Signs.

1. Small directional signs, such as parking and entrance signs, shall be limited to four (4) feet in height. Maximum of 16 square feet.
2. Signs must be consistent in color, material, and style with the primary monument sign.
3. Internal illumination is prohibited; externally lit fixtures must be shielded to prevent light pollution.

Section 10.21.40. Prohibited Signs.

A. The following sign types are prohibited within Fairfield Town limits:

1. Digital, LED, or flashing signs, including scrolling or animated messages.
2. Billboards or off-site advertising signs not associated with the property.
3. Roof-mounted signs extending above the highest part of the building.
4. Portable or mobile signs, including trailer-mounted advertising.
5. Neon signs, except for small window-mounted "Open" signs under four (4) square feet.
6. Signs obstructing road visibility or creating safety hazards.

Section 10.21.50. Temporary & Event Signs.

Community event signs (e.g., town fairs, seasonal markets) may be allowed but must be removed within seven (7) days after the event.

B. Banners and sandwich boards are permitted only for special events or grand openings and must be removed within fourteen (14) days.

C. Temporary signs shall not exceed thirty-two (32) square feet in size and must be securely fastened to prevent wind damage.

Section 10.21.60. Lighting Standards.

A. All sign lighting must use warm, non-intrusive illumination that aligns with Fairfield's rural character.

B. No neon, backlit, or excessively bright lighting is allowed.

C. Dark-sky compliant fixtures are required to reduce light pollution.

Section 10.21.70. Compliance & Enforcement.

- A. All new signs must be reviewed and approved as part of the site plan or master development plan process.
- B. Non-conforming signs must be removed or brought into compliance within thirty (30) days of notice.
- C. Violations of this ordinance may result in fines, penalties, or removal of the non-compliant sign at the owner's expense.

DRAFT MARCH 4, 2025

Title 10 - Land Use Regulations

Chapter 16 - Special Use Regulations

Section 10.16.010 Purpose

The purpose of these Special Use Regulations is to ensure that certain land uses, which may have unique characteristics or potential impacts, are reviewed and regulated to maintain the health, safety, and welfare of the community. These regulations are intended to:

1. Promote compatibility between special uses and surrounding properties by addressing potential impacts such as noise, traffic, visual appearance, and environmental effects.
2. Protect and enhance the character, quality, and stability of neighborhoods, commercial areas, and public spaces.
3. Provide a clear and predictable process for the review, approval, and enforcement of special uses.
4. Ensure that special uses contribute positively to the community by balancing the needs of property owners, neighbors, and the broader public interest.
5. Align with the goals and policies set forth in the Town's comprehensive plan or other adopted planning documents.

Section 10.16.020 General Regulations

The following general regulations shall apply to all special uses within the jurisdiction of the Town to ensure consistency, fairness, and adherence to community standards:

1. **Compliance with Zoning and Land Use Plans.** All special uses must comply with the requirements of the zoning district in which they are located and align with the goals and objectives of the Town's comprehensive plan and other applicable land use policies.
2. **Minimization of Adverse Impacts.** Special uses shall be designed, located, and operated to minimize negative impacts on surrounding properties, including but not limited to noise, vibration, odors, light, traffic, and visual intrusions.

3. **Adequate Infrastructure and Services.** Special uses must have access to adequate public infrastructure, including roads, utilities, water, sewer, and emergency services, without placing undue burden on existing systems or requiring unplanned expansions.
4. **Traffic and Access Management.** Special uses shall provide safe and efficient ingress and egress, with adequate off-street parking and loading areas to avoid traffic congestion and ensure pedestrian safety.
5. **Compatibility with Surrounding Land Uses.** Special uses must demonstrate compatibility with adjacent and nearby land uses, including appropriate buffering, landscaping, or screening where necessary to reduce visual or operational conflicts.
6. **Lighting.** Lighting must be directed downward to avoid glare on neighboring properties. Must follow Fairfield's lighting ordinance.
7. **Environmental Protection.** Special uses shall avoid significant adverse impacts on natural resources, including wetlands, floodplains, water bodies, and environmentally sensitive areas. Appropriate mitigation measures shall be required where impacts cannot be fully avoided.
8. **Hazardous Material Storage and Spill Prevention.**
Storage of fuels, chemicals, or hazardous materials shall comply with all applicable federal, state, and local regulations, including the International Fire Code. All hazardous materials must be stored in appropriate containers with clearly marked labels and housed in secured areas.
9. **Secondary containment systems** are required to prevent contamination in the event of a spill or leak. Containment must be capable of holding at least 110% of the volume of the largest container stored.

10. **Spill Prevention, Control, and Countermeasure (SPCC) Plan** or equivalent emergency response plan shall be submitted to the Town as part of the application. This plan must identify:
- All hazardous materials proposed to be stored or used on-site;
 - Spill containment methods;
 - Emergency contacts and training procedures;
 - Clean-up and disposal procedures in compliance with EPA and Utah DEQ regulations.
11. **Operational Standards.** All special uses must comply with applicable operational standards established by federal, state, and local regulations, including building codes, health and safety codes, and environmental laws.
12. **Time Limitations and Phasing.** The Town may impose time limitations on the duration of a special use or require phasing plans to ensure orderly development and compliance with conditions of approval.
13. **Periodic Review and Compliance.** Special uses may be subject to periodic review by the Town to ensure continued compliance with the terms of approval. Failure to comply may result in revocation or modification of the permit.
14. **Conditions of Approval.** The Town may impose additional conditions as necessary to address unique characteristics of the proposed use or its site to ensure compatibility with surrounding properties and adherence to the public interest.
15. **Expiration and Renewal.** Special use permits shall expire if the use is not established or operational **one (1) year** of the date of approval, unless an extension is granted by the Planning Commission. A use shall be considered “established” when:
- All required permits have been obtained;
 - Construction (if applicable) has commenced;
 - The use has begun operating or been substantially implemented.
16. **Transferability.** Special use permits shall not be transferable without prior approval of the Town, unless otherwise specified in the terms of the permit.

17. **Public Hearing and Notice Requirements.** All applications for special use permits shall be subject to a 10-day public notice and hearing requirements to ensure transparency and community input.

18. **Modification of Approved Special Uses.** Any material changes to an approved special use shall require review and approval by the Town through the same process as the initial application.

Section 10.16.030 Application and Approval

1. **Application.** Any person or entity seeking a special use permit within the Town must submit a complete application package to the Town Administrator. The application must include the following:
 - a. **Completed Application Form.** A fully completed application form, signed by the applicant and the property owner (if different from the applicant).
 - b. **Application Fee.** Payment of the required non-refundable application fee, as set forth in the Town's fee schedule, to cover administrative and review costs.
 - c. **Proof of Ownership or Authorization.** Documentation demonstrating that the applicant owns the property or has authorization from the property owner to submit the application.
 - d. **Project Description.** A detailed narrative describing the proposed use, including:
 - i. The nature and scope of the activity.
 - ii. Hours of operation.
 - iii. Anticipated traffic generation.
 - iv. Proposed number of employees (if applicable).
 - v. Any potential environmental impacts or mitigation measures.
 - e. **Site Plan.** A scaled site plan or survey, prepared by a licensed professional (if required), that includes:
 - i. Property boundaries, dimensions, and total area.

- ii. Location of all existing and proposed buildings, structures, and improvements.
 - iii. Parking areas, driveways, and access points.
 - iv. Landscaping, fencing, and screening.
 - v. Utility lines, easements, and drainage features.
 - vi. Nearby streets and adjacent property uses.
- f. **Floor Plans and Building Elevations.** For applications involving new construction or building modifications, detailed floor plans and building elevations showing the size, layout, and appearance of the structures.
- g. **Traffic Impact Study.** If required by the Town, a traffic impact study prepared by a qualified professional to assess the potential effects of the proposed use on traffic flow and safety.
- h. **Environmental Impact Analysis.** If applicable, an environmental impact analysis identifying potential effects on natural resources, wetlands, floodplains, or other sensitive areas, along with proposed mitigation measures.
- i. **Neighbor Notification List.** A list of names and addresses of all property owners within a 500 feet of the subject property for purposes of public notification.
- j. **Public Hearing Notice Materials.** Draft language for the required public notice of the hearing, including a description of the proposed special use and the property's location.
- k. **Additional Studies or Reports.** Any additional studies, reports, or documentation deemed necessary by the Town, such as noise studies, utility impact analyses, or economic feasibility assessments.
- l. **Statement of Compliance.** A written statement from the applicant explaining how the proposed special use complies with the zoning ordinance, special use regulations, and the Town's comprehensive plan.
- m. **Digital Copies.** A digital copy of all submitted documents and plans in a format acceptable to the Town.
- n. **Screened Fencing.** All areas used for storage, equipment being worked on, stored inventory, manufactured goods for sale, or fabrication must be

o. **Other Information.** Any other information deemed necessary by the Town to adequately evaluate the application, as specified during pre-application consultations.

- ### 10.16.035 Approval Criteria and Findings

1. Is consistent with the Town's General Plan and applicable zoning district;
2. Will not be detrimental to the public health, safety, or general welfare;
3. Is compatible with adjacent land uses in terms of scale, operation, and appearance;
4. Minimizes impacts on traffic, parking, utilities, noise, odor, lighting, and other nuisances;
5. Complies with all applicable federal, state, and local regulations.

10.16.036 Revocation of Special Use Permits

A Special Use Permit may be revoked by the Town for:

- Violation of any condition of approval;
- Operation of the use in a manner detrimental to public health or safety;
- Abandonment or discontinuation of the use for twelve (12) consecutive months.
The permit holder shall be notified in writing and provided an opportunity to cure violations or request a hearing before the Planning Commission.

Section 10.16.040 Contractor Yards and Industrial Outdoor Storage

1. Use-Specific Setbacks.

- a. All storage areas, equipment, and materials must be located at least:
 - i. 100 feet from any residential property line.
 - ii. 25 feet from public rights-of-way.
- b. No storage or activity shall occur within the required landscaping buffers or front yard setback.

2. Height of Stored Materials. Materials, equipment, or vehicles stored outdoors shall not exceed **16 feet** in height unless screened by a solid structure or enclosure of equivalent or greater height.

3. Pavement and Surface Requirements.

- a. Storage and operational areas must be paved or surfaced with dust-free materials, such as gravel, asphalt, or concrete, as approved by the Town.
- b. Appropriate stormwater management features, such as permeable surfaces or retention areas, must be incorporated to prevent runoff.

4. On-Site Waste Management.

- a. All waste materials generated on-site must be stored in designated, enclosed areas and regularly disposed of.

- b. Open burning of waste or debris is prohibited.

5. Vehicle and Equipment Restrictions.

- a. Only vehicles and equipment directly associated with the contractor's or industrial operation may be stored on-site.
- b. No long-term storage of unregistered, inoperable, or salvaged vehicles or equipment is permitted unless explicitly authorized.

6. Temporary Structures.

- a. Temporary structures, such as storage containers or modular offices, may be allowed with prior approval but must be located in compliance with setback and screening requirements.
- b. Temporary structures must be removed within a specified timeframe if no longer associated with the approved use.

7. Fuel and Chemical Storage.

- a. Storage of fuels, chemicals, or hazardous materials must comply with all federal, state, and local regulations including International Fire Code and include secondary containment systems to prevent contamination.
- b. A spill response plan must be submitted with the application and kept on-site.

8. Fencing and Security.

- a. Contractor yards and industrial outdoor storage facilities must be fully enclosed with a secure fence or wall, at least [6-8 feet] in height, with lockable gates.
- b. Security measures, such as surveillance cameras or lighting, must be implemented to deter unauthorized access.

9. Seasonal and Idle Equipment. Seasonal or idle equipment stored on-site must be maintained in operable condition and stored in an orderly manner.

Section 10.16.050 Automotive Uses

The following standards shall apply to all automotive uses, including automotive repair, automotive paint and repair, automotive service, automotive storage, towing yards, and automotive rentals.

1. Storage of vehicles must be screened from public view with a minimum 8-foot opaque fence or solid wall.
2. Spray painting/bodywork must be conducted inside enclosed, ventilated and environmentally safe structures.
3. No dismantling or salvaging of vehicles shall be permitted on site.
4. Vehicles may not be stacked.
5. Stormwater management measures must be in place to prevent fluid leaks from contaminating the ground.
6. A maximum storage duration of 180 days per vehicle shall be enforced.
7. All vehicle storage must be on a paved or stabilized surface to minimize dust and environmental impact.

Section 10.16.060 Auto self-serve stations, Gas Stations, Convenience Stores, Fuel Stations

1. Location Restrictions.

- a. Gas stations and convenience stores must be located at least:
 - i. [300 feet] from schools, daycare centers, and residential zoning districts, unless otherwise approved with appropriate mitigation measures.
 - ii. [1,000 feet] from existing gas stations to avoid over-concentration, unless deemed necessary to serve the community.
- b. Sites must be located at intersections or along major arterial or collector streets for optimal traffic flow and access.

2. Fueling Station Setbacks.

- a. Fuel pump islands must be set back at least:
 - i. [25 feet] from all property lines.

- ii. [50 feet] from any residential property or district boundary.

3. Canopy Design and Lighting.

- a. Canopies over fuel pumps must:
 - i. Be designed to complement the architectural character of the primary building.
 - ii. Not exceed [20 feet] in height.
- b. Lighting under the canopy must be fully recessed and shielded to prevent glare onto adjacent properties or roadways.

4. Underground Storage Tanks (USTs).

- a. All underground storage tanks must comply with state and federal regulations for installation, monitoring, and spill prevention.
- b. A spill containment and response plan must be submitted as part of the application.

5. Traffic and Access Management.

- a. A minimum of two access points must be provided, with no access drive located closer than [50 feet] to an intersection.
- b. Driveways must align with existing or planned driveways on opposite sides of the street, wherever feasible.
- c. On-site circulation must allow for safe and efficient movement of vehicles, including fuel delivery trucks, without impeding traffic on public roads.

6. Parking Requirements.

- a. A minimum of [1 space per 250 square feet] of building area, excluding fueling positions.
- b. Fueling positions shall not count toward required parking spaces.

7. Screening and Buffering.

- a. A solid fence or wall, [6-8 feet] in height, and landscaping shall be required along property lines adjoining residential districts or uses.
- b. Dumpster and service areas must be fully screened with materials matching the primary building.

8. Convenience Store Regulations.

- a. Outdoor display or sale of goods (e.g., propane tanks, firewood, ice machines) is permitted only in designated areas approved on the site plan.
- b. Overnight parking of commercial vehicles is prohibited unless explicitly approved.
- c. Alcohol sales must comply with local and state licensing requirements.

9. Environmental Protections.

- a. Stormwater runoff must be managed to prevent contamination of nearby water resources.
- b. Spills from fueling operations must be cleaned immediately, and all spills must be reported in compliance with local, state, and federal requirements.

10. Signage.

- a. Freestanding signs must be located outside visibility triangles and setback at least [10 feet] from property lines.
- b. Electronic price displays must not flash or change more frequently than once every [30 seconds].

11. Hours of Operation. Hours of operation may be restricted in proximity to residential areas. Standard hours of operation are [6:00 AM to 11:00 PM], unless otherwise approved.

12. Security Measures.

- a. Security cameras must monitor all fueling stations, entry points, and parking areas.
- b. The site must be well-lit, with lighting designed to minimize glare and spillover onto adjacent properties.

13. EV Charging Stations. If electric vehicle (EV) charging stations are provided, they must be located to avoid traffic congestion and must be clearly marked and accessible.

14. Air and Water Stations. An air and water station must be provided for public use and located to ensure safe access without impeding on-site traffic circulation.

15. Fuel Delivery Restrictions. Fuel deliveries must be restricted to off-peak hours to minimize traffic disruptions.

Section 10.16.070 Microbreweries and Distilleries

1. Outdoor seating or entertainment areas must be at least 100 feet from residential properties.
2. Loading/unloading zones must be designed to prevent traffic congestion.
3. Odor mitigation measures may be required.

Section 10.16.080 Showroom and Sales Centers

1. Buildings must be architecturally compatible with surrounding structures.
2. Parking areas must be paved and ADA-compliant.
3. Outdoor display areas must be screened from public roads.

Section 10.16.090 Commercial Greenhouses & Hydroponic Greenhouses

1. Must include a water conservation plan and use responsible irrigation practices.
2. Chemical storage and fertilizer handling must follow Utah State environmental regulations.
3. Must be set back at least 50 feet from residential properties.
4. Operators must implement an Odor Mitigation plan
5. No detectable odors should cross property boundaries. Verified complaints will require immediate mitigation.
6. Operators must submit a Waste Management plan detailing how plant and water runoff will be handled.

Section 10.16.100 Welding Machine Shops & Small Engine Repair

1. Operations producing noise or vibrations must be conducted indoors or be mitigated with noise barriers.
2. Storage of hazardous materials must comply with federal and state regulations.

Section 10.16.110 Fireworks Sales/Stands

1. Firework storage and sale areas must comply with Utah State Fire Code.
2. A fire suppression and emergency plan must be submitted.
3. Temporary sales stands must be at least 300 feet from residential properties.

Section 10.16.120 Public Utility Stations

1. Must be screened with landscaping or fencing to minimize visual impact.
2. Noise-producing equipment must meet Fairfield noise ordinances.

Section 10.16.130 Pawn Shops

1. Must be at least 1,000 feet from any school, park, or residential area.
2. Security measures, including surveillance cameras and proper lighting, are required.

Section 10.16.140 Warehouse Storage Units (Commercial)

1. Shall not be used for residential storage or self-storage purposes.
2. Must provide adequate loading docks and circulation areas to prevent traffic congestion.

Section 10.16.150 Indoor Shooting Ranges

1. Safety Regulations:
 - a. Must conform to all federal, state, and industry regulations for health and safety.
 - b. Construction must be designed and certified to capture all fired rounds.
 - c. No ammunition may be fired that exceeds the range's certified design specifications.
 - d. Alcoholic beverages shall not be sold, consumed, or permitted on the premises.
 - e. A written log of all range users must be maintained by the range operator.
 - f. Minors must be accompanied by a responsible adult at all times. No child under eight years old may discharge or handle firearms.

- g. On-site supervision and monitoring must be provided at all times.
 - h. A cut-wire protected alarm system must be installed for general security.
- 2. Sound Study:
 - a. A sound study shall be conducted and submitted with the application.
 - b. Noise levels above 65 decibels at property lines shall be considered a nuisance and require mitigation.
- 3. Additional Components:
 - a. May include a retail component for the sale and rental of firearms, ammunition, and related accessories.
 - b. May include classroom facilities for community education and gun safety training.
 - c. May include a restaurant or dining component.

Section 10.16.160 Multi-Tenant Industrial Building (MTIB)

- 1. Multi-Use Configuration: Units may be used for a combination of industrial, office, and storage purposes, subject to zoning compliance.
- 2. Independent or Shared Facilities: Each tenant may have independent access or share common infrastructure such as loading docks, parking, and utilities.
- 3. Zoning Compliance: All businesses operating within the MTIB must comply with the permitted and conditional uses outlined in the Light Industrial West Zone.
- 4. Parcel and Ownership Structure: The building may be under single or multiple ownership, with businesses leasing or owning individual units.
- 5. Tenant Improvement Permit Requirement: Each tenant is required to obtain a Tenant Improvement Permit from the Town of Fairfield before making any modifications, alterations, or occupying space within the MTIB. This includes but is not limited to:
 - a. Interior build-outs, electrical, plumbing, and structural changes.
 - b. Installation of new equipment or machinery requiring utility connections

- c. Changes to the use of the space that may impact zoning, fire codes, or safety regulations

Definitions (Special Use Regulations)

Abandonment – The discontinuation of a use or activity for a period of twelve (12) consecutive months or more, unless otherwise approved by the Town.

Accessory Structure – A building or structure that is subordinate to the primary use of a property and serves a purpose customarily incidental to the main use.

Application – A complete package submitted to the Town for review of a proposed Special Use, including all required forms, fees, plans, and documentation.

Buffer – A landscaped area or physical barrier intended to reduce visual, sound, or operational impacts between dissimilar uses.

Comprehensive Plan – The officially adopted planning document of the Town of Fairfield that guides future growth, land use, infrastructure, and community development.

Compatibility – The degree to which a proposed use is consistent in scale, appearance, intensity, and function with surrounding uses or zoning districts.

Conditional Use – A land use that may be permitted only after review and approval by the Town and upon compliance with specific conditions to mitigate impacts.

Dust-Free Surface – A stable, compacted surface made of gravel, concrete, asphalt, or similar material approved by the Town to minimize airborne dust.

Findings – Written conclusions by the Planning Commission that justify the approval, denial, or modification of a Special Use Permit based on applicable criteria.

Hazardous Materials – Any substance or material that may pose a threat to health, safety, or the environment as defined by federal, state, or local law.

Mitigation – Measures taken to reduce or eliminate negative impacts resulting from a development or land use, such as noise, light, odor, or traffic.

Material Modification – A substantial change to an approved Special Use, including but not limited to changes in intensity, site layout, building footprint, hours of operation, or approved conditions.

Noise Barrier – A physical structure, such as a wall or fence, designed to block or absorb noise to protect adjacent properties.

Odor Mitigation Plan – A written plan outlining the steps a property owner or operator will take to prevent offensive odors from crossing property lines.

Operational Standards – Conditions and performance measures imposed on a use to ensure it operates safely, quietly, and without adverse community impacts.

Planning Commission – The body appointed by the Town of Fairfield responsible for reviewing Special Use Permit applications and making decisions or recommendations as outlined in the Town Code.

Screened Fencing – A fence or wall, typically 6 to 8 feet in height, designed to obscure outdoor storage, equipment, or operations from public view using solid or opaque materials.

Setback – The required minimum distance between a building, structure, or storage area and a property line, street, or other feature.

Site Plan – A scaled drawing showing the layout of a proposed development, including structures, access, parking, landscaping, drainage, and utilities.

Special Use – A land use that is allowed within a zoning district only after review and approval by the Town, subject to specific conditions to ensure compatibility and mitigate impacts.

Special Use Permit (SUP) – A permit issued by the Town of Fairfield allowing a Special Use, subject to compliance with all applicable standards and conditions.

Temporary Structure – A non-permanent building or container used on a property for a limited duration in support of an approved use or construction activity.

Town – Refers to the Town of Fairfield, Utah.

Use – The purpose or activity for which a lot, building, or structure is designed, intended, or occupied.

Zoning Administrator – The individual or office responsible for interpreting and enforcing the Town's zoning ordinance, which may include the Mayor or Town Recorder as designated.

Rough Draft 2025



PREPARED FOR:

PREPARED BY:

FAIRFIELD TOWN



FAIRFIELD TOWN

FEBRUARY 2025

CULINARY WATER MASTER PLAN

DRAFT

Fairfield Town

Culinary Water Master Plan

February 2025

DRAFT

Prepared for:

Fairfield Town

Prepared by:



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CHAPTER 1 INTRODUCTION

INTRODUCTION & BACKGROUND

Fairfield Town (the Town) is located in Utah County on the west side of Cedar Valley, situated directly south and west of the city of Eagle Mountain. Historic growth in the Town has been minimal, however recent discussions between the Town and developers may result in an expansion of the Town's population and utility services in the near future.

In response to these development pressures and potential utility service expansion, the Town contracted with Bowen Collins & Associates (BC&A) to complete a Water System Master Plan. The purpose of this master plan is to provide the Town with the information needed to provide an efficient water system capable of meeting existing and expected future demands and satisfying customer expectations in the Town's service area.

SCOPE OF WORK

The following tasks were completed as part of this 2024 Fairfield Water Master Plan:

Task 1: Collect, review, and organize existing data needed to develop the master plan.

Task 2: Evaluate current and projected water use patterns.

Task 3: Evaluate current and possible future water supplies.

Task 4: Create a culinary hydraulic model and identify existing and future operating deficiencies.

Task 5: Evaluate alternative improvements to resolve deficiencies identified in Task 4 and develop a water system capital facilities plan.

Task 6: Document methods and results of the previous tasks in this master plan report.

REPORT ASSUMPTIONS

As a long-term planning document, this report is based on several assumptions related to future growth patterns, service area expansion, and source availability. Assumptions related to water use patterns, development densities, and allowable water use for industrial facilities will be key to monitor as development occurs within the Town. The details of these assumptions are documented within the report. If actual development and water use are significantly different than what has been assumed, the results of this report will need to be adjusted accordingly. Because of these uncertainties, this report should be updated every four to six years or sooner if significant changes such as annexation or changes in development patterns occur.

CHAPTER 2 DEMAND PROJECTIONS

Projecting future increases in water demand is key to planning for the future of the Town. Therefore, BC&A has gathered what is currently known about water use patterns, development, and zoning to create demand projections. The purpose of this chapter is to summarize the work and results of BC&A's projections of existing and future water demands in the Town. A discussion of water supplies is included in Chapter 3.

DEMAND PROJECTION METHODOLOGY

This master plan was developed concurrently with the Town's general plan and relies heavily upon the updated zoning and development vision in the general plan. Demand projections contained here reflect the general plan concepts developed in November of 2024. The methodology used to project demand in this study is as follows:

1. Define the service area.
2. Project the growth of water connections within the study area through buildout based on the Town's general plan and on currently available land development plans.
3. Convert projections of connection growth to a system water demand based on historic per connection demand.

Each step of this process is summarized in the sections that follow.

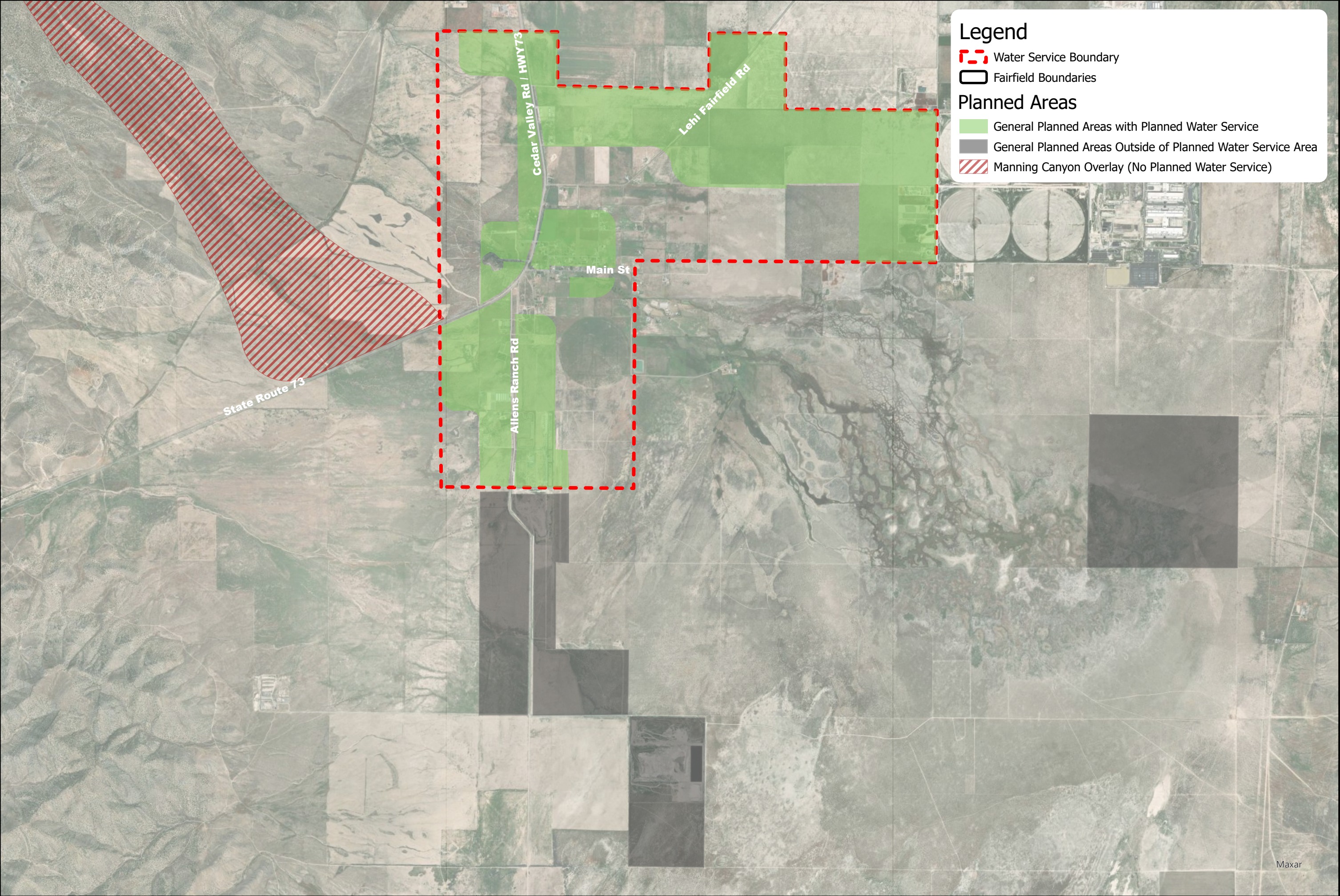
SERVICE AREA

Although the boundaries of Fairfield Town cover a relatively large area (see Figure 2-1), historic development has been limited to the Town center (i.e. Main Street) and the immediate surrounding areas. The centralized water system is limited to these developed areas. Because the water system service area within Fairfield is limited to a small area, and because the usage patterns across existing users are relatively consistent across the system, BC&A considered the entire system as one service area.

BC&A made multiple assumptions regarding future growth within (and outside) the water service area shown on Figure 2-1:

- Future land development with lot sizes greater than 5 acres are assumed to have their own water supply and will not be serviced by the Town's centralized water system.
- The Manning Canyon Overlay area was not included in this analysis. This area is higher than can be serviced with the existing water tanks and sources and will its own tank, booster station, and/or source for future water service.

Additional details about planned development in Fairfield can be seen in the Town's Vision Plan figure from their General Plan, which is included in Appendix A.



Legend

- Water Service Boundary
- Fairfield Boundaries

Planned Areas

- General Planned Areas with Planned Water Service
- General Planned Areas Outside of Planned Water Service Area
- Manning Canyon Overlay (No Planned Water Service)

PROJECTED GROWTH IN WATER CONNECTIONS

Currently, approximately half of the Town's residents use culinary water from the Town's centralized water system. The remaining residents source their water from private wells. Only the connections to the centralized water system will be analyzed for this study.

Existing Connections

As of December of 2024, the following number of equivalent residential units (ERUs) were connected to the Town's water system (Table 2-1).

**Table 2-1
Existing ERUs**

Area	Total Connections	Total Connections
Residential	27	27
Commercial	2	0.8
Institutional	4	1.6
Total	33	29.4

System Growth and Buildout Projections

Projected total connections within the Town water system are based on a build-out scenario using expected zoning from the Town's general plan. Additionally, known information regarding upcoming developments was utilized to estimate the timing and location of growth within the water system.

Zoning in the general plan allows residential, light industrial, and commercial development to occur within the Town. After discussing with Town personnel, BC&A has based this analysis on buildout densities (ERU/acre) of residential, commercial, and light industrial to be 1.0, 2.0, and 1.0, respectively. It should be noted that these densities are substantially lower than would be typically seen for development along the Wasatch Front. Town personnel have decided to limit the densities used for planning due to the severely limited access to water rights in the Cedar Valley for new development. Town personnel have indicated that the Town will enforce these lower water use densities in the future through the development review processes and adopting policies that limit the allowable water use of new developments.

Table 2-2 illustrates BC&A's growth projections in ERUs for 10-year and buildout conditions. We anticipate nearly all of the Town's growth to occur by the year 2065.

**Table 2-2
Buildout ERUs**

Area	Existing ERUs	10-Year ERUs	Buildout ERUs
Residential	27	396	989
Industrial	0	95	1,177
Commercial	2	20	830
Institutional	4	4	6
Total	33	515	3,002

WATER USE PROJECTIONS

Water demands are projected assuming that future water use patterns will be similar to existing use patterns. Because the exact split between indoor and outdoor use cannot be determined from available data, BC&A has defined an ERU using typical combined indoor and outdoor use from Fairfield historic data.¹

Annual Average Demand

Annual average demand refers to the total volume of culinary water consumed each year by Fairfield customers over one year. From Fairfield historical production data, average annual water demand between 2016 and 2023 was 570 gpd per ERU.

While these are the demand standards used in this study, it should be emphasized that the actual water usage in the Town will change over time, especially as the balance between residential and non-residential users changes with development, or the density of residential development changes. As a result, it is important that the Town continue to monitor water demands and adjust recommendations in this master plan accordingly.

Peak Day Demand

Peak day demand is the highest daily water demand observed during the year. The peak day peaking factor is the ratio of peak day demand to average day demand.

Most water system infrastructure (such as source and storage facilities) is sized to satisfy peak day demands. Therefore, it is imperative to identify the peak day demand of the system. For Fairfield, the current peaking factor for an ERU (including indoor and outdoor usage) was observed to be about 2.57.

Note that we expect that the peaking factor will change over time as the balance between residential and non-residential connections changes. This is because non-residential users typically use more water indoors than outdoor, which is the opposite of typical residential use patterns (i.e. the majority of residential water demands are used outside during the irrigation season). Correspondingly, we have estimated the buildout peak day peaking factor to be about 2.22. This was estimated by calculating a weighted average of residential and non-residential peaking factors for estimated buildout development conditions.

Peak Hour Demand

Peak hour, or instantaneous peak, is used to estimate the needed capacities of transmission and distribution system infrastructure. Due to a lack of historic hourly use data, peak hour demands were

¹ There is a mix of culinary and secondary water used for outdoor applications during the irrigation season within the Town. The Town collects data on source production and water sales. We have made assumptions concerning indoor and outdoor water use patterns due to the lack of data to separate the use applications. For the purposes of this analysis, each connection is assumed to include some irrigation use.

BC&A estimated indoor use patterns for the existing customers (typical per capita use for the state of Utah) and assumed an indoor average day demand of 198 gpd/ERU (60 gpd x 3.3 people/household).

Within each culinary connection demand estimate we assumed approximately 0.119 acres (5,180 SF) of irrigated area was included as pressurized culinary irrigation. We are aware that existing lots include irrigated areas much larger than this, however, historic water production and sales data suggests that the majority of these areas are irrigated using flood irrigation with secondary water.

Future projections maintain the same estimated culinary use per connection (570 gpd/ERU peak day demand). It is assumed that any irrigation needs in excess of this demand may be obtained through secondary water. Because the nature of real irrigation needs in future development is unknown, it is crucial that the Town monitor water use within the system as new users are added so demand projections can be updated according to real need.

estimated using the 10-state standard method of calculating peaking factors for small areas. This is a widely used and accepted method of calculating peaking factors across the industry when other data is unavailable. Through this method, BC&A estimated the current peak hour peaking factor (i.e. ratio of peak hour demand to average annual demand) to be 4.25.

Similar to the peak day peaking factor, BC&A anticipates that the instantaneous peaking factor will change with the expected growth of industrial and commercial facilities. We estimate the future buildout peaking factor to be 2.66 using the same 10-state standard calculation method and projected buildout water demands.

PRODUCTION REQUIREMENTS

The following Table 2-3 contains our projections for the future water production requirements within the Town².

Table 2-3
Projected Future Water Production Requirements

Year	ERUs	Annual Demand (ac-ft)	Average Day Demand (gpd)	Peak Day Demand (gpm)	Peak Hour Demand (gpm)
2024	31	21	18,801	34	142
2025	33	46	40,744	72	291
2026	72	70	62,763	110	425
2027	110	95	84,877	147	549
2028	149	120	107,109	184	664
2029	188	142	127,211	217	760
2030	223	166	148,068	251	855
2031	260	199	177,810	299	997
2032	312	237	211,935	354	1,156
2033	372	281	250,519	416	1,333
2034	440	329	293,489	485	1,528
2035	515	382	340,634	560	1,738
2040	1,101	702	627,035	1,011	2,961
2050	2,279	1,454	1,298,173	2,045	5,655
2060	2,885	1,841	1,643,809	2,559	6,917
2070	2,989	1,908	1,703,037	2,636	7,058
2080	3,000	1,915	1,709,382	2,638	7,036

Currently the Town is relatively limited in its historical water production data, which adds an additional level of uncertainty to the projections shown in this master plan. Therefore, Fairfield

² These projections do not include consideration of conservation or source redundancy. Conservation refers to the reduction of water use on a per connection basis as customers increase the efficiency of their water use. Redundancy refers to the preservation of extra supply to ensure the Town has an adequate water supply in the event of a medium- or long- term source disruption, such as a low yield due to drought, a water quality event, etc. While the Town expects both of these items to be a part of its future water supply planning, these factors are expected to largely offset each other and have correspondingly been excluded for simplicity at this stage of planning. Additional consideration of these issues are recommended as the Town continues to grow.

should begin initiatives to gather, consolidate, organize, and make visible its water use data. Doing so will support greater accuracy in sizing standards and in future updates to this master plan.

CHAPTER 3 SUPPLY PROJECTIONS

The purpose of this chapter is to evaluate the adequacy of existing Fairfield supplies to meet projected system demands. This evaluation considers supply capacity in terms of annual yield and peak day production.

DISCUSSION ON WATER RIGHTS

The demand projections included in the previous chapter have been prepared under the assumption that there will be sufficient water rights to support development shown in the Town's General Plan. However, based on conversations with Town personnel, general knowledge regarding water rights in the Cedar Valley, and the results of the analysis contained in this chapter, it is likely that water rights will control how much development can occur in Fairfield. BC&A recommends the Town continue their water dedication policy (i.e. developers must turn in water rights before they can develop) to ensure development does not overtake water supply in the future.

A full evaluation of not yet-to-be used water rights is outside the scope of this master plan, but BC&A recommends conducting a water right evaluation to understand how many water rights the Town currently owns and the projected number of rights available in the area that may be dedicated to the Town in the future.

EXISTING WATER SOURCES

This section discusses the water sources Fairfield is currently utilizing as a water source. Municipal water source production capacity must legally and physically meet water demands, which is satisfied in three parts:

1. The water provider must have the necessary water rights.
2. Annual yield of the source must be adequate to provide one year's supply of water; and
3. Peak source production capacity must be adequate to meet peak day demands.

The Town supplies water to its customers from two sources: the Fairfield Town well and Fairfield Town Spring. Table 3-1 below summarizes the current yield in annual supply and estimated peak day capacity of both sources.

**Table 3-1
Existing Source Production**

Source	Annual Yield (AF)*	Peak Day Capacity (gpm)
Fairfield Town Well	118	146
Fairfield Town Spring	68	84
TOTAL	186	230

**Due to lack of reliable data, the annual yield shown here is assumed to be 50% of peak day capacity. Actual annual yield may vary significantly from these values based on real water available and water right limitations were not considered.*

PROJECTED ADEQUACY OF WATER SUPPLY

BC&A has examined the adequacy of existing water supply to meet the projected needs of future growth. The projected growth in annual demand is shown versus the Town's existing annual supply

in Figure 3-1. The projected growth in peak day demand is shown versus the Town's existing peak capacity in Figure 3-2.

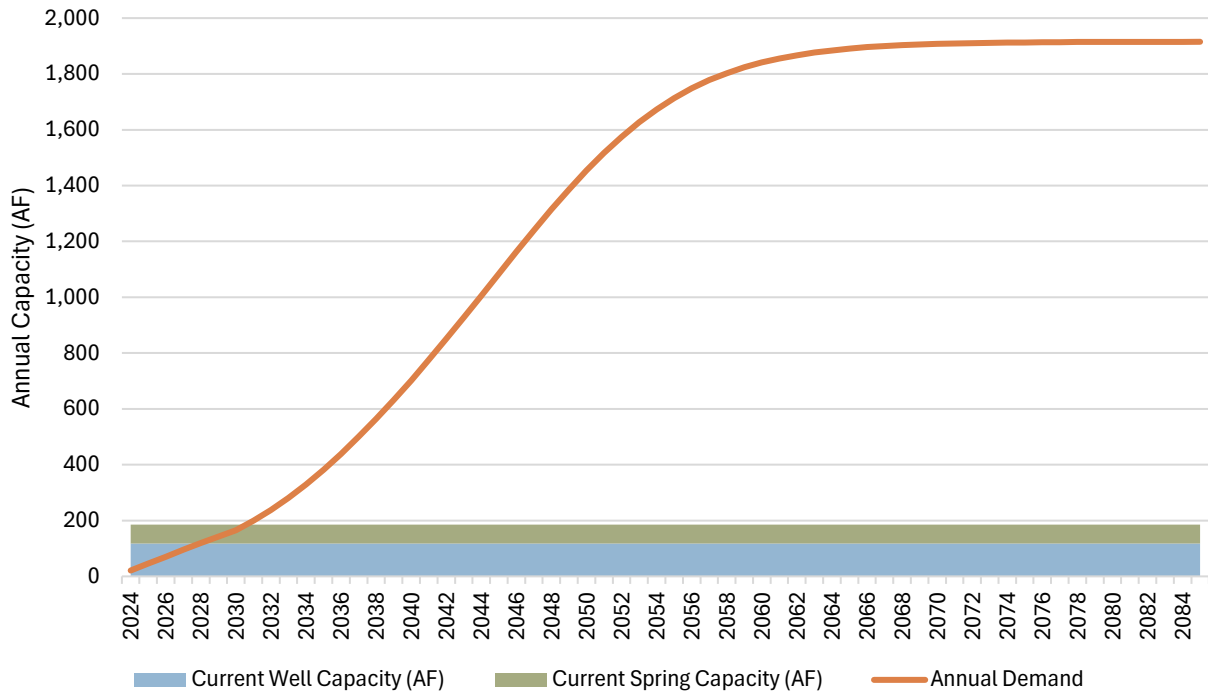


Figure 3-1. Projected Annual Demand vs Supply

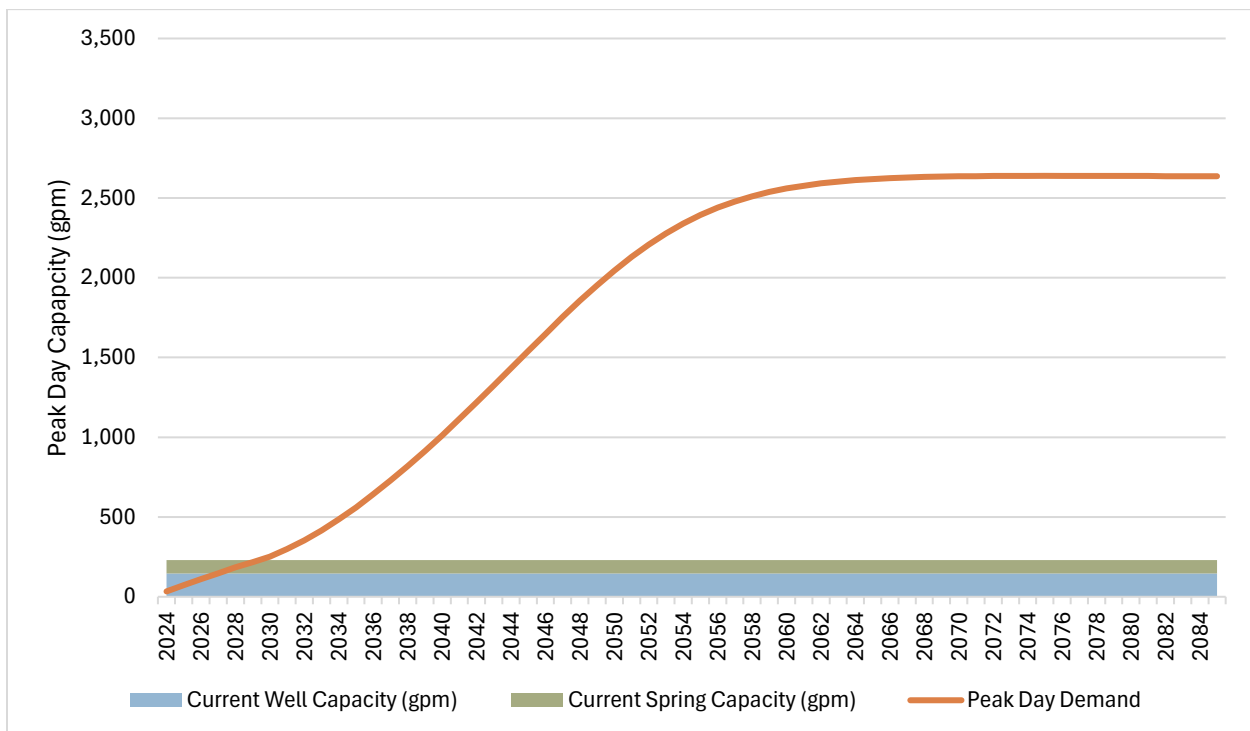


Figure 3-2. Projected Peak Day Demand vs Supply

SUPPLY SUMMARY

Figures 3-1 and 3-2 illustrate that current sources are expected to meet projected demands through approximately 2030. Future source additions or expansions are needed to meet the projected demands of the system at buildout.

BC&A recommends the town begin investigating potential new water sources as soon as possible in order to meet the expected water demands in the near term and beyond. As part of this analysis, the Town may consider looking into the maximum capacity of their current well and the potential to expand their existing water source.

Note that this analysis did not consider a supply buffer or the effects of conservation on water demands (and therefore needed water supplies). These elements should be added in future master planning documents when additional information is available concerning real water demands (with upcoming land development), potential new sources, and water right limitations.

CHAPTER 4 EXISTING WATER SYSTEM

Existing infrastructure in the water system is described in this chapter and shown in Figure 4-1.

WATER PRODUCTION FACILITIES

The Town owns and operates two water sources as part of its water system:

- **The Fairfield Well** – Located on the west end of the water system near the water tanks, the Fairfield well was drilled in 2016. The well is equipped with one pump (described in the “Pump Stations” section below). Additional discussion about the Town’s well is contained in the “Existing Water Sources” section of Chapter 3.
- **The Fairfield Spring** – The Fairfield Spring is located directly west of Main Street. Production capacity and annual yield vary depending on water year conditions, however historic production data is somewhat limited. Flows from the spring are used for both the Town’s culinary and irrigation systems, with the culinary system flows being capped at 84 gpm (31 shares). Water from the spring is pumped to the storage tanks via the main 12-inch distribution line along State Route 73. Additional discussion about the Town’s spring can be found in the “Existing Water sources” section of Chapter 3 and the in the “Pump Stations” section below.

Fairfield water system does not include any treatment processes or chemical additions. As future sources are developed in the valley, the Town may require treatment facilities, depending on the quality of water sources developed. Future treatment may be as involved as a treatment plant, or it may be as simple as including a chlorination step before pumping water into the system. Because future source water quality is unknown at this time, no treatment facilities are planned for the Town water system.

PUMP STATIONS

The Town’s water system includes two pump stations on each of the existing water sources. The Table 4-1 below summarizes the capacity of these pumps stations.

**Table 4-1
Fairfield Pump Stations**

Name	Total Pumping Capacity	Number of Pumps
Well Pump Station	146 gpm	1
Spring Pump Station	84 gpm	1

STORAGE TANKS

The Fairfield water system has two storage tanks, located southwest of the Town’s main development. One tank has a 250,000 gallon capacity and the other has a 160,000 gallon capacity. The 250,000 gallon tank was recently constructed in 2016. Both tank elevations are approximately 5,030 ft when full.

CONVEYANCE SYSTEM

The Fairfield distribution system is composed of distribution pipes and transmission pipes up to 12-inches in diameter. Table 4-2 summarizes the total length of pipe in the system. Two personnel report that all pipes in the system are made of PVC C900.

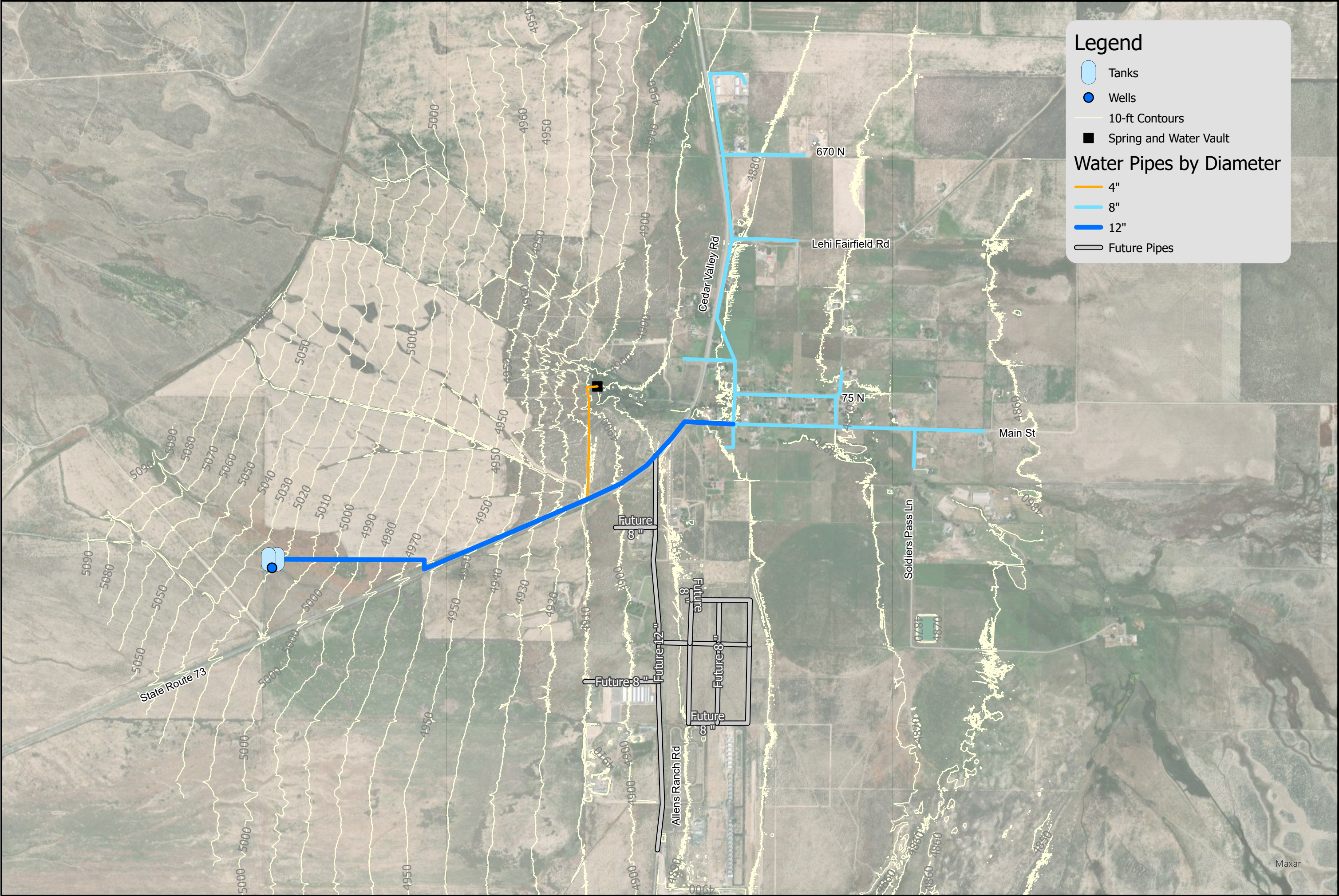
**Table 4-2
Pipeline Summary**

Pipe Diameter (in)	Total Length (ft)	Total Length (mi)	Percentage of Network
4	2,014	0.38	7.0%
8	18,392	3.48	63.9%
12	8,358	1.58	29.1%
Total	28,764	5.45	100.0%

PRESSURE ZONES

Pressure zones consist of service areas within a water system that have a common operating hydraulic grade line (HGL). The HGL of the pressure zone translates to the available water pressure at points of service within the zone. The HGL in each pressure zone can be controlled by tank or reservoir elevations, pressure reducing valves, and/or pumping pressures.

The existing water system in Fairfield operates on a single pressure zone with an HGL of approximately 5,030 ft. The HGL in the zone is controlled by water surface elevations in the Town's tanks.



Legend

- Tanks
- Wells
- 10-ft Contours
- Spring and Water Vault

Water Pipes by Diameter

- 4"
- 8"
- 12"
- Future Pipes

CHAPTER 5

STORAGE CAPACITY EVALUATION

Utah state law (R309-510-8) requires that public water system storage facilities provide equalization, emergency, and fire flow storage to satisfy the expected demands of the system. This chapter outlines the requirements for the sizing calculations and how the existing Town storage compares to expected storage demands in the future.

STORAGE EVALUATION CRITERIA

Equalization Storage

Equalization storage is the volume of water needed to supply the system for periods when demands (peak hour demands) exceed the supply (peak day supply). Based on historic water use patterns of systems similar to Fairfield, BC&A recommends that the equalization storage for the Town be equal to 25 percent of peak day demands.

It is also important to remember that, because equalization storage is used on a daily basis during the summertime, the Town's sources must have the ability to replenish the equalization storage over a 24-hour period. Because emergency and fire flow storage are not used on a regular basis, they do not have the same source requirements as the equalization storage.

Emergency Storage

Emergency storage is the volume of water required to meet water demand during an emergency situation which interrupts the supply of water to the tanks. For example, an emergency might be a power outage that prevents the source pumps from operating, or it could be a break on a critical supply pipeline. While redundant equipment and backup power generators are critical measures for handling emergencies, it is also wise to include additional emergency water at storage tanks. This also gives the system operators the benefit of an extra buffer for system operations. BC&A applied a typical standard for emergency storage, which requires that storage meet water demands during a six-hour power outage during the peak day demand. Thus, the combined need for equalization and emergency storage is 50 percent of peak day demands.

Fire Suppression Storage

Fire suppression storage is the volume of water needed to provide a required fire flow for a specified period of time. Fire flow storage requirements are defined in Utah State code as follows:

"R309-510-8(3): Fire Flow Storage:

- (a) Fire flow storage shall be provided if fire flow is required by the local fire code official or if fire hydrants intended for fire flow are installed.
- (b) Water systems shall consult with the local fire code official regarding needed fire flows in the area under consideration. The fire flow information shall be provided to the Division during the plan review process.
- (c) When direction from the local fire code official is not available, the water system shall use Appendix B of the International Fire Code, 2015 edition, for guidance. Unless otherwise approved by the local fire code official, the fire flow and fire flow duration shall not be less than 1,000 gallons per minute for 60 minutes."

As stated in the code, the primary authority responsible for establishing needed fire flows and fire flow storage is the local fire code official. The Cedar Valley Fire Marshall has required that fire suppression storage meets international fire flow standards, which are based on building square footage and building material type.

The anticipated building square footage for the Fairfield study area has been estimated based on typical development patterns. Development is expected to be primary residential and light industrial, with some associated commercial (grocery, hotel, convenience store, etc.) and institutional development (churches, elementary schools, etc.) in the future. For master planning purposes, the existing critical case for fire suppression storage is either the historic schoolhouse or Camp Floyd State Park, which requires 1,500 gpm for two hours. Thus, the resulting fire suppression storage volume for the system is 180,000 gallons. Unfortunately, there are no details regarding future structure construction. It is expected that some future structures may require more fire storage than existing (particularly industrial, commercial, or institutional). Therefore, for planning purposes, it has been assumed that buildout fire storage needs will be 3,000 gpm for 3 hours (540,000 gallons).

EXISTING AND FUTURE STORAGE REQUIREMENTS

An analysis of existing and future storage requirements for the Town was conducted that considered the equalization, emergency, and fire storage requirements as discussed above. As there is only one pressure zone within the water system, storage can be analyzed for the system as a whole as shown in Table 5-1.

Table 5-1
Summary of Fairfield Storage Analysis

Tank Service Area	Peak Day Demand (gpm)	Peak Day Equalization Storage (gallons)	Emergency Storage (gallons)	Fire Flow Storage (gallons)	Total Required Storage	Available Storage (gallons)	Storage Surplus/ Deficit (gallons)
Existing Storage	72	25,879	25,879	180,000	232,000	410,000	178,000
10-yr Storage	560	201,750	201,750	540,000	943,000	410,000	-533,000
Buildout Storage	2,636	949,113	949,113	540,000	2,438,000	410,000	-2,028,000

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis summarized in the tables above, the Town has sufficient storage in its tanks to meet current system storage requirements with surplus storage. Development in the immediate future may buy into the excess storage capacity of existing tanks. Once all capacity in existing tanks has been allotted, future development will be required to work with the Town to construct or pay for new storage facilities. BC&A estimates that, if the Town is developed the identified density in its general plan, approximately 2 million gallons of additional storage will be needed at buildout. Approximately 500,000 gallons of this additional storage will likely be needed in the next ten years. Chapter 7 summarizes and describes these expected storage expansion projects in more detail.

CHAPTER 6

DISTRIBUTION SYSTEM EVALUATION

To evaluate the ability of the Town's water distribution system to serve the needs of its existing and future customers, a hydraulic model was created using water system information provided by the Town and McNeil Engineering. Elevation data of the area and the supply and demand information discussed in Chapters 2 and 3 of this report were also utilized in the hydraulic model.

The purpose of this model is to simulate the existing and future demands on the transmission and distribution piping. Based on the results of the model simulations, improvements can then be evaluated to correct any identified deficiencies. The purpose of this chapter is to document the results of this distribution system evaluation.

HYDRAULIC MODEL

The operating characteristics of the existing distribution system were evaluated as part of this study using a hydraulic model. A hydraulic computer model is a digital representation of physical features and characteristics of the water system, including pipes, valves, storage tanks, and pumps. Key physical components of a water system are represented by a set of user defined parameters that represent the characteristics of the system. The computer model utilizes the digital representation of physical system characteristics to mathematically simulate operating conditions of a water distribution system. Computer model output includes pressures at each node and a flow rate and velocity for each pipe in the model.

Computer models are excellent tools that can be used to evaluate operating conditions in water systems. Models can identify where deficiencies in the system are located and can be used to evaluate alternatives to correct any identified problems. Computer models are valuable in examining future operating conditions. They also help to evaluate operating conditions during extreme events such as fires or power failures. There are several different computer programs used for modeling water distribution systems. The program InfowaterPro version 2024.4 by Innovyze was used for this study.

Geometric Model Data

There are two major types of data required to create a hydraulic model of a water system: geometric data and flow data. Geometric data consists of information on the location and size of system facilities including pipes, storage reservoirs, sources, pump stations, etc. It also includes the physical characteristics of the facilities including pipe roughness, delivery point elevations, pump settings, and tank levels. This information is generally collected from system inventory data or through direct field measurement. The following sections describe how geometric data was assembled and is used in the hydraulic model.

Demand Nodes and Pipe

- Pipe sizes were taken from McNeil Engineering records of the water system and from information provided by the previous water system manager, Vern Carson.
- Node elevations were taken from topographical elevation data generated based on light detection and ranging (LiDAR) data provided by the Utah Geospatial Resource Center (UGRC) website.
- Pipe roughness was set at a Hazen-Williams coefficient of 135 for all sizes of pipe, consistent with typical roughness of PVC C900 pipe.

Source Connections

- The Fairfield well and spring sources were modeled as fixed elevation reservoirs with a pump to provide a constant flow to the two tanks they fill as well as the rest of the water system. Elevations of the source reservoirs were set at a head which ensured there would be sufficient pressure to deliver water into the system. Pump head settings were set based on the estimated elevation difference between the water source (i.e. ground level for the spring and the aquifer water level for the well³) and the tanks.
- Sources were set up to pump at a constant flow rate.

Tanks

- Exact tank dimensions were not available. Therefore, they have been estimated based on volumes provided by the Town and typical tank height ranges.
- Future storage was added to the model such that future demands could be met. Actual location or dimensions of future tanks is unknown. Projected storage needs are described in detail in Chapter 5.

Pressure Regulating Valves

- There are no existing pressure regulating valves (PRV) in the system to model, and none are expected to be needed in the future.

Flow Data

Once all required geometric data is collected and a physical model of the system is created, the second type of data needed to model the system is flow data. Two basic types of flow information are required for hydraulic modeling: flow out of the system (demand) and flow into the system (supply).

Demand

Demand for hydraulic modeling must be defined in at least two ways: total demand (production requirement) and distribution of demand across the Fairfield service area.

- Total Production Requirement – Production projections for Fairfield Town have been presented in detail in Chapter 2. Total demands used in the model have been taken directly from those projections. The following years were modeled: 2024 (existing) and 2080 (approximate buildout).
- Distribution of Demand – Where available, distribution of demand is typically based on detailed water meter data. Due to data availability constraints and the relatively small size of the system, BC&A staff split the system into small distribution zones. They determined the demand for each zone based on the number of connections within each zone and the typical water demand per connection, as calculated in Chapter 2. The future buildout demand distribution was estimated using existing and future zoning densities and estimating location and number of connections. These connection estimates were used to model previously projected demands in 2080.

Supply

The model had the following supply scenarios:

- Existing – The sources available in the existing model are the Fairfield well (near the water tanks) and the Fairfield Town spring.

³ The Utah State Division of Water Rights website provides information about all public wells drilled around the State, including date of drilling, total bore depth, finished well depth, well diameter, well intake depth, and water level depth. This information was used to calculate pump head.

- **2080** – Because the certainty or viability of future sources is unknown at this time, BC&A assumed for the purposes of modeling that additional water sources would be developed as needed with growth. Therefore, in addition to the two existing sources, we modeled two additional wells, located as shown in Figure 7-1. The capacity of future sources is unknown, therefore BC&A modeled a scenario in which these new sources were able to meet projected buildout demands. This assumption allowed us to proceed with the hydraulic analysis of the future system, despite the uncertainty of future sources.

Model Calibration

Model calibration is typically performed by iterations of comparing model results with field-data and altering the model to more accurately represent field conditions. Calibration was done using peak and average pumping data, annual source production data, and hydrant pressure tests performed by Town personnel. This information was used to calibrate the pump settings, system demands, and peaking factors.

Recommended Future Model Improvements

The model prepared for this report has been developed using available data from Fairfield. To increase the model accuracy and facilitate future modeling efforts, the following actions are recommended.

- **Verification of Tank Geometry and Pump Capacities** – BC&A recommends the Town find or obtain records concerning the elevation and dimensions of the existing tanks that could be used to better calibrate the hydraulic model. Additionally, the Town should obtain information about the existing pump capacities and pump curves by either monitoring pumping pressures and flows or locating the original pump documentation (including pump curves). This data can also be used to calibrate the model.
- **More Detail in Demand Distribution** – The distribution of demand based on number of connections is sufficient for this level of analysis. As the system grows and more sophisticated model results are desired, it is recommended that actual meter data be georeferenced and integrated into the model. This will allow the system model to capture differences in water use between different neighborhoods, conduct flushing and contaminant tracing models, and otherwise pursue more nuanced model results. For now, the demands are approximated by zones and thus the model can only effectively simulate the transmission and main distribution pipes (which is ok as that is the goal of the modeling for this master plan).
- **Periodic Model Updates** – The model should be updated on a continual basis to reflect improvements made to the distribution network and changes to demand patterns. Especially important will be to understand and accurately model the final size and location of future sources. Any differences in the future sources from what was assumed here could affect the results and recommendations contained in this report.

Model Scenarios

Three overall scenarios were modeled for this analysis:

- Existing demand with existing model geometry,
- Future demand with existing model geometry as if no recommended improvements (i.e. new sources, pipe upsizes, etc.) occurred from now until buildout, and
- Future demand with proposed model geometry (i.e., assuming all recommended improvements are implemented).

Results for all scenarios included static demands, peak day demands, peak hour demands, and peak day demands + fire flow.

EVALUATION CRITERIA

The computer model was used to simulate operating conditions of the water distribution system using current and future water system production requirements. For both existing and future production requirements, the performance of the system was evaluated using the following criteria.

1. **Pressure** – A distribution system should provide adequate delivery pressure across the system. The State of Utah requires that distribution pressures be greater than 40 psi during peak day production requirements and 30 psi during peak hour production requirements. We also recommend that the Town maintain the standard of targeting a maximum delivery pressure of 120 psi with limited exceptions upon Engineer approval. (Note: Future transmission lines may be designed for higher pressures, but service connections should not be allowed to connect to those lines directly.)
2. **Pipe Velocity** – Except in fire flow events, flow velocities in distribution pipes should be limited to less than 7.0 feet per second (ft/s). Transmission pipes can have velocities that are higher than distribution pipes, but typically should be less than 10 ft/s.
3. **Fire Flow** – In accordance with the typical Utah County fire authority requirements for fire flow to residential buildings, most of the Fairfield service area should meet a fire flow of 1,500 gpm for 2 hours at 20 psi of residual pressure. As development occurs it is expected that large buildings will be constructed that require larger fire flows (3,000 gpm for 3 hours with fire sprinklers installed). This study considered the 3,000 gpm fire demand for industrial areas of the buildout system. All residential area fire flow demands were kept at 1,500 gpm for 2 hours through buildout. Any nodes not meeting the requisite fire flows were identified as deficient.

SYSTEM EVALUATION RESULTS

As described above, the hydraulic computer model was used to simulate system conditions for both the existing and buildout (2080) development conditions. Existing and future scenarios were run as extended state models for 24 hours of peak day flows. The following sections describe the model results, conclusions, and recommendations.

Minimum and Maximum Pressures

No maximum pressure deficiencies (>120 psi) were identified in either the existing or buildout system models. Additionally, modeled peak day and peak hour pressures for all modeled points of delivery stayed above 40 psi and 30 psi, respectively.

Maximum Pipe Velocities

No maximum pipe velocity deficiencies were identified in the modeled existing or buildout systems.

Available Fire Flow

Multiple fire flow deficiencies were identified in the existing and buildout water models. These were identified as residual pressure deficiencies as described below:

Existing Conditions:

Multiple locations within the existing system have insufficient pressures to provide the fire flows required by the International fire code, as shown in Figure 6-1 and described below:

- **Main St. and 430 E:** The hydrant located at the far east end of Main St experiences residual fire pressure of 19 psi, which is barely lower than the 20 psi minimum. If

pressures at this hydrant are worse during a field hydrant test, the Town should consider creating a looped connection to this end of the system. However, because the modeled residual pressure is so close to the acceptable range, and because there are no known future expansions in this area of the system, BC&A does not recommend any corrective projects other than monitoring pressures at this hydrant.

- **Lehi-Fairfield Rd, 670 N, and North End of System:** All hydrants north of Lehi-Fairfield Road are deficient in fire flow and residual pressures. At the very end of the pipe on the north end of the system, the maximum flow that can be achieved while maintaining 20 psi of pressure is approximately 950 gpm, well below the 1,500 gpm required. This deficiency can be remedied by building pipe sections to create more looped connections. BC&A recommends combining projects to address these deficiencies with upcoming system expansion projects to reduce overall system disruption and minimize project cost. These recommended projects are described in Chapter 7 (Project FF-1).

Buildout Conditions:

There are multiple areas of the system that are expected to be deficient in fire flow meeting fire flow criteria if the system is simply expanded without any additional upgrades. These are described below and illustrated in Figure 6-2.

- **Tal Adair Property & Dead Ends Along Allen's Ranch Rd:** Without additional source or storage capacity, the development on and near the Tal Adair Property is expected to be deficient in fire flow availability.
- **Dead Ends Along Main St and Solder Pass Ln:** As other demands on the system increase, the existing fire flow deficiency on the east end of Main St is expected to become worse.
- **North End of System:** Similar to the deficiency along Main St, the fire flow deficiencies in the north area of the system are expected to worsen as system demands increase in the future. Even with the addition of system looping in the immediate area, additional system improvements will be needed to achieve adequate fire flows on the north end of the system.

All of these deficiencies are expected to be corrected by adding additional storage as the system expands (Projects ST-1 & ST-2), adding additional source flow and locations (Project S-1), and upsizing existing pipes to reduce pressure losses from friction (Projects D-1, D-2, & D-3). These projects are described in detail in Chapter 7 and are illustrated in the model results in Figure 6-3.

System Reliability/Redundancy

In addition to resolving the existing fire flow deficiencies, looping the north system (Project FF-1) will also improve redundancy for water availability during a water line shutdown (from a break or routine maintenance).

No additional system reliability or redundancy projects were identified in this study.

System Efficiency

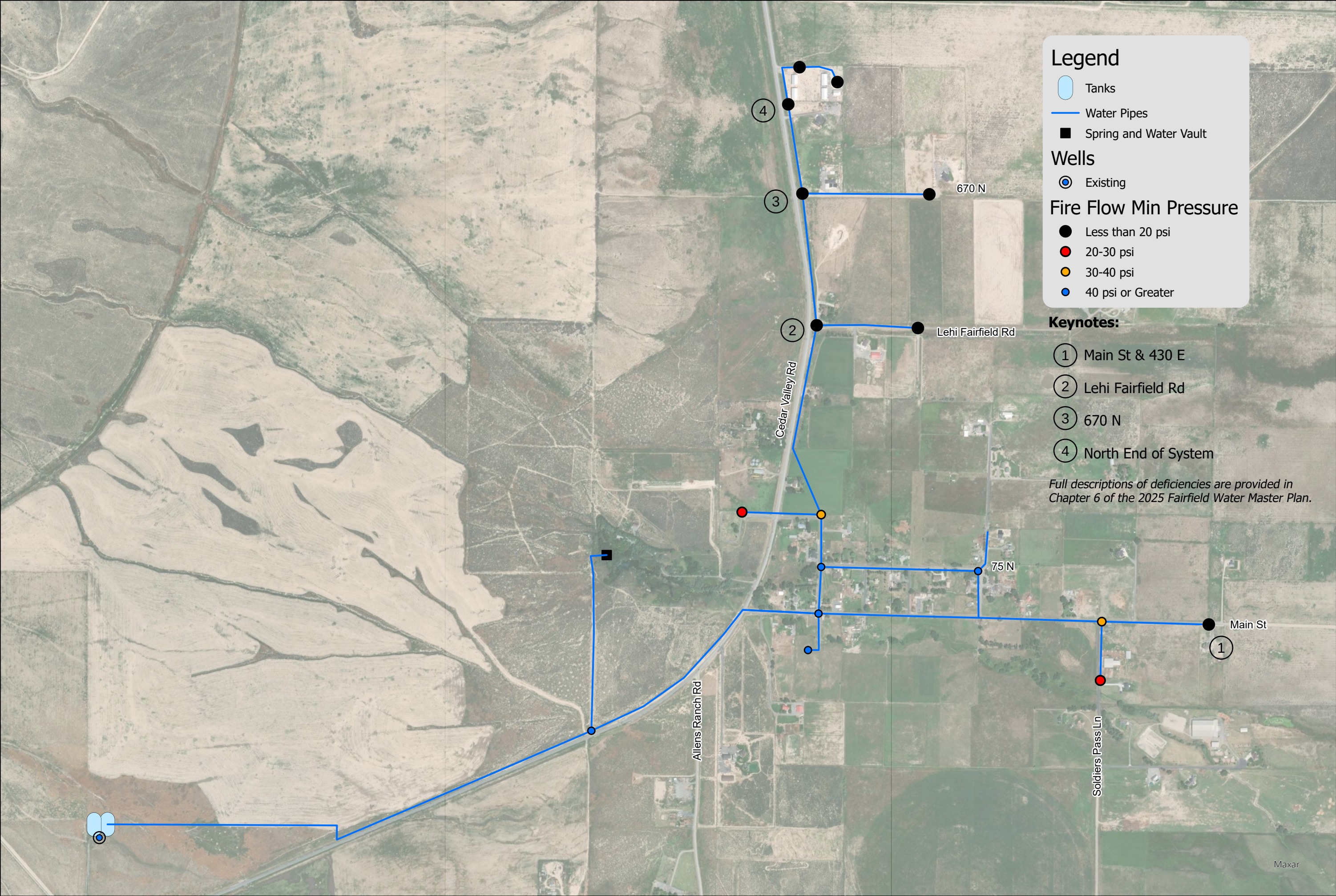
As the Town's water system expands, the Town should consider developing future sources on the North side of the system to reduce the amount of pumping and travel distance (i.e. friction losses) between the sources and future development on the north side of the Town. This will be beneficial for multiple reasons, including (but not limited to) the following:

- The further water has to travel through pipe the more energy losses to friction and the more likely water quality issues (i.e. stale water) are to occur.
- This also helps with redundancy peak demand scenarios (i.e. not all water is coming from the same area)

SUMMARY OF RECOMMENDATIONS

Based on the model results and discussion presented above, BC&A recommends the following actions to serve future demands and maintain the reliability of the Fairfield water system.

- Monitor pressure fluctuations at the far extents of system during peak flows and occasional fire flow hydrant tests.
- Resolve fire flow deficiencies at the north end of the existing system by creating looped connections. If possible, the Town should try to coordinate these pipeline projects with developer expansion projects. (Project FF-1)
- Consider the viability and availability of creating new water sources that will provide water to new users. (Project S-1)
- Replace some of the existing pipelines with larger diameter pipe. BC&A has identified pipes to be upsized in Chapter 7 based on our estimation of how the system will expand and develop, and where future storage and sources may be located. (Projects D-1, D-2, & D-3)



Legend

- Tanks
- Water Pipes
- Spring and Water Vault

Wells

- Existing

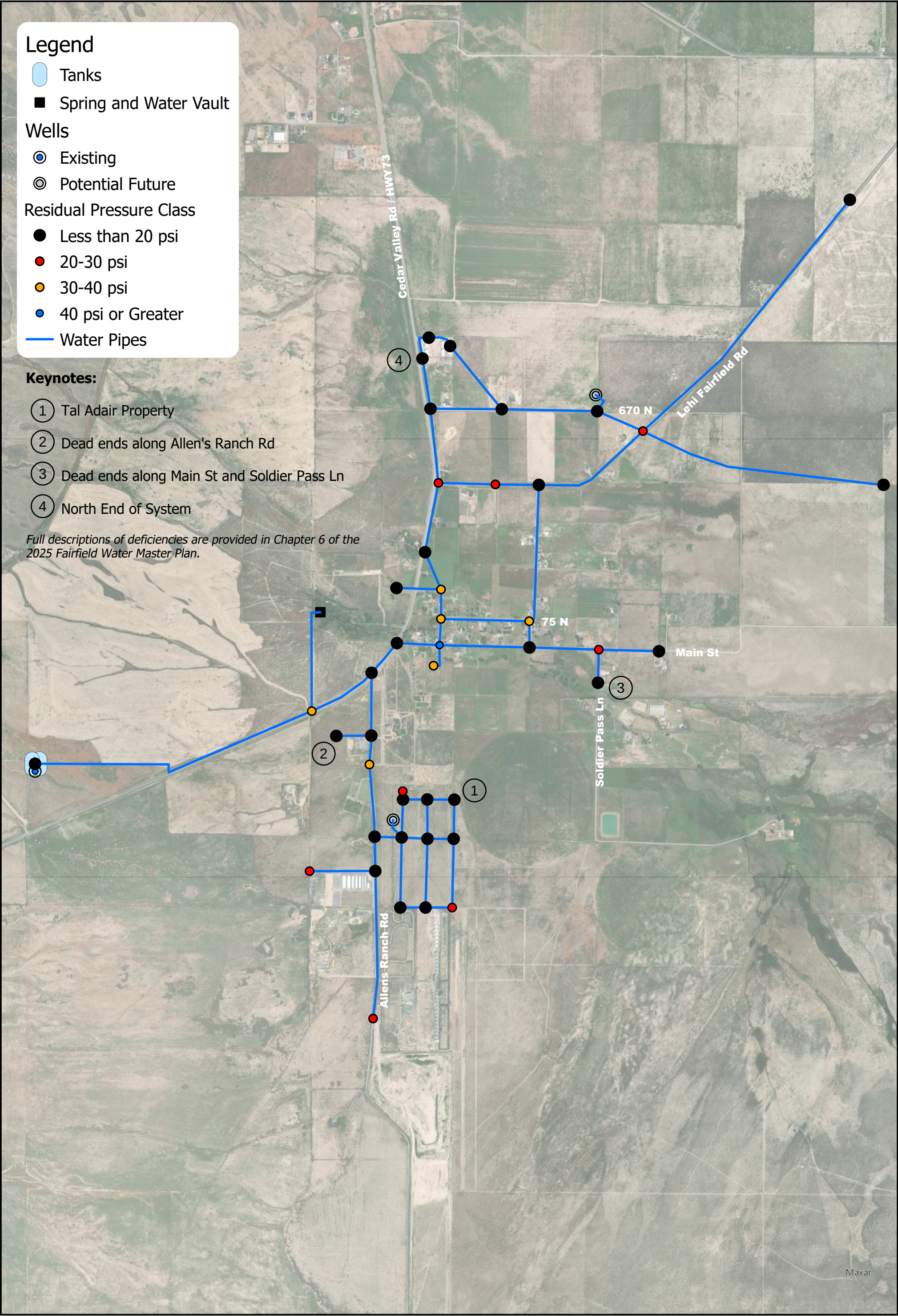
Fire Flow Min Pressure

- Less than 20 psi
- 20-30 psi
- 30-40 psi
- 40 psi or Greater

Keynotes:

- 1 Main St & 430 E
- 2 Lehi Fairfield Rd
- 3 670 N
- 4 North End of System

Full descriptions of deficiencies are provided in Chapter 6 of the 2025 Fairfield Water Master Plan.



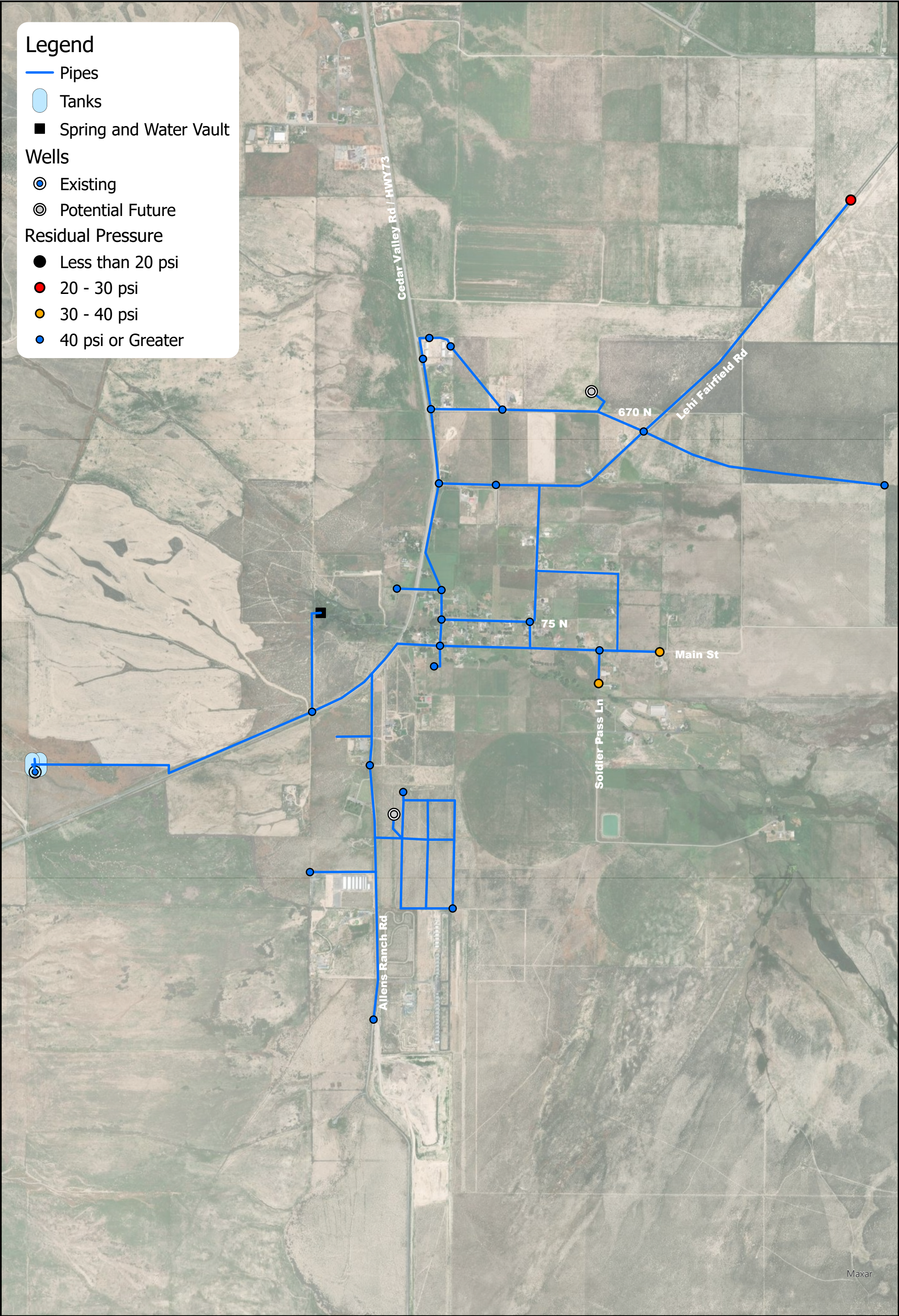
Legend

- Tanks
- Spring and Water Vault Wells
- Existing
- Potential Future
- Residual Pressure Class
 - Less than 20 psi
 - 20-30 psi
 - 30-40 psi
 - 40 psi or Greater
- Water Pipes

Keynotes:

- 1 Tal Adair Property
- 2 Dead ends along Allen's Ranch Rd
- 3 Dead ends along Main St and Soldier Pass Ln
- 4 North End of System

Full descriptions of deficiencies are provided in Chapter 6 of the 2025 Fairfield Water Master Plan.



Legend

- Pipes
- Tanks
- Spring and Water Vault
- Wells
 - Existing
 - Potential Future
- Residual Pressure
 - Less than 20 psi
 - 20 - 30 psi
 - 30 - 40 psi
 - 40 psi or Greater

FAIRFIELD TOWN

2025 WATER
MASTER PLAN

BUILDOUT WITH
IMPROVEMENTS:
FIRE FLOW

NORTH:



SCALE:



FIGURE NO.

6-3

CHAPTER 7

CAPITAL IMPROVEMENT PLAN

Recommendations pertaining to the Fairfield water system were identified in Chapters 3 through 6. The purpose of this chapter is to organize those recommendations into a capital project list, present a cost estimate for each project, and identify the expected timing of each project.

RECOMMENDED IMPROVEMENTS

The recommended improvement projects have been categorized as Storage, Distribution, Source, and Fire Flow Projects. Each project is described below and is shown in Figure 7-1. Note that many of these projects will not be needed until development creates a need for the system to expand.

Storage Projects

It is recommended that storage be added to the system in phases as follows:

- **ST-1 – Construct Approximately 500,000 gallons of Additional Storage** – BC&A estimates that within the next 10-years, the Town will need an additional 500,000 gallons of storage to meet the expected demands and additional fire flow storage requirements of the system. Actual storage needs will depend on the rate of development, and the Town will need to work closely with developers to ensure the storage need estimates in this study reflect actual needs of future customers.
- **ST-2 – Construct ~1.5 million gallons of Additional Storage** – Outside of the 10-year planning window, BC&A expects the Town will need to construct 1.5 million gallons of storage (in addition to the 500,000 gallons constructed in the 10-year window). The Town should be strategic about storage construction timing and locations by balancing the construction of storage with real development in the future. Often it is preferable to construct a larger water storage tank that will serve conditions several years into the future than construct many small tanks. However, having too much storage can create water quality issues and financial burdens on existing customers if future demand does not materialize.

Distribution Projects

In order to convey the estimated buildout system demands without excessive pressure losses due to friction, the following projects will be needed as shown in Figure 7-1. These projects all involve upsizing the pipeline between the system storage and points of distribution and delivery.

- **D-1 – Upsize 12-inch Diameter Pipe Along Route 73 to 16-inch**
- **D-2 – Upsize 8-inch Diameter Pipe Along 75 W Between Main St and 75 N to 16-inch Diameter**
- **D-3 – Upsize 8-inch Diameter Pipe Along 75 W Between 75 N and 150 N to 12-inch Diameter**

It will be noted that all of these projects have been conservatively identified as pipe upsizes (replacement of existing pipes in the same corridor with new larger pipes). However, new development may provide opportunities to build new looping pipelines along other routes that accomplish the same purpose. This should be examined and considered as new development projects are proposed in the area of these improvements.

Source Projects

To satisfy the projected growth in demand in the Town, the following water source improvements are recommended:

- **S-1 - Investigate the Viability of Adding New Source(s) to the Water System** – The Town should complete an analysis and field investigation to determine if adding new sources to the water system is viable. This will likely involve a study of the groundwater levels and availability in the area and the quality of the groundwater. This study will inform the Town about how much water is available in the area and how much development can realistically occur if new sources could be developed.
- **S-2 – Complete an Evaluation of the Town’s Water Rights** – In addition to understanding the wet water availability in the Town, it is also crucial to understand how many water rights the Town currently owns and project how many could be dedicated in the future. BC&A recommends the Town complete an evaluation of water rights to understand how much development can occur based on available water rights.
- **S-3 – Add Additional Source Capacity** –Although the results of the recommended studies in projects S-1 and S-2 are unknown, the Town will need to develop a new source by 2030, as discussed in Chapter 3. This new source may be drilling a new well or contracting with another entity to purchase additional water. For planning purposes, we have assumed the construction of a new 500 gpm well.

Fire Flow Projects

Eliminating the existing fire flow deficiency at the north end of town will require the following improvement:

- **FF- 1 – Connect the North Existing System with Planned Expansion Along Lehi-Fairfield Rd** – Due to existing fire flow deficiencies within the system, the Town should begin plans to create a 12-inch looped connection on the north end of the system. Ideally, this project will be completed in conjunction with expansion of the system along Lehi-Fairfield Rd, but the Town should not wait beyond the 10-year planning window to complete this project .

Legend

Pipes

- Existing Pipe
- Upsized Pipes
- Expected Developer-Driven Expansion
- 10-yr Capital Project

Wells

- Existing
- Potential Future

Name

- Existing
- Future
- Spring and Water Vault



Not shown on Figure:
S-2: Complete an evaluation of the Town's water rights.

CAPITAL IMPROVEMENTS PLAN SUMMARY

The recommended improvements for the Fairfield Town Water System have been summarized in Table 7-1. The table includes a summary of each project, an estimated year (or years) of completion, and an estimated project cost in 2025 dollars. More detailed cost estimates for each project are included in Appendix B.

Each project has been prioritized based on level of importance relative to the Town's goal of providing efficient and reliable water service to its customers. Some projects are driven by land development and have been scheduled based on current assumptions of future growth. As land development plans deviate from these assumptions, the project schedule will likely need to be adjusted. Project locations are shown in Figure 7-1. We also recommend that an update to this master plan and its associated analyses be completed every five to seven years.

Table 7-1
Summary of Recommended Water System Improvements

Project ID	Description	Estimated Year of Completion	Estimated Cost (2025 \$'s)
Storage			
ST-1	Construct 500,000 gallons of additional storage	2032	\$1,801,000
ST-2	Construct 1,500,000 gallons of additional storage	Beyond 2035	\$5,092,000
<i>Storage Subtotal</i>			<i>\$6,893,000</i>
Distribution			
D-1	Upsize 12-inch diameter pipe along State Route 73 to 16-inch diameter	Beyond 2035	\$3,721,000
D-2	Upsize 8-inch diameter pipe along 75 W between Main St and 75 N to 16-inch diameter	Beyond 2035	\$197,000
D-3	Upsize 8-inch diameter pipe along 75 W between 75 N and 150 N to 12-inch diameter	Beyond 2035	\$217,000
<i>Distribution Subtotal</i>			<i>\$4,135,000</i>
Source			
S-1	Investigate the viability of adding new source(s) to the water system	2028	\$50,000
S-2	Complete an evaluation of the Town's water rights	2025	\$13,500
S-3	Add additional source capacity	2030	\$1,600,000
<i>Source Subtotal</i>			<i>\$1,663,500</i>
Fire Flow			
FF-1	Connect north existing system with planned expansion along Lehi-Fairfield Rd*	2030	\$1,697,000
<i>Fire Flow Subtotal</i>			<i>\$1,697,000</i>
TOTAL			\$14,388,500
TOTAL WITHIN 10-YR WINDOW			\$5,161,500

*The actual cost of project FF-1 will depend on coordination and cost sharing with developers.

RECOMMENDED CAPITAL IMPROVEMENTS BUDGET

Each component of the water system has a finite service life. As such, it is necessary to continually budget for the rehabilitation or replacement of these system components. Adequate funds must be set aside for regular system maintenance and renewal in order to prevent the system from falling into disrepair. To maintain the water system in good operating condition, it is recommended that the Fairfield annual budget for water system renewal be approximately equal to the replacement value of the system divided by its estimated service life.

- **Replacement Value** – The replacement value of the Fairfield water system is estimated to be approximately \$12 million. This estimate has been prepared using a GIS database of the system and includes the value of pipelines, wells and tanks.
- **Service Life** – The service life for water facilities can vary greatly depending on the type of facility and the conditions in which it serves. Service life estimates by system component are shown in Table 7-2 below.

Based on these estimates in Table 7-2, the annual capital improvements budget should be set to approximately \$175,000. Although the Town may not spend this amount every year, it is important to consider setting aside that amount for years when large capital projects in the water system need to be completed.

**Table 7-2
System Replacement Value Summary**

Infrastructure Type	Total Replacement Value	Estimated Average Service Life (Years)	Average Annual Investment (2025 \$'s)
Pipes	\$10,178,000	70	\$145,400
Tanks	\$1,697,000	70	\$24,200
Source	\$345,000	70	\$4,900
TOTAL	\$12,220,000	--	\$174,500

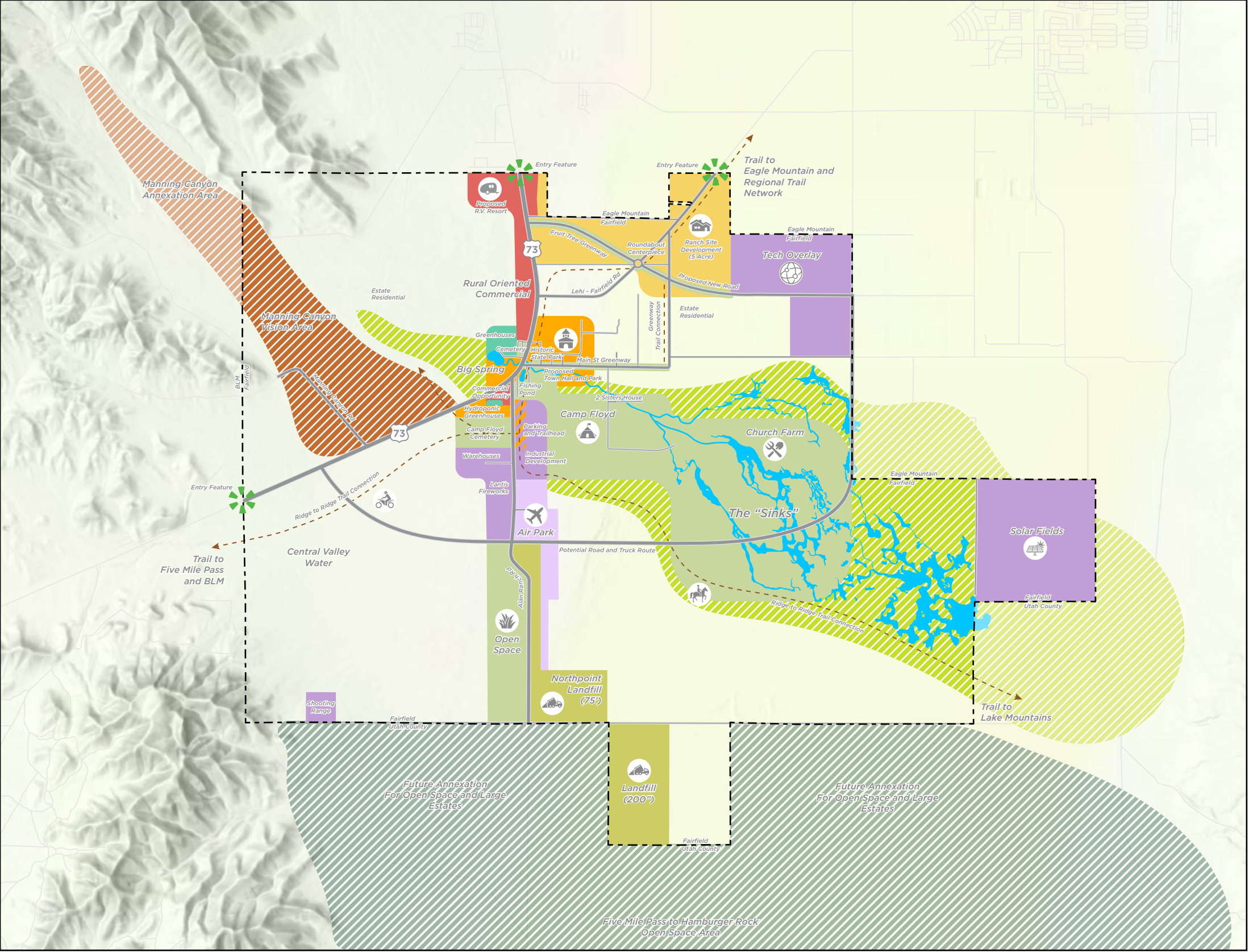
RECOMMENDATIONS SUMMARY

Based on the analysis contained in this report and in addition to the capital improvement projects listed in this chapter, BC&A recommends taking the following actions:

- **Create Town Policy to Limit Development Density and Corresponding Water Use.** A basic assumption for this study was that future development would be limited to 1, 2, and 1 ERU/acre of allowable water use for residential, commercial, and light industrial, respectively. The Town should consider creating a town policy to support these water use densities and preserve the limited water available in the area.
- **Improve Data Gathering and Organization.** Currently the Town is relatively limited in its historical water usage and production data, and this adds an additional level of uncertainty to the projections shown in this master plan. Therefore, Fairfield should begin initiatives to gather, consolidate, organize, and make visible its water use data. Doing so will support greater accuracy in sizing standards and in future updates to this master plan.
- **Adopt the Master Plan with Its 10-yr Capital Improvement Plan.** The 10-year capital improvement plan summarized in Table 7-1 represents the latest assessment of Town capital needs in the upcoming years. It is recommended that this plan be adopted for budgeting, staffing, and financial planning purposes.

- **Prepare to Adequately Fund Projects.** In order to facilitate the completion of the proposed projects and keep up with rehabilitation and replacement needs, the Town will need to budget accordingly. This may include completing a rate study to increase rates as well an update to the Town's impact fees.
- **Look for Opportunities to Cost Effectively Add Customers.** A quick review of the sustainable funding level for capital improvements will reveal that it will require nearly \$500 per month per connection to maintain the existing system moving forward (capital costs only – does not include O&M). This is very high compared to other communities in the State. The reason for the high costs is the comparatively large amount of infrastructure being supported by only a small number of connections. Adding connections that don't require significant expansion of the existing infrastructure can lower the per connection cost for all customers.
- **Update This Master Plan Regularly.** This water master plan should be viewed as a living document. The conclusions contained herein are based on several assumptions that will assuredly change from time to time. Examples of this include assumptions associated with development patterns, regulatory requirements, economic conditions, etc. As changes occur in these areas, the conclusions and recommendations in this report may need to be revised. For this reason, it is recommended that this report be updated on a regular basis. This should be at least once every 5 years and more often if necessitated by a major change in the Town (e.g. major new regulatory requirement, significant deviation from the underlying master plan assumptions, annexation of a new area, etc.).

APPENDIX A FAIRFIELD VISION PLAN



VISION MAP
FAIRFIELD

LEGEND

- CORE FAIRFIELD
- GREENSPACE
- COMMERCIAL
- INDUSTRY
- AIRPORT
- WASTE FACILITIES
- ESTATE DEVELOPMENT
- GREENHOUSE AGRICULTURE
- WATER BODIES
- CONSERVATION OVERLAY
- SOUTHERN ANNEXATION OVERLAY
- MANNING CANYON OVERLAY
- RECREATIONAL PARKING OVERLAY
- FAIRFIELD BOUNDARY
- ROADS
- PROPOSED TRAILS
- CREEKS



APPENDIX B DETAILED PROJECT COST ESTIMATES

Appendix B: Detailed Project Cost Estimates

Project ID	Description	Quantity	Unit	Unit Cost	Initial Cost Estimate	Contingency	Engineering	Item Total
Storage								
ST-1	Construct 500,000 gallons of additional storage	500,000	gal	\$2.61	\$1,305,000	\$261,000	\$234,900	\$1,801,000
ST-2	Construct 1,500,000 gallons of additional storage	1,500,000	gal	\$2.46	\$3,690,000	\$738,000	\$664,200	\$5,092,000
Storage Subtotal								\$6,893,000
Distribution								
D-1	Upsize 12-inch diameter pipe along State Route 73 to 16-inch diameter	8,400	LF	\$321	\$2,696,400	\$539,280	\$485,352	\$3,721,000
D-2	Upsize 8-inch diameter pipe along 75 W between 75 N and 150 N to 12-inch diameter	500	LF	\$286	\$143,000	\$28,600	\$25,740	\$197,000
D-3	Upsize 8-inch diameter pipe along 75 W between 75 N and 150 N to 12-inch diameter	550	LF	\$286	\$157,300	\$31,460	\$28,314	\$217,000
Distribution Subtotal								\$4,135,000
Source								
S-1	Investigate the viability of adding new source(s) to the water system	1	EA	\$50,000	\$50,000	--	--	\$50,000
S-2	Complete an evaluation of the Town's water rights	1	EA	\$13,450	\$13,450	--	--	\$13,500
S-3	Add additional source capacity	1	EA	\$1,600,000	\$1,600,000	--	--	\$1,600,000
Source Subtotal								\$1,663,500
Fire Flow								
FF-1	Connect north dead end of existing system with planned expansion along Lehi-Fairfield Rd*	4,300	LF	\$286	\$1,229,800	\$245,960	\$221,364	\$1,697,000
TOTAL								\$14,388,500

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FAIRFIELD TOWN

APRIL 2025

SEWER MASTER PLAN

DRAFT

FAIRFIELD TOWN SEWER MASTER PLAN

April 2025

DRAFT

Prepared for:

**FAIRFIELD
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Prepared by:



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CHAPTER 1 INTRODUCTION

INTRODUCTION & BACKGROUND

Fairfield Town (the Town) has contracted with Bowen Collins & Associates (BC&A) to prepare a sewer master plan. The purpose of this master plan report is to forecast future wastewater production as a result of growth, evaluate alternative methods of treating future wastewater flows, recommend parameters for a future sewer collections system, and identify improvements that will be required to create a wastewater collections and treatment system.

Currently, all wastewater flows within Fairfield Town are sent to septic systems owned by individual residents. Discussion with developers have prompted Town personnel to consider the future need of a centralized collection and treatment system.

SCOPE OF SERVICES

As part of this master plan, BC&A completed the following tasks:

Task 1: Collect, review, and organize data to identify expected sewer flows and needed capital improvements.

Task 2: Project population growth and estimate future wastewater flows.

Task 3: Evaluate alternatives and recommend sewer collection and treatment options.

Task 4: Develop a comprehensive capital facilities plan incorporating all recommended projects identified for the collection and treatment system as applicable.

Task 5: Document results of the previous tasks in a report.

It should be noted that the primary focus of this report was to identify the big-picture aspects and needs of constructing a new wastewater system. Therefore, we have outlined a general plan for a sewer system but have not developed any detailed design for these systems.

REPORT ASSUMPTIONS

The following assumptions were key to developing this master plan and the final results presented. If any of these assumptions prove to be incorrect as more details about system growth and development are available, the results of this master plan should be revised to reflect those changes.

- Eagle Mountain City has expressed willingness to treat Fairfield's sewer flows, pending an agreement between the two parties.
- Development in the Town will begin in the northeast corner. Additional development will occur over time at the north end, through the town center, and at the southwest corner near Allen's Ranch Road. The timing of these developments is unknown, but initial sewer system infrastructure is expected to be needed within the next 5 years.
- The indoor water demand estimates in the 2025 Water Master Plan are representative of existing and expected water use patterns and therefore sewer flows.
- As later described in this report, BC&A has assumed that the Town will limit development to 1 ERU/acre for industrial customers and 2 ERUs/acre for commercial customers.¹

¹ In connection with limitations on development density, BC&A has also assumed that the Town will require customers to limit sewer release rates to the maximum planned discharged for buildout level of service, as shown in Table 2-3 of Chapter 2. Release rates higher than the peak month average day or peak hour flow listed in this report may impact pipe sizing and treatment capacity needs outlined in this report.

- All cost estimates have been included in 2025 dollars. Future project costs will need to be inflated to the year of construction for a true cost projection.

CHAPTER 2

WASTEWATER SYSTEM GROWTH PROJECTIONS

INTRODUCTION

A key aspect of the master planning process is developing projections for future system utilization. Growth projections have a direct impact on important components of this master plan and other Town planning studies (including the 2025 Water Master Plan). The purpose of this chapter is to estimate future growth and project future wastewater production within the Town's service area.

ESTIMATING BASE WASTEWATER FLOWS

Wastewater flows consist of flows from base sanitary sources (residential, commercial, and industrial), inflow, and infiltration. Each of these components are described in greater detail below.²

Base Sanitary Sewer Flow

Base sanitary wastewater is categorized as flow that intentionally enters the collection system from a home, business, or other sewer connection. Ideally, base sanitary waste should make up the majority of flow in the sewer collection system. Often sewer flows are estimated using water meter data by evaluating demands in winter months, when little to no irrigation occurs and therefore most water use is for indoor applications. Due to the lack of reliable historic metered data from sales and water production, indoor water use was estimated based on typical per capita water use in the state of Utah in combination with a conservatively high household size of 3.3 people per household (Fairfield 2020 census data reports 2.09 people/household). Based on this method the estimated indoor water use per residential connection is 198 gpd. BC&A checked water production data for 2022 and 2023 and verified that this estimate is reasonable.

The average household indoor water use does not necessarily equate to the water that is discharged into the sewer system. While the majority of culinary water use in the winter directly enters the sewer collection system after use (such as water used for toilets, showers, washing machines, dishwashers, etc., hereafter referred to as "non-consumptive" water use), a small portion does not. Water used for drinking or cooking, watering plants, or water that is lost through internal leaks within the unit's plumbing system on the customer's side of the meter will not enter the sewer. However, this is only a small portion of the total flow. For a residential unit, it is estimated that 90 – 95% of metered winter water use will be discharged into the sewer collection system.

For the purpose of this master plan, it was conservatively assumed that 95% of overall indoor water use would ultimately enter the sewer collection system. Under this assumption, Table 2-1 summarizes base sanitary wastewater flow estimates for residential and non-residential connections under an average daily demand scenario. Non-residential applications are assumed to use a larger share of water indoors, resulting in higher sewer flows and more sewer ERUs per connection. See the 2025 Fairfield Water Master Plan for details concerning estimated water use for these facilities.

Note that actual sewer flows vary throughout the day due to typical patterns of indoor water use. The values shown in Table 2-1 represent peak month, average day flows.

² Utah Administrative Code R317-3 titled, "Design Requirements for Wastewater Collection, Treatment and Disposal Systems" provides guidelines for estimating per capita wastewater production for the purpose of sizing sewer collection and treatment systems. The code states that, "New sewer systems shall be designed on the basis of an annual average daily rate of flow of 100 gallons per capita per day unless there are data to indicate otherwise. The per capita rate of flow includes an allowance for infiltration/inflow". The design guidelines presented in UAC R317-3 are typically conservative when compared to actual sewer flows in a collection system. Since historic water production data is available from the Town, sewer flow estimates specific to the Fairfield sewer system were developed and used for this master plan as described in this chapter.

Table 2-1
Estimated Standard Base Sanitary Wastewater Flow

Customer Type	Estimated Typical Indoor Water Use per Connection (gal)	Estimated % of Non-Consumptive Indoor Water Use	Estimated Peak Month, Average Day Wastewater Production per Connection (gal)	Sewer ERU per Connection
Residential	198	95%	188	1.0
Light Industrial	388	95%	368	2.0
Commercial	775	95%	737	3.9

Inflow and Infiltration

Inflow refers to flows that enter the sewer system via unofficial connections (such as manhole covers, leaky service laterals, root damage, etc.) during a precipitation event. These are temporary increases in flow that enter the system after a storm. Conversely, infiltration is related to groundwater seeping into the wastewater collection system through cracks, breaks, or un-sealed pipe joints. Groundwater levels—and therefore infiltration flows—can vary with seasonal and long-term precipitation trends but are generally constant over a 24-hour period.

Inflow and infiltration flows can be separated from base sanitary wastewater flows with detailed monitoring. However, most sewer systems don't have sufficient data to separate these sources. In the absence of detailed monitoring, we have assumed infiltration to be 18% of base sanitary sewer flows. Inflow will be accommodated in the pipe capacity safety factor discussed in Chapter 4.

Peak Hour Flows

Sewer flows typically vary throughout the day based on daily water use patterns. For example, morning and evenings typically see a spike in domestic water use (and therefore sewer flows) as more people are at home using showers, toilets, washing machines, etc. as opposed to the middle of the day, when people often leave the house for work or other activities. Understanding and planning for these hourly peaks is crucial to adequately sizing a sewer collection system.

Hourly peaking factors may change over time for multiple reasons, including, but not limited to:

- **System Growth:** Peaking factors generally decrease as a system grows. As additional connections are added to the system, the base flows conveyed through the collection system increases, which reduces the peaking effect of a single or small group of customers.
- **Change in Customer Class Distribution:** The daily indoor water use patterns of residential and non-residential customers are usually very different, which creates different peaking factors. Therefore, peaking factors often change when the balance between residential and non-residential customers changes within a sewer system.

Peaking factors were estimated based on the 10-state Standard for small area peaking factors. This method uses historic data collected over many systems, estimated connections, and estimated flows to project peaking factors for hourly sewer flows. For Fairfield, these peaking factors range from 4.05 in the first year of system operation to 2.66 at buildout.

Hourly peaking factors are applied only to the base sanitary sewer flows, not I&I.

Proposed Level of Service for New Users

BC&A proposes the level of service per ERU for new development in Fairfield as shown in Table 2-2. These values are based on the assumption that future development will follow similar indoor use patterns as existing Fairfield Town water customers, and that infiltration will continue at 18% of total base sanitary flows per ERU.

Table 2-2
Recommended Near-Term Level of Service per ERU (10-yr)

Flow Component	Peak Month, Average Day Flow per Sewer ERU (gpd)	Peak Hour Flow per Sewer ERU (gpd)
Base Sanitary Flow	188	761
Infiltration ¹	34	34
Total Level of Service	222	795

¹Assumed to constitute 18% of total base sanitary sewer flow.

Table 2-3 shows the projected level of service for the system at buildout.

Table 2-3
Estimated Buildout Level of Service per ERU

Flow Component	Peak Month, Average Day Flow per Sewer ERU (gpd)	Peak Hour Flow per Sewer ERU (gpd)
Base Sanitary Flow	188	501
Infiltration ¹	34	34
Total Level of Service	222	535

¹Assumed to constitute 18% of total base sanitary sewer flow.

Note that it is likely that water use patterns will change as development occurs, impacting the sewer flows per ERU estimated in this study. The Town should review incoming development proposals and monitor real water use and/or sewer flows to understand if and when these estimates need to be updated.

Additionally, some customers (notably non-residential) may create peak instantaneous sewer discharges larger than those published in Tables 2-2 and 2-3. In order to reduce the risk of overwhelming the collections and treatment systems with these large peak wastewater flows, BC&A recommends that the Town requires all developments to restrict sewer releases to the buildout peak hour flows for base sanitary flows published in Table 2-3.

Summary of Flow Projections

Below is a summary of flow projections described in this section. These values represent the base sanitary sewer flow and expected I&I.

- Existing and future peak month, average day flow = 222 gpd/ERU
- Existing peak hour flow = 795 gpd/ERU (0.552 gpm/ERU)
- Future peak hour flow = 535 gpd/ERU (0.372 gpm/ERU)

GROWTH PROJECTIONS AND FUTURE FLOWS

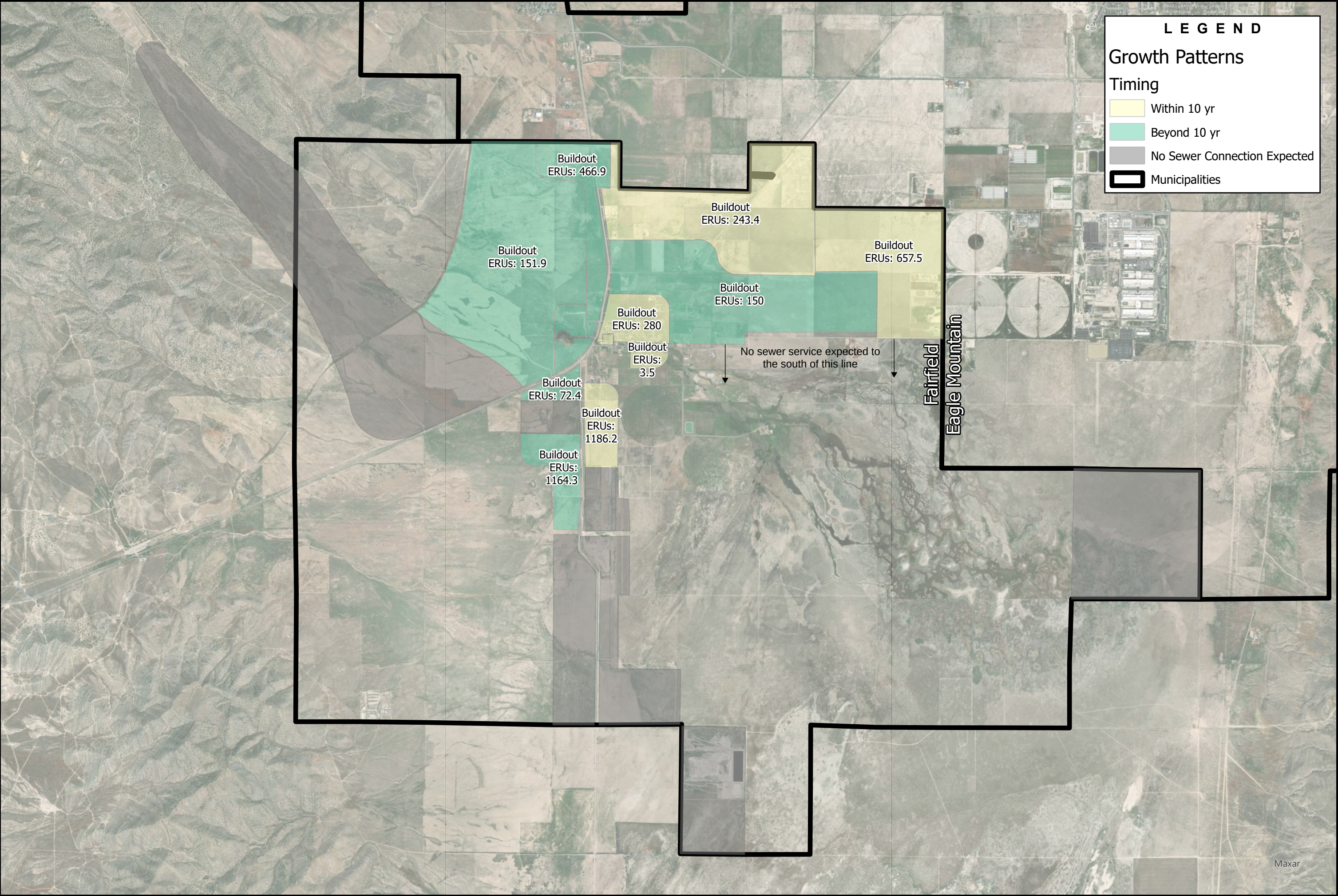
Future growth projections for all of Fairfield Town were estimated in the concurrently developed 2025 Water Master Plan, completed by BC&A. After coordinating with Town staff, BC&A decided to utilize these growth projections to ensure consistency between the different utility master plans. One important difference in how the growth projections were used in this plan pertains to existing users. Since there is no existing centralized sewer system in Fairfield currently, BC&A adjusted the number of “new ERUs” in the system to be zero for the sewer system and to grow with development. BC&A conservatively assumed current residents of Fairfield will connect to the centralized sewer system within the next 10 years. Growth projections shown in Table 2-4 reflect this assumption.

Table 2-4
Growth Projections for Fairfield Town

Year	Estimated Growth Rate	Population	Sewer ERUs	Base Sanitary Sewer Flow (gpd)	Infiltration (gpd)	Total Average Flow (gpd)
2025	--	265	0	0	0	0
2026	54.0%	355	85	17,879	3,218	21,098
2027	35.2%	445	128	27,040	4,867	31,907
2028	26.2%	535	172	36,278	6,530	42,808
2029	18.8%	625	209	44,138	7,945	52,083
2030	16.4%	718	248	52,306	9,415	61,722
2031	20.1%	839	306	64,546	11,618	76,164
2032	19.2%	974	373	78,742	14,174	92,916
2033	18.2%	1,123	451	95,027	17,105	112,132
2034	17.2%	1,282	538	113,499	20,430	133,929
2035	16.1%	1,449	635	133,953	24,112	158,064
2040	11.1%	2,249	1,286	271,076	48,794	319,869
2045	7.8%	2,744	2,191	462,048	83,169	545,217
2050	4.9%	2,952	3,143	662,755	119,296	782,051
2055	2.4%	3,025	3,832	807,952	145,431	953,384
2060	0.9%	3,049	4,175	880,417	158,475	1,038,892
2065	0.3%	3,056	4,308	908,280	163,490	1,071,770
2070	0.1%	3,059	4,354	918,106	165,259	1,083,365
2075	0.0%	3,059	4,369	921,171	165,811	1,086,981
2080	0.0%	3,060	4,373	922,148	165,987	1,088,135

ESTIMATED DISTRIBUTION OF FUTURE GROWTH

While it is impossible to predict exactly when and where new development will occur within the system, Town staff have a general idea of where new projects are occurring and how new development will unfold in the future. Through coordination with the Town staff, Figure 2-1 displays the estimated distribution of new growth within the 10-year planning window and 20-year planning window. This exercise helps to prioritize which sewer collection system projects will need to be built to accommodate the needs of future growth. It should be noted that the areas identified in the 10-year window are not expected to be fully developed within ten years, but that at least some portion of growth will begin within this planning window. If the Town observes significant deviations from these assumptions with respect to the location or timing of new development, updates should be made in subsequent master planning efforts.



LEGEND

Growth Patterns

Timing

Within 10 yr

Beyond 10 yr

No Sewer Connection Expected

Municipalities

SCALE: 0 1,750 3,500 Feet

NORTH:

PROJECTED AREAS
OF GROWTH

FAIRFIELD TOWN
2025 FAIRFIELD
SEWER MASTER PLAN

**BOWEN COLLINS
& ASSOCIATES**

FIGURE NO.
2-1

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CHAPTER 3

FUTURE TREATMENT ALTERNATIVES EVALUATION

BC&A began its analysis by considering sewer treatment alternatives because the location of treatment facilities will inform much of how the collections system is conceptualized. The purpose of this chapter is to consider which alternatives exist for treating Fairfield's sewer flows, understand the relative advantages and disadvantages of each alternative, and provide a recommended treatment alternative.

TREATMENT ALTERNATIVES

While there are many nuances to sewer treatment options, BC&A considered two main alternatives for this master plan:

- Building a new wastewater treatment facility in Fairfield or
- Entering into an agreement with another entity to treat sewer flows.

These alternatives are described and analyzed in the following sections. BC&A summarized advantages and disadvantages by considering short-term and long-term costs to the Town, ease of complying with state regulations regarding sewer treatment, and time to have an operational system.

Alternative 1: Build a New Wastewater Treatment Facility in Fairfield

Fairfield may plan for, design, build, and operate its own wastewater treatment plant (WWTP). The estimated cost, advantages, and disadvantages of this alternative are as follows:

Estimated Cost:

- Capital Construction Cost: ~\$22 million
- Annual Operation & Maintenance: Between \$270,000 and \$2.0 million per MGD of treatment capacity
- Annual Treatment System Capital Investment³: ~\$392,000/year

Advantages:

- Gives the Town control over treatment processes
- Holds the cost at actual cost of treatment (i.e. cost not dependent on an agreement with another entity)

Disadvantages:

- Expensive to construct, operate, and maintain
- Requires full time licensed and/or certified personnel to be added to Town staff
- Requires approval by the Utah Division of Environmental Quality to build and operate. Approval is unlikely due to the proximity to the existing treatment plant in Eagle Mountain.
- Relatively long time frame to have an operational sewer system because of time for design, state approval, and construction
- Functionality of WWTP becomes difficult without a surface water body in the Town for effluent discharge

³ Long-term budget required to sustainably maintain the capital facilities associated with treatment after it is initially paid for. Based on expected 50-year service life for most treatment facilities.

Alternative 2: Enter into an Agreement with Eagle Mountain for Sewer Treatment

The other alternative Fairfield has in dealing with centralized sewer treatment is to enter into an agreement with Eagle Mountain for sewage to be treated at the Eagle Mountain WWTP. At the time of writing this master plan, Fairfield has already approached Eagle Mountain public works staff and City Council to propose this alternative. The Eagle Mountain City Council approved the proposal submitted by the Town, but the actual terms of the agreement have not been set. As with Alternative 1, the estimated cost, advantages, and disadvantages of this alternative are as follows:

Estimated Cost:

- Both initial capital and ongoing annual costs will be dependent on the cost of treatment and conveyance for Eagle Mountain and will be decided in the official agreement between Eagle Mountain and Fairfield. Eagle Mountain's current sewer capacity impact fee is \$4,665/ERU. While this is expected to increase in the future, it is significantly less than the approximately \$15,000/ERU cost associated with building treatment for Alternative 1. An additional cost advantage of Alternative 2 is that it would be easier to add cost (and treatment capacity) incrementally compared to Alternative 1.

Advantages:

- A much simpler process for the Town because it eliminates the need to hire additional staff members, acquire licenses and permits for building and operating a WWTP, working through state approval, etc.
- More in line with state desires to consolidate treatment locations where possible
- It is expected that Eagle Mountain will allow the Town to buy into the treatment plant incrementally. This would result in a much smaller up-front capital investment than Alternative 1.

Disadvantages:

- Agreement cost will be controlled by Eagle Mountain, may not be strictly cost of service, and will likely be increased on a regular basis
- May require a more extensive collections system to reach the Eagle Mountain WWTP

TREATMENT CONCLUSIONS AND RECOMMENDATIONS

Based on the cost estimates, advantages, and disadvantages stated above, we anticipate Alternative 2 will be the best option for Fairfield economically and administratively. We recommend the following action be taken to facilitate treating sewer flows at the Eagle Mountain WWTP:

- Continue discussions with Eagle Mountain public works to form an agreement for sewer treatment. While this agreement will be unique to Eagle Mountain and Fairfield, the following items are commonly seen in these types of agreement or are general things to consider:
 - The agreement will likely include a buy-in portion (i.e. Fairfield has to purchase their fair share of treatment capacity from Eagle Mountain) and a volume portion (i.e. the cost of actually treating each gallon of sewage). In addition to treatment capacity, this may also include a buy-in to existing collection facilities that Fairfield ties into.
 - While there are multiple different approaches to determining buy-in costs, it is recommended that the Town negotiate a buy-in cost for existing development that is closely tied to the calculation of Eagle Mountain's impact fees. This will ensure that the fees are calculated fairly and according to a set process dictated by State code.

- Future volume capacity can be purchased in blocks at a time to cover expected development for the next several years or can be purchased for individual connections as they are developed. If possible, it is recommended that the Town pursue an agreement in which its new connections simply pay an impact fee to Eagle Mountain as they connect to the system. Again, this will ensure that the fee is fairly calculated and will remove any kind of burden for financing future development off the Town.

CHAPTER 4 FUTURE COLLECTIONS SYSTEM

This chapter was written under the assumption that Fairfield sewage flows will be treated at the Eagle Mountain WWTP, as discussed in Chapter 3. Therefore, all collections system improvements discussed in this chapter are laid out to send flows to that location.

COLLECTIONS SYSTEM ALTERNATIVES

Multiple alternatives or alternative combinations were developed for the future sewer collection system in Fairfield, as shown in Figure 4-1 and summarized in Table 4-1. Three basic alternatives were considered:

- **Alternative 1:** Sends majority of flows north to tie into Eagle Mountain's existing sewer mains in Pole Canyon Rd. This alternative would leave a small area to the east that would need to be served by a lift station.
- **Alternative 2:** Sends all flows to the northeast corner of Fairfield to connect into Eagle Mountain's collection system along Magnolia Rd.
- **Alternative 3:** Sends flows to Fairfield's Main Street, where they will be sent east and north to connect to Eagle Mountain's collection system along Magnolia Rd.

The following items were considered when developing and evaluating these alternatives:

- The amount of the system that can gravity flow to the WWTP, rather than requiring lift stations and force mains (which are typically more expensive to build, operate, and maintain);
- The number of outfalls from Fairfield into the Eagle Mountain sewer collections system and WWTP;
- Total pipe required and expected pipe sizes (assuming minimum pipe slope per Utah code R317-3-2.3(D)(4)); and
- Rough estimated cost.

In addition to the considerations above, the following assumptions were made when sizing gravity pipes in this analysis:

- Manning's roughness coefficient of 0.013 was assumed.
- Pipes were sized such that maximum pipe capacity for base flows did not exceed 75% pipe capacity (q/Q). The remaining 25% of pipe capacity is reserved for precipitation related inflow or atypical fluctuations in base sanitary water use.

**Table 4-1
Comparison of Collections Alternatives**

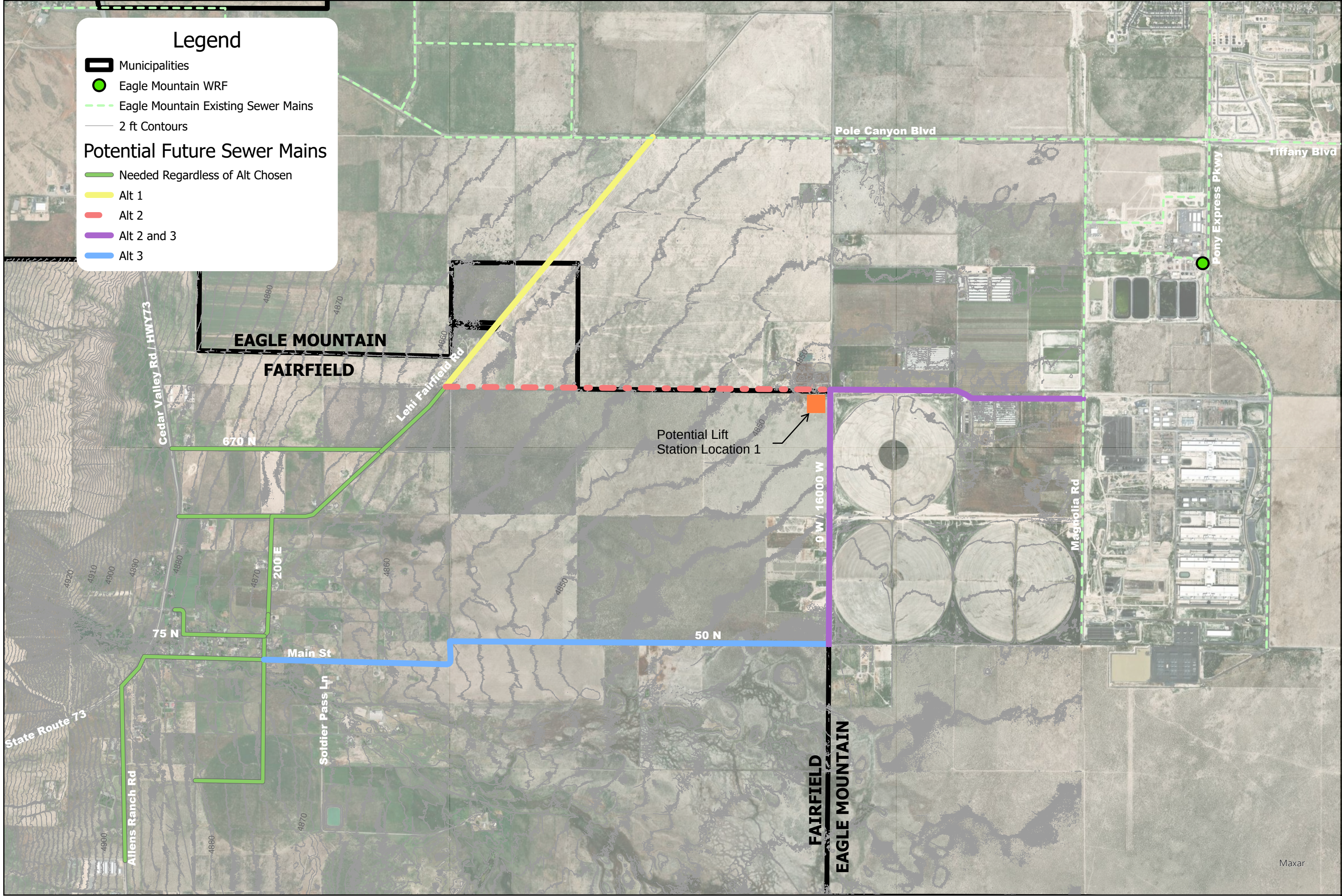
	Alternative 1 Only	Alternative 2 Only	Alternative 3 Only	Alternatives 1 and 3	Alternatives 2 and 3
Number of Major Lift Stations Required	1	0	0	0	0
Number of Outfalls to Eagle Mountain System	1	1	1	2	1
Total Gravity Pipe (inch-diameter miles)¹	100	134	159	157	163
Total Force Main Pipe Length (inch-diameter-miles)²	12	0	0	0	0
Pipe Cost Estimate (design, material, & pipe installation)³	\$20,067,900	\$21,641,500	\$24,859,100	\$25,153,900	\$25,958,100
Lift Station Cost Estimate	\$1,003,000	\$0	\$0	\$0	\$0
Approximate Cost of Buy-In to Eagle Mountain Conveyance Facilities⁴	\$3,984,300	\$1,538,700	\$1,538,700	\$1,538,700	\$1,538,700
Total Collections Cost Estimate	\$25,055,200	\$23,180,200	\$26,397,800	\$26,692,600	\$27,496,800
Additional Notes	This alternative cannot function without lift station location 1 (see Figure 4-1).	—	---	Splits the Fairfield system into two separate systems and outfalls. May be beneficial to avoid overwhelming the Eagle Mountain collections system but also creates challenges for cost sharing.	This alternative creates virtually two separate systems on the north and south ends of Fairfield, while isolating connections to Eagle Mountain to only one location.

¹Inch-diameter-mile is a measure of total pipe length weighted by pipe diameter and is commonly used to objectively compare a mix of pipe lengths and diameters.

²Force main dimensions based on C900 PVC DR14 pipe.

³Excludes appurtenant construction costs such as survey, traffic control, pipe fittings, etc. Should be used for comparison of alternatives only with a more detailed estimate to be assembled after an recommended alternative is selected.

⁴Actual cost of Eagle Mountain conveyance cost is unknown. It was assumed for the purposes of this analysis that Fairfield can share capacity in these pipes. We have assumed this would be approximately 60% of the cost of installing independent infrastructure.



Legend

Municipalities

Eagle Mountain WRF

Eagle Mountain Existing Sewer Mains

2 ft Contours

Potential Future Sewer Mains

Needed Regardless of Alt Chosen

Alt 1

Alt 2

Alt 2 and 3

Alt 3

SCALE:
0 900 1,800 Feet

NORTH:

NORTH

FAIRFIELD TOWN

2025 SEWER MASTER PLAN

BOWEN COLLINS & ASSOCIATES

FIGURE NO.

4-1

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Based on the information contained in Table 4-1 the following discussions and conclusions can be made:

- From an initial capital cost perspective, Alternative 1 is the second cheapest, however this does not consider the ongoing costs of operating and maintaining the lift station(s).
- Alternative 2 keeps collections infrastructure required to a minimum, while also likely eliminating the need for a lift station.
- A high-level investigation performed for this analysis indicated that a pipe laid at a minimum slope north from 50 N could eliminate the need for a lift station in Alternatives 2 and 3. However, additional survey and topographical investigation should be performed to confirm these slopes and constructability of a gravity line for these alternatives.
- The combination of alternatives may make sense as development occurs, depending on development patterns. For example, if the north end of the system develops many years before the south end, building enough infrastructure only for the immediate demand would reduce the Town's cost burden of paying for infrastructure that will not be used or reimbursed for many years. However, it's also important to remember that the more separate the systems, the more infrastructure is required and the more difficult it is to share costs for infrastructure among future customers.
- An additional consideration is related to the amount of pipe capacity available in the existing Eagle Mountain main lines that Fairfield would connect into. BC&A does not have information on these existing pipe sizes and would encourage additional investigation and coordination with Eagle Mountain to determine pipe capacity availability. If existing pipe capacity is insufficient for total Fairfield sewer flows, it may be better to connect to the Eagle Mountain system at two locations in order to avoid needing to upsize existing pipes.

Without further information about the Eagle Mountain system, BC&A recommends moving forward with the collection system shown in Alternative 2. This alternative is economical, likely does not involve constructing and maintaining a sewer lift station, allows for infrastructure cost sharing among future sewer customers, and isolates the connection to Eagle Mountain to one location.

COLLECTIONS CONCLUSIONS AND RECOMMENDATIONS

BC&A recommends having conversations with Eagle Mountain to understand:

1. If there is a preferred location to tie-in to their existing sewer system based on the alternatives presented in this master plan; and
2. If the existing Eagle Mountain sewer pipes we are proposing to connect to (shown in Figure 4-1) are sized to handle the additional flows from Fairfield.

Unless information from Eagle Mountain reveals high additional cost associated with upsizing the existing sewer line along Magnolia Rd, BC&A recommends Fairfield make Alternative 2 the preferred alignment for its collection system.

CHAPTER 5

CAPITAL IMPROVEMENT PLAN

The purpose of this chapter is to summarize the projects recommended to create a centralized sewer system in Fairfield and assemble a 10-year capital improvement plan to implement the recommended projects. This will include recommendations regarding funding mechanisms for capital projects. The timing and need for the capital projects included in this chapter rely heavily on when and where development will occur within the Town. If actual development patterns differ significantly from what is assumed in this master plan, the timing of capital projects should be revised to match actual growth.

SUMMARY OF RECOMMENDATIONS AND SYSTEM PROJECTS

The following projects represent a summary of all recommendations made throughout this master plan. Note that some items in this list are projects related to the physical infrastructure of the sewer system, while others involve additional analysis or discussions required to appropriately plan for and construct the physical infrastructure. These projects are summarized in Table 5-1 and illustrated in Figure 5-1.

Treatment Projects

- **T-1 - Implement a Sewer Flow Release Limitation for Non-Residential Customers:** The Town should implement an ordinance or similar regulation for all future non-residential customers which restricts development of industrial customers to 1 ERU/acre and commercial customers to 2 ERUs/acre. Sewer flow releases for these customers should be limited to those flows shown in Table 2-3 of this report. This will reduce the risk of a high volume of water being released into the sewer system and creating surcharging or overwhelming the treatment system infrastructure.
- **T-2 - Finalize Agreement for Eagle Mountain Wastewater Treatment:** Fairfield should continue discussions with Eagle Mountain to finalize the treatment agreement. Important considerations for this agreement include but are not limited to:
 - Cost of initial buy-in and volume charges;
 - Process and cost for addition of future capacity;
 - Definition of process for future rate increases and of allowable profit margin (if applicable);
 - Required notification time of cost increases (i.e. Eagle Mountain must provide at least x days' notice of agreement cost increase so that Fairfield can adjust its own budget accordingly).

Collections Projects

- **C-1 - Finalize Collection System Layout:** Fairfield should discuss the proposed Alternative 2 collection system connection with Eagle Mountain, specifically to ensure the location of connection is amenable to Eagle Mountain and there is sufficient capacity available in receiving pipes. Unless otherwise required based on these discussions, Fairfield should use the Alternative 2 collection system layout to plan for future sewer service.
- **C-2 - Install 24-inch Sewer Main from Fairfield Boundary to Eagle Mountain System:** The first sewer main required will be the connection between the Fairfield boundary and the existing Eagle Mountain sewer system. We have proposed placing this line along ~2500 N

and tying into the existing sewer line on Magnolia Rd. Expected ERUs through this pipe at buildout are ~4,380.

- **C-3 – Install 8-inch Sewer Main Along 0 W/ 1600 W:** A sewer line along the boundary line between Fairfield and Eagle Mountain will collect flows from the far east side of the Town and convey them north to the sewer trunkline constructed in project C-3. Expected ERUs through this pipe at buildout are ~558. This pipeline will be required only as dictated by development and may not be needed for many years.
- **C-4 – Install 21-inch Sewer Main Along 2500 N:** Based on the vision plan in the Town's updated General Plan, a road is expected to be built along ~2500 N. BC&A recommends installing a sewer trunkline along this roadway that will collect the majority of the Town's flows and connect into project C-2. Expected ERUs through this pipe at buildout are ~3,820.
- **C-5 – Install 21-inch Sewer Main Along Lehi-Fairfield Rd:** A sewer main along Lehi-Fairfield Road will connect future sewer pipes within the town center with projects C-2 through C-4. Expected ERUs through this pipe at buildout are ~3,635.
- **C-6 – Install 18-inch Sewer Main Along 200 E:** BC&A expects that the expansion of the sewer system into the town center will be largely driven by development to the southwest but may also come as a result of demand for centralized sewer service from existing residents. Expected ERUs through this pipe at buildout are ~2,700.
- **C-7 – Install 12-inch Sewer Main Between 200 E and Tal Adair Property:** To avoid installing a lift station on the east side of the Tal Adair property, BC&A recommends installing a gravity line from this area that connects to project C-6 which convey flows north along 200 E. Expected ERUs through this pipe at buildout are ~1,185.
- **C-8 – Install 8-inch Sewer Main Along 75 N:** This project has been included in the 10-year window but may fall outside this planning window depending on completion of other project and the demand from existing residents to connect to the centralized sewer system. This line will service existing residents who are now on septic systems in addition to potential development on the west side of Highway 73. Expected ERUs through this pipe at buildout are ~140.
- **C-9 – Install 12-inch Sewer Main Along Allen's Ranch Rd and 15-inch Main Along Main St:** As required by development on the west side of Allen's Ranch Rd and along Main St, a sewer main should be constructed along these roads to connect into project C-6. This will likely be outside the 10-year planning window. Expected ERUs through this pipe at buildout are ~1,380.
- **C-10 – Install 8-inch Sewer Main Along Lehi-Fairfield Rd to Highway 73:** This pipeline may be needed to service existing or new customers on the west side of the Town who desire to connect into the centralized sewer system, but it not expected to be built until after 2035. It will also likely service some commercial development planned to occur on the west side of the highway in the future. Expected ERUs through this pipe at buildout are ~420.
- **C-11 – Install 8-inch Sewer Main Along 670 N:** Similar to C-10, this pipeline will service some commercial development expected in the northwest corner of the Town, in addition to residential customers within this area. Expected ERUs through this pipe at buildout are ~350.

CAPITAL IMPROVEMENTS PLAN

Each project described above has been summarized in the capital improvement plan (CIP) shown in Table 5-1. Detailed cost estimates for these projects are included in Appendix A. The following are items to be aware of when using and interpreting this CIP:

- This CIP is meant to aid the Town in understanding the timing and approximate cost of each project so that they can budget and plan accordingly. Note that, except for the discussions with Eagle Mountain, all projects will be driven by development. In other words, if development pressures change from what was expected at the time of this writing, project timing will also change. Therefore, the Town should closely monitor land development over the next 10 years and adjust this plan accordingly.
- Pipe sizes listed in this plan are approximate. Actual pipe sizes will need to be defined during detailed design using projected flows and designed pipe slopes calculated from survey data.
- For ease of interpretation and due to the unknown nature of future development, projects descriptions have been broken into large sections of pipe. Actual construction of these sewer mains will likely be completed in smaller sections as development occurs and as funds become available.
- BC&A has assumed that the northeast corner of Fairfield will be developed first before expanding to the southwest corner, and the order of projects reflects this assumption. It is possible that development occurs in the southwest corner before expected, which would expedite the need to construct sewer mains between Main Street and Lehi-Fairfield Rd (projects C-5 and C-6).

**Table 5-1
Sewer Capital Improvements Plan**

Project ID	Description	Time Frame	Estimated Year of Completion	Estimated Cost (2025 \$'s)
Treatment				
T-1	Implement a Sewer Flow Release Limitation for Non-Residential Customers	Within 10-years	2025	\$0
T-2	Finalize Agreement for Eagle Mountain Wastewater Treatment	Within 10-years	2025	\$10,000
<i>Treatment Subtotal</i>				<i>\$10,000</i>
Collections				
C-1	Finalize Collection System Layout and Alignment	Within 10-years	2025	\$5,000
C-2	Install 24-inch Sewer Main from Fairfield to Eagle Mountain System	Within 10-years	2026	\$3,412,800
C-3	Install 8-inch Sewer Main Along 0 W/ 1600 W	Within 10-years	2027	\$1,852,100
C-4	Install 21-inch Sewer Main Along 2500 N	Within 10-years	2028	\$4,637,300
C-5	Install 21-inch Sewer Main Along Lehi-Fairfield Rd	Within 10-years	2030	\$2,748,100
C-6	Install 18-inch Sewer Main Along 200 E	Within 10-years	2032	\$1,590,400
C-7	Install 12-inch Sewer Main Between 200 E and Tal Adair Property	Within 10-years	2034	\$1,516,800
C-8	Install 8-inch Sewer Main Along 75 N	Within 10-years	2035	\$838,700
C-9	Install 12-inch Sewer Main Along Allen's Ranch Rd and 15-inch Main along Main St	Beyond 10-years	--	\$2,446,200
C-10	Install 8-inch Sewer Main Along Lehi-Fairfield Rd to Highway 73	Beyond 10-years	--	\$699,000
C-11	Install 8-inch Sewer Main Along 670 N	Beyond 10-years	--	\$1,572,600
<i>Collections Subtotal</i>				<i>\$21,319,000</i>
TOTAL				\$21,329,000
TOTAL WITHIN 10-YR WINDOW				\$16,611,200

CAPITAL IMPROVEMENTS FUNDING

This section discusses items relevant to capital improvements funding to answer questions such as which improvements are to be funded under Town funding mechanisms, what are the available sources of funding, and how to coordinate funding with land developers.

Project Level Improvements

Land developers are required to provide all infrastructure necessary to connect to the Town's existing sewer system infrastructure including all collection piping and lift stations necessary to convey sewer flows from the development. These project level improvements typically include collection pipe networks, lift stations not otherwise needed for regional use, as well as other improvements as needed. Project level improvements are funded by land developers outside of Town funding mechanisms, approved by the Town Engineer and built to Town Standards, and dedicated to the Town for long term ownership and maintenance.

System Level Improvements

System Level Improvements are those which provide system-wide and/or regional benefits to multiple land developments. These projects include regional collection pipes, and regional lift stations. They are generally funded under or within Fairfield funding mechanisms.

It should be noted that system level improvements—while generally funded under Fairfield mechanisms—do not always need to be funded initially or directly using Town resources. It is often necessary to partner with land developers to overcome cash flow challenges associated with building infrastructure ahead of the receipt of revenues (i.e. impact fees and rate revenues are realized only after infrastructure is built and customers are connected to the system). See the following descriptions of various funding options for system level improvements.

Cash Funding

Cash funding involves the Town using cash on hand to fund projects. The principal source of cash for the Town is rate revenues. Cash funding is a critical piece of funding any capital facilities plan. It is recommended, however, that this be used in conjunction with other funding mechanisms.

Impact Fees

Impact fees are an excellent way to distribute the cost of system level infrastructure between new and existing users. Impact fees are charged to new connections to collect their proportional share of the infrastructure that has or will be constructed on their behalf.

Impact Fee Credits

In the Town—and in many other sewer systems experiencing high growth—impact fee receipts are insufficient to construct all of the system level improvements at the time requested by development. This is because of the inherent characteristic of impact fee receipts that they recover the full cost of projects only after all of the planned properties have developed (and thus paid their impact fees). Fortunately, impact fees can still facilitate the construction of system level infrastructure in a timely manner by offering impact fee credit to land developers in exchange for their constructing system level infrastructure (i.e. “If you construct system level infrastructure, you have in essence already paid your impact fees or a portion thereof and thus won’t need to pay that portion at the time of connection.”)

Grants

Sewer treatment grants are an excellent way to fund system infrastructure when available. Grants are typically provided by state or federal agencies. Each of these grants target different types of projects and come with their own requirements and attached strings. It is recommended that the

Town apply to be part of the new State of Utah Unified Water Infrastructure Plan (UWIP), monitor potential grant opportunities, and utilize grants when and where applicable and advantageous. Grants do not typically need to be repaid as long as grant requirements are met.

Debt

Another potential source of funding for the Town is debt. Debt can be in the form of revenue bonds, special assessment bonds, and loans. The advantage of debt is the ability to spread costs over time to manage cash flow and related issues (such as rate increases). Of course, debt is not a standalone funding mechanism since debt must be repaid via another funding source.

Public Improvement Districts (PIDs)

PIDs can sometimes be used by property owners (typically land developers) to fund public infrastructure. The typical mechanism is to create a special property tax for the area covered by the PID and to sell bonds backed by the future property tax receipts. The bonds thus generate immediate funds for public infrastructure.

APPENDIX A DETAILED COST ESTIMATES

**Table A-1
Detailed Cost Estimates**

Project ID	Description	Quantity	Unit	Unit Cost	Initial Cost Estimate	Contingency	Engineering	Item Total
Treatment								
T-1	Implement a Sewer Flow Release Limitation for Non-Residential Customers	1	LS	\$0	\$0	--	--	\$0
T-2	Finalize Agreement for Eagle Mountain Wastewater Treatment	1	LS	\$10,000	\$10,000	--	--	\$10,000
<i>Treatment Subtotal</i>								\$10,000
Collections								
C-1	Finalize Collection System Layout and Alignment	1	LS	\$5,000	\$5,000	--	--	\$5,000
C-2	Install 24-inch Sewer Main from Fairfield to Eagle Mountain System	5,400	LF	\$458	\$2,472,988	\$494,598	\$445,138	\$3,412,800
C-3	Install 8-inch Sewer Main Along 0 W/ 1600 W	5,300	LF	\$253	\$1,342,094	\$268,419	\$241,577	\$1,852,100
C-4	Install 21-inch Sewer Main Along 2500 N	8,100	LF	\$415	\$3,360,354	\$672,071	\$604,864	\$4,637,300
C-5	Install 21-inch Sewer Main Along Lehi-Fairfield Rd	4,800	LF	\$415	\$1,991,321	\$398,264	\$358,438	\$2,748,100
C-6	Install 18-inch Sewer Main Along 200 E	3,100	LF	\$372	\$1,152,445	\$230,489	\$207,440	\$1,590,400
C-7	Install 12-inch Sewer Main Between 200 E and Tal Adair Property	4,000	LF	\$275	\$1,099,106	\$219,821	\$197,839	\$1,516,800
C-8	Install 8-inch Sewer Main Along 75 N	2,400	LF	\$253	\$607,741	\$121,548	\$109,393	\$838,700
C-9	Install 8-inch Sewer Main Along Allen's Ranch Rd and Main St	7,000	LF	\$253	\$1,772,577	\$354,515	\$319,064	\$2,446,200
C-10	Install 8-inch Sewer Main Along Lehi-Fairfield Rd to Highway 73	2,000	LF	\$253	\$506,451	\$101,290	\$91,161	\$699,000
C-11	Install 8-inch Sewer Main Along 670 N	4,500	LF	\$253	\$1,139,514	\$227,903	\$205,113	\$1,572,600
<i>Collections Subtotal</i>								\$21,319,000
TOTAL								\$21,329,000

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