H_2Oquirrh

A Vision for Salt Lake County's Southwest Waterways

DRAFT

OCTOBER 2024

THE H2OQUIRRH VISION PLAN UNIFIES THE VISION FOR SALT LAKE COUNTY'S SOUTHWEST WATERWAYS AND PROVIDES STRATEGIES FOR ACHIEVING WATERSHED REVITALIZATION WHILE SERVING THE NEEDS OF THE LOCAL COMMUNITIES.

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Thank you to our partners and funders who made the H2Oquirrh Vision Plan possible.

A special thank you to the many community members who participated in the planning process and contributed to the document.

All photographs and graphics are courtesy of the H2Oquirrh Vision Plan team unless otherwise noted.

PARTNERS AND FUNDERS

SALT LAKE COUNTY REGIONAL DEVELOPMENT

WASATCH FRONT REGIONAL COUNCIL

BLUFFDALE EST. 1848

COPPERTON UTAH est. 1926

HERRIMAN CITY

RIVERTON UTAH

WEST JORDAN UTAH

DESIGNWORKSHOP

LimnoTech

FOREWORD

Southwest Salt Lake County is gearing up for an exciting future centered around the waterways of the Oquirrh mountains – Bingham, Rose, Midas, Copper, Butterfield, Beef Hollow, Wood Hollow, and Juniper Canyon Creeks, as well as Barney's Wash. These creeks and washes create incredible opportunities for recreation, stewardship, and community that address the Oquirrh's distinctive desert climate. The H2Oquirrh Vision Plan unifies the vision for these waterways and provides strategies for achieving watershed revitalization while serving the needs of the local communities.

This plan puts forth a new dialogue about watershed management and waterway focused recreation and development in Salt Lake County. The Oquirrh mountain waterways are primarily ephemeral and intermittent stormwater and snowmelt drainages. Managing water resources in such a dry, fluctuating landscape presents distinctive challenges and opportunities that are the foundation of this plan. The benefits of planning for the Oquirrh waterways, however, are abundant: aquifer recharge, noxious weeds mitigation, enhanced native species and pollinator habitat, access to nature, pedestrian and multi-modal transportation connectivity, sustainable land development, environmental education, and long-term resiliency in a desert environment.

As the first cross-jurisdictional plan for the Oquirrh mountain waterways, H2Oquirrh represents a new commitment to sustainability and resiliency in southwest Salt Lake County. The Cities of Bluffdale, Herriman, Riverton, and West Jordan, and the Town of Copperton have all participated in the creation of this plan, pulling inspiration from each other's past successes and sharing new ideas. Municipal leaders and technical experts worked together to identify five key goals for this plan based on community input, research, and aspiration for the future. These five goals align with the themes of **water quality, preservation, recreation, development, and resiliency**.

The H2Oquirrh Vision Plan provides a framework to address the growth of beloved communities in the context of valuable environmental assets. This collective vision serves to protect water resources, preserve natural and open spaces, and continue to make southwest Salt Lake County a great place to live, work, and play.

PLACEHOLDER SECTION FOR MAYOR ACKNOWLEDGEMENTS/SIGNATURES

Mayor, Bluffdale

Mayor, Riverton

Mayor, Copperton

Mayor, West Jordan

Mayor, Herriman

INTRODUCTION

In this Chapter:

» Project Overview

» Planning Context

PROJECT OVERVIEW

PURPOSE OF THE PLAN

The intricate network of waterways, washes, and canals in Southwest Salt Lake County plays a pivotal role in shaping the region's natural and built environments. As the demand for water resources grows with the region's development demands, understanding and prioritizing the waterways has become paramount in charting a sustainable and resilient future. The H2Oquirrh Vision Plan study area encompasses a diverse and rapidly growing region, extending from the Oquirrh Mountains down to the meandering course of the Jordan River, including the communities of the City of Bluffdale, the Town of Copperton, Herriman City, Riverton City, South Jordan City, and the City of West Jordan.

Wasatch Front Regional Council (WFRC) and Salt Lake County (SLCo) are working together to plan for the future of the Oquirrh Range's waterways. With the challenges of rapid population growth and development, the future of these creeks and washes needs consideration today to preserve them as natural and community assets in the future. WFRC and SLCo partnered with consultants at Design Workshop (landscape architecture and planning) and LimnoTech (environmental and water resources engineering) to provide analysis and planning services to support the creation of this plan. The vision planning process included each municipality as an important stakeholder, and the final plan provides recommendations and resources for managing the southwest waterways into the future. The analysis and recommendations in the ensuing document serve to catalyze an ethic of sustainable development along these waterways and their long-term preservation.

The vision plan provides comprehensive analysis of the physical, environmental, and socio-economic aspects of the regional waterways in Southwest Salt Lake County, advocating for the sustainable management of water resources. This plan serves as a crucial step in the path toward balancing the diverse needs of the community while safeguarding the ecological integrity of these invaluable water resources.

WHY NOW?

The municipalities, agencies, and land owners in the region have expressed the need for collaborative action going beyond piecemeal waterway projects. WFRC and SLCo are the primary organizers of this intergovernmental and regional scale project. Each municipality has defined goals and strategies for managing the waterways through their own planning efforts, but this plan represents an opportunity to create a vision across city boundaries and tackle issues collectively. Representatives from WFRC, SLCo, and each municipality, as well as other key stakeholders have been instrumental in providing information and data to the project team to curate an accurate understanding of the existing conditions and opportunities the within the waterways.

The following factors underscore the urgency and necessity of this plan, including the dynamic interplay between human activities, environmental considerations, and the overarching need for sustainable resource management.

Population Growth and Urbanization: In 2022, the population of Salt Lake County was 1.2 million, 14.8% up from the 1 million who lived there in 2010. For comparison, the US population grew 7.7% and Utah's population grew 21.8% during that period. This has led to increased demands on water resources for residential, commercial, and industrial purposes. A shared vision is essential to anticipate and manage the impacts of urban development on water quality, quantity, and overall ecosystem health.

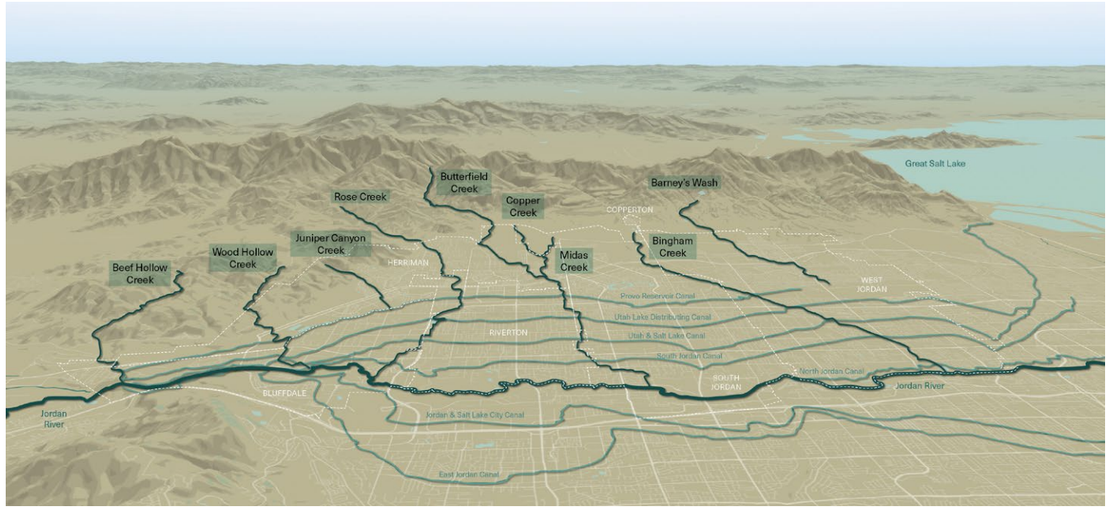


Figure 1: The H2Oquirrh Waterways

Climate Change: Climate change is a pressing issue in the region, with unpredictable weather patterns, altered precipitation regimes, and rising temperatures impacting water availability and ecosystem dynamics, leading one of America's most visible climate catastrophes, the drying of the Great Salt Lake. This vision plan provides adaptive strategies to address these climate-induced challenges and promote the resilience of the waterways in the face of changing environmental conditions. In the face of dwindling water resources and rapidly sprawling residential development, it is imperative to preserve and enhance the historical waterways of the region to ensure the continuation and amplification of the myriad social, ecological, and environmental services they provide.

Ecological Preservation: The region's waterways harbor a diversity of ecosystems that contribute to the overall health of the environment. With increasing human activities, there is a need to balance development with ecological preservation. The vision plan outlines strategies for protecting and restoring critical habitats and ensuring the sustainability of these natural resources.

Community Engagement and Equity: This vision plan engaged stakeholders from each community in the study area to represent their residents, businesses, and environmental organizations in decision-making process and shaping of the document and its goals. Promoting equitable access to water resources is an important takeaway from this plan. Studies show access to outdoor amenities and recreation provide mental and physical health benefits, but those benefits are not equally realized across the region, particularly in lower income and minority communities.

The vision plan for the regional waterways in Southwest Salt Lake County is not merely a response to current challenges but a forward-looking strategy addressing complex and interconnected factors. There is an opportunity to shape the future of the region in a manner that safeguards its natural resources, enhances resilience, and fosters a thriving place to live for all community members.

OUTCOMES

The outcome of this plan is a vision to unite the leaders and community members within the study area around a healthier, more vibrant, and integrated approach to waterway management. The plan's recommendations aim to steer communities towards this vision and help guide decision making in the future.

The recommendations provided in this plan are divided into five guiding goals that were derived from the overall plan vision. Each over-arching goal includes important strategies and recommendation areas. The goals and strategy topics are listed on this page but will be further detailed in **Chapter 3: Vision and Action**.

After outlining the vision, goals, and strategies, the plan proceeds to identify key action items that will assist with the implementation of this plan in the near term. These action items require collaboration across jurisdictions, departments, and disciplines to help achieve the plan's overall vision.

GOALS AND STRATEGIES

GOAL 1: REHABILITATE & EMBRACE THE NATURAL WATER CYCLE

- Water Availability
- Stormwater
- Creek and Wash Enhancement

GOAL 2: PRIORITIZE PRESERVATION AND ENHANCE OPEN SPACE

- Land Ownership
- Habitat
- New and Existing Parks/Open Spaces
- Riparian Enhancement

GOAL 3: PROVIDE ACCESS TO WATERWAY CORRIDORS FOR RECREATION AND CONNECTIVITY

- Preservation First/Stewardship
- Amenities
- Connectivity

GOAL 4: INTEGRATE NATURAL SYSTEMS INTO COMMUNITY DEVELOPMENT

- Infrastructure
- Development Requirements
- Embracing Waterways
- Zoning
- Education

GOAL 5: INCREASE RESILIENCY AND CLIMATE ADAPTATION FOR NATURAL AND URBAN CONDITIONS

- Drought and Heat
- Flooding
- Pollution/E.coli
- Fire

PLAN COMPONENTS

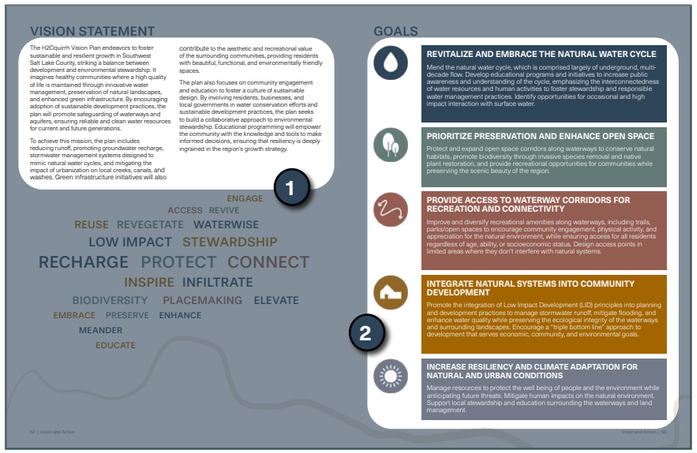


Figure 2: Vision and Goals

1. Vision Statement
2. Goals and Goal Descriptions

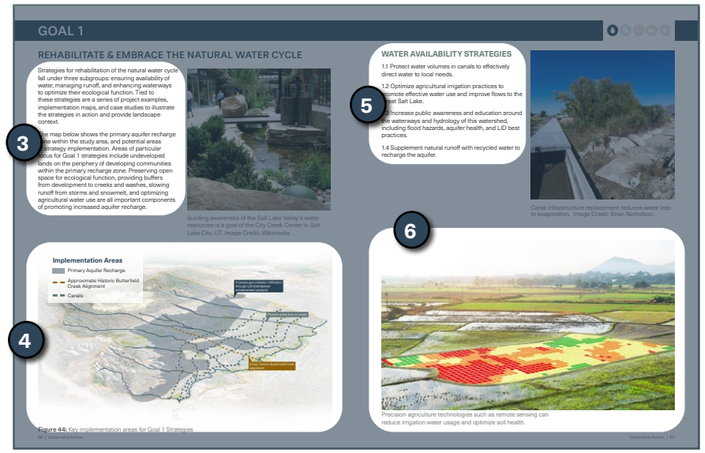


Figure 3: Strategies

3. Goal Introduction
4. Implementation Area Map
5. Strategies
6. Example images

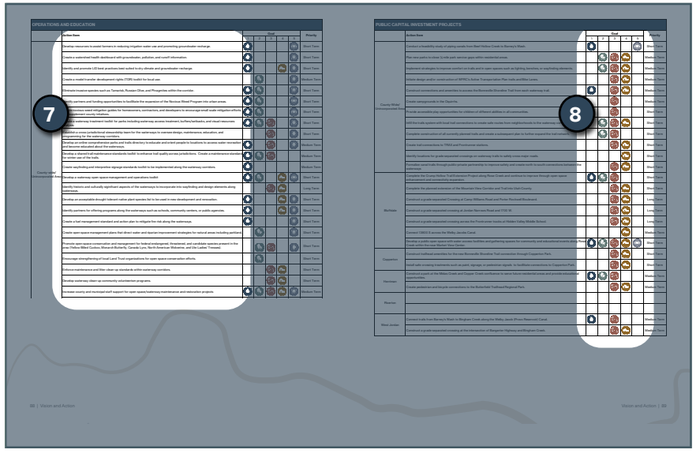


Figure 4: Action Items

7. Action Items
8. Goals Alignment

PLANNING CONTEXT

STUDY AREA

The study area spans from the Oquirrh Mountains to the Jordan River and encompasses a complex and dynamic landscape, including expanding swathes of residential development, fragmented natural landscapes, and interconnected waterways. The following section highlights key aspects of the environment.

The area of interest for the H2Oquirrh Vision Plan totals 183 square miles of southwest Salt Lake County and includes the nine major creeks and washes flowing from the Oquirrh mountains to the Jordan River, as well as significant urban and natural assets surrounding the waterways. The waterways included in this study are Beef Hollow Creek, Wood Hollow Creek, Butterfield Creek, Midas Creek, Copper Creek, Juniper Canyon Creek, Rose Creek, Bingham Creek, and Barney's Wash. The area of interest also considers the canals that intersect these waterways, and municipalities that surround the waterways, including the City of Bluffdale, the Town of Copperton, Herriman City, Riverton City, South Jordan City, and the City of West Jordan. The combination of municipal, county, and natural resource boundaries used to create the area of interest reflects the plan's intent to respond to challenges in both the natural and built environment. The following includes an assessment of the land use typologies and characteristics within the area of interest.

Geographic Features: The Oquirrh Mountains are the most prominent geological feature and provide a scenic backdrop to the study area. The word Oquirrh originates from a Goshute native American word meaning "shining mountains." The Oquirrh Mountains and adjacent foothills define the western edge of the Salt Lake Valley, cascading into a mix of suburban and urban landscapes. As the land slopes down, it gives rise to a network of waterways that play a crucial role in shaping both the environment and the communities in which they traverse.

Waterways and Watersheds: A key focus of the study area is the system of waterways that originates from the Oquirrh Mountains and flows to the Jordan River. These watercourses include small creeks, washes, and man-made canals that serve as vital conduits for stormwater runoff and contribute to and sustain diverse ecosystems. Understanding the hydrological connectivity and dynamics of these waterways is fundamental to the region's water management challenges and opportunities.

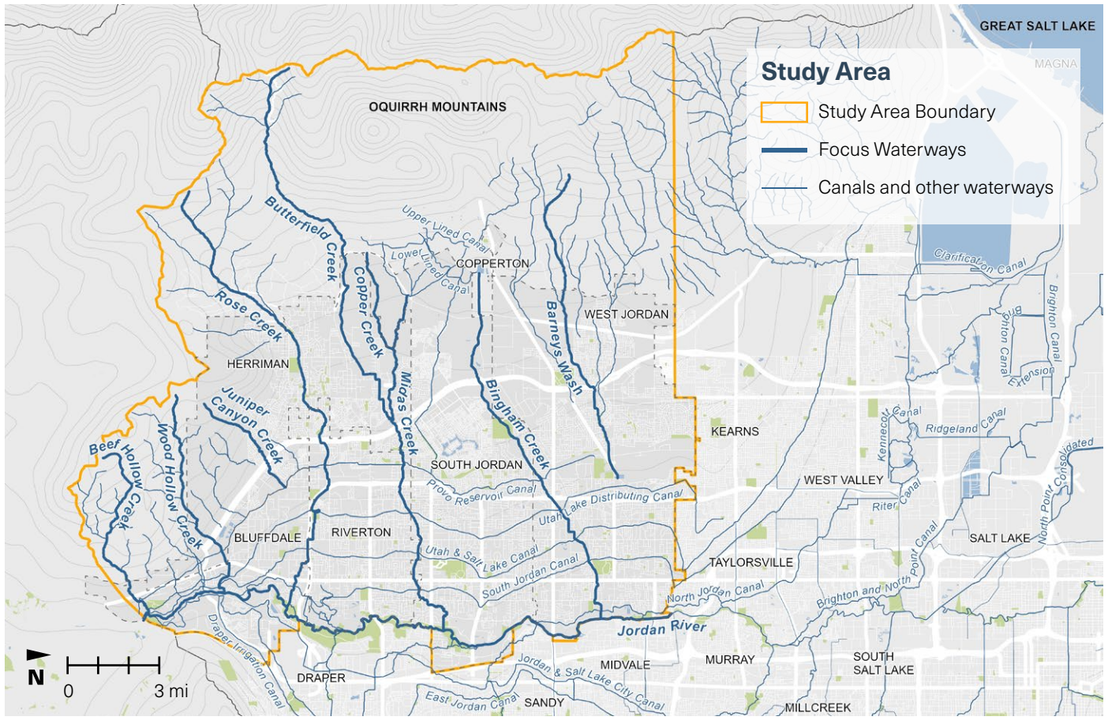


Figure 5: Project study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data)

Communities: The City of Bluffdale, the Town of Copperton, Herriman City, Riverton City, South Jordan City, and the City of West Jordan are vibrant communities, each with their own character and growth trajectory. The population expansion and urban development in these areas contribute to increased demands on water resources, necessitating a thoughtful and comprehensive approach to water management.

Urban-Suburban Interface: The study area captures the interface between urban and suburban environments in southwest Salt Lake Valley. As neighborhoods expand and urban centers develop the management of water resources becomes increasingly complex. Balancing the needs of a growing population with the preservation of natural habitats and water quality is a critical aspect of this vision plan.

Cultural and Recreational Significance: The waterways in the study area are both functional components of the hydrological system as well as significant cultural and recreational assets. Parks, trails, and green spaces along these watercourses provide recreational activities and contribute to the well-being and of residents. Preserving and enhancing these features is vital for fostering a sense of community and promoting a high quality of life.

The region's variable topography, differing communities, and their shared, interconnected waterways require an integrated and forward-looking approach to water management and urban planning. The vision plan is crucial for the harmonization of urban development, environmental preservation, and community well-being.

6 cities

183 square miles

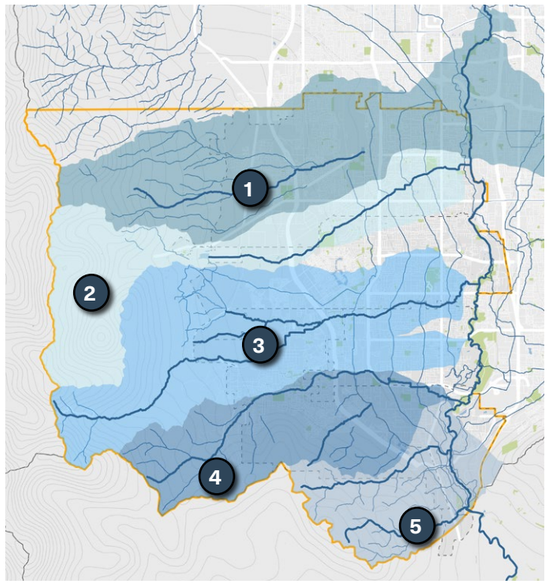
8 creeks

1 wash

10 canals

THE WATERWAYS OF SOUTHWEST SALT LAKE COUNTY

The nine creeks and washes emerging from the Oquirrh Range in Salt Lake County feeding into the north-flowing Jordan River are Beef Hollow Creek, Wood Hollow Creek, Juniper Creek, Rose Creek, Butterfield Creek, Copper Creek, Midas Creek, Bingham Creek, and Barney's Wash. They are divided into five watersheds and total 72 miles of stream length. The five watersheds are the Wood Hollow-Jordan River Watershed, the Rose Creek Watershed, the Midas-Butterfield Creek Watershed, the Bingham Creek Watershed, and the Barney's Wash-Jordan River Watershed. Each waterway is described on the following pages.



LEGEND

1. Barney's Wash-Jordan River Watershed
2. Bingham Creek Watershed
3. Midas-Butterfield Creek Watershed
4. Rose Creek Watershed
5. Wood Hollow-Jordan River Watershed

Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data

BARNEY'S WASH-JORDAN RIVER WATERSHED

Area: 50.6 square miles

2011 population: 152,405

2040 population estimate: 255,603

Barney's Wash at Bacchus Highway

BARNEY'S WASH

- Total Stream Length: 8.5 miles
  - Buried: 1.0 miles
  - Impaired: No Data
- Flow type: Intermittent
- Cities Flowed Through: City of West Jordan

Barney's Wash is a primarily dry creek that stretches from the Oquirrhs through the City of West Jordan, terminating around the South Valley Regional Airport and Jordan Landing Employment District. There is no consistent flow of water in Barney's Wash, and it does not reach the Jordan River. Although the wash does not have consistent water flow, there is still a lot of natural open space in the surrounding area and provides habitat and corridors for wildlife.

BINGHAM CREEK WATERSHED

Area: 36.2 square miles

2011 population: 51, 594

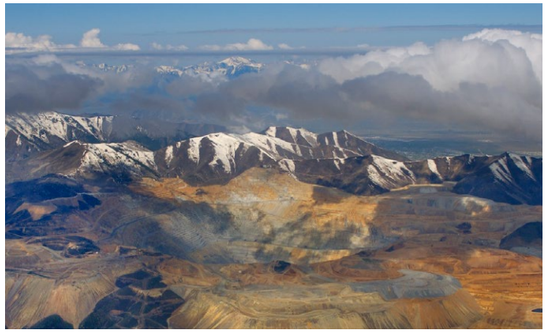
2040 population estimate: 145,424

Bingham Creek adjacent to the Glenmoor Golf Course

BINGHAM CREEK

- Total Stream Length: 10.2 miles
  - Buried: 1.6 miles
  - Impaired: 4.4 miles (Selenium, Total Dissolved Solids)
- Flow type: Intermittent
- Cities Flowed Through: South Jordan City, City of West Jordan, Town of Copperton

Bingham Creek drains a 36.2 square mile basin, in which much of the Kennecott Copper Mine (also known as the Bingham Canyon Mine) can be found. As one of the largest open-pit mines in the world radical modifications to the natural drainage patterns have occurred in the upper portion of this subwatershed. A creek drainage once flowing from high in the Oquirrh Mountains is now little more than a drainage ditch with high intermittent flow. It is not until the creek reaches the Utah Distributing



Kennecott Copper Mine

Canal, which crosses over the creek at approximately 3300 West 11800 South, that more regular flows are introduced into the channel. From this point flowing to the Jordan River, canal exchange flows provide year-round water in the creek. The highest flows are seen when canal flow reaches seasonal maximum, but this generally does not result in creek depths that vary by more than six inches.

MIDAS-BUTTERFIELD CREEK WATERSHED

Area: 50.3 square miles

2011 population: 54,384

2040 population estimate: 146,849

Oquirrh Lake at Daybreak

BUTTERFIELD CREEK

- Total Stream Length: 11.4 miles
  - Buried: 2.2 miles
  - Impaired: 6.2 miles (E. coli, Selenium, Total Dissolved Solids)
- Flow type: Intermittent in upper watershed, perennial (spring fed) in lower watershed
- Cities Flowed Through: Herriman City

Butterfield Creek at Butterfield Trailhead Regional Park

Butterfield Creek reaches the farthest into the Oquirrh mountains of any of the southwest waterways. It originates in the Oquirrh Mountains and converges with Midas Creek at approximately 5100 West 12120 South. Butterfield Creek is undeveloped until it reaches the mouth of Butterfield Canyon, where residential and commercial development begin. The creek is primarily characterized by recreation and conservation, with hikers, bikers, and equestrians taking advantage of the trails in the area. In 2023, Butterfield Trailhead Regional Park opened and is increasing access to these trails. However, high levels of lead and arsenic have been found in Butterfield Creek due to historic mining activities. The Environmental Protection Agency and Kennecott have participated in cleanup of contaminated soils along the creeks .

Midas Creek pedestrian bridge

MIDAS CREEK

- Total Stream Length: 10.1 miles
  - Buried: 0.7 miles
  - Impaired: No Data (E. coli)
- Flow type: Intermittent in upper watershed, perennial (spring fed) in lower watershed
- Cities Flowed Through: Herriman City, Riverton City, South Jordan City

Midas Creek drains a 50.3 square mile basin, which includes Butterfield Creek and several gulches. Midas Creek once drained a larger basin. Prior to excavation of the Kennecott Copper Mine, the eastern portion of the mine originally had slopes that drained into Midas Creek. As the land surface has changed, drainage patterns have changed, resulting in tributary area being routed to Bingham Creek.

COPPER CREEK

- Total Stream Length: 2.7 miles
  - Buried: 0.0 miles
  - Impaired: No Data
- Flow type: Intermittent
- Cities Flowed Through: Herriman City, South Jordan City

Copper Creek is a short leg of waterway that feeds into Midas Creek. Its headwaters are close to the Kennecott Copper Mine, and the copper mining connection gives it its name. The area surrounding the creek has been identified for future development, including residential lots and an employment district.

ROSE CREEK WATERSHED

Area: 27.6 square miles

2011 population: 27,235

2040 population estimate: 51,461

Rose Creek flowing through a naturalized area

ROSE CREEK

- Total Stream Length: 13.8 miles
  - Buried: 0.9 miles
  - Impaired: 7.0 miles (E. coli)
- Flow type: Perennial in upper watershed, intermittent in lower watershed
- Cities Flowed Through: City of Bluffdale, Herriman City, Riverton City

Rose Creek drains the 27.6 square mile basin with headwaters flowing from the Oquirrh Mountains. The creek has year-round flows in the upper watershed where the land is managed for irrigation, water supply, wildlife and military use. Rose Canyon and Yellow Fork Canyon have long been recreation destinations for hikers, runners, mountain bikers, equestrian riders, and birders. The 1,681-acre Rose Canyon Ranch is a protected open space in the foothills of the Oquirrhs and Yellow Fork Canyon Park offers 800 acres of parkland. The lower watershed is rapidly urbanizing, transitioning from agricultural land use to residential and commercial land use. Creek flow is intermittent in the valley section of the creek causing SLCo Watershed Planning and Restoration Program (WPRP) to have minimal sample sites where ephemeral flow is found.

JUNIPER CANYON CREEK

- Total Stream Length: 3.3 miles
  - Buried: 0.0 miles
  - Impaired: No Data
- Flow type: Intermittent
- Cities Flowed Through: Herriman City

Juniper Canyon Creek is the smallest standalone creek in the study area and does not reach the Jordan River. The creek flows into the Provo Reservoir Canal at the Salt Lake Community College Campus after crossing Mountain View Corridor. The creek will be the focal point of the future Juniper Canyon Recreation Area, a 72-acre open space connecting the city to the mountains.

WOOD HOLLOW-JORDAN RIVER WATERSHED

Area: 15.3 square miles

2011 population: 1,742

2040 population estimate: 1,856

The Jordan River near the confluence with Beef Hollow Creek and Wood Hollow Creek

BEEF HOLLOW CREEK

- Total Stream Length: 5.8 miles
  - Buried: 0.3 miles
  - Impaired: No Data
- Flow type: Intermittent
- Cities Flowed Through: City of Bluffdale

Beef Hollow Creek is the southernmost waterway in the study area and is very close to the border of Salt Lake County and Utah County. It passes through the City of Bluffdale and the Camp Williams military area. The creek is almost entirely undeveloped, except for a road that runs parallel along the hollow and in the area surrounding Redwood Road. Beef Hollow Creek feeds into the Jordan River at the Jordan Narrows, the point at which several canals are diverted off of the River.

WOOD HOLLOW CREEK

- Total Stream Length: 6.2 miles
  - Buried: 1.2 miles
  - Impaired: No Data
- Flow type: Intermittent
- Cities Flowed Through: City of Bluffdale, Herriman City

Wood Hollow Creek is north of Beef Hollow Creek. It is primarily undeveloped aside from crossings at Mountain View Corridor and the road that runs parallel along the hollow. Wood Hollow Creek and Beef Hollow Creek are proposed to be connected to the rest of the Oquirrh front through an extension of the Bonneville Shoreline Trail.

CANALS

Area: 183.0 square miles

People and dogs walking along the South Jordan Canal and Trail in Bluffdale

CANAL LENGTHS

There are 80 miles of canals flowing through the study area, split amongst the following 10 canals:

- Draper Irrigation Canal - 2.3 miles
- East Jordan Canal - 5.5 miles
- Jordan & Salt Lake City Canal - 3.3 miles
- Welby-Jacob/Provo Reservoir Canal - 14.2 miles
- Lower Lined Canal - 4.2 miles
- North Jordan Canal - 4.0 miles
- South Jordan Canal - 14.1 miles
- Upper Lined Canal - 1.7 miles
- Utah & Salt Lake Canal - 15.1 miles
- Utah Lake Distributing Canal - 15.5 miles

The canals in southwest Salt Lake County are human-made channels that divert water from creeks and rivers to be used irrigation. Many of these canals can be traced back to pioneer settlements who constructed them for agricultural uses. Canals are typically constructed as open channels, however, some have been converted to pipelines in order to better manage water quality and volume.

Each canal is managed by a canal company who is responsible for the conveyance of water through their canal, as well as maintaining the canal infrastructure. Some canal companies have made their canal trails accessible to public, while others restrict access due to liability concerns.

THEMES OF RELATED PLANNING EFFORTS

This plan builds upon previous planning efforts at both the county and municipal level. Plans adopted by each municipality, WFRC, and SLCo were reviewed to gain an understanding of priority goals and ongoing initiatives that this plan can build upon. The following themes were identified by analyzing the goals and vision of each document related to community, environmental, and economic planning.

CITIZEN EDUCATION & INVOLVEMENT

- Education Programming
- Public Participation

RECREATION

- Parks & Open Space
- Equity & Inclusivity
- Facilities & Amenities

CONNECTIVITY

- Trails & Active Transportation
- Greenway Connectivity
- Multimodal Networks

HABITAT & RIPARIAN ECOLOGY

- Preservation & Protection
- Restoration & Improvement
- Daylighting Streams

WATER & RESILIENCE

- Flood Control & Green Infrastructure
- Water Quality & Best Management Practices
- Water Quantity & Infrastructure Planning

LAND USE & DEVELOPMENT

- Urban Growth & Density
- Development Centers
- Low Impact Development

COMMUNITY, PARTNERSHIPS, & FUNDING

- Community Engagement
- Partnerships
- Funding & Revenue

For a list of all plans and documents reviewed as a part of this process, please see **APPENDIX A: H2Oquirrh Plan Review Matrix** and **APPENDIX B: H2Oquirrh Plan Review Summaries.**

Heights Park at Daybreak in South Jordan

EXISTING CONDITIONS

In this Chapter:

- Core Topics
- Land Use & Built Environment
- Outdoor Recreation & Connection to Nature
- Natural Systems & Water Resources
- Collaborative Plan
- Takeaways

CORE TOPICS

This chapter provides the first comprehensive collection of data regarding the waterways delineated in the preceding section. This chapter provides important educational analysis filtered through three lenses that tie the waterways to the surrounding built environment, recreation opportunities, and natural resources. The following inventory of existing conditions and anticipated future change in the study area has been developed through background research, digital mapping, site visits, and conversations with stakeholders. This content is organized into the three topic areas below:

Land Use & Built Environment: This topic addresses human impact on land use and development, including urban growth trends, land cover, transportation systems, and culturally significant places.

Outdoor Recreation & Connection to Nature: This topic addresses the ways in which we interact with nature for leisure, including parks and trails assets and the ways we access them.

Natural Systems & Water Resources: This topic addresses the natural conditions surrounding the waterways, including waterway typologies, wildlife communities, and natural hazards.

LAND USE & BUILT ENVIRONMENT

This section discusses issues and opportunities within the southwest waterways related to Land Use and Built Environment including,

1. Urban Growth and Development
2. Open Space and Land Value
3. Land Use Planning and Decision Making
4. Transportation and Infrastructure
5. Cultural Assets

URBAN GROWTH AND DEVELOPMENT

Southwest Salt Lake County has witnessed rapid growth and urban development in recent years. As the population continues to expand, the demand for residential, commercial, and recreational spaces has intensified. Opportunities for sustainable urban planning present a canvas for thoughtful development within the region's distinctive geography.

Creeks and greenways enhance the region's aesthetic appeal and offer significant environmental and social benefits. Greenways serve as vital connectors for urban trails, providing opportunities for recreation, active transportation, and wildlife corridors. They also help mitigate the effects of urban heat islands and contribute to improved air and water quality.

Balancing the desire for urban growth with the preservation of green spaces and water resources can be complex. Open space has a proven connection to quality of life, livability, and property values, making it an essential balance to address. In focus group discussions, multimodal connections, preservation of open space, and development impacts to waterways were the top three challenges identified for this area. Each of these represents a direct link between the environment and development. Additionally, managing stormwater in an ecologically sensitive manner must become a priority, as overdevelopment can lead to flooding and water pollution issues.

Creating cities with a high livability score includes how well a neighborhood offers convenient access to retail, entertainment, health care, education, and food or personal services. It also includes access to open space, tree canopy, walkability, and safety. The community of Daybreak is a great example of new urbanism in the heart of this study area. Daybreak features a variety of housing types, abundant open space, and a mixed-use core with commercial and civic amenities.

Industrial land uses have also played a significant role in the development of southwest Salt Lake County. In particular, the Kennecott Copper Mine

LAND USE SNAPSHOT

Projections estimate that 2.2 million more people will call Utah home by 2060.

Urban development accounts for 39% of the study area

Only 6% of the study area is developed as urban open space.

Natural landscape makes up less than half of the study area and is at risk of shrinking further.

Only 1% of the study area is wetlands.

Oquirrh Lake at Daybreak

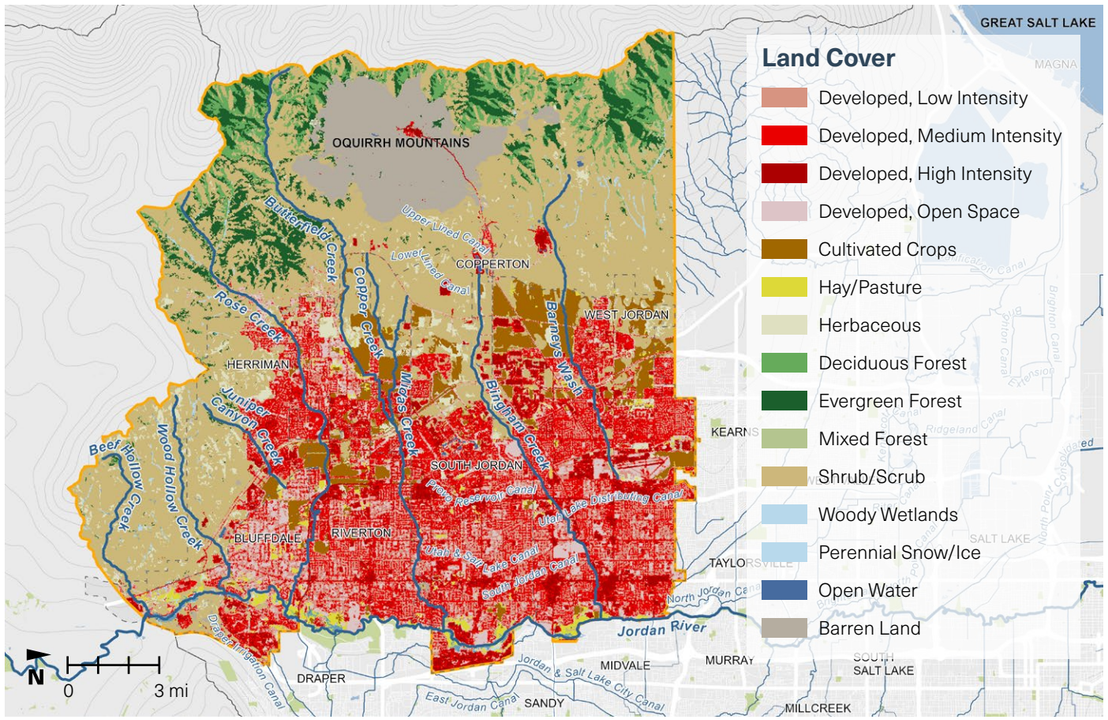


Figure 6: Land Cover in the study area, 2021 (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, USGS/MRLC)

operated by Rio Tinto in Bingham Canyon has been a large economic driver and environmental factor since it opened in 1903.[1] The mine primarily extracts copper, but also produces gold, silver, molybdenum, and tellurium. This mine has significantly altered the landscape and hydrology of Bingham Canyon and is the world's deepest open pit mine.[2] The tailings from the mine impact water quality in Bingham Creek, and the land disruption creates a significant void in usable habitat for wildlife. Rio Tinto is working to manage these impacts through their sustainability efforts, including improved energy efficiency, waste management, and a goal to be carbon neutral by 2050.

OPEN SPACE AND LAND VALUE

Greenways and open spaces contribute to long-term real estate value by enhancing the aesthetics, quality of life, and desirability of neighborhoods. They offer recreational opportunities, promote environmental sustainability, and play a crucial role in creating resilient, well-connected, and healthy communities. There should be a balance between the desire for urban growth with the preservation of green spaces and water resources. Overdevelopment can lead to flooding and water pollution issues. Therefore, managing stormwater in an ecologically sensitive manner should be a priority.

Greenways and open spaces enhance the visual appeal of a neighborhood or community. Numerous studies have shown a positive correlation between attractive landscapes and property values. A study conducted by the USDA found that a 1% increase in tree canopy coverage in a neighborhood could add

1 Rio Tinto Website (https://www.riotinto.com/en/operations/us/kennecott)
2 https://geology.utah.gov/map-pub/survey-notes/geosights/geosights-bingham-canyon-mine/

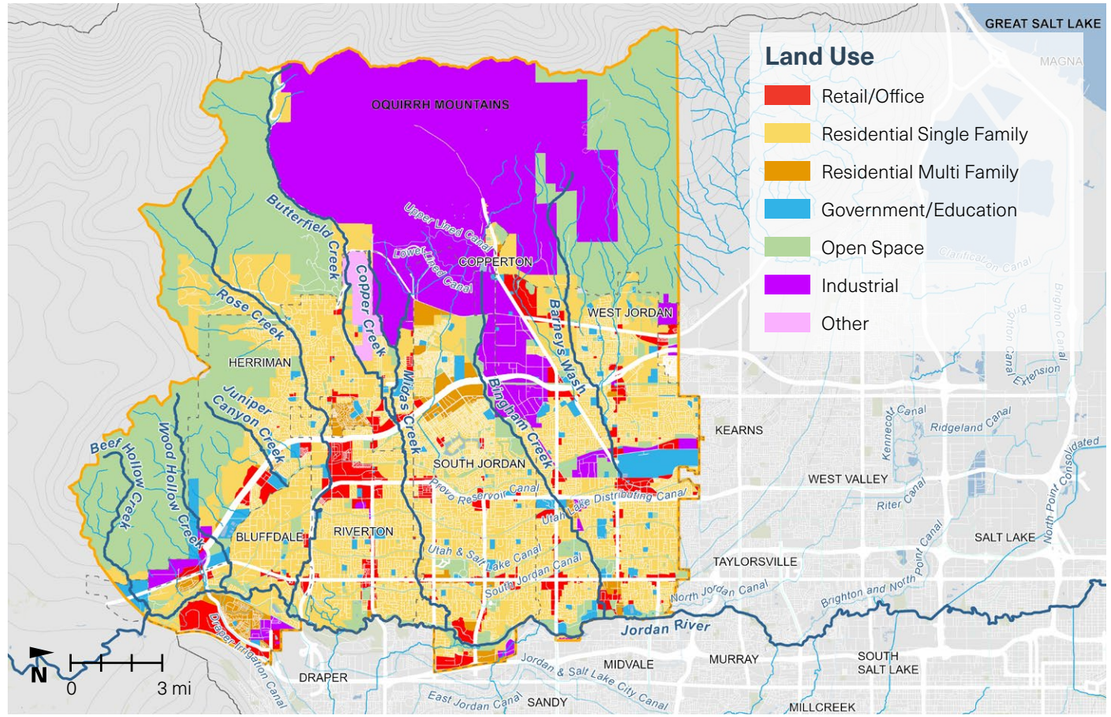


Figure 7: WFRC Generalized Future Land Use, 2021 (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, WFRC)

value at the rate of $277 per acre, adding up to over half a million dollars in a circular mile.[3]

Greenways and open spaces often serve as community gathering places, fostering social connections and a sense of belonging. The "Neighborhood Effects on the Long-Term Well-Being of Low-Income Adults" study published in the journal "Science" indicates that cohesive and connected communities tend to have higher property values.[4]

LAND USE PLANNING

In Southwest Salt Lake County greenways and creeks can serve as both a remedy and a catalyst for land use decisions. When planned and managed thoughtfully, they offer a natural and sustainable solution to the challenges posed by urban expansion, promoting a healthier, more resilient, and connected community. Prioritizing water quality and preserving natural systems can guide land use decisions, ensuring sustainable and responsible development. This approach not only safeguards the region's ecosystems but also ensures a sustainable and resilient future for the community. WFRC's population projections expect a 35% increase, or 115,000 residents, across the study area by 2050[5]. Strategic land use planning and attention to land cover typology and density is paramount when planning for rapid population growth and the protection of southwest waterways.

Utah has already made a commitment to promoting sustainable development through Low Impact Development (LID). Permitting for construction, sewer systems, and industrial uses is managed through the Department of Environmental Quality, Division of Water Quality (DWQ). In 2020, the DWQ released

3 Tree cover and property values in the United States: A national meta-analysis (https://www.fs.usda.gov/nrs/pubs/jrnl/2022/nrs_2022_kovacs_001.pdf)
4 NEIGHBORHOOD EFFECTS ON THE LONG-TERM WELL-BEING OF LOW-INCOME ADULTS - PMC (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3491569/)
5 Population Projections (TAZ) - RTP 2023, Analytics Group Wasatch Regional Council (https://data.wfrc.org/datasets/b22aac2dbb994a949665cb3a3fb078c1/about)

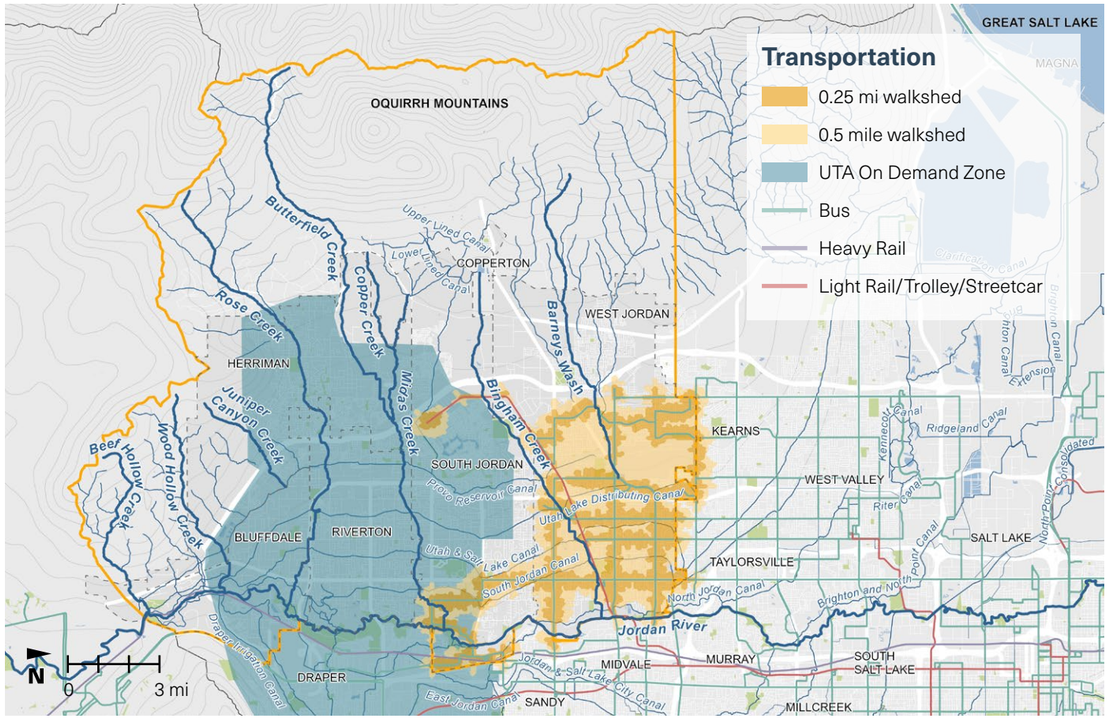


Figure 8: Transportation systems in the study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, UTA)

an update to their LID guide, which includes a list of appropriate LID techniques for Utah. Some of these include bioretention cells or rain gardens, green roofs, permeable surfaces, and curb cuts.[6] Salt Lake County has agreed to implement LID practices and educate others on their importance through the 2020 Stormwater Management Plan.

Focus group discussions revealed several land use and development patterns that are already raising concerns for southwest Salt Lake County. Car-centric development and trucking raise concerns for overall mobility. There were also concerns for development that focuses primarily on single family housing or that turns its back to the waterways. There are precedents today of practices that can alleviate the burden of such development on the environment.

TRANSPORTATION & INFRASTRUCTURE

Southwest Salt Lake County is connected to the surrounding region by major corridors such as I-15, Bangerter Highway, and Mountain View Corridor. The area is predominantly serviced by personal vehicle transportation, and in 2021, 70.9% of Salt Lake County workers drove alone to work.[7]

The study area is serviced by Utah Transit Authority (UTA), offering options for light rail, regional rail, buses, and On Demand service. Although public transportation is a less prominent form of transportation in the area, UTA's Five-Year Service Plan is continuing to build out the system by adding new routes and updating existing ones to better serve the area.

Rail: UTA's TRAX service is a popular way for residents in the area to commute to Salt Lake City. TRAX's Red Line runs from Daybreak in South Jordan to Downtown Salt Lake City and the University of Utah Medical Center. UTA also operates the FrontRunner regional rail that extends from Provo to Ogden. Transfers between the TRAX Red Line and FrontRunner can be made at Murray Central Station just north of the study area.

Bus: UTA's bus service primarily serves the northern part of the study area in South Jordan and West Jordan. Most buses run every 30 minutes or more, with the exception of Route 217, which runs with frequent service (every 15 minutes) along Redwood Road.

On Demand Zones: UTA On Demand service allows riders to request a ride from corner to corner between two locations within the designated service area. These rides are operated with small vehicles (vans, SUVs) and may carry multiple people or parties at a time and connect them to other transit options. Plans to expand and update the On Demand zone will make it possible for workers and residents in the entire study area to access public transportation within a 1/4 mile of their location.

Transportation options are important for fostering sustainability in southwest Salt Lake County and imperative to incorporate into long-term development planning and community adaptation. Daybreak is a recent transit-oriented-development (TOD), and proves the option to commute via public transportation is a demand for this area. Additionally, focus group discussions revealed that the highest priority for waterway trail improvements are connections to local pathways, more multi-modal paved trails, and safe street crossings. These examples illustrate the enthusiasm around alternate modes of transportation and reducing reliance on personal vehicles in this area. The benefits of decreasing miles traveled by solo-commuters will improve air and water quality surrounding the study area's waterways and leaves more options for low impact development (LID) and green infrastructure. The careful integration of green infrastructure, LID, and responsible land use policies is essential to maintain the region's quality of life while fostering sustainable development.

There are already new transportation investments being planned in this part of the county. In 2015, UTA announced plans to eventually expand the Red line train, which is currently a major transportation corridor terminating in Daybreak. The current

TRAX Red Line at 5600 W Old Bingham Highway Station

6 *Low Impact Development - Utah Department of Environmental Quality (https://deq.utah.gov/water-quality/low-impact-development)*

7 *https://datausa.io/profile/geo/salt-lake-county-ut*

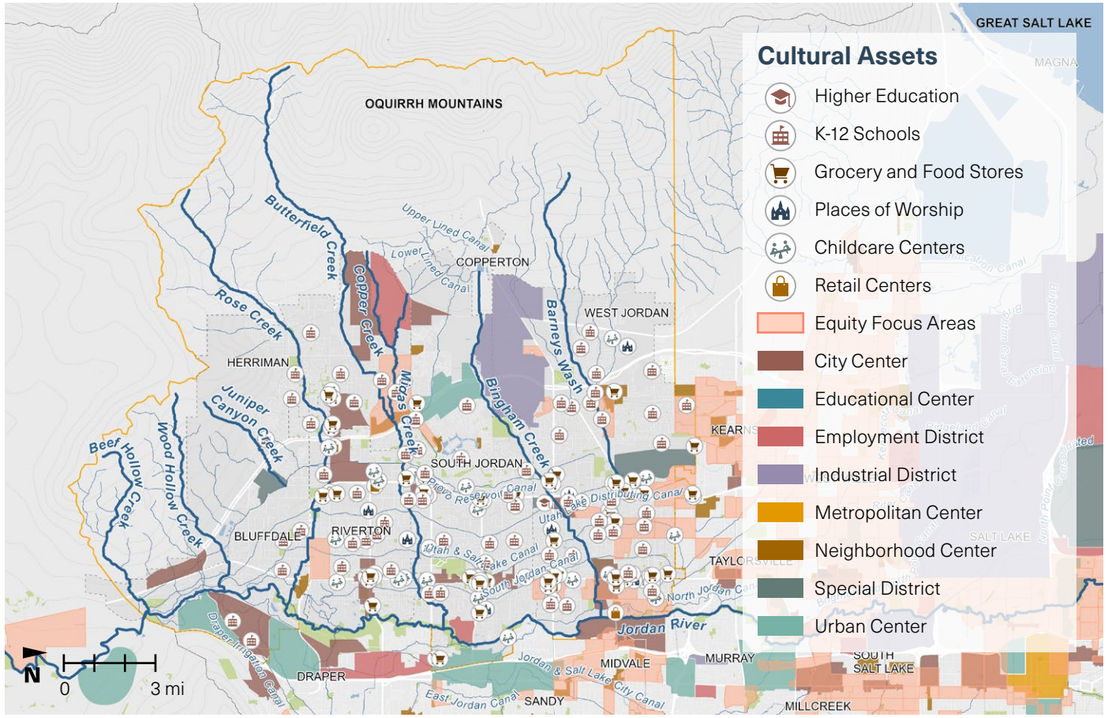


Figure 9: Cultural assets in the study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, WFRC)

proposal would have extension travel south to Herriman City, and then turn eastbound, passing through Riverton City and terminating in Draper. There are also plans to build an express bus route in this area along 5600 West.

CULTURAL ASSETS

There are many community spaces and cultural assets throughout the study area that help shape the character of the region and make this a place people love to live. Connecting these assets with the open spaces and trails that surround the waterways can be an effective way to improve access to these important places as well as connect to larger transit systems described on the preceding page.

Wasatch Choice 2050 Centers: The Wasatch Choice 2050 Vision Plan developed by WFRC identifies centers throughout the study area that municipalities are planning for or currently developing with mixed use, a walkable environment, and concentrated development. These centers are identified as important areas for new development that can invigorate the surrounding area and set a model for positive urban development. These centers are primarily located along major corridors, but all 32 within the study area also have a proximity to one or more creeks, washes, or canals.

Community Assets: Schools, places of worship, grocery stores, childcare centers, and retail centers all play an important role in the everyday life of SLCo residents. These assets indicate where people tend to gather and can be leveraged as opportunities for education around the waterways. Schools in particular benefit from close proximity to open space, and the educational value of the natural environment can benefit all age groups.

Copperton Town Days at Copperton Park

Bikers on Jordan River Parkway Trail

Mountain View Village Shopping Center

OUTDOOR RECREATION & CONNECTION TO NATURE

Equity Focus Areas: WFRC developed the Equity Focus Areas dataset based on two criteria: concentration of low-income households and concentration of persons identifying as members of racial and ethnic minority groups. These areas can help the plan address areas where social equity can be addressed by any improvements or developments proposed around the waterways.

This section discusses issues and opportunities within the southwest water ways related to Outdoor Recreation and Connection to Nature including,

1. Recreation Facilities
2. Access and Connections

RECREATION FACILITIES

EXISTING FACILITIES

There are over 150 parks in the study area, ranging from pocket parks to regional open space areas. Trails are also important and abundant as they connect people to the major assets of the Oquirrh Mountains and the Jordan River through a 135-mile network of existing paved and unpaved trails. Trails such as the Bonneville Shoreline Trail and the Jordan River Parkway Trail are well loved by Utahns and have a regional draw for outdoor enthusiasts. These parks and trails utilize connections to the waterways to make outdoor spaces more enjoyable for residents and visitors, and access to water, even if intermittent, is important to the park network.

There are many types of recreation that take place along the Oquirrh front.

Hiking/Trail Running: There are an abundance of trails along the Oquirrhs. These trails range from regional trails such as the Jordan River Parkway Trail and the Bonneville Shoreline Trail, to creekside trails and smaller connectors through urban areas.

Biking: Mountain biking is quickly gaining popularity in southwest Salt Lake County, especially among younger populations. The Utah High School Cycling league hosts races that serve over 7,000 student mountain bikers across Utah. Although there are fewer formal mountain biking trails on this side of the Salt Lake Valley, new trail parks such as the Butterfield Trailhead Regional Park are starting to meet the demand for new mountain bike facilities.

Horseback Riding: Equestrian uses have a long history in Salt Lake County. The agricultural traditions and heritage in this area have strong ties to keeping and riding horses, and many residents continue this to this day. Some trails in the Oquirrh mountains permit equestrian uses alongside hiking and biking.

ATV/OHV: All Terrain Vehicles and Off Highway Vehicles are another popular form of recreation in Utah. There are a few trails in this area that allow ATV/OHV use, and they can also be registered for street use.

Skiing: There is a small amount of backcountry skiing that occurs in the Oquirrh Mountains, as there are no formal ski resorts on this side of the valley. There is significantly less skiing activity here as compared to the Wasatch Front. Access is limited, meaning the terrain is primarily suited for advanced skiers.

RECREATION SNAPSHOT

Salt Lake County manages over 90,000 acres of open space and parklands.

Approximately 60% of the county's water supply originates from open space areas.

There are over 1,000 miles of public trails within Salt Lake County

Utah ranks as the second-best state for mountain biking with a total of 6,036 trails. This means around 199 trails per 100,000 people.

Public open space in the study area includes local, state, and federal parks.

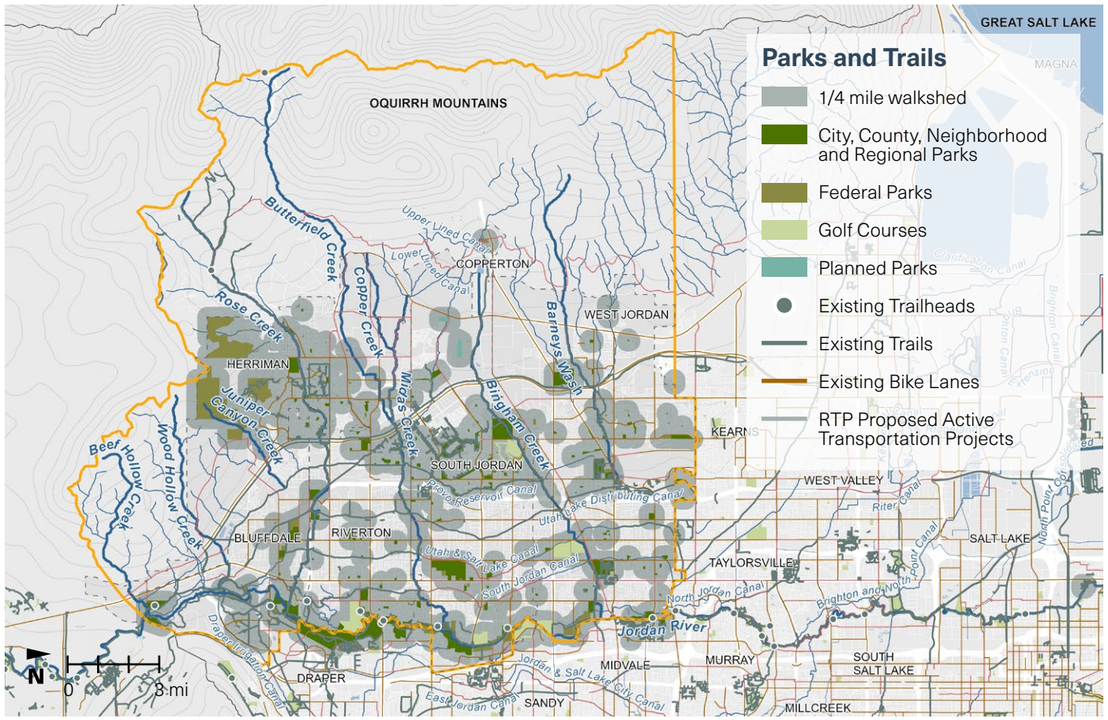


Figure 10: Parks and trails in the study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, WFRC)

Butterfield Trailhead Regional Park

Juniper Canyon Eastern Trailhead

Desert Wash Way Playground

RECREATION TRENDS

Overwhelmingly, Utahns participate in hiking more than any other recreational activity, such as bicycling, running, walking and playing golf. This may be due to the high cost of some of these activities.

Despite the high cost, skiing and snowboarding have gained broad appeal. While golf is played much more frequently by those with incomes greater than $100,000, skiing and snowboarding are more commonly enjoyed by Utahns across all income brackets

The outdoor recreation economy in Utah grew 27.3% from 2020 to 2021, according to the BEA Outdoor Recreation Satellite Account. This year's report shows that outdoor recreation creates $6.1 billion in value-added for Utah, accounts for 2.7% of Utah GDP and includes 66,736 jobs.

In 2019, Salt Lake County attracted over 16 million visitors, largely due to its outdoor recreation opportunities.

Mountain biking is quickly becoming more popular, especially among youth.

Some trails are dedicated to one specific recreational use, such as mountain biking or hiking, but most are shared use trails that allow multiple types of recreation to occur simultaneously. The newly opened Butterfield Trailhead Regional Park is one noteworthy trail and open space asset along Butterfield Creek. It provides connections to 12 different trails, including a connection to Yellow Fork Canyon and serves hiking, biking, and equestrian uses.

PROPOSED FACILITIES

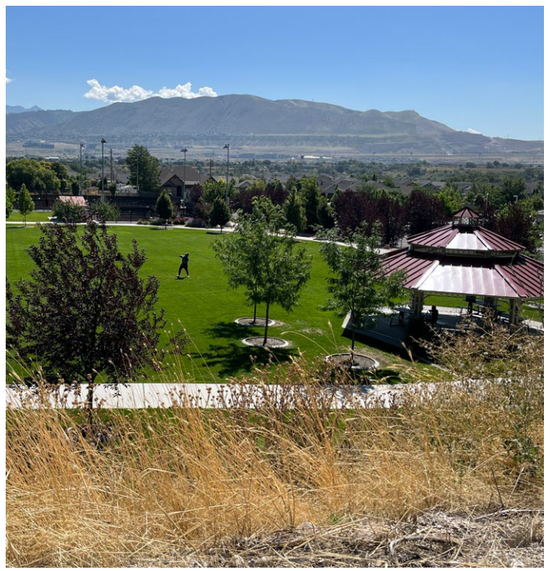
Each municipality is planning to expand their parks and trails system in order to meet the needs of residents for years to come. Future trails along the waterways and canals are already planned, as well as parks that will serve new developments and infill existing residential neighborhoods with pocket parks. Many proposed canal trails would help create north-to-south connections throughout the study area and increase access to the waterways. Additionally, major expansions to the Bonneville Shoreline trail have been proposed, allowing this trail to be as connected and expansive as it is on the valley's east bench.

ACCESS AND CONNECTIONS

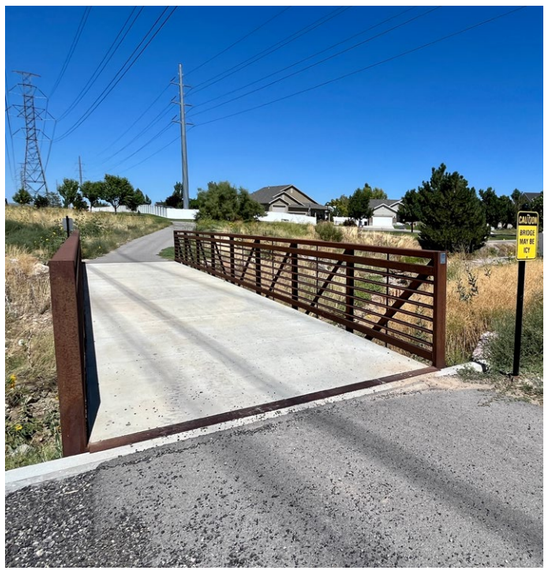
Proximity to greenways and open spaces provides residents with opportunities for outdoor recreation and leisure. The Jordan River Parkway trail is a major greenway that connects communities across Salt Lake County, from Bluffdale to Salt Lake City. Many of the waterways in this study area flow into the Jordan River, and therefore share a connection to this important trail network. With numerous parks within a ¼ mile of the waterways, there are many walkable connections between open spaces that can supplement formal greenway corridors.

Walking and biking trails along the banks of creeks and canals can connect different neighborhoods and provide a safe and scenic route for residents

Lake Avenue Park, Daybreak



Vintage Park, Bluffdale



Midas Creek Trail, Herriman

NATURAL SYSTEMS & WATER RESOURCES

to enjoy outdoor activities. Outdoor fitness stations, art Installations, picnic areas, fishing ponds, and educational programming can help activate these spaces and create respite along the waterways trails.

This section discusses issues and opportunities within the southwest waterways study area related to Natural Systems and Water Resources including,

1. Hydrology
2. Wildlife Habitats
3. Natural Hazards

HYDROLOGY

Throughout the study area, the creeks, washes, and canals traverse a variety of typologies and contexts. As they flow from their headwaters in the Oquirrh Mountains into more urbanized areas, the width, adjacent uses, and waterway channel varies. There are three main typologies of waterways investigated by this plan: creeks, washes, and canals.

ENVIRONMENT SNAPSHOT

There are 72 miles of creeks and washes in the study area.

Five subwatersheds of the Jordan River Watershed are included in the study area.

All of the waterways except for Barney's Wash and Juniper Canyon Creek drain into the Jordan River, and later into the Great Salt Lake.

None of the creeks or washes supply drinking water for Salt Lake County residents.

The waterways are primarily ephemeral and often dry.

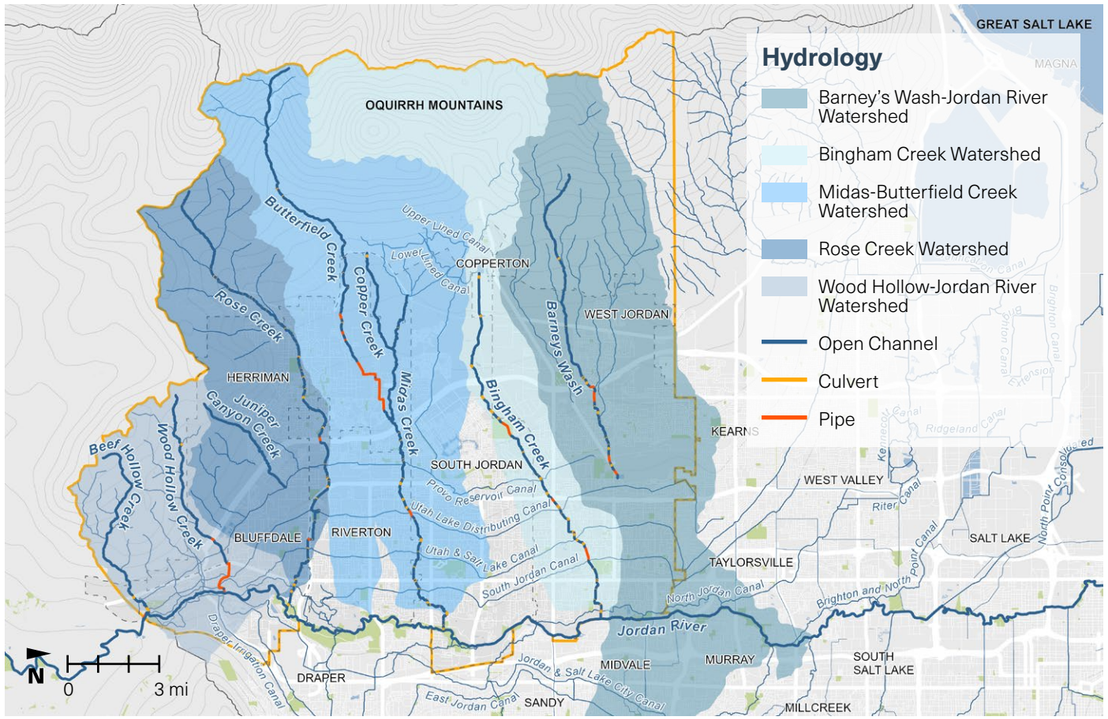


Figure 11: Hydrology in the study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data)

These waterways pass through two categories of adjacent land use: open space, and rural and urban development.

WATERWAY TYPOLOGIES

Creek: Creeks are waterways that support perennial or intermittent flow of water. They are tributaries to a larger stream or river, in this case the Jordan River.

The creeks in the study area include:

- Beef Hollow Creek
- Bingham Creek
- Butterfield Creek
- Copper Creek
- Juniper Canyon Creek
- Midas Creek
- Rose Creek
- Wood Hollow Creek

Wash: A wash is a shallow channel that allows water from storms or snowmelt to move across the landscape. They typically only have water in them seasonally depending on precipitation.

The washes in the study area include:

- Barney's Wash

Canal: Canals are human-made structures that affect the overall hydrology of the area. They are managed by private companies and may or may not allow public access. There are numerous canals that intersect the creeks in this area that distribute water from the Jordan River to communities across Salt Lake Valley.

The canals in the study area include:

- Draper Irrigation Canal
- East Jordan Canal
- Jordan & Salt Lake City Canal
- Welby-Jacob/Provo Reservoir Canal
- Lower Lined Canal
- North Jordan Canal
- South Jordan Canal
- Upper Lined Canal
- Utah & Salt Lake Canal
- Utah Lake Distributing Canal


Rose Creek


Barney's Wash


Welby-Jacob/Provo Reservoir Canal

LAND USE TYPOLOGIES ADJACENT TO WATERWAYS

OPEN SPACE

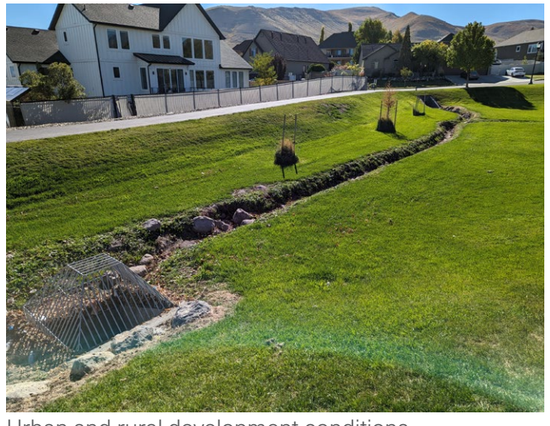
There are two primary typologies of land use that will be pertinent to this analysis: open space and urban/ rural development. In the open space condition, the creeks and washes remain in their natural state. This condition primarily exists in the upper portions of the watershed where the waterways flow through the Oquirrh mountains and the foothills. Much of this land also serves as recreation areas for people to interact with the waterways. Native vegetation, riparian zones, and wildlife are important in open space areas. The potential opportunities for open space areas include protection and preservation of natural resources, remediation of riparian area and water quality, and connecting to outdoor recreation.

URBAN AND RURAL DEVELOPMENT

As the waterways continue down into the valley, they reach various typologies of rural and urban development. The creeks and washes weave through residential, commercial, and civic spaces. They cut between properties or may be piped and sent underground. These developed areas impact water quality, flood management, and the urban green space network, including parks, bikeways, and walking paths. Areas where the waterways are visible create opportunities to foster connections, build identity, and promote environmental stewardship.

Open space conditions

Urban and rural development conditions



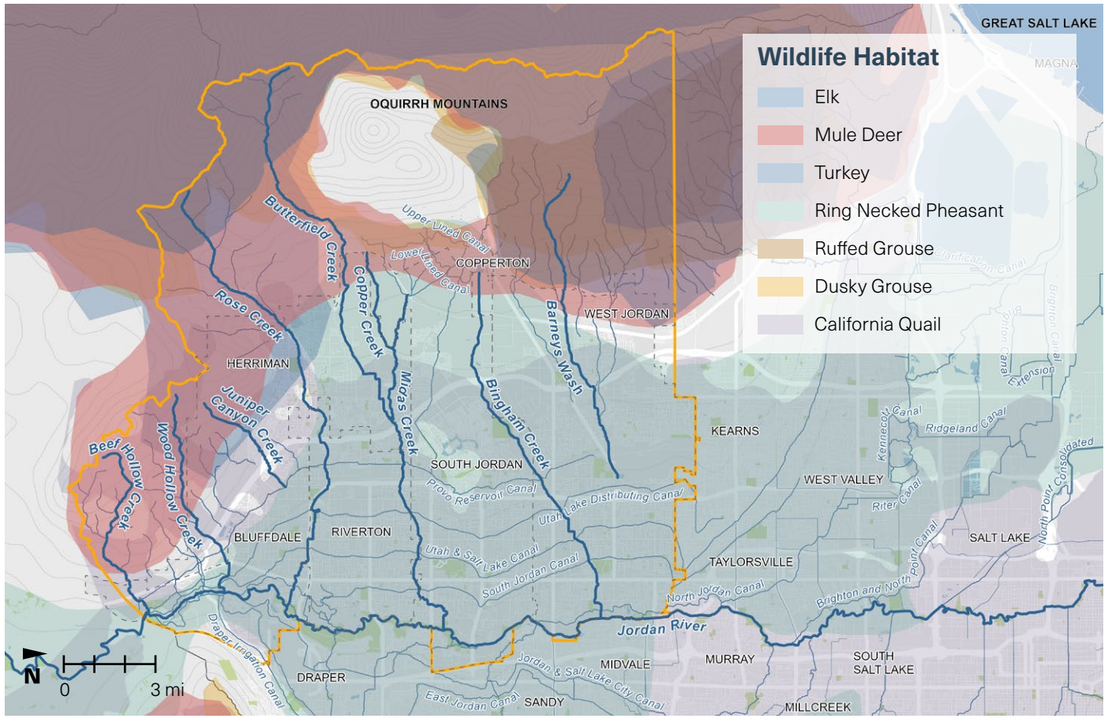


Figure 12: Wildlife habitats in the study area (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data, Utah DWR)

WILDLIFE HABITAT

The Salt Lake Valley is surrounded by rich habitat nestled in the canyons and peaks of the Wasatch and the Oquirrh Mountains. The Oquirrh Mountains are directly adjacent to the Great Salt Lake on their northern end, creating important corridors for birds, elk, and other wildlife to move through.

The Utah Division of Wildlife Resources maps game species habitat, which can be used as a proxy for wildlife habitat ranges. The following species have habitat that falls within the study area:

- Elk
- Mule Deer
- Turkey
- Ring Necked Pheasant
- Ruffed Grouse
- Dusky Grouse
- California Quail

Turkey vulture

Flora and fauna of the southwest waterways

Ute Ladies' Tresses: USFWS/B. Hotze; Yellow Billed Cuckoo: Peter Pearsall/USFWS; Monarch: Gary Eslinger/USFWS; Bald Eagle: Chris Moehring/USFWS

In addition to these indicator species, there are over 40 animal and plant species that have been identified by the Department of Wildlife Resources as species of greatest concern, 5 of which are federally listed.[8] The species that occur in Salt Lake County are reliant on the natural environment that remains here and are at risk as future development continues. Specific ranges of these species are not available due to sensitive conservation efforts. These species include[9]:

AMPHIBIANS

- Columbia Spotted Frog
- Northern Leopard Frog
- Western Toad

BIRDS

- American Bittern
- American White Pelican
- Bald Eagle
- Band-tailed Pigeon
- Black Rosy-finch
- Black Swift
- Burrowing Owl
- Caspian Tern
- Ferruginous Hawk
- Flammulated Owl
- Golden Eagle
- Lewis's Woodpecker
- Olive-sided Flycatcher
- Peregrine Falcon
- Snowy Plover
- Yellow Billed Cuckoo - **THREATENED**
- White-faced Ibis

FISH

- Bonneville Cutthroat Trout
- June Sucker
- Least Chub

INSECTS

- Monarch Butterfly - **CANDIDATE**

8 IPaC: Explore Location resources (https://ipac.ecosphere.fws.gov/location/SH6CMAL4NZETPJOE76IB7P2K5Q/resources#endangered-species)
9 Utah's Species of Greatest Conservation Need | Species by County (https://wildlife.utah.gov/pdf/WAP/utah-sgcn-list-by county-10-23.pdf)

Bonneville Cutthroat Trout: Clint Wirick/USFWS; Burrowing Owl: Dustin Casady/USFWS/Siler Pincushion Cactus: USFWS Mountain-Prairie

MAMMALS

- American Pika
- Canada Lynx - **THREATENED**
- Long-eared Myotis
- Long-legged Myotis
- Townsend's Big-eared Bat
- North American Wolverine - **THREATENED**

MOLLUSKS

- Bear Lake Springsnail
- Coarse Rams-horn
- Cross Snaggletooth
- Deseret Mountainsnail
- Desert Tryonia
- Green River Pebblesnail
- Lyrate Mountainsnail
- Mill Creek Mountainsnail
- Mitered Vertigo
- Mountain Marshsnail
- Rustic Ambersnail
- Top-heavy Column
- Utah Physa
- Western Pearlshell
- Widelip Pondsnail
- Winged Floater

PLANTS

- Siler Pincushion Cactus
- Ute Ladies' Tresses - **THREATENED**

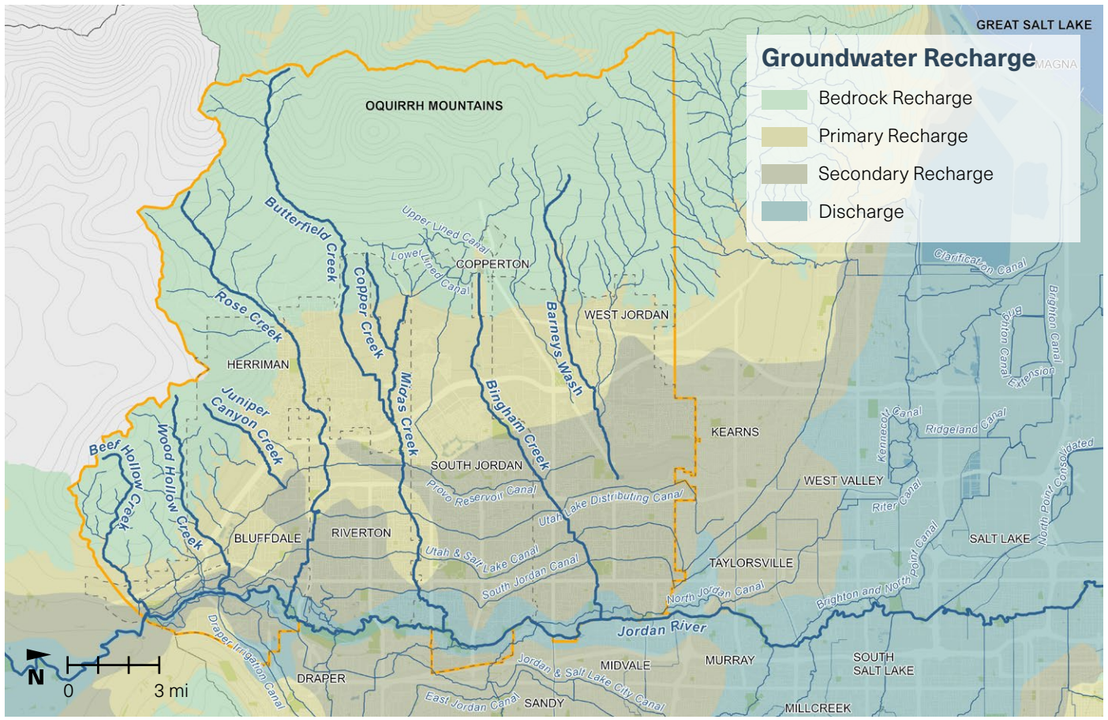


Figure 13: Groundwater Recharge Zones, 2024 (Data Sources: UGRC, Salt Lake County Open Data, Utah Open Data)

NATURAL HAZARDS

CLIMATE CHANGE

As climate change becomes a growing concern, areas with green infrastructure are more resilient to extreme weather events and natural disasters. The Urban Land Institute's report "Water Wise" suggests that properties in resilient communities tend to maintain their value even in the face of climate-related challenges.[10] Drought and extreme temperatures have already been observed in Salt Lake County. Careful management of water resources, including surface and groundwater, is necessary to ensure that water can continue to serve the environment and the people of Salt Lake County.

As droughts get longer and more severe in the Salt Lake Valley, the Great Salt Lake and the valley's groundwater are increasingly at risk. Dropping lake levels have already been observed in recent years, prompting many residents and experts to look for ways to reduce water consumption and increase flow volumes to the Great Salt Lake. Recharging the valley's groundwater is one of the best ways to protect the hydrology of this watershed. Groundwater flows towards the Great Salt Lake gradually, and while the water is in the aquifer it is protected from evaporation. Groundwater ultimately helps preserve the lake volume, as less water will be lost to infiltration and evaporation when it reaches the lake. As development continues in this area, the increased amounts of impervious surfaces (limiting infiltration) and increased groundwater pumping are becoming a significant threat to groundwater volumes.

EROSION

The banks of the waterways are fragile ecosystems. There is very little area along the waterways that is officially classified as riparian (wetlands adjacent to rivers or streams), but the interface between land and water is still important. Pollution, invasive species, and human interaction can exacerbate poor conditions in areas challenged by erosion. As banks erode, the natural state of the environment changes and the additional sediments deposited into the waterways can reduce overall water quality. Currently, erosion has been identified in Yellow Fork Canyon, Midas Creek's upper watershed, and near confluences with the Jordan River.

*10 Water Wise (https://knowledge.uli.org/reports/research-reports/2022/water-wise?_gl=1*dt5xfz*_ga*NDY2ODIyNDA5LjE2NTU4MjE4NjM.*_ga_HB94BQ21DS*MTY2NDk5NDIwNi4yMDUuMS4xNjY0OTk3Njl1LjAuMC4w*

Turf sports field struggling with drought

FLOODING

While this study area has very little land designated as a 50- or 100-year floodplain by FEMA, flooding can still be a concern. Flooding in this area is caused by spring runoff from snowmelt and rain from thunderstorms. Yellow Fork Canyon, Midas Creek, and areas surrounding confluences with the Jordan River have been identified as problem areas for flooding. Even though flooding is rare, many people don't understand the risks that occur when the waterways do experience high water conditions.

Waterwise planting at Juniper Canyon Eastern Trailhead

COLLABORATIVE PLAN

APPROACH

Community engagement and stakeholder input were an important component in shaping the recommendations of this plan. In order to reach community members across the large study area, a variety of engagement strategies were utilized. Among these strategies were steering committee meetings with representatives from local government, a presentation at the regional watershed symposium, and an online public survey inviting residents, employees, and visitors of the area to share their vision for the future of southwest Salt Lake County's Waterways.

The engagement process began with a project kickoff meeting with the steering committee. The project team solicited input for the existing conditions analysis, which was presented at a site tour and presentation with the steering committee a few months later. After the in-person workshop and site tour, focus groups comprised of stakeholder organizations and community members convened in early 2024 to discuss challenges and opportunities to be addressed by the plan recommendations. Feedback from these meetings was used to refine the public survey, which was distributed in the spring of 2024.

ENGAGEMENT TOOLS

Project Website

Project StoryMap

Steering Committee

Focus Groups

Public Survey

Social Media

E-mail outreach

Newsletters

KUER Article

Watershed Symposium Presentation

PLAN DEVELOPMENT AND ENGAGEMENT TIMELINE

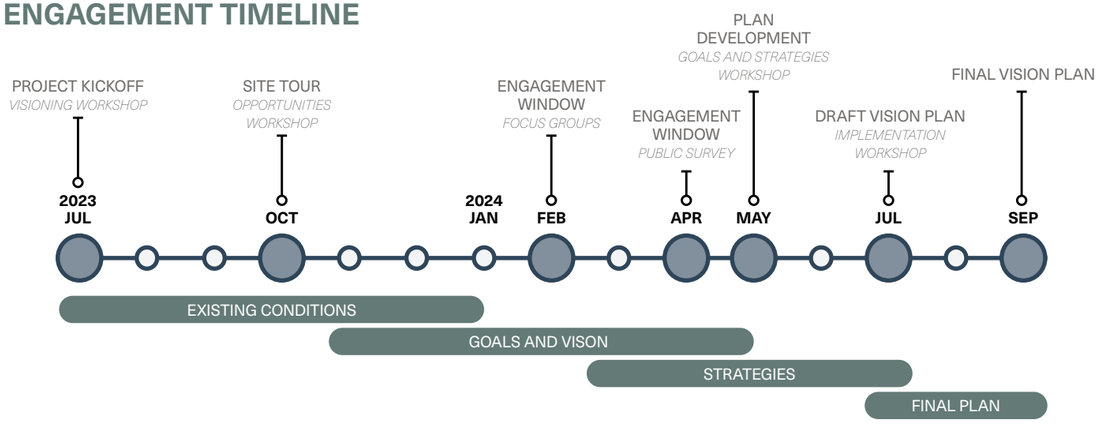


Figure 14: Plan Timeline

STEERING COMMITTEE

To help guide the vision of this plan and reflect the specific needs and challenges of each municipality in the study area, a Steering Committee was assembled. This Steering Committee included representatives from municipal leadership, county leadership, local non-governmental organizations, and state and federal organizations. Each member of the Steering Committee brought a unique perspective on community, environment, transportation, or economic opportunities.

The first Steering Committee meeting was held virtually in July 2023. The goal of this meeting was to identify the major issues and opportunities for the plan to address, identify the project study area, and develop a draft of the vision statement and plan title.

The second Steering Committee meeting was held in person in October 2023. The team convened for a tour of several sites throughout the study area to assess existing conditions and understand the breadth of conditions that exist around the waterways today. The tour was followed by a presentation of existing conditions research and a workshop to begin mapping opportunity areas.

The third Steering Committee meeting was held virtually in May 2024. This meeting was held to collect feedback on the plan vision, goals, and draft strategies. Steering Committee members added to and edited the draft strategies to represent the collective vision.

STEERING COMMITTEE MEMBERS

Jennifer Robison, Bluffdale

Grant Crowell, Bluffdale

Tessa Stitzer, Copperton

Michael Maloy, Herriman

Jason Lethbridge, Riverton

Lisa Halversen, Riverton

Bianca Paulino, MSD

Curtis D. Woodward, MSD

Kayla Mauldin, MSD

Angelica Haro, West Jordan

Mark Forsythe, West Jordan

Megan Jensen, West Jordan

Betsy Byrne, NPS

Steering Committee members on a site tour and presentation

FOCUS GROUPS

Planning topics for the H2Oquirrh Vision Plan were explored in one-time focus group meeting discussions among industry experts, stakeholders, and members of the public. These three meetings were conducted virtually on February 7th and 8th, 2024 and each lasted 1.5 hours. The topics for the groups included Outdoor Recreation, Natural Systems & Water Resources, and Land Use & Built Environment.

OUTDOOR RECREATION

KEY TAKEAWAYS

- Participants generally felt that the waterways present opportunities to preserve space for outdoor recreation and connectivity between communities.
- Trail systems have gaps in connectivity that make them unreliable and potentially dangerous for commuters, with canal trails called out specifically.
- Participants cited development impacts in general as the most pertinent challenge to this vision plan. It was noted that these impacts include pollution, loss of open space, wildlife habitat, and drought, among other issues.
- Large increase in population of mountain bikers, especially youth, was noted as a trend in outdoor recreation in this area.
- Generally, connectivity to parks and open space along the trial system was a high priority for this focus group, as well as more multi-modal paved trails and safe street crossings.

NATURAL SYSTEMS & WATER RESOURCES

KEY TAKEAWAYS

- Development impacts to the waterways and need for preservation of open space were noted as the most important aspects of this vision plan.
- It was noted that canals are being treated as a stormwater conveyance, which is a potential issue for water management and quality.
- Increasing public awareness about ecological and hydrologic function of the waterways was noted as a crucial aspect of protection.
- Work with communities to establish protections in the near term and work towards zoning and setback protections in the future.

LAND USE & BUILT ENVIRONMENT

KEY TAKEAWAYS

- Upcoming projects present challenges and opportunities for improvement, with retail development posing the biggest challenge.
- Developments that do not acknowledge or utilize the waterways create barriers to preservation and interaction.
- Improved connections and safe crossings were noted as the two most important improvement opportunities to the trails system.
- Leaving buffers and viewing the waterways as an amenity would benefit the area in terms of land use.
- Low impact development practices were identified as an appropriate strategy for the plan.
- Need for multimodal connections, preservation of open space, and waterway development impacts were noted as the largest challenges to this area.

ORGANIZATIONS REPRESENTED

Bike Utah

Ivory Homes

Jordan River Commission

Perpetual Housing Fund

RioTinto

Riverton City

The Oquirrh Foundation

Tree Utah

Utah Open Lands

UTA

UT Division of Water Quality

UT Division of Water Resources

UT Division of Outdoor Recreation

West Jordan City

Flowers in bloom along a creek

SURVEY

ADVERTISING

The H2Oquirrh Vision Plan public survey was open from April 1st to May 31st, 2024. WFRC, Salt Lake County, and the partner cities used all of their advertising channels to advertise the survey, including social media posts (Instagram, X, LinkedIn, and Facebook), newsletters, emails, and flyers.

APPROACH

The was intended to collect feedback on the vision and current challenges facing southwest Salt Lake County's waterways, and the responses were used to shape the plan's vision, goals, and strategies around the community's desires and needs. The first part of the survey asked about how people currently interact with the waterways, followed by multiple-choice and free response questions about how people would like to see them used in the future. Optional demographic information was collected at the end of the survey.

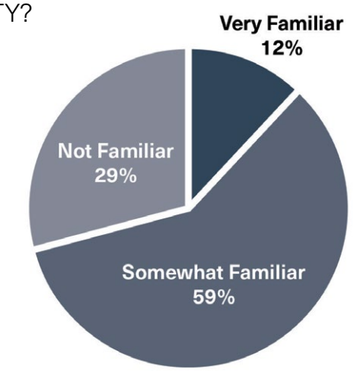
RESPONSES

The survey received 245 responses from across the study area. Most respondents were somewhat familiar with the waterways and visit the corridors less than once a month. The top three most visited waterways included Butterfield Creek, Rose Creek, and Bingham Creek. Walking and running were the most common activities reported, but biking, taking in the view, and using parks were also common responses.

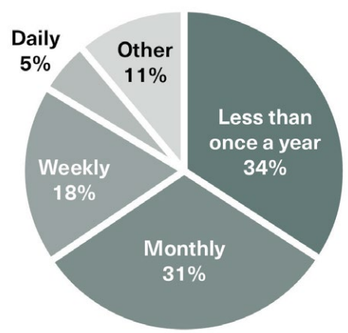
Most respondents indicated preservation as a top priority for the vision plan for both water quality and plant and animal communities. Recreation, education, and development regulations were also common themes that emerged. These priorities were consistent in the multiple choice and free response sections of the survey.

HOW DO YOU CURRENTLY USE THE WATERWAYS?

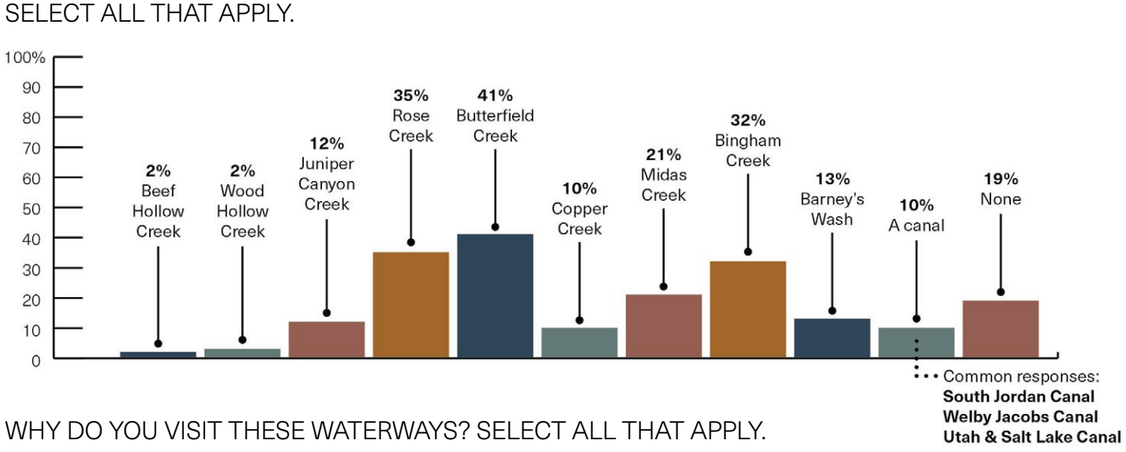
HOW FAMILIAR ARE YOU WITH THE WATERWAYS IN SOUTHWEST SALT LAKE COUNTY?



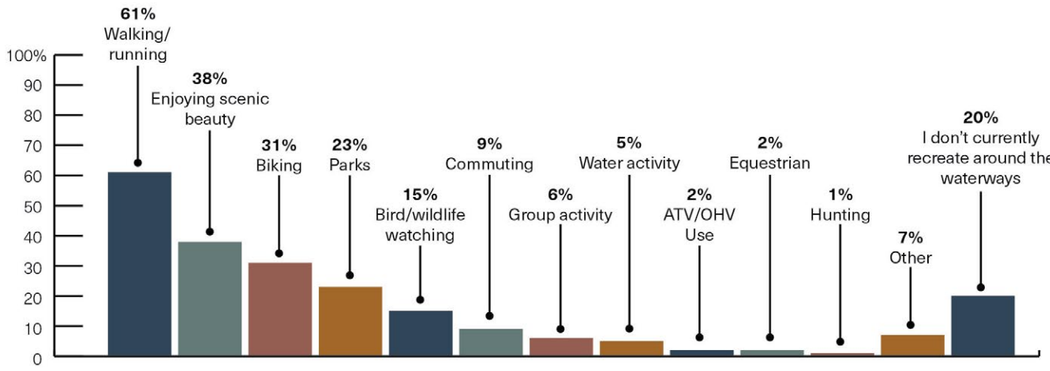
HOW OFTEN DO YOU VISIT THESE CORRIDORS THROUGHOUT THE YEAR?



AT WHICH OF THESE WATER CORRIDORS HAVE YOU SPENT THE MOST TIME? SELECT ALL THAT APPLY.

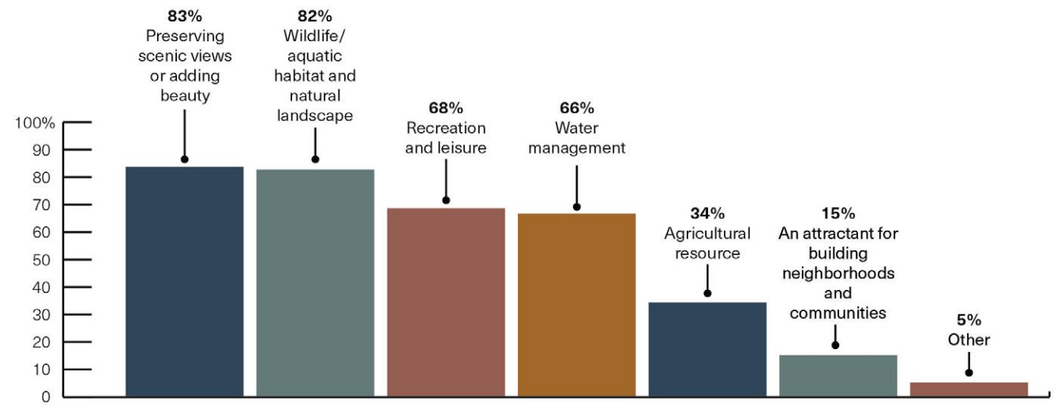


WHY DO YOU VISIT THESE WATERWAYS? SELECT ALL THAT APPLY.

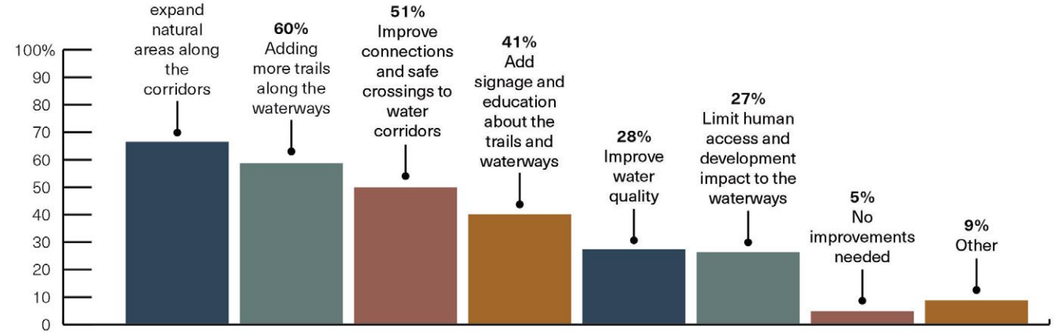


WHAT IS YOUR VISION FOR THE FUTURE OF THE WATERWAYS?

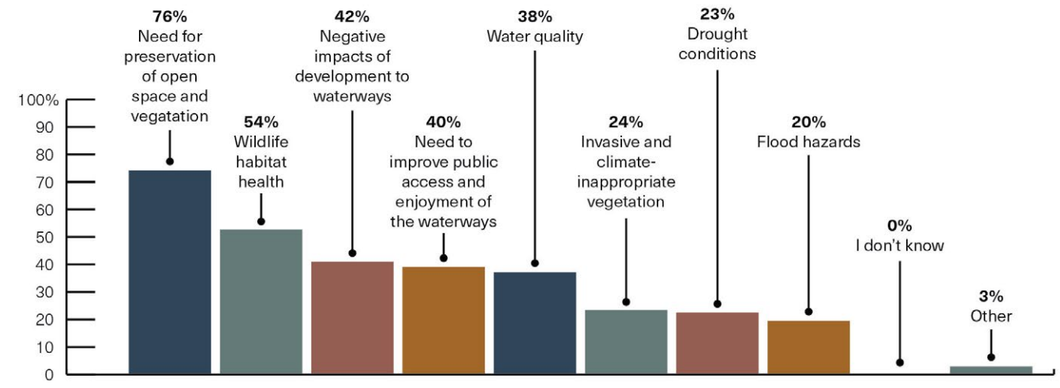
WHAT VALUES SHOULD THESE WATER CORRIDORS PROVIDE? SELECT ALL THAT APPLY.



WHAT ARE THE BIGGEST ISSUES THAT THIS VISION PLAN FOR THE WATERWAYS MUST ADDRESS? SELECT UP TO 3 RESPONSES.

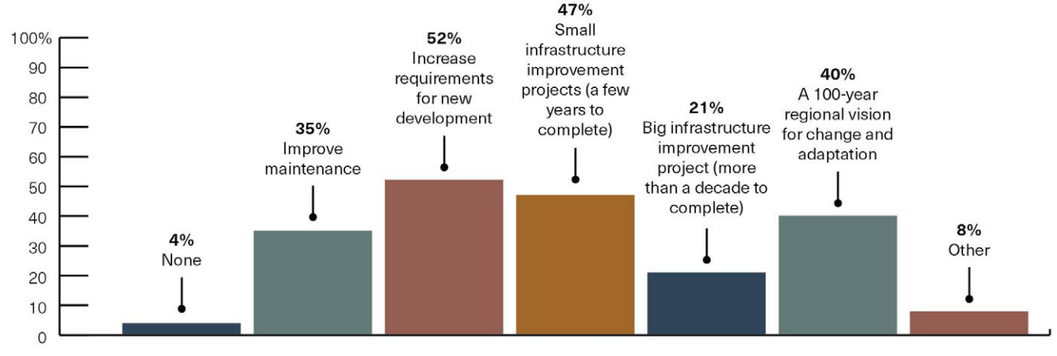


WHAT WOULD HELP YOU ENJOY THE WATER CORRIDORS MORE? SELECT ALL THAT APPLY.



WHAT IS YOUR VISION FOR THE FUTURE OF THE WATERWAYS?

HOW SIGNIFICANT OF CHANGES ARE NEEDED TO IMPROVE THESE WATERWAYS? SELECT ALL THAT APPLY.



WHAT GOALS SHOULD THIS PLAN ESTABLISH FOR THE WATERWAYS?

COMMON THEMES

PROTECTING WATER QUALITY AND USAGE

PRESERVING PLANT AND ANIMAL HABITATS

RECREATING AT AND ACCESSING THE WATERWAYS

INCREASING COMMUNITY AWARENESS AND INVOLVEMENT

DEVELOPING RESPONSIBLY

QUOTES

"I love the walkways and open space, but I would give it up for quality water source, storage, and use."

"I would really love to have trails that stretch all the way and connect the valley."

"Maintain a reasonable distance between new developments and the waterways to help protect them."

"Expand knowledge and access to trails and waterways without damaging or risking natural habitats."

"Remove non-native plants and replace [them] with native plants and trees along waterways."

"Keep some beautiful space out here, make it easier for the growing public to get out of the city and enjoy."

"Keep water flowing to the Salt Lake."

"Make more trails and maps for public knowledge."

"Preserve the waterways and enhance the natural areas around them with simple pathways."

"The water ways should double both as a trail system and also build water resilience."

"Provide clean water, maintain beauty and open space and provide area for wildlife to flourish and humans to enjoy the beauty and wildlife with minimal disruption."

THEMES OF COMMUNITY INPUT

There were several themes that consistently emerged throughout stakeholder and community engagement sessions. These themes informed the priorities for the plan's recommendations, and included:

PRESERVATION AND CONSERVATION

- Drought tolerant and native vegetation
- Enhance riparian zones
- Protect habitat areas

WATER RESOURCES MANAGEMENT

- Encourage aquifer recharge and flow to the Great Salt Lake
- Improve water quality
- Reduce water consumption

RECREATION AND ACCESS

- Provide safe access to water
- Improve trail networks
- Improve park amenities

DEVELOPMENT THREATS

- Turn development towards the waterways
- Implement setback requirements
- Update zoning

COLLABORATION AND EDUCATION

- Public/private partnership
- Improve waterway stewardship
- Educate community members on waterway issues

Sierra Newbold Memorial Park

TAKEAWAYS

“BUSINESS AS USUAL” SCENARIO

If the communities of Southwest Salt Lake County continue with “business as usual,” which assumes that existing trends and policies regarding land use, development, water management, and environmental protection remain unchanged, what can be expected amounts to a continuation of expansive sprawl characterized by increased residential, commercial, and industrial developments and increasing threats to water availability and quality, ecosystem health, wildlife habitat, and quality of life.

Aquifer Recharge: The expansion of impervious surfaces will also continue to impede natural aquifer recharge processes. Normally, precipitation infiltrates the soil and replenishes underground water reserves. However, with more impervious surfaces in the Primary Recharge Area preventing this infiltration, there will be a reduction in the amount of water entering the aquifers. This could lead to a decline in groundwater levels, exacerbating water scarcity issues.

Impact on Waterways: As development progresses, the region’s waterways, including streams and rivers, will face significant stress. Increased runoff from impervious surfaces may lead to higher volumes of stormwater entering these waterways, which can result in erosion, sedimentation, and pollution. The alteration of natural flow patterns can disrupt aquatic ecosystems and degrade water quality, affecting both wildlife and human populations dependent on these resources.

Urban Growth and Land Use: The ongoing urban/suburban sprawl will lead to more land being converted from agricultural and natural uses to urban infrastructure. This expansion will involve extensive paving and construction, increasing impervious surfaces such as roads, parking lots, and buildings.

Environmental and Community Impact: The continuation of current development practices without significant changes in policy or strategy may lead to long-term environmental degradation and sustainability challenges. The community could face increased flooding risks, water shortages, increased spread of noxious weeds, and the loss of natural habitats and biodiversity, impacting both the quality of life and the local economy.

Increased urbanization can lead to more traffic congestion, air and noise pollution, and higher living costs. The reduction in green spaces and natural areas may affect recreational opportunities and overall community well-being. Water shortages and poorer water quality can also impact daily living conditions, health, and local agriculture. Additionally, the increased risk of flooding and environmental degradation could result in costly damages and a less resilient community in the face of climate change and other stresses.

To mitigate these effects, proactive measures such as enhanced stormwater management systems, increased green infrastructure, and more stringent land use regulations will be essential. Without these interventions, the development trajectory in Southwest Salt Lake County could compromise the region’s environmental health and water security.

VISION AND ACTION

In this Chapter:

- Vision Statement
- Goals
- Strategies
- Action Items

HOW TO USE THIS CHAPTER

VISION STATEMENT

The Vision Statement compiles values and aspirations for the study area shared by leaders, communities, and stakeholders surrounding the waterways. It identifies what the plan aims to achieve and acknowledges its guiding principles.

GOALS

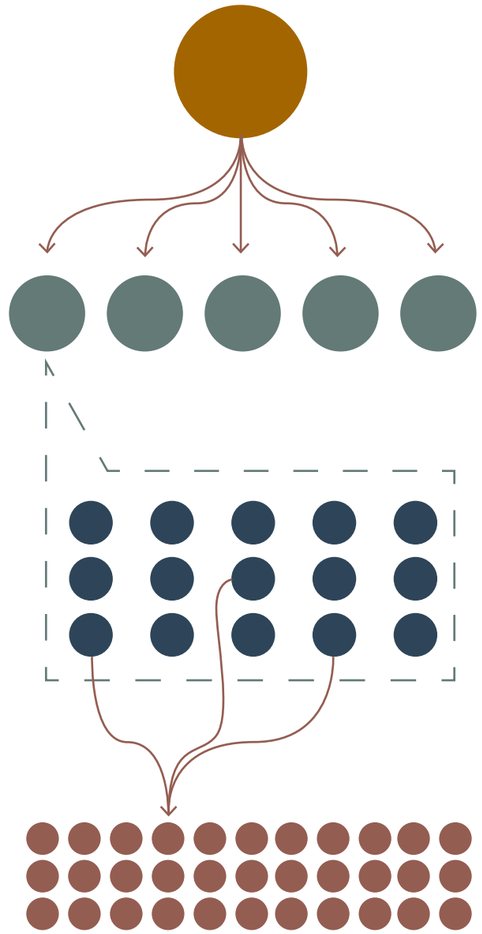
The plan's Goals identify recurring themes from community engagement and analysis of current challenges and opportunities to guide the development of the plan's recommendations. These recommendations are comprised of two parts: the Strategies and the Action Items.

STRATEGIES

The Strategies in this plan break the Goals down into specific outcomes that will contribute to the Vision. The Strategies are narrowed down to specific topics, but are not as specific as the Action Items. They create a framework for identifying Action Items and can be used to ensure those Action Items align with the overall Goals and Vision.

ACTION ITEMS

The Action Items located at the end of this chapter identify critical tasks to be initiated within the next 5 years. These action items may address multiple strategies and help accomplish multiple goals. This section aims to assist municipal and county leaders with the implementation of strategies included in this plan.



VISION STATEMENT

The H2Oquirrh Vision Plan endeavors to foster sustainable and resilient growth in Southwest Salt Lake County, striking a balance between development and environmental stewardship. It imagines healthy communities where a high quality of life is maintained through innovative water management, preservation of natural landscapes, and enhanced green infrastructure. By encouraging adoption of sustainable development practices, the plan will promote safeguarding of waterways and aquifers, ensuring reliable and clean water resources for current and future generations.

To achieve this mission, the plan includes reducing runoff, promoting groundwater recharge, stormwater management systems designed to mimic natural water cycles, and mitigating the impact of urbanization on local creeks, canals, and washes. Green infrastructure initiatives will also contribute to the aesthetic and recreational value of the surrounding communities, providing residents with beautiful, functional, and environmentally friendly spaces.

The plan also focuses on community engagement and education to foster a culture of sustainable design. By involving residents, businesses, and local governments in water conservation efforts and sustainable development practices, the plan seeks to build a collaborative approach to environmental stewardship. Educational programming will empower the community with the knowledge and tools to make informed decisions, ensuring that resiliency is deeply ingrained in the region's growth strategy.

GOALS

REVITALIZE AND EMBRACE THE NATURAL WATER CYCLE

Mend the natural water cycle, which is comprised largely of underground, multi-decade flow. Develop educational programs and initiatives to increase public awareness and understanding of the cycle, emphasizing the interconnectedness of water resources and human activities to foster stewardship and responsible water management practices. Identify opportunities for occasional and high impact interaction with surface water.

PRIORITIZE PRESERVATION AND ENHANCE OPEN SPACE

Protect and expand open space corridors along waterways to conserve natural habitats, promote biodiversity through invasive species removal and native plant restoration, and provide recreational opportunities for communities while preserving the scenic beauty of the region.

PROVIDE ACCESS TO WATERWAY CORRIDORS FOR RECREATION AND CONNECTIVITY

Improve and diversify recreational amenities along waterways, including trails, parks/open spaces to encourage community engagement, physical activity, and appreciation for the natural environment, while ensuring access for all residents regardless of age, ability, or socioeconomic status. Design access points in limited areas where they don't interfere with natural systems.

INTEGRATE NATURAL SYSTEMS INTO COMMUNITY DEVELOPMENT

Promote the integration of Low Impact Development (LID) principles into planning and development practices to manage stormwater runoff, mitigate flooding, and enhance water quality while preserving the ecological integrity of the waterways and surrounding landscapes. Encourage a "triple bottom line" approach to development that serves economic, community, and environmental goals.

INCREASE RESILIENCY AND CLIMATE ADAPTATION FOR NATURAL AND URBAN CONDITIONS

Manage resources to protect the well being of people and the environment while anticipating future threats. Mitigate human impacts on the natural environment. Support local stewardship and education surrounding the waterways and land management.

OQUIRRH MOUNTAINS WATER CYCLE

The water cycle of Southwest Salt Lake County relies on seasonal snowmelt and occasional rainfall from the Oquirrh Mountains to recharge the aquifer underlying the alluvial basin in which the communities of Salt Lake County have developed. The primary recharge area, where water begins to infiltrate into the aquifer, is located along the mountain foothills and extends into the valley at the mouths of major drainages. The secondary recharge area is located on the benches and uplands of the valley. Ground water moves from these recharge areas to the discharge area where it feeds the Jordan River.

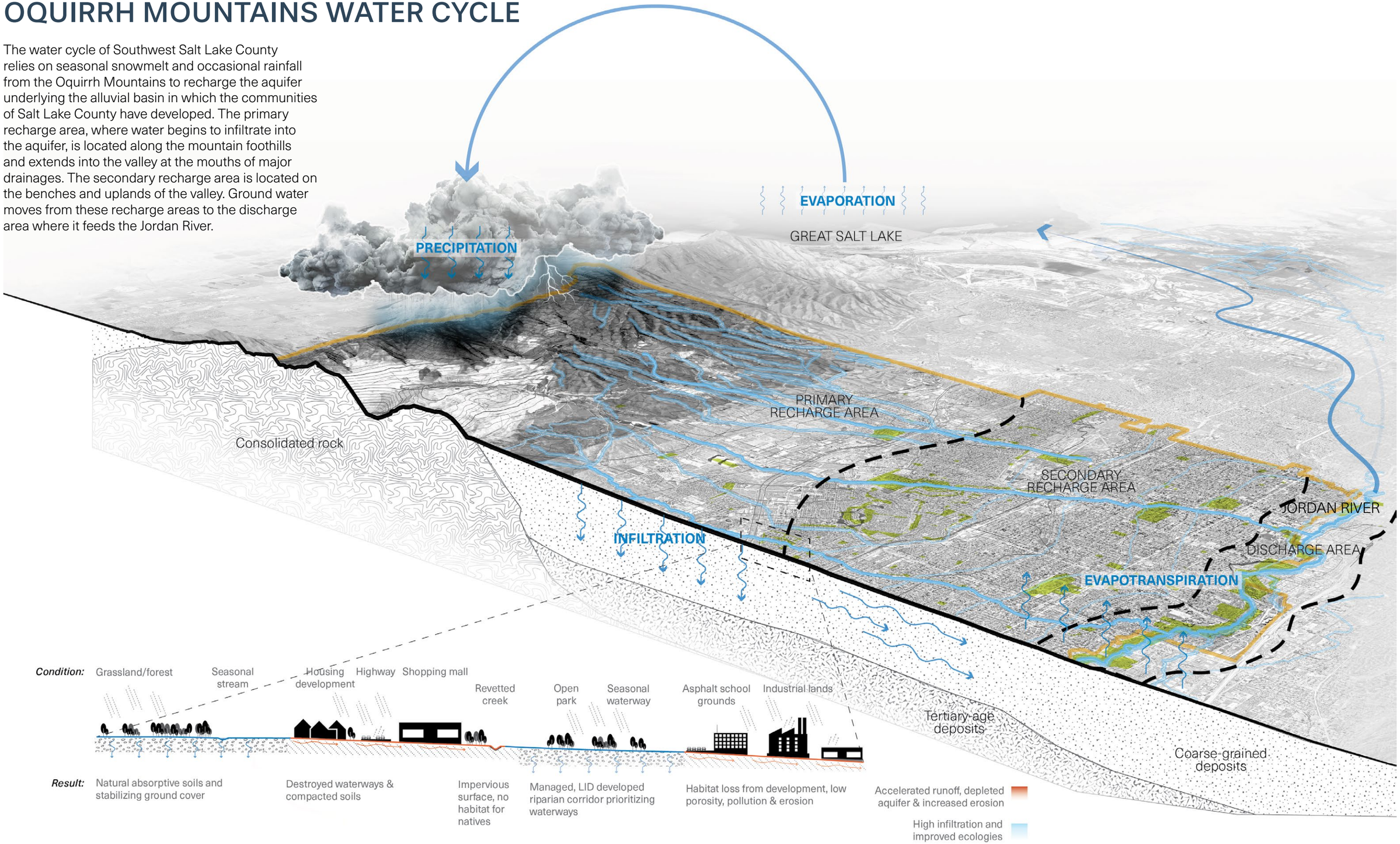


Figure 15: An illustration of the water cycle within the project study area and the various impediments imposed by increasing development.

REHABILITATE & EMBRACE THE NATURAL WATER CYCLE

Strategies for rehabilitation of the natural water cycle fall under three subgroups: ensuring availability of water, managing runoff, and enhancing waterways to optimize their ecological function. Tied to these strategies are a series of project examples, implementation maps, and case studies to illustrate the strategies in action and provide landscape context.

The map below shows the primary aquifer recharge zone within the study area, and potential areas of strategy implementation. Areas of particular focus for Goal 1 strategies include undeveloped lands on the periphery of developing communities within the primary recharge zone. Preserving open space for ecological function, providing buffers from development to creeks and washes, slowing runoff from storms and snowmelt, and optimizing agricultural water use are all important components of promoting increased aquifer recharge.

Building awareness of the Salt Lake Valley's water resources is a goal of the City Creek Center in Salt Lake City, UT. Image Credit: Wikimedia.

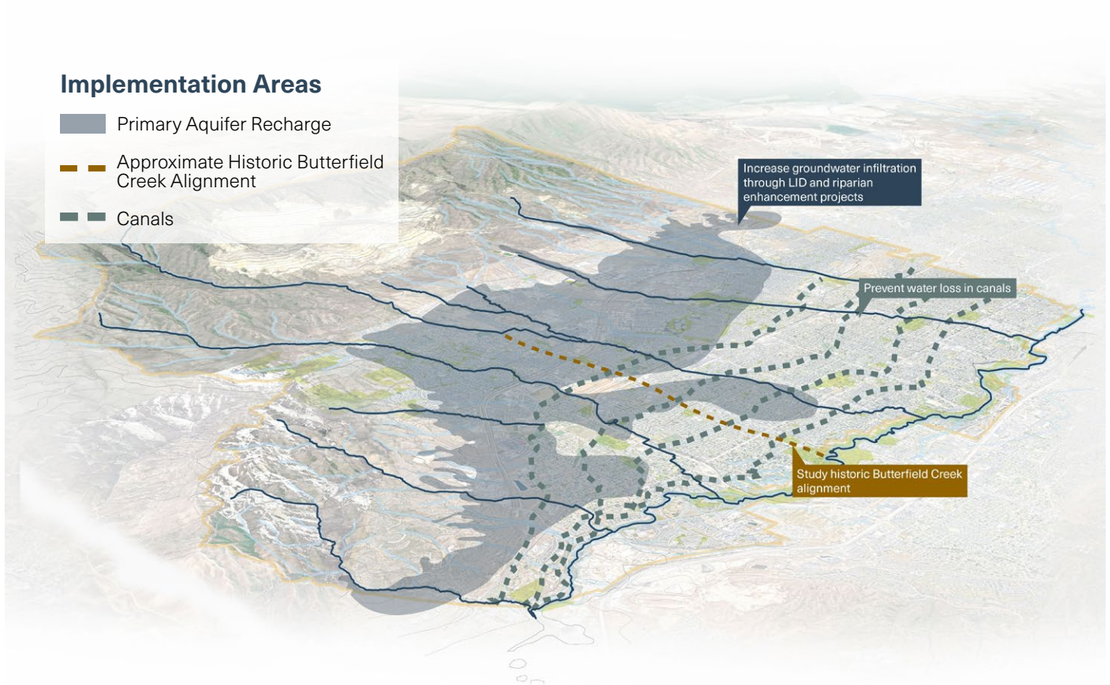


Figure 16: Key implementation areas for Goal 1 Strategies

WATER AVAILABILITY STRATEGIES

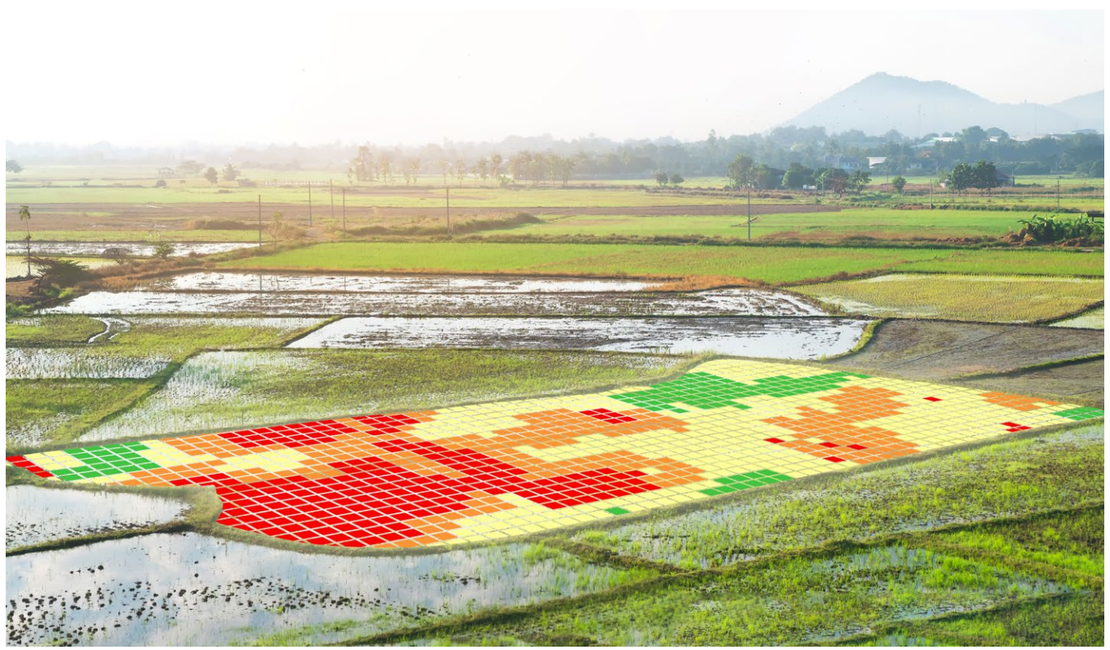
1.1 Protect water volumes in canals to effectively direct water to local needs.

1.2 Optimize agricultural irrigation practices to promote effective water use and improve flows to the Great Salt Lake.

1.3 Increase public awareness and education around the waterways and hydrology of this watershed, including flood hazards, aquifer health, and LID best practices.

1.4 Supplement natural runoff with recycled water to recharge the aquifer.

Canal infrastructure replacement reduces water loss to evaporation. Image Credit: Brian Nicholson.



Precision agriculture technologies such as remote sensing can reduce irrigation water usage and optimize soil health. Image Credit: zapp2photo on Adobe Stock.

STORMWATER STRATEGIES

1.5 Slow stormwater runoff flow volumes over land to encourage water percolation to recharge groundwater.

1.6 Implement stormwater pollution prevention strategies.

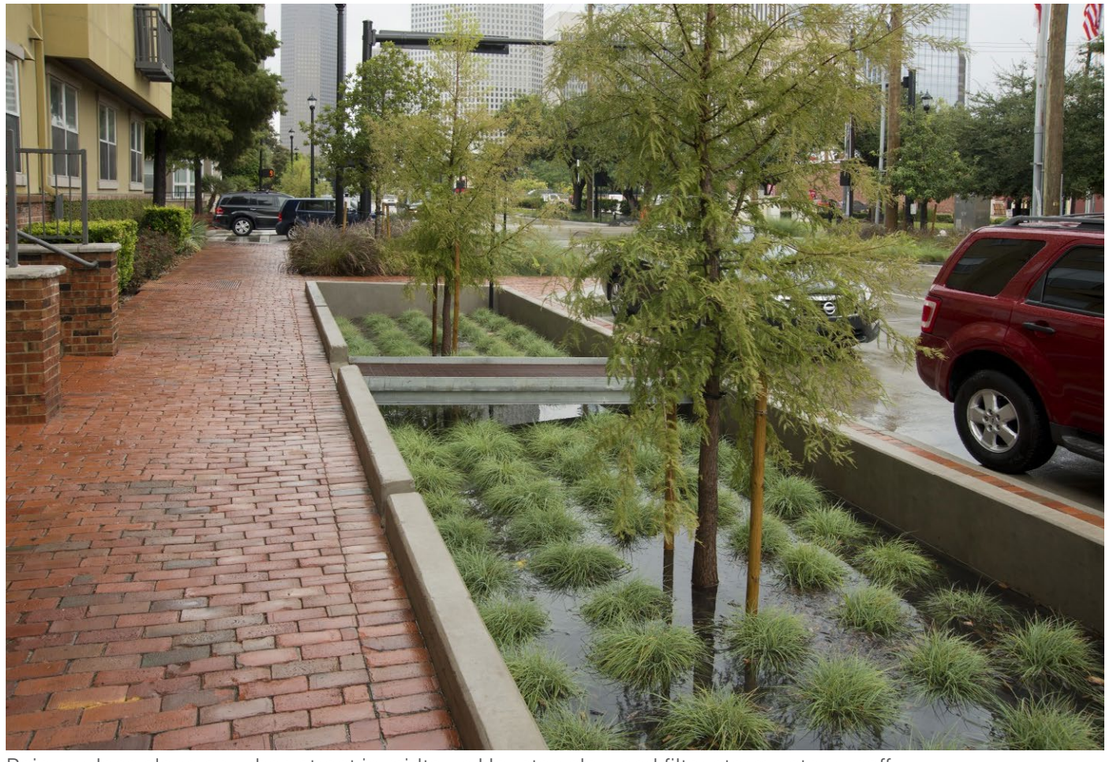
CREEK AND WASH ENHANCEMENT STRATEGIES

1.7 Create stream meanders and modify stream channel forms to slow water, increasing groundwater absorption and reducing erosion.

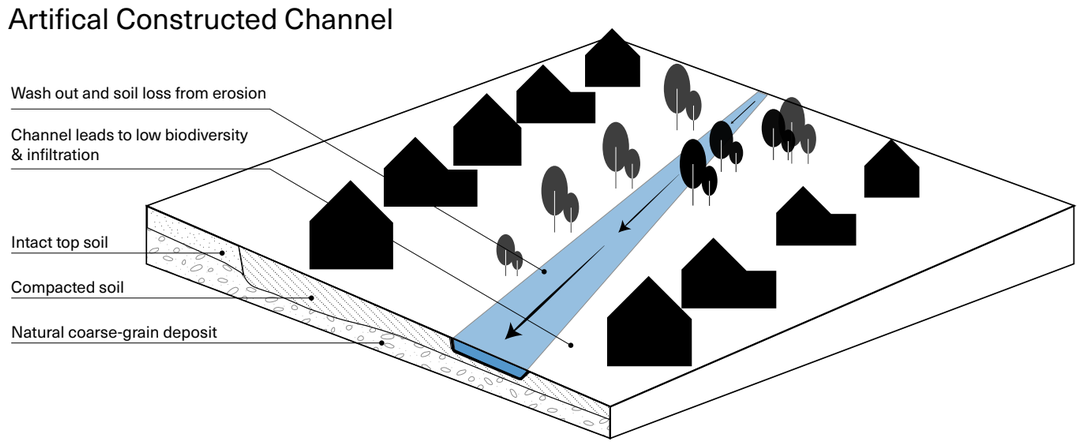
1.8 Increase riparian vegetation that improves water quality, slows water flows, and improves ground absorption.

1.9 Discourage piping of creeks and washes.

Historically, stormwater has often been conveyed using grey infrastructure to control runoff and reduce flooding. This results in reduced aquifer recharge and poorer water quality as water is not able to filter through the landscape. Strategies for stormwater management should embrace natural systems and green infrastructure, as described in the Wasatch Front Regional Council's 2012 (Re) Connect Plan. Some of the best ways to achieve slower runoff and promote infiltration involve preserving or mimicking natural meanders of waterways, increasing native riparian vegetation, and avoiding piping of creeks and washes. New developments in particular should be created around waterways, allowing them space to function. Figure 17 illustrates the differences between a channelized condition versus a naturalized meandering condition.



Rain gardens along an urban street in midtown Houston slow and filter stormwater runoff.



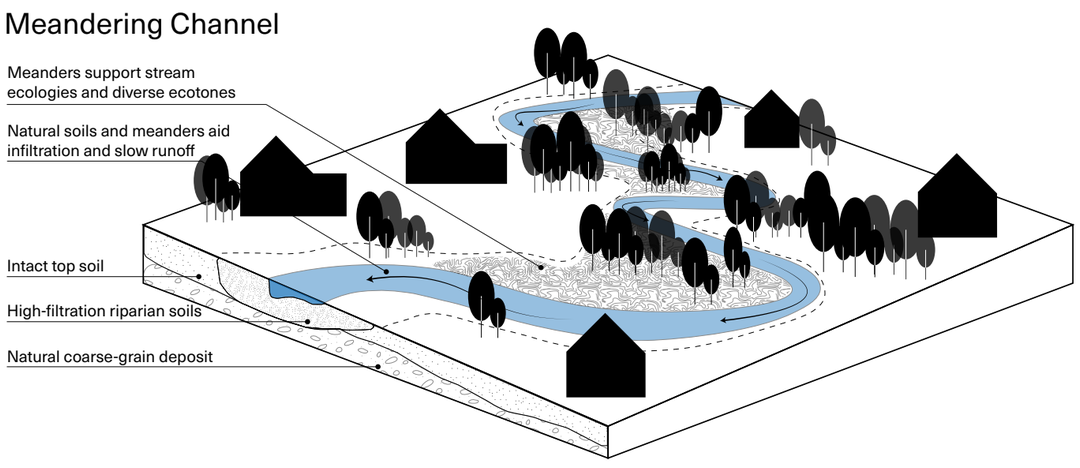


Figure 17: Creating and preserving meanders of waterway channels reduces runoff, increases infiltration and promotes habitat diversity.

CASE STUDY
LITTLE DRY CREEK

CONTEXT:

Drainage and flood control project for Little Dry Creek in the City of Westminster, CO

PROJECT AIMS:

- Improve floodplain resiliency, lower floodplain to avoid flooding of adjacent rail line tracks.
- Provide 172 acre-feet of regional flood storage
- Create community recreation amenity with environmental functionality
- Tie into regional transit hub

"The Urban Drainage & Flood Control District, working with the City of Westminster and Adams County, lowered the 100-year floodplain and restored the natural and beneficial functions of little dry Creek while improving open space, habitat, adding water quality facilities and wetlands."

-Mile High Flood District

Image Credits: City of Westminster

PRIORITIZE PRESERVATION AND ENHANCE OPEN SPACE

The following strategies fall under the subcategories of land ownership strategies, habitat protections, open space creation and management, and riparian enhancement Remaining open spaces and places of potential preservation or restoration, particularly undeveloped or low density areas, are suitable for these types of strategies.

The map below shows potential areas of implementation for goal 2 strategies. Creek conservation areas represent zones for protections and habitat improvement projects throughout the study area. At this scale, the zones are not intended to be conscriptive or spatially accurate, but rather to convey an overall vision.

LAND OWNERSHIP STRATEGIES

2.1 Place permanent protections on creek corridors through conservation land ownership, easements, and development policies.

2.2 Promote cross collaboration between governmental agencies and jurisdictions for regional conservation and management of open space.

2.3 Identify ways to leverage federal and state support for land preservation.

2.4 Provide education to private and public land owners about improvement and management of water corridors and terrestrial habitats, especially noxious weed management.

2.5 Secure dedicated long term funding for the maintenance of open space.

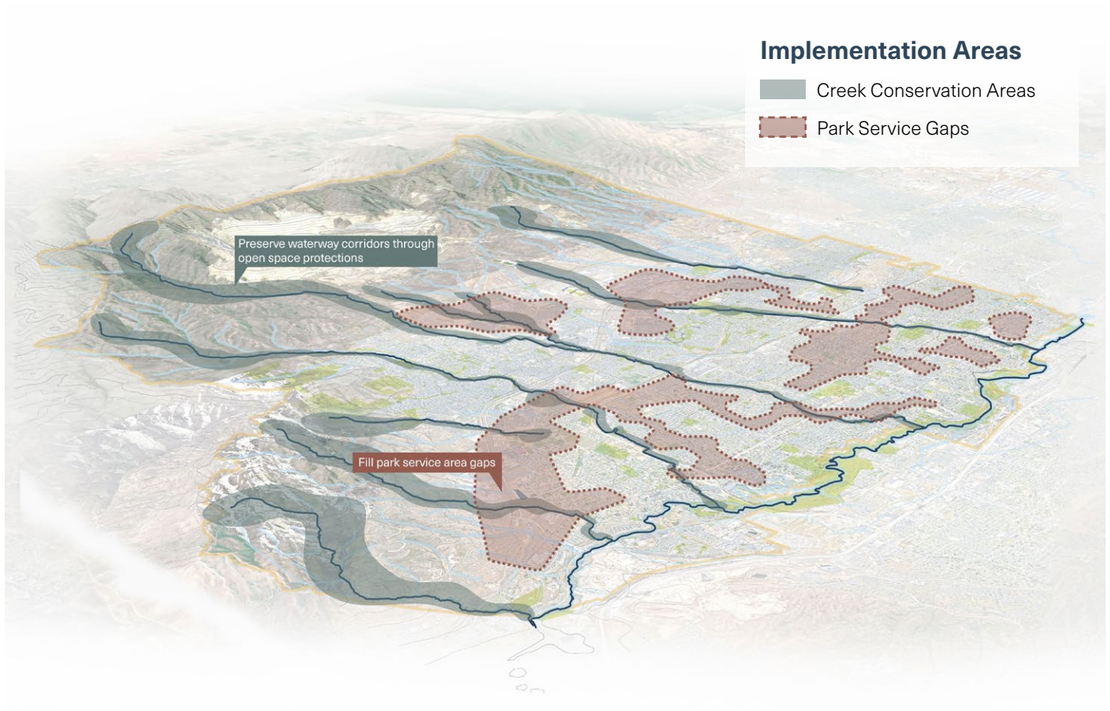
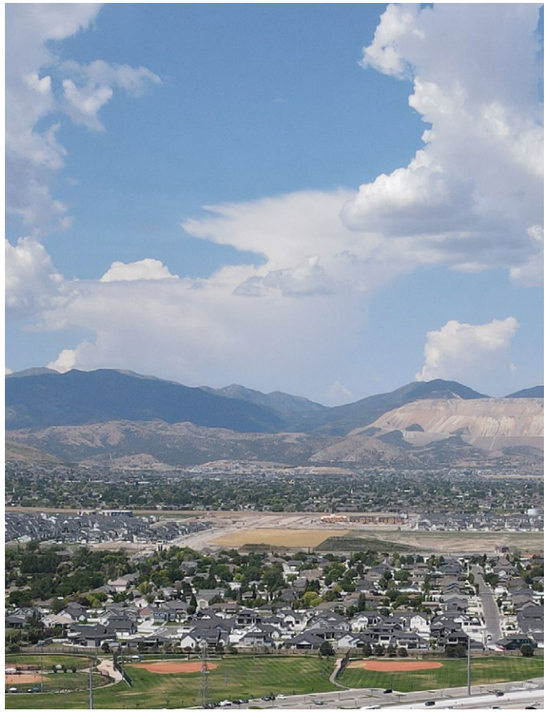


Figure 18: Key implementation areas for Goal 2 Strategies

The 17-acre Butterfield Trailhead Regional Park, which provides access to over 13 miles of mixed use trails, is the result of a 2022 lease agreement between Salt Lake County and Rio Tinto Kennecott and is part of the Southwest Canyon Trails Network, which is composed of 2,500 acres including Rose and Yellow Fork canyons.



View toward the Oquirrh Mountains

NEW AND EXISTING PARKS/OPEN SPACES STRATEGIES

2.6 Designate portions of parkland for natural area and water management purposes.

2.7 Preserve existing viewsheds and create opportunities to frame key views within parks and open spaces.

2.8 Utilize a variety of policy and funding tools to pursue open space conservation opportunities within waterway corridors.

2.9 Identify appropriate public access points to stream corridors through resource mapping to mitigate conflicts between human-made and natural environments.

Habitat management strategies across the communities of Southwest Salt Lake County will ensure that the waterways are kept ecologically functional and beautiful. These areas should be protected from invasive species and regarded as bastions of biodiversity. In addition to weed management and riparian enhancement, continued monitoring of species and soil health is important to maintain improvements. Volunteer organizations and university programs such as the Swaner Preserve and EcoCenter volunteer program in Snyderville Basin, Utah, are effective ways to improve ecological health and build community.

HABITAT STRATEGIES

2.10 Protect and restore native habitat within wildlife corridors, stream corridors, and aquatic environments.

2.11 Support the recovery of threatened and endangered species populations.

2.12 Mitigate noxious and invasive species using science based best management practices, followed by revegetation with native, water wise, and pollinator friendly planting.

RIPARIAN ENHANCEMENT STRATEGIES

2.13 Enhance policy protections in the riparian zone to support hydrological and ecological value.

2.14 Use native planting to stabilize soils, filter sediment, and improve biodiversity along the waterways.

Volunteers remove invasive weeds through the Swaner Preserve & EcoCenter volunteer program. Image Credit: Swaner Preserve & EcoCenter.

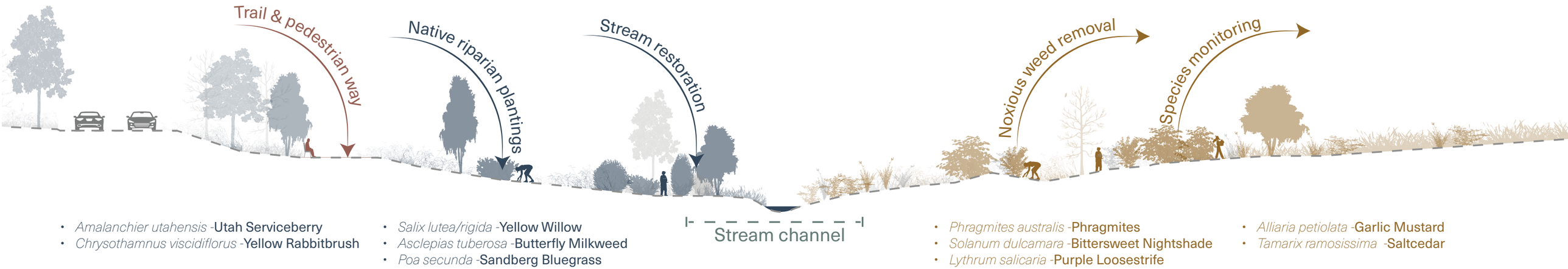


Figure 19: Restoration efforts involve removal of invasive plants in exchange for native riparian species.

PROVIDE ACCESS TO WATERWAY CORRIDORS FOR RECREATION AND CONNECTIVITY

Goal 3 strategies center around preservation and stewardship, as well as creating community amenities and connectivity along the waterways.

There are many areas of potential implementation for these strategies along the waterway channels, as seen in the map below. While some of the creeks, washes, and canals already have adjacent trails, there is immense opportunity in expanding and completing sections of the trail system.

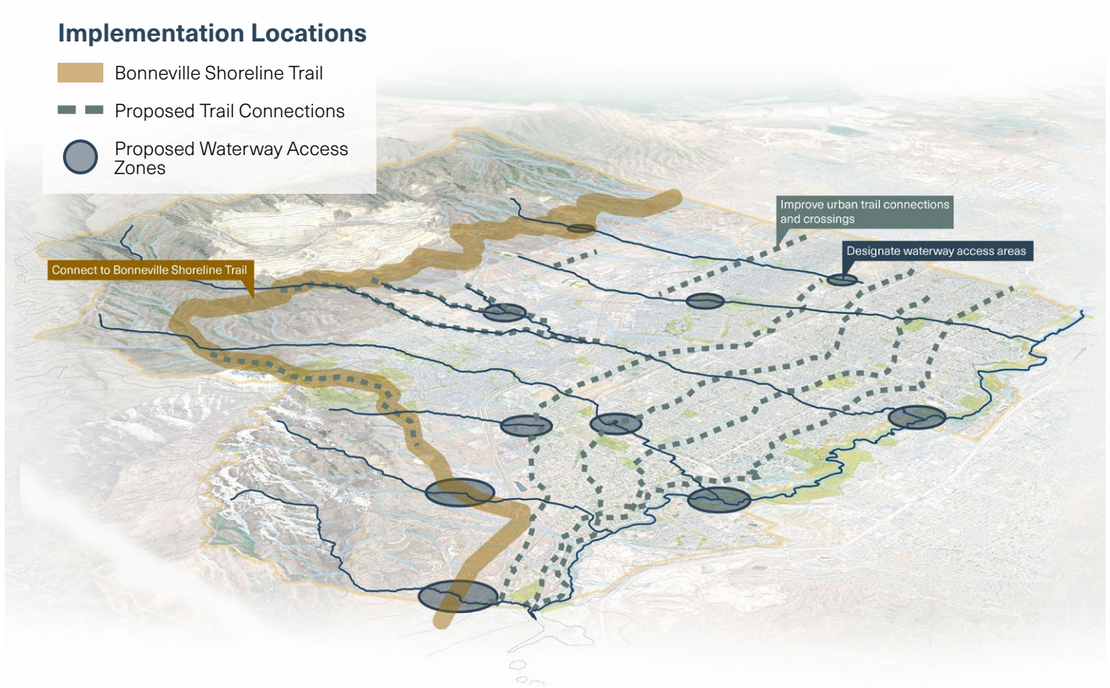


Figure 20: Key implementation areas for Goal 3 Strategies

PRESERVATION FIRST/STEWARDSHIP STRATEGIES

3.1 Provide recreation opportunities that prioritize the health of natural areas.

3.2 Collaborate on county-wide strategies for managing public access to trails, parks, and recreation opportunities around the waterways.

3.3 Improve water recreation safety in designated waterway access areas.

3.4 Strengthen mitigation requirements for construction impacts to maintain safe, clean, and accessible public spaces.

3.5 Increase water corridor clean-up and maintenance of public properties and enforce maintenance requirements on private lands.

AMENITIES STRATEGIES

3.6 Improve and complete trail connections along the creeks, washes, and canals to connect people to recreation from the Oquirrhs to the Jordan River.

3.7 Promote accessibility for all ages and abilities within park, trail, and public open spaces.

3.8 Promote four-season use of trails and open spaces.

CONNECTIVITY STRATEGIES

3.9 Connect schools to trails and open spaces to facilitate safe routes to school and educational programming.

3.10 Improve first mile/last mile connectivity to support public transit riders.

3.11 Improve multi-modal transportation connections (bus, passenger rail, bike, pedestrian pathways) to waterway access.

3.12 Improve urban trail connections and crossings to connect pedestrians and cyclists across municipalities, including grade separated crossings across major arterials.

Volunteers plant trees with the High Line Canal Conservancy to enhance and protect the environment surrounding the canal trail. Image Credit: High Line Canal Conservancy.

Bikers enjoying the multi-modal Jordan River Trail

CASE STUDY
HIGH LINE CANAL TRAIL

CONTEXT:

71-mile trail and linear park connecting communities of Denver, Colorado along a historic canal.

PROJECT AIMS:

- Revitalize and transition the Canal as a regional green way while improving the health of the ecosystem
- Create a natural, connected, continuous, varied, managed and enhanced trail.
- Honor and re-purpose the historic canal system.
- Manage stormwater through green infrastructure.
- Access, education and stewardship improvements.

Over 350,000 residents reside within one mile of the Canal and recent data indicates that annually more than 1 million people use the Canal as a recreational asset.

More than 80 percent of the water diverted to the Canal seeps into the ground or evaporates prior to reaching a paying water customer, which means that the community needs to generate uses for the Canal and its greenway that will preserve the qualities that people love about it–spending time walking, riding and recreating along the Canal.

-High Line Canal Conservancy

Image Credit: High Line Canal Conservancy

INTEGRATE NATURAL SYSTEMS INTO COMMUNITY DEVELOPMENT

Development irrespective of natural systems results in habitat loss and fragmentation, biodiversity loss, decreased permeability, water, soil, and air pollution, and the degradation of ecosystem services. As the communities of Southwest Salt Lake County continue to sprawl, it is a crucial time to act in order to ensure that future developments take natural systems into account.

Key implementation areas, as depicted in the map across, include the areas of anticipated suburban growth, which are largely found in the primary aquifer recharge zone. This zone is of particular importance as it pertains to protecting the waterways. Developments in the recharge areas should protect and enhance the waterways, mitigate invasive species introduction and construction-related impacts, and should implement green infrastructure techniques for stormwater management.

INFRASTRUCTURE STRATEGIES

4.1 Build smaller wastewater plants in the watersheds and use the treated water to fill nearby high visibility creeks and/or to recharge groundwater.

4.2 Pump treated wastewater from the lower part of the valley to the upper part for high visibility creeks and/or to recharge groundwater.

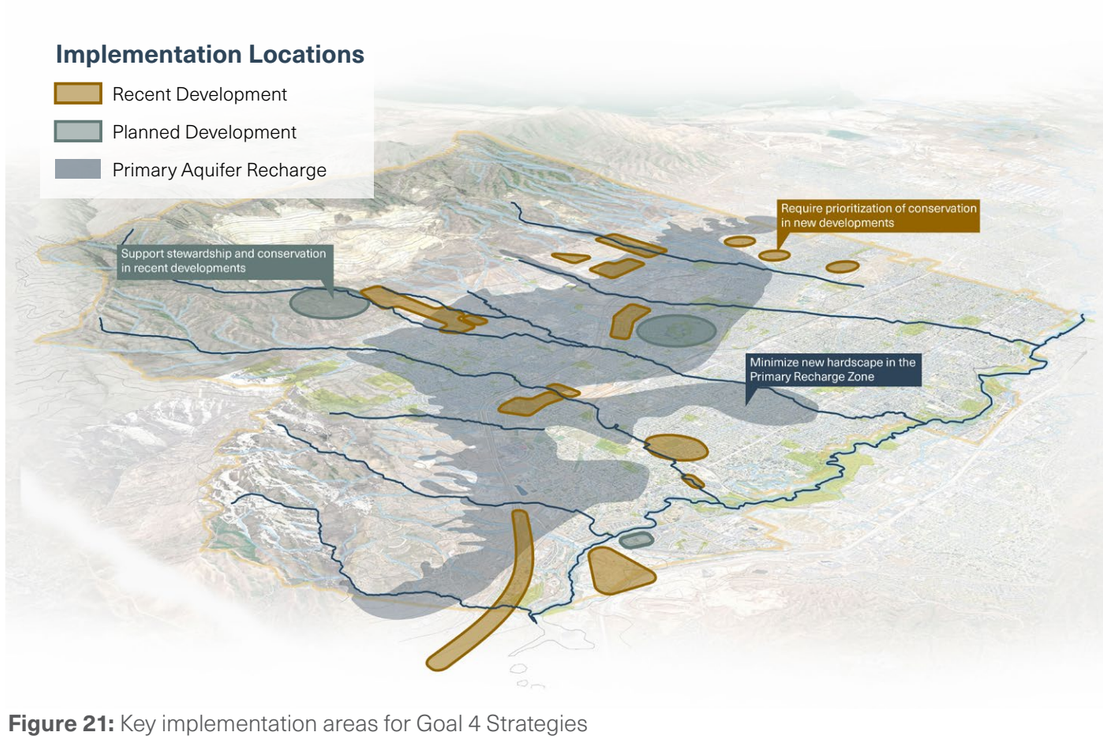


Figure 21: Key implementation areas for Goal 4 Strategies

Maintaining continuous green space along creek corridors, such as at Rosecrest Park in Herriman.

DEVELOPMENT REQUIREMENTS STRATEGIES

4.3 Encourage open space conservation along waterway corridors in new development.

4.4 Require new development to prioritize open space conservation along waterway corridors and implement approved waterway preservation strategies.

4.5 Require new development to mitigate noxious and invasive species prior to construction.

4.6 Limit human impact within riparian areas.

Goal 4 strategy implementation areas

EMBRACING WATERWAYS STRATEGIES

4.7 Support retrofits of existing developments to enhance waterway treatment and conservation.

4.8 Encourage stewardship and integration of waterways into future development plans.

4.9 Design parks, trails, and open spaces that contribute to the identity of each waterway and municipality.

ZONING STRATEGIES

4.10 Create zoning requirements and setbacks that fold waterways into community development.

4.11 Update future land use mapping to reflect high-quality open space conservation opportunities.

EDUCATION STRATEGIES

4.12 Educate developers and residents on the value of the waterways as an asset.

At Daybreak in South Jordan, UT, water is an integral part of the community and adds value to the surrounding properties.

CASE STUDY
GRAND JUNCTION
PARK & PLAZA

CONTEXT:

7.8 acre civic park at the confluence of several creeks in Westfield, Indiana.

PROJECT AIMS:

- Flood mitigation through green infrastructure.
- Create community spaces and programming.
- Stream bank repair and stabilization.
- Spur adjacent development.

In response to a significant flood event that inundated the town, increased vulnerability from escalating climate change events, and an aspiration for recognition as a design-forward town, the City of Westfield, Indiana, has overlaid strategic infrastructure with communal purpose to create a socially-purposeful, environmentally-resilient, and inclusive park focused on human engagement.

-David Rubin Land Collective

Image Credits: Alan Karchmer (Photo), Land Collective (Diagram)

INCREASE RESILIENCY AND CLIMATE ADAPTATION FOR NATURAL AND URBAN CONDITIONS

Goal 5 strategies address climate change related challenges including drought, flooding and fire risk, as well as pollution and water quality. Many interventions related to climate resiliency can complement one another. For example, implementing solutions for flood protection through native riparian planting and water detention may also have benefits to combat the urban heat island effect and treat pollutants.

As the effects of climate change continue to threaten water resources in arid climates, it is imperative that communities conserve water through proper planning and design, as well as through consumption practices.

Scottsdale, Arizona, has implemented an advanced wastewater treatment facility to recycle and re-purpose treated wastewater. The majority of this water is used to irrigate 23 golf courses in the greater area. When demand is low, the excess water is used for aquifer recharge. The result is the replenishment of approximately 70 billion gallons into Scottsdale's regional aquifers since 1988.

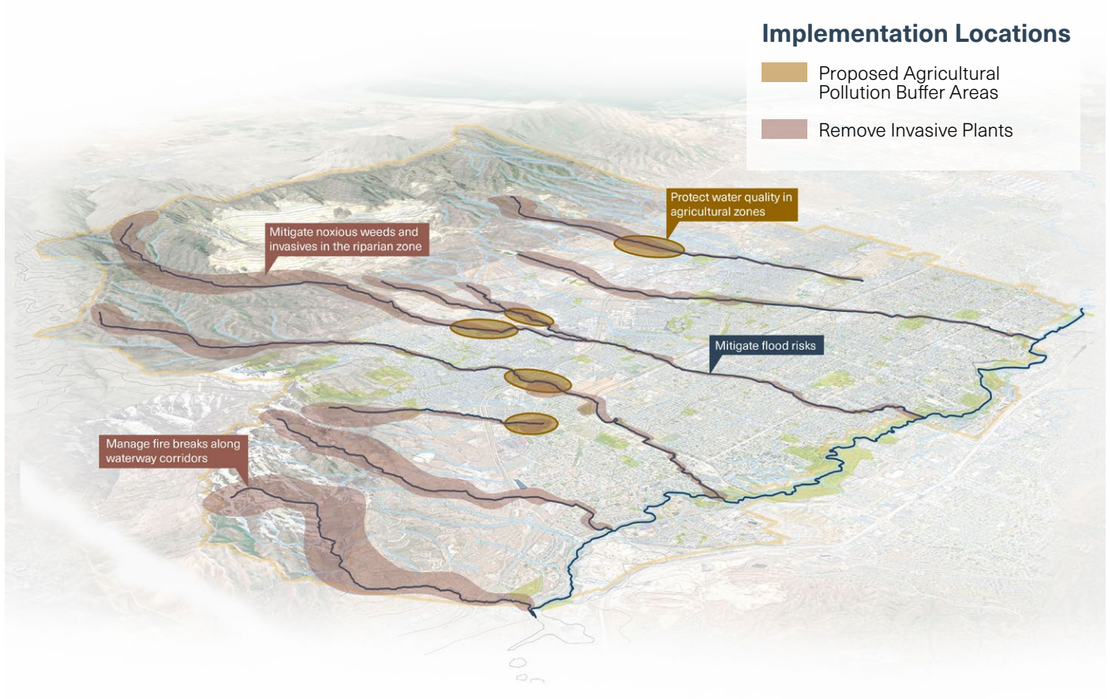


Figure 22: Key implementation areas for Goal 5 Strategies

DROUGHT AND HEAT STRATEGIES

5.1 Increase climate-resilient vegetation to provide shade, reducing water evaporation and mitigating heat.

FLOODING STRATEGIES

5.2 Mitigate erosion hazards created from flood events.

5.3 Improve hardscape, softscape, and architectural design standards to manage development impacts in and near the flood plain.

Flash flooding in a Herriman neighborhood.

A scientist from the Salt Lake County Watershed Planning & Restoration Program takes samples to check for E. coli. Image Credit: Salt Lake County Watershed Planning & Restoration Program.

POLLUTION / E. COLI STRATEGIES

5.4 Reduce pollution from runoff into the waterways.

5.5 Mitigate the effects of human and animal waste on water quality.

FIRE STRATEGIES

5.6 Integrate community wildfire mitigation into open space conservation strategies.

5.7 Identify fire resistant plant species that can be used to reduce fire risk.

CASE STUDY

SCOTTSDALE, AZ WASTEWATER RECYCLING

CONTEXT:

The Scottsdale Water Campus is home to the Advanced Water Treatment Facility (AWT), one of the most sophisticated recycled water facilities in the world. The facility can treat up to 20 million gallons of recycled water a day to a water quality standard that exceeds that of bottled water.

PROJECT AIMS:

- Take recycled water from the city's conventional water reclamation plant and further treat it through ozonation, membrane ultrafiltration, reverse osmosis and ultraviolet photolysis.
- Provide non-potable water to 23 golf courses in north Scottsdale through a public-private partnership known as the Reclaimed Water Distribution System (RWDS).
- In the non-peak months when the courses do not need their daily water allotments, the city uses the excess purified water from the Advanced Water Treatment Facility for aquifer recharge through indirect potable reuse, further advancing Scottsdale's long-term water sustainability.

Scottsdale recharges nearly two-billion gallons of purified recycled water to replenish our drinking water annually. Due primarily to the AWT, Scottsdale has recharged over 70 billion gallons into regional aquifers since 1988.

-City of Scottsdale, AZ

Image Credits: Kate Duffy/Cronkite News (Full Spread), Hazen and Sawyer (Right)

KEY OPPORTUNITIES

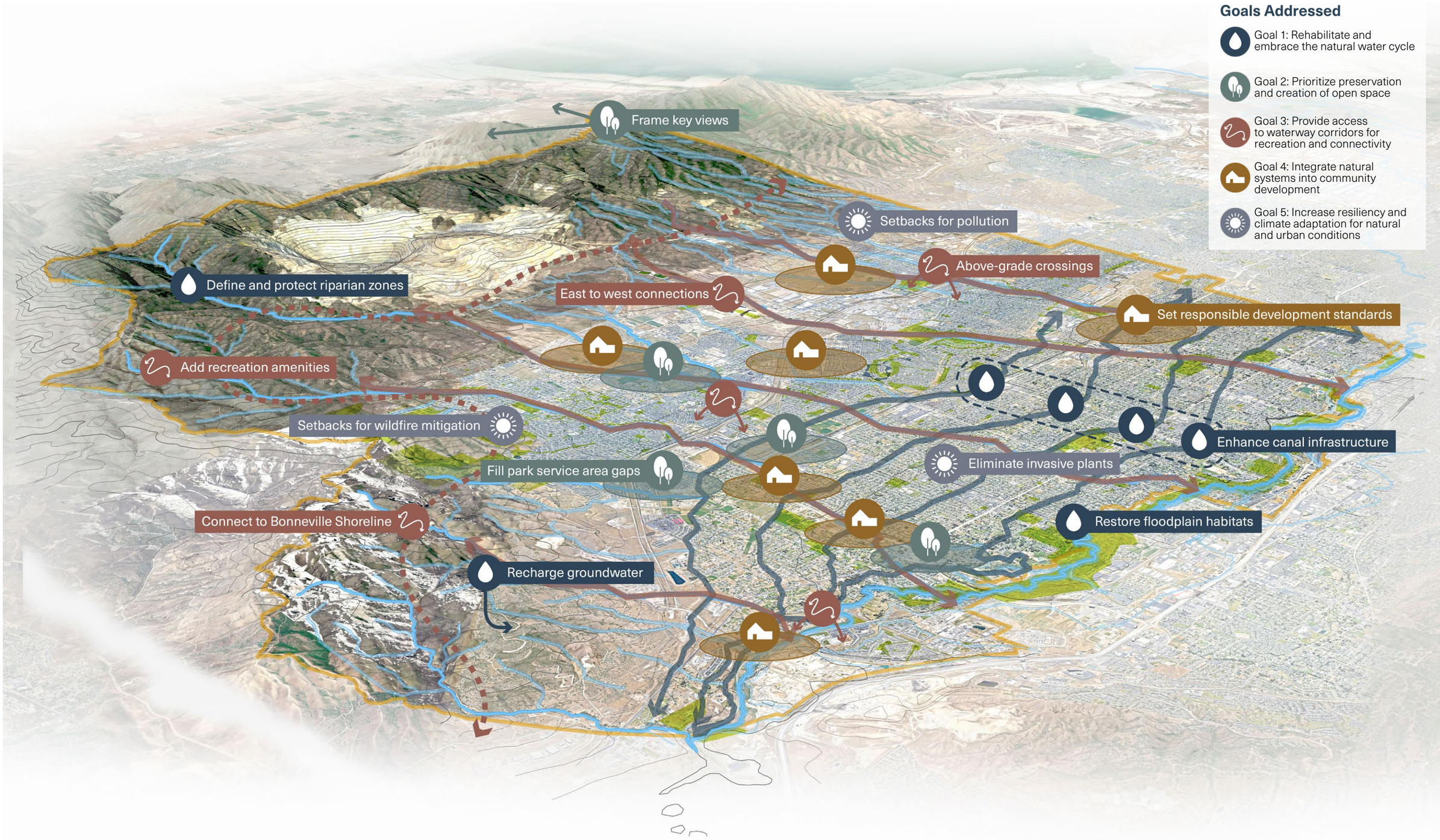


Figure 23: Goals Applied Across the Study Area

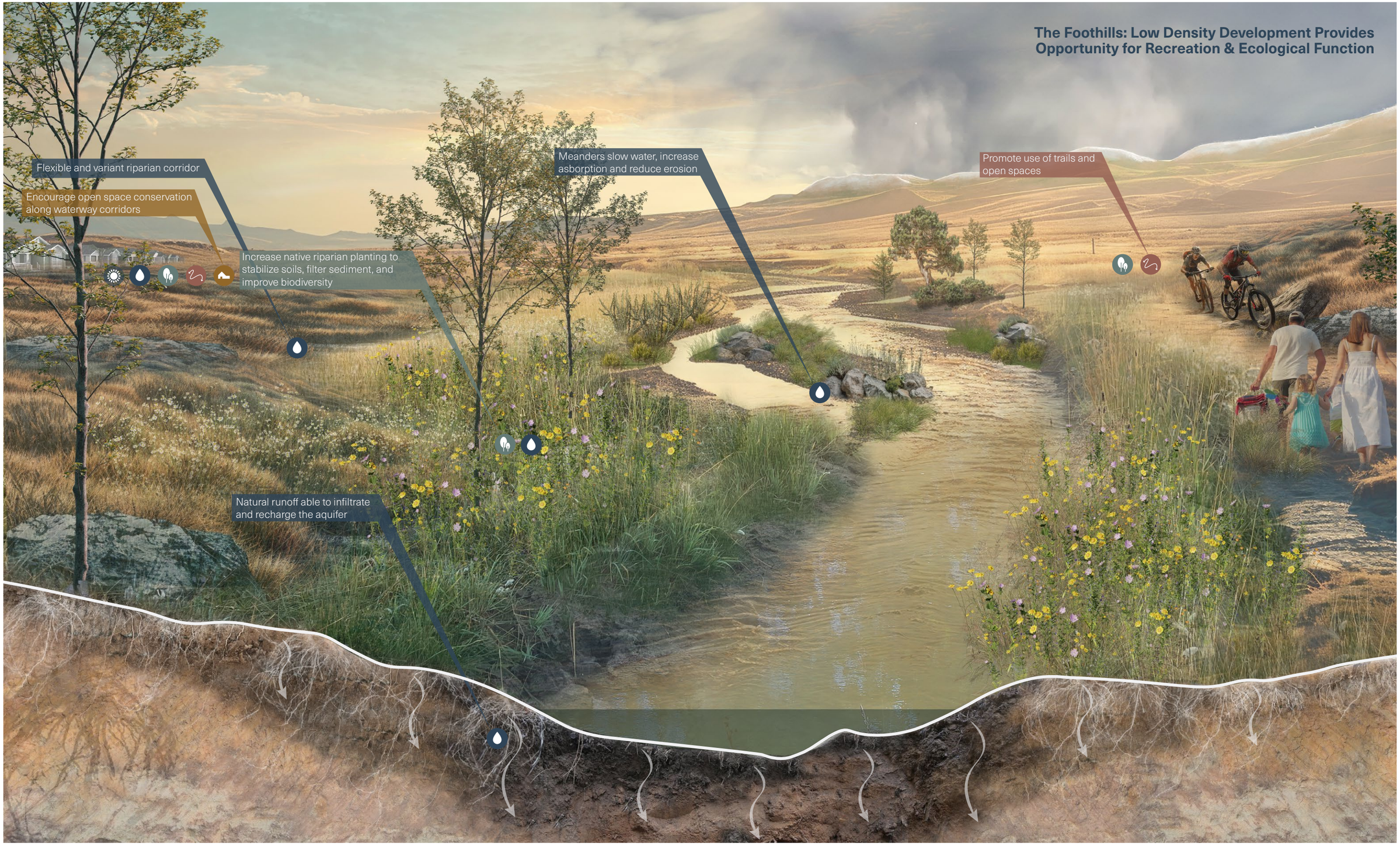


Figure 24: The Foothills Vision

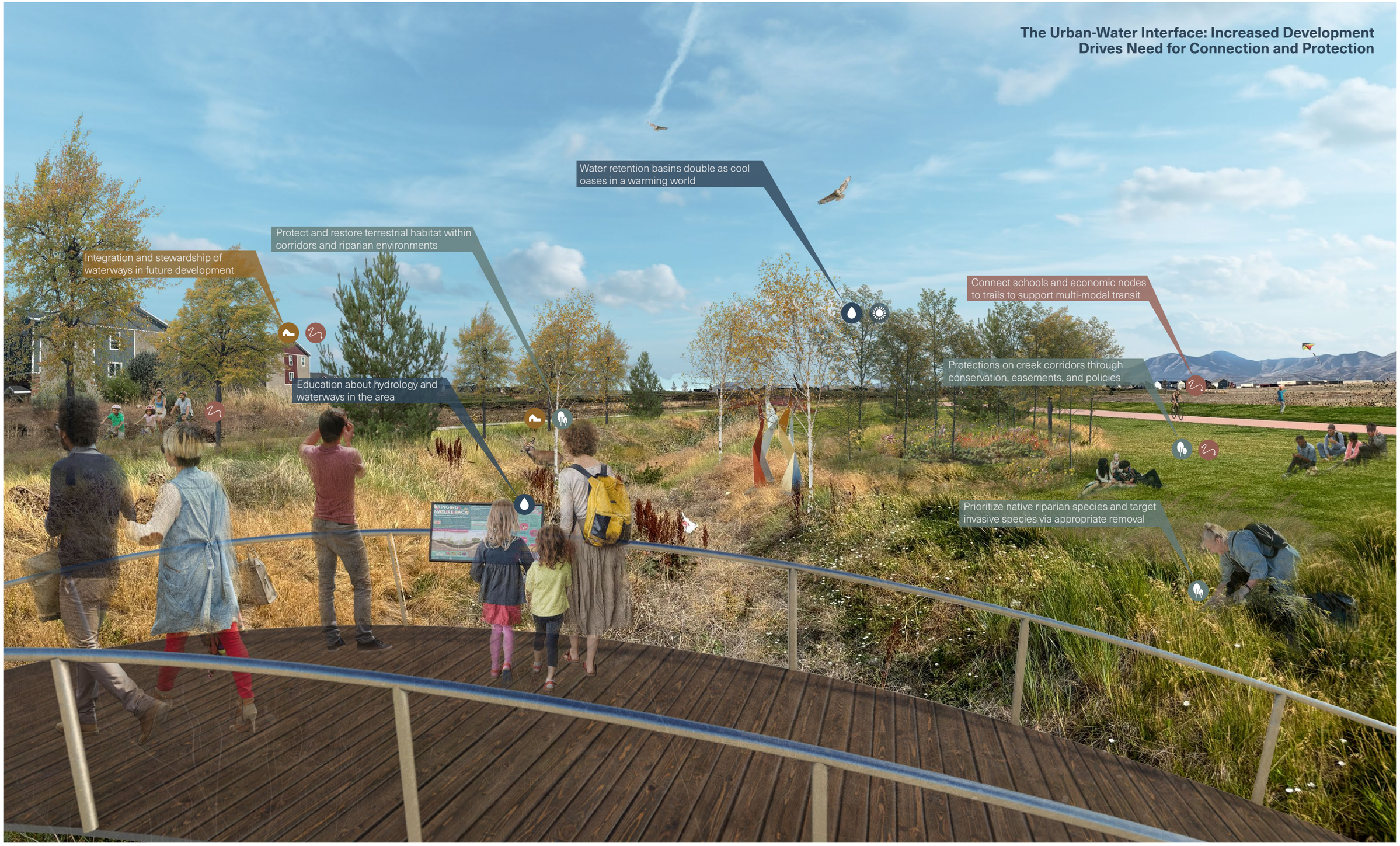


Figure 25: The Urban-Water Interface Vision

ACTION ITEMS

Successful execution of the H2Oquirrh Vision Plan will require a large and concerted effort across multiple local governments and organizations. Implementation of development code changes, additional studies, and environmental protections will necessitate broad buy-in from the communities in the study area.

The following list of action items is broken into Policy, Operations and Education, and Public Capital Investment Projects. It provides government employees, elected officials, nonprofit organizations, and citizens with the tools to move forward. Each action item addresses one or more plan goals, with most supporting at least two goals.

The items are further categorized into short term, medium term, and long term actions. In this context, short-term actions are considered appropriate for immediate implementation, whereas long-term actions may take many years to complete, and may require additional planning and funding. Medium-term actions are considered generally feasible in the next 1-5 years.

The charts may be utilized for decision making and fund-raising in determining the most effective path forward. Inter-community cooperation will be paramount to successful implementation.

REVITALIZE AND EMBRACE THE NATURAL WATER CYCLE

PRIORITIZE PRESERVATION AND ENHANCE OPEN SPACE

PROVIDE ACCESS TO WATERWAY CORRIDORS FOR RECREATION AND CONNECTIVITY

INTEGRATE NATURAL SYSTEMS INTO COMMUNITY DEVELOPMENT

INCREASE RESILIENCY AND CLIMATE ADAPTATION FOR NATURAL AND URBAN CONDITIONS

POLICY

	Action Item	Goal					Priority
		1	2	3	4	5	
County-wide/ Unincorporated	Complete a study of groundwater resources to update the 2002 Salt Lake Valley Groundwater Management Plan.	●					Short Term
	Create incentives for green infrastructure and LID projects.	●			●	●	Medium Term
	Study and implement additional protections for waterways in storm water pollution prevention plans (SWPPP).	●			●	●	Short Term
	Develop a pilot program to test out incentives for retiring water rights for irrigation as a means of reducing over-draft of groundwater resources.	●				●	Medium Term
	Establish policy for canal metering and secondary irrigation water billing to promote water conservation.	●				●	Short Term
	Identify locations for wastewater treatment plants to provide supplemental water to aquifer and collaborate with water resource managers to implement.	●			●	●	Medium Term
	Re-evaluate future land-use planning to specify heavy industrial polluting sources away from sensitive water and riparian resources.	●			●	●	Short Term
	Re-evaluate future land use planning in Primary Recharge Areas to land use types with minimal hardscape development or those with greatest opportunities to implement LID to promote successful groundwater recharge.	●			●	●	Short Term
	Complete surveys of current creek conditions to develop recommendations for site-specific improvements of channel design, setback standards, and vegetation. Establish creek setback standards appropriate for the waterway types and urban to natural transitions.	●	●		●	●	Short Term
	Create a county-wide Greenprint Study to evaluate priority lands for strategic acquisitions of public open space.		●			●	Medium Term
	Complete a county-wide Greenprint Study to identify private parcels with land preservation and water resource value that could be protected through public-private partnership, land deals, land trusts, or acquisition.		●		●	●	Medium Term
	Conduct a visual resources inventory to inform viewshed preservation regulations and acquisition priorities.		●	●	●		Long Term
	Complete a study of appropriate recreation uses/capacity and locations in relation to waterways and environmental resources.	●	●	●		●	Short Term
	Establish a riparian protection zone to protect ecological value along the waterways. Identify appropriate setbacks for each context the waterways flow through and riparian habitat.	●	●		●	●	Short Term
	Create and adopt development requirements that strengthen floodplain protections.	●	●		●	●	Short Term
	Revise development requirments for minimum open space contributions requirements to include specifications for waterway and natural resource type conservation. These requirements will have the goal of limiting open space contributions of turf fields and other low ecological values.				●	●	Short Term
	Create incentives for development to contribute to open space conservation and enhancement along waterways that contribute to significant regional waterway goals.	●	●	●	●		Short Term
	Refer to environmental and water resource mapping in development application review processes to identify avoidance or mitigation requirements. Refer to regional trail opportunities mapping along waterways to identify locations to encourage developer contributions of trail linkages.	●			●		Short Term
	Revise municipal code development requirements to include contributions to water rights, open space contributions, and trails/recreation provision. Update municipal codes and general plans to guide developers on city goals for water management and strategies for development.	●	●	●	●		Long Term
	Promote reduced or phosphorus free fertilizer use to prevent algae blooms.	●				●	Short Term
	Expand the turfgrass replacement program to unincorporated areas of Salt Lake County.	●				●	Medium Term
	Adopt requirements and guides for plant selection within riparian areas.	●			●	●	Short Term
Bluffdale	Create requirements for water rights dedication or options for fee-in-lieu water shares purchase for new developments.	●			●		Medium Term
Copperton	Create requirements for water rights dedication or options for fee-in-lieu water shares purchase for new developments.	●			●		Medium Term
Herriman	Complete a feasibility study of restoring lower Butterfield Creek to its historic alignment.	●	●	●	●	●	Short Term - In Progress
	Collaborate with Salt Lake Community College and Real Salt Lake to create connections to the Provo Reservoir Canal and Juniper Canyon Creek from their campuses.			●	●		Short Term
	Create requirements for water rights dedication or options for fee-in-lieu water shares purchase for new developments.	●			●		Short Term

Riverton	Direct new development on Rose Creek to integrate trails along creek and conserve open space.	●	●		●	●	Short Term
	Complete a feasibility study of restoring lower Butterfield Creek to its historic alignment.	●	●	●	●	●	Short Term - In Progress
	Continue to purchase additional water shares for current and future city needs.	●			●		Short Term - In Progress
West Jordan	Direct new development on Barney's Wash to integrate trails along wash and conserve open space.	●	●		●	●	Short Term
	Identify opportunities to connect residents in the Equity Focus Areas (from WFRC's Wasatch Choice Vision Plan) to Bingham Creek and Barney's Wash.			●	●		Short Term
	Create requirements for water rights dedication or options for fee-in-lieu water shares purchase for new developments.	●			●		Short Term

OPERATIONS AND EDUCATION

	Action Item	Goal 1	2	3	4	5	Priority
County-wide/ Unincorporated Area	Develop resources to assist farmers in reducing irrigation water use and promoting groundwater recharge.	●				●	Short Term
	Create a watershed health dashboard with groundwater, pollution, and runoff information.	●				●	Short Term
	Identify and promote LID best practices best suited to dry climate and groundwater recharge.	●			●	●	Short Term
	Create a model transfer development rights (TDR) toolkit for local use.		●			●	Medium Term
	Eliminate invasive species such as Tamarisk, Russian Olive, and Phragmites within the corridor.	●	●			●	Short Term
	Identify partners and funding opportunities to facillitate the expansion of the Noxious Weed Program into urban areas.	●	●			●	Short Term
	Create noxious weed mitigation guides for homeowners, contractors, and developers to encourage small scale mitigation efforts that supplement county intiatives.	●	●			●	Short Term
	Create a waterway treatment toolkit for parks including waterway access treatment, buffers/setbacks, and visual resources analysis.	●	●	●		●	Short Term
	Establish a cross-jurisdictional stewardship team for the waterways to oversee design, maintenance, education, and programming for the waterway corridors.			●		●	Short Term
	Develop an online comprehensive parks and trails directory to educate and orient people to locations to access water recreation and become educated about the waterways.	●		●		●	Medium Term
	Develop a shared trail maintenance standards toolkit to enhance trail quality across jurisdictions. Create a maintenance standard for winter use of the trails.	●	●	●			Medium Term
	Create wayfinding and interpretive signage standards toolkit to be implemented along the waterway corridors.	●					Medium Term
	Develop a waterway open space management and operations toolkit	●	●		●	●	Short Term
	Identify historic and culturally siginifcant aspects of the waterways to incorporate into wayfinding and design elements along waterways.			●	●		Long Term
	Develop an acceptable drought tolerant native plant species list to be used in new development	●			●	●	Short Term
	Identify partners for offering programs along the waterways such as schools, community centers, or public agencies.	●			●	●	Short Term
	Create a fuel management standard and action plan to mitigate fire risk along the waterways.	●				●	Short Term
	Create open space management plans that direct water and riparian improvement strategies for natural areas including parkland.		●			●	Short Term
	Promote open space conservation and management for federal endangered, threatened, and candidate species present in the area (Yellow Billed Cuckoo, Monarch Butterfly, Canada Lynx, North American Wolverine, and Ute Ladies' Tresses).		●	●		●	Short Term
	Encourage strengthening of local Land Trust organizations for open space conservation efforts.		●				Short Term
	Enforce maintenance and litter clean-up standards within waterway corridors.			●	●		Short Term
	Develop waterway clean-up community volunteerism programs.			●	●		Short Term
	Increase county and municipal staff support for open space/waterway maintenance and restoration projects	●	●	●	●	●	Medium Term
	Create a open space protection and maintenance task force with representatives from each municipality.		●			●	Medium Term

PUBLIC CAPITAL INVESTMENT PROJECTS

	Action Item	Goal 1	2	3	4	5	Priority
County-Wide/ Unincorporated Area	Conduct a feasibility study of piping canals from Beef Hollow Creek to Barney's Wash.	●				●	Short Term
	Plan new parks to close ¼ mile park service gaps within residential areas.		●	●	●		Medium Term
	Implement strategies to improve comfort on trails and in open spaces such as lighting, benches, or wayfinding elements.		●	●	●		Medium Term
	Initiate design and/or construction of WFRC's Active Transportation Plan trails and Bike Lanes.			●	●		Medium Term
	Construct connections and amenities to access the Bonneville Shoreline Trail from each waterway trail.	●		●	●		Medium Term
	Create campgrounds in the Oquirrhs.			●			Medium Term
	Provide accessible play opportunities for children of different abilities in all communities.			●			Short Term
	Infill the trails system with local trail connections to create safe routes from neighborhoods to the waterway corridors.		●	●	●		Short Term
	Complete construction of all currently planned trails and create a subsequent plan to further expand the trail network.		●	●			Short Term
	Create trail connections to TRAX and Frontrunner stations.			●	●		Short Term
	Identify locations for grade separated crossings on waterway trails to safely cross major roads.				●		Short Term
	Formalize canal trails through public-private partnership to improve safety and create north to south connections between the waterways			●	●		Short Term
Bluffdale	Complete the Crump Hollow Trail Extension Project along Rose Creek and continue to improve through open space enhancement and connectivity expansion.	●	●	●			Short Term
	Complete the planned extension of the Mountain View Corridor and Trail into Utah County.			●	●		Short Term
	Construct a grade separated Crossing at Camp Williams Road and Porter Rockwell Boulevard.			●	●		Long Term
	Construct a grade separated crossing at Jordan Narrows Road and 1700 W.			●	●		Long Term
	Construct a grade separated crossing across the Frontrunner tracks at Hidden Valley Middle School.			●	●		Long Term
	Connect 13800 S across the Welby Jacobs Canal.				●		Medium Term
	Develop a public open space with water access facilities and gathering spaces for community and educational events along Rose Creek within the near Market View Center.	●	●	●	●	●	Short Term
Copperton	Construct trailhead amenities for the new Bonneville Shoreline Trail connection through Copperton Park.			●	●		Short Term
	Install safe crossing treatments such as paint, signage, or pedestrian signals to facillitate connections to Copperton Park.			●	●		Short Term
Herriman	Construct a park at the Midas Creek and Copper Creek confluence to serve future residential areas and provide educational opportunities.	●	●	●			Medium Term
	Create pedestrian and bicycle connections to the Butterfield Trailhead Regional Park.			●	●		Medium Term
Riverton							
West Jordan	Connect trails from Barney's Wash to Bingham Creek along the Welby Jacob (Provo Reservoir) Canal.	●		●			Medium Term
	Construct a grade separated crossing at the intersection of Bangerter Highway and Bingham Creek.			●	●		Medium Term

CONCLUSION

Southwest Salt Lake County has a tremendous opportunity to embrace a more sustainable future as its population continues to expand rapidly. Adoption of sustainable development practices to protect waterways and promote aquifer recharge will result in communities that are more vibrant, healthy, connected, resilient, and beautiful.

In the arid climate of Western Utah, the water cycle is not always evident to the eye. This plan aims to provide opportunities for current and future generations to understand and embrace that cycle by making waterways a central and celebrated component of development. A functional water cycle is needed to support a healthy local ecosystem and community. It is therefore crucial that communities work in concert to protect, mend, and maintain the cycle, ensuring reliable and clean water resources for future generations.

Being a cross-jurisdictional and community -wide vision, the plan endeavors to provide a framework for decision-making that serves the interests of a broader vision for community development - one that results in a more connected region and cohesive landscape planning that looks upstream and considers the downstream effects of development, planning, and restoration. This vision plan lays out the possibilities for Southwest Salt Lake County, the opportunities and dangers; water-wise design and the prioritization of the unique and ephemeral waterways of the region are key to a sustainable future. Now what is needed is cooperation, participation, and action.

IMAGE CREDITS

The H2Oquirrh Vision Plan Project Team created and edited all images unless othewise stated below:

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Page 78 A small pond in front of the city of Scottsdale Water Campus holds recycled wastewater, Courtesy of Kate Duffy/Cronkite News

Page 79 Water recycling equipment, Courtesy of Hazen and Sawyer.

A VISION FOR SALT LAKE COUNTY'S SOUTHWEST WATERWAYS