WARM SPRINGS PRESERVE

Vision Plan

March 2023

Warm Springs Preserve offers a unique opportunity for large-scale, community-supported creek restoration and passive recreation near the confluence of the Big Wood River.

Proposed Design Vision to include: preserved fairway lawn, enhanced floodplain and restored landscape

PROJECT PARTNERS

CITY OF KETCHUM
191 5th Street West
Ketchum, ID 83340
208.726.3841
https://www.ketchumidaho.org/

WOOD RIVER LAND TRUST
119 E Bullion St
Hailey, ID 83333
208.788.3947
woodriverlandtrust.org

FRIENDS OF WARM SPRINGS PRESERVE

CONSULTANT TEAM

SUPERBLOOM
Landscape Architecture
Community & Regional Planning

23 Lincoln Street, Suite 200
Denver, Colorado 80203
.720.310.0255
superbloom.net

RIO APPLIED SCIENCE & ENGINEERING
Applied Science & Engineering

3380 West Americana Terrace, Suite 390
Boise, ID 83706
208.559.4615
www.rioase.com

ECOSYSTEM SCIENCES
Science, Design & Planning

202 N 9th Street, Suite 400
Boise, ID 83702
208.383.0226
ecosystemsciences.com

WARM SPRINGS PRESERVE

This report is a summary of the community engagement process and vision plan developed for the future of Warm Springs Preserve.

Existing studies, new analysis and extensive public meetings lead to this vision plan that focuses on the connectivity, accessibility, and ecological restoration of the Preserve.

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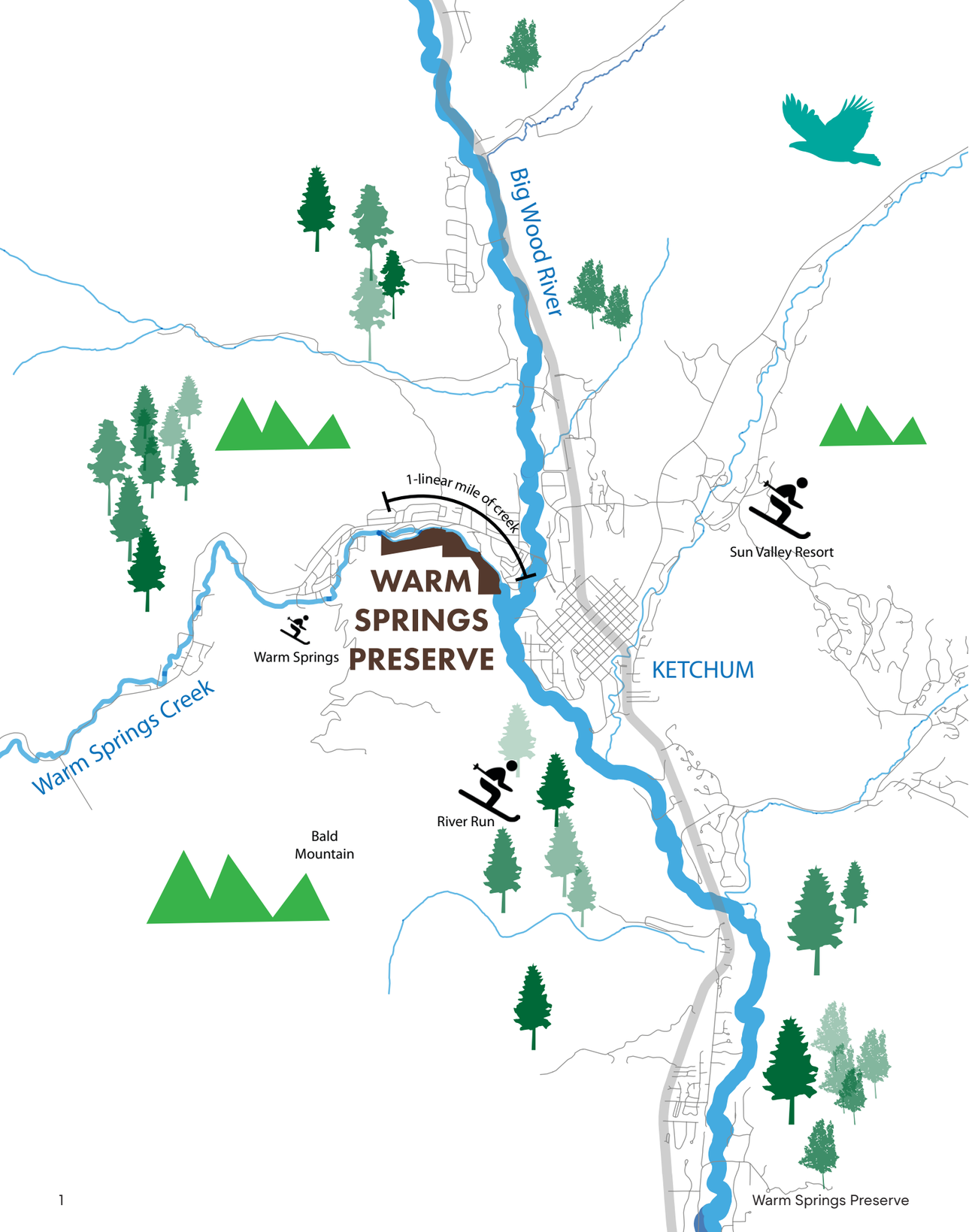


Introduction

Warm Springs Preserve is an Essential Community Gathering Space for the City of Ketchum and the Wood River Valley

At the base of Bald Mountain, along the confluence of the Big Wood River and Warm Springs Creek, Warm Springs Preserve is a cherished community gathering space. This preserve provides opportunities to exercise and play all year long for locals and their furry companions.

Thanks to overwhelming community support, in 2022 the City of Ketchum purchased Warm Springs Preserve, now a 65-acre protected open space for residents and visitors of Ketchum, Idaho in perpetuity. The Preserve, a former golf course, was slated for housing development and used informally as a dog park. To ensure that the Preserve was available for community use, the City of Ketchum, the Wood River Land Trust, Spur Community Foundation, and over 900 community members donated funds to purchase the property. The acquisition also makes an additional 15-acres of beautiful riparian woodlands along the southern floodplain of Warm Springs Creek just above the confluence of the Big Wood River available to the Ketchum community.

The Preserve is used by a variety of users, from dog walking, disc golf players, nordic skiing and more. Due to the historic use of the property, the City committed to the community to restore the environment where possible, to diversify access and enhance basic facilities. To enhance this beloved landscape, the vision plans take careful consideration of the community's dreams for the Preserve, and synthesizes those ideas into an inclusive, accessible and restorative place to gather.

How will we measure success?

Stream Restoration

Increase acres of floodplain connectivity, #/size/depth of pools, observed species richness (wildlife + vegetation)

Water Efficiency

Reduce managed water consumption (target reduction % or gal/acre)

Hazard + Flood Safety

Reduce frequency and extent of flooding in residential areas; reduce water speed, and bank erosion

Visitor Experience

Increase access, usage, and activity types (access for all)

Aerial Image Source: Google Maps 2023

The Story of Warm Springs Preserve

Ecological Context

Warm Springs Preserve is near the mouth of Warm Springs Canyon along Warm Springs Creek, about two miles west of Ketchum halfway between downtown and the base of the Warm Springs ski lifts. The ranch property is south of Warm Springs Road and is bisected by Warm Springs Creek. Warm Springs Creek is a major tributary of the Big Wood River which flows into the Snake River within the Columbia Basin. Warm Springs Creek flows from the Smoky Mountain Range and is part of a transitional zone that separates the northern Rocky Mountains from the Basin and Range physio-graphic provinces. Elevations within the ranch range from 5,800 to 6,200 feet above sea level.

Warm Springs Creek has long meandered through the narrow, high-elevation river valley and over the years has changed its course due to flooding and past waterway developments. It has been stabilized into its present channel with some rock rip-rap and fill against residential development areas. In the southeast portion of the ranch, the old stream channel meanders through developed land, including the old golf course where the floodplain has been reshaped and filled. The southeast portion of the ranch also contains topsoil and gravel that have been removed from the stream channel by past landowners. The golf course was formerly forested ground and was built against a steep, forested, north-facing side of Bald Mountain. The densely forested hillsides are populated by Douglas fir trees with a dense understory of shrubs. Opening onto the terraces between the mountain slope and the floodplain are areas of sagebrush and grasses, many of which have been replaced by turf-grass or overrun by invasive weeds. Soils on the property range from sandy and gravelly alluvium on the floodplain to loamy and humic loamy residual and colluvial on the forested Bald Mountain slopes.

* Text from the Warm Springs Historic Context Narrative Claudia T. Walsworth | Walsworth and Associates, 2009









Superbloom

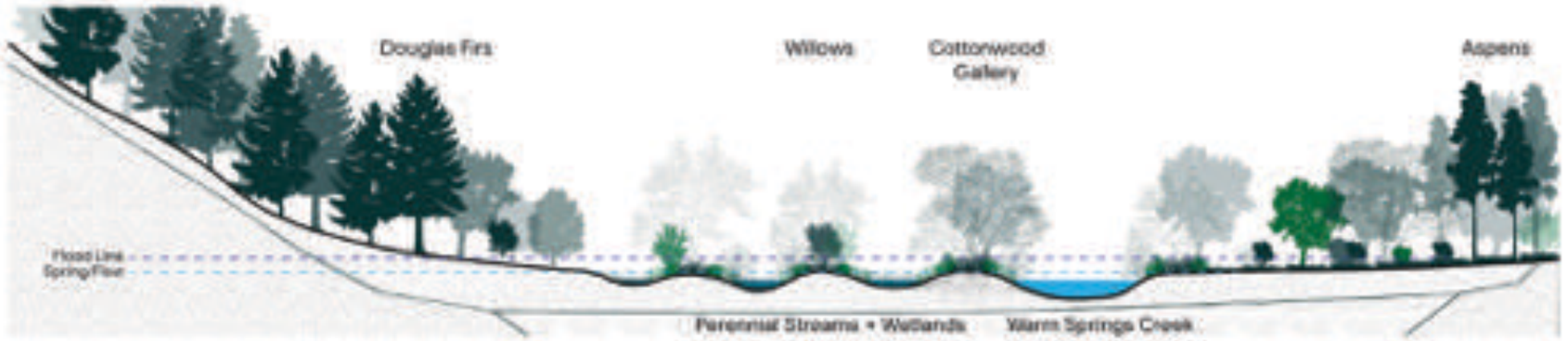
The Story of Warm Springs

Historic Timeline

Timeline

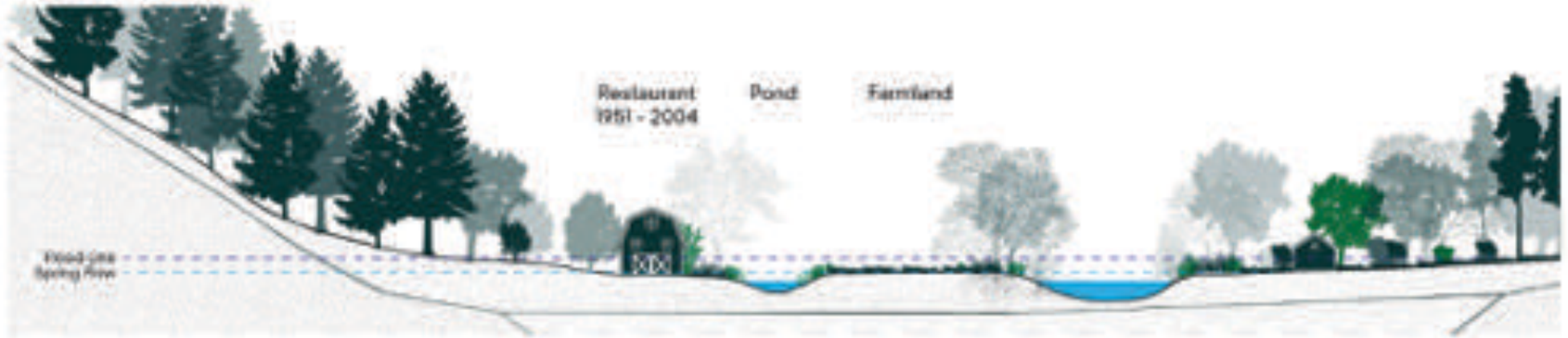
Alluvial Floodplain
Pre-1800

In this condition, the area where Warm Springs Preserve currently exists acted as an active floodplain containing multiple meandering streams and floodable areas.



Farm + Restaurant
1800 - 1950s

As people moved to the area and used the land for other purposes such as farming and recreation, the channel was confined and the floodplain was largely filled in.



Golf Course
1960 - 2009

Intensive development on the floodplain has limited the creek's natural ability to move and flood. The stream has become channelized with even extreme floods focused within the banks increasing the risk of bank erosion, channel incision, and downstream flooding.

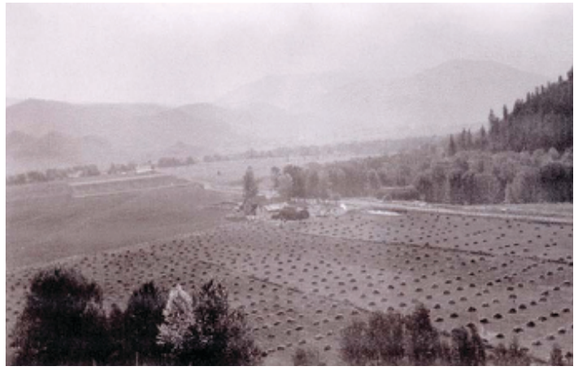
Future / Post-Restoration

The project would address many of the past impacts by restoring a natural stream and floodplain while maintaining access for people and their pets primarily in the upland areas. Creek restoration would add in-stream complexity and create side-channels for aquatic habitat and riparian function. The middle terrace would be outside of the new floodplain with native meadow plant species. The upper fairway would remain largely turf-grass.

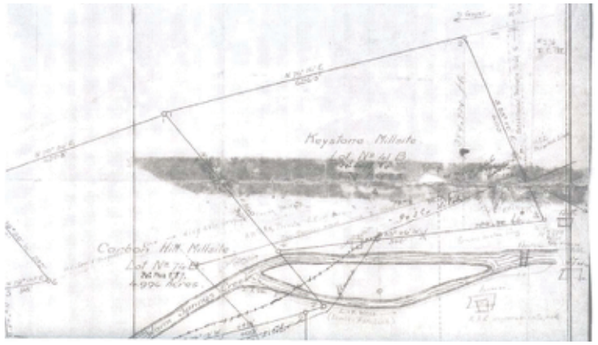
Warm Springs Preserve History

The story of Warm Springs Ranch is embedded in Western frontier development. The property, originally part of a desert land entry and homestead, was part of a historic working ranch that evolved into a resort. The history of the ranch coincides with the socio-economic growth of the upper Wood River Valley that began during the 1880s over 100 years ago. Although it was not documented through archaeological field finds, it is highly likely that the Warm Springs canyon, including what is now ranch property, was inhabited by the native people. The Wood River region is part of the Great Basin culture area that was the ancestral homeland of the Northern Shoshone for thousands of years. The travel corridor that is now state Highway 75 was originally a migration route for both game animals and humans.

* Text from the Warm Springs Historic Context Narrative Claudia T. Walsworth | Walsworth and Associates, 2009



Oscar Smith Farnlun's Warm Springs ranch circa 1920, courtesy of Petra Morrison



Properties of H.C. Lewis and Mary Guyer, hand-drawn by Isaac Lewis courtesy Fuller 1908. Map Source: Palmer Lewis Collection, Ketchum-Sun Valley Historical Society.

Aerial Image from 1943 showing secondary channels and pre-disturbance terracing. Courtesy of Blaine County GIS Land Use Information Map

The August Farnlund Home on Warm Springs Wagon Road. Source: Blaine County Historical Museum and Photo #F-05391 The Community Library Ketchum

The Guyer Hot Springs Hotel May 1891. Photograph # 66-74-30 Idaho State Historical Society.

Warm Springs Ranch Inn, 1956. Photograph #F-05875 Simpson Collection. Community Library's Regional History Department, Ketchum.

Advertisement in a 1973 Ketchum Tomorrow for the Warm Springs Ranch Inn. Ketchum Tomorrow newspaper files. Community Library's Regional History Department, Ketchum.

Saving the Preserve

The purchase of Warm Springs Preserve was the culmination of community and City fundraising effort, spearheaded by the Friends of Warm Springs Preserve Committee. Over 950 donors contributed between $7 and $1 million to raise a total of $9.5 million for the Preserve. In April 2022, the City paid $8 million to purchase the property from Bob Brennan and put $1 million in reserve for repairs to the extremely outdated irrigation system.

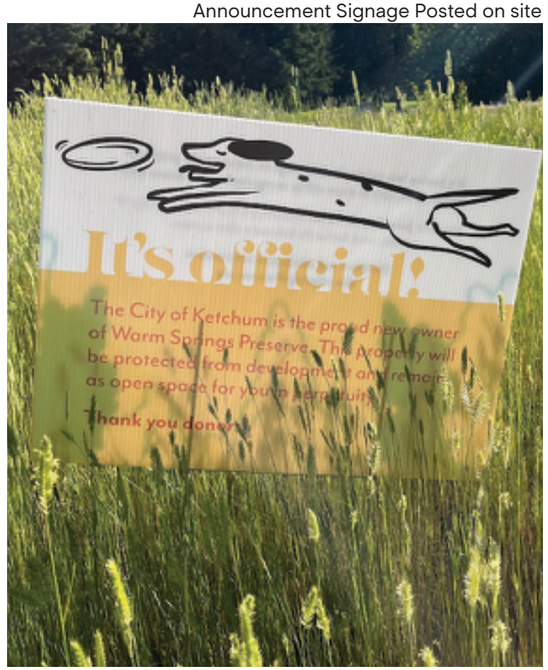
950+
donors

$9.5M+
donations raised thus far

$7–$1M
donation value range

Celebration event photos courtesy of the City of Ketchum, June 2022

Announcement Signage Posted on site



Community commitments made during the acquisition and funding of the Preserve:

Warranty Deed Requirements:

- (1) or more 10-ft w pedestrian trail for walking/skiing
- (1) pump house
- (1) public restroom
- (1) storage building (1000sf max)
- Floodplain restoration
- (24) parking stalls

Community Commitments:

- New irrigation system that reduces water use
- Flood mitigation
- Restoration of riparian zone & floodplain adjacent to Warm Springs Creek
- Creek & habitat restoration
- Passive park for open space in perpetuity
- Off-leash dog access
- Informal activities (disc golf, dog walking, etc.)
- Informal gathering space (picnic tables, etc.)
- Nordic trails
- Public restroom

The Story of Warm Springs

Existing Site Observations

A

A major issue for the Preserve and its maintenance is the inefficient and outdated irrigation system that uses significant amounts of water.

B

With a mile of continuous stream frontage along Warm Springs Creek, there is a major opportunity for stream, floodplain, and riparian restoration that would improve habitat and biodiversity.

C

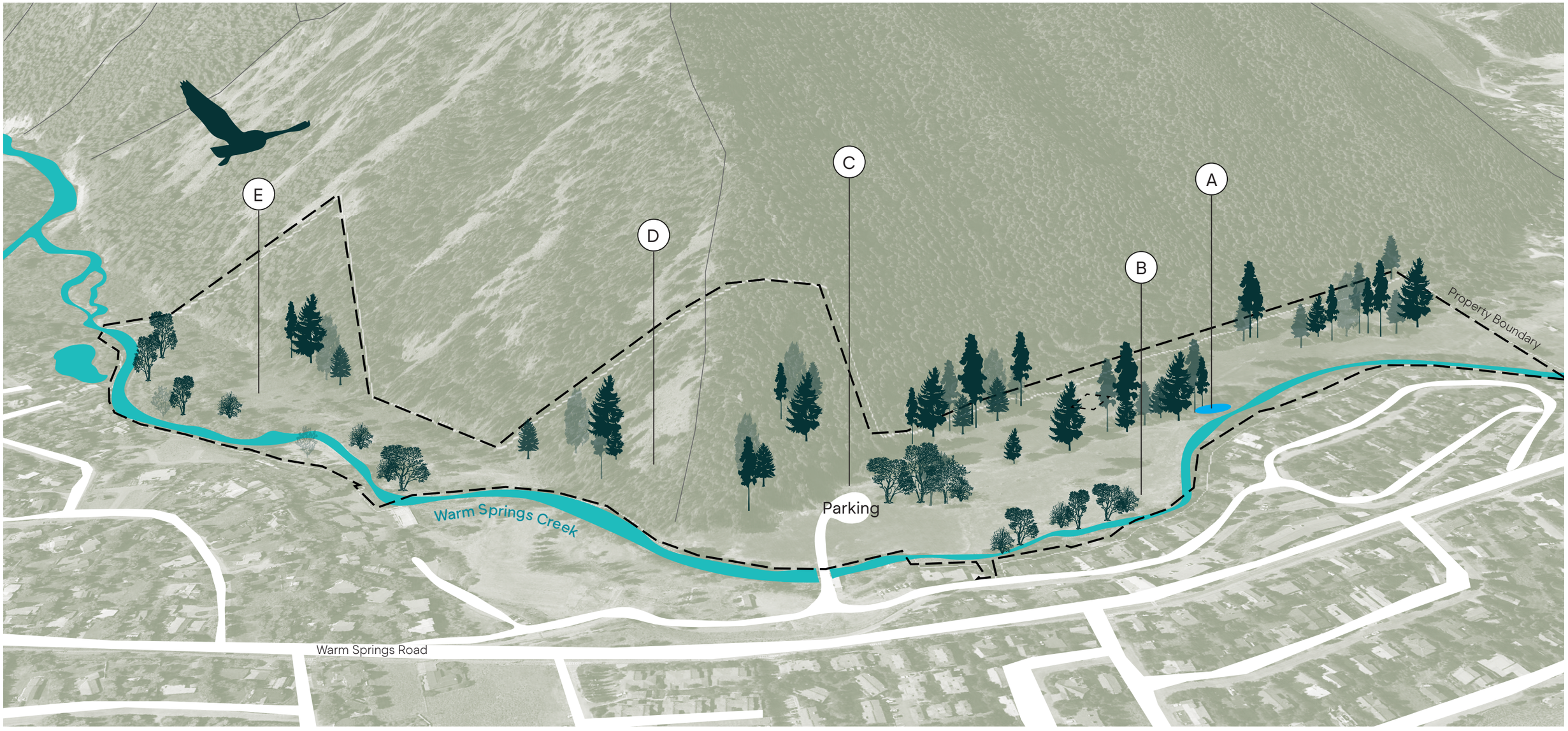
The gravel drive requires expensive annual maintenance and the increased use of the Preserve demands visitor amenities such as toilets, bike racks and new seating.

D

The Preserve has a single access point and limited trails or routes for people with disabilities. Parking and trail enhancements could provide ADA facilities, designated parking and pathways.

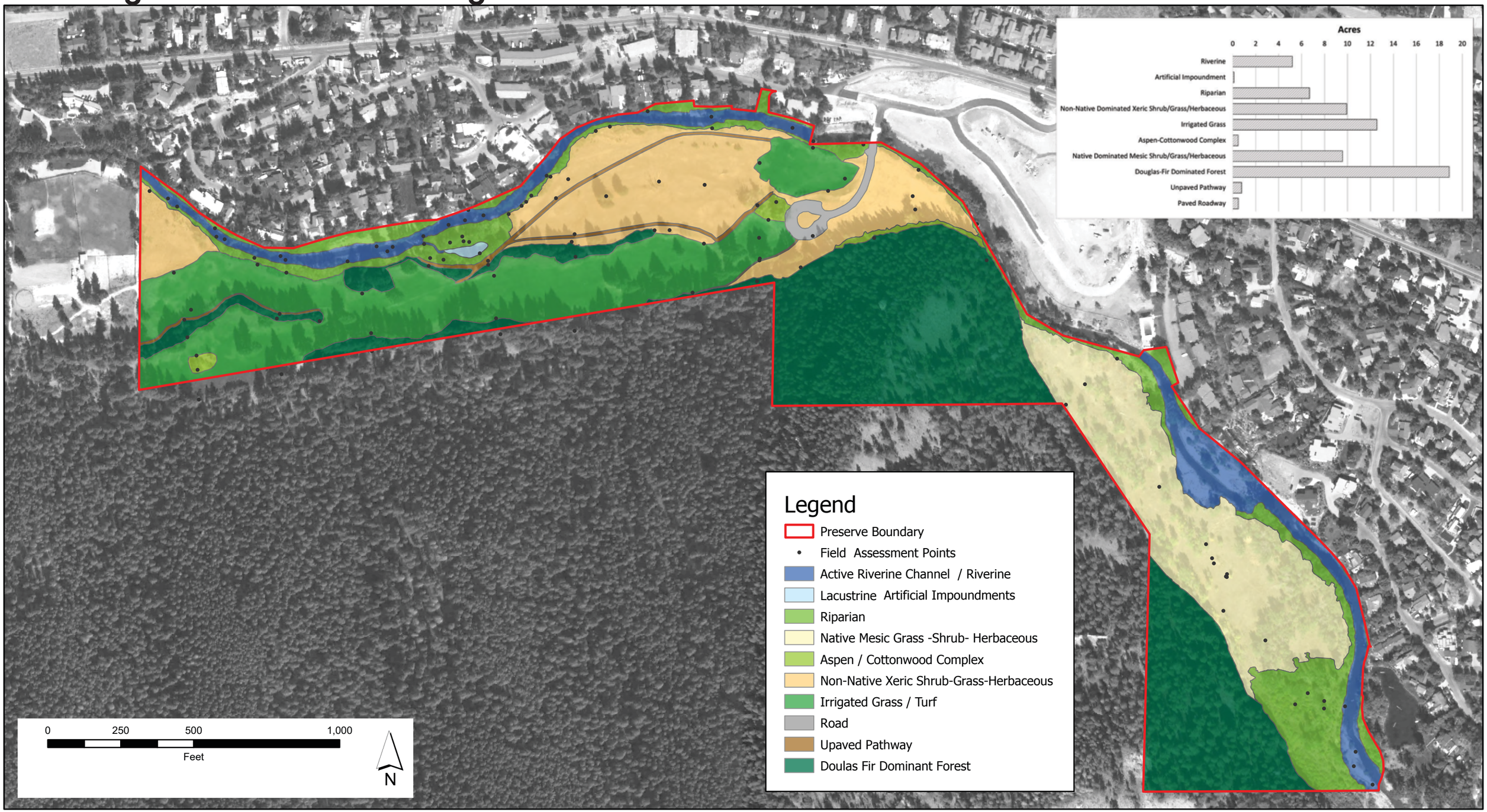
E

There are many opportunities to protect and enhance existing ecosystems, especially in the southern floodplain extension to the site. This area of the site is currently difficult to access.



The Story of Warm Springs

Existing Site Conditions: Ecological Units

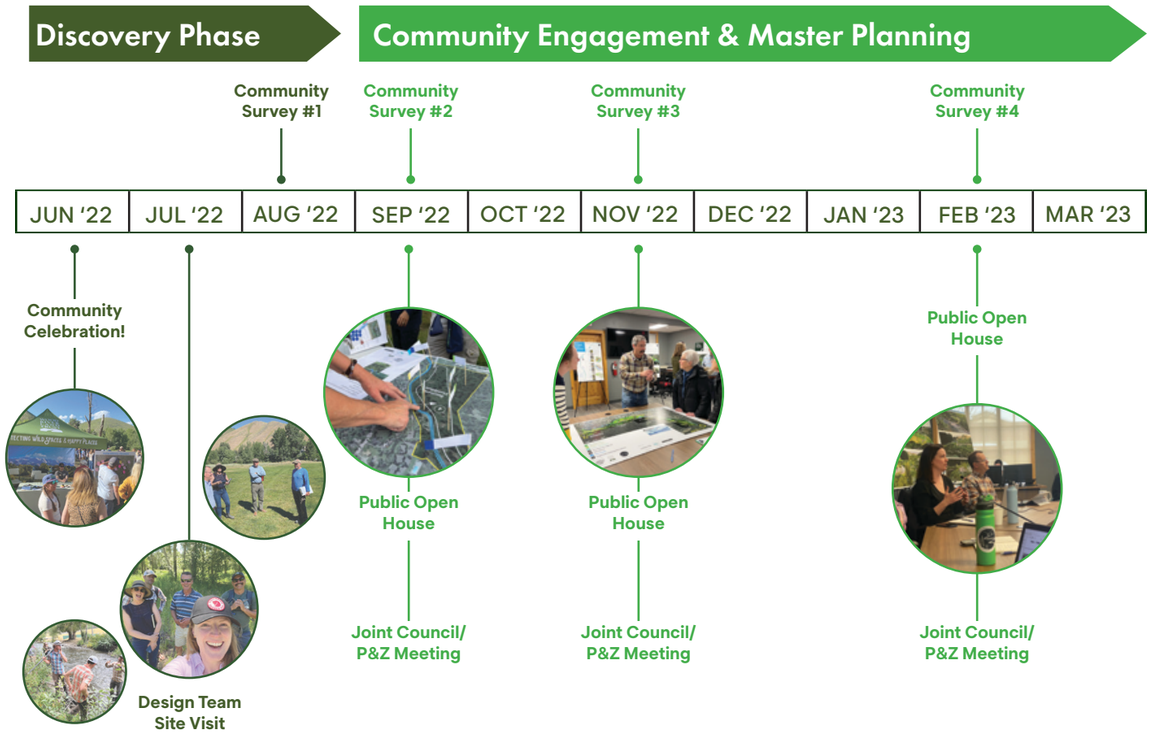


Community Engagement

The master plan vision was developed based in a deep understanding of the connections between ecological systems and human communities. Between July 2022 and February 2023 the community participated in a range of virtual and in-person events and workshops to discuss and give input on the future of the Preserve.

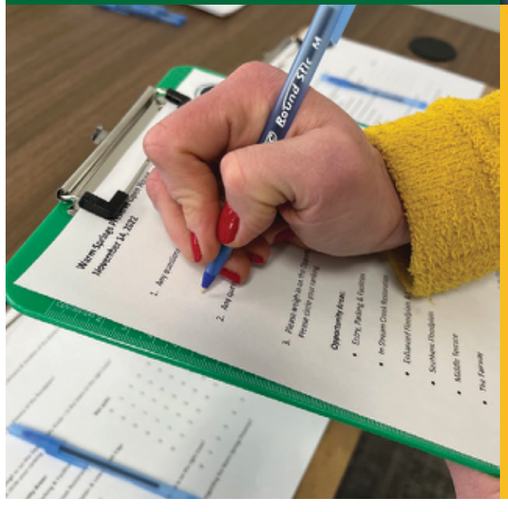
The project was informed from two primary perspectives that were synthesized into design concept and are merged into the final master plan:

1. A scientific analysis to determine what is appropriate for the site, and
2. Stakeholder outreach to determine the community desires for the site.



10
public meetings
(from Sept. - Feb.)

200+
estimated average daily visitors today



400
online + in-person survey results collected

Public Meeting Photos

Dotocracy Poster at Public Open House, September 2022

Public Open House, September 2022

Public Open House, November 2022

Public Open House, February 2023

Public Open House, November 2022

Public Meeting, February 2023

Public Open House, September 2022

Public Open House, September 2022

Public Open House, September 2022

Design Vision

A space that enhances both the natural habitat of the preserve and experience for visitors and their furry companions.

The proposed vision for Warm Springs Preserve builds upon the substantial community comments, feedback and support. The conceptual design envisions a rich matrix of experiential spaces and dynamic ecologies that span the unique topographies and micro-climates throughout the Preserve. Project Partners and Design Team developed six principles that describe the goals, values and themes universally important to the community and against which we tested design scenarios.

The final design includes ample off-leash dog access, creek and habitat restoration, new water-conscious irrigation system, walking trails, informal gatherings and activities, Nordic ski and snowshoe trails, and public restrooms. Development, organized sports and reserved private or commercial events would be restricted.

Project Principles

Create a Preserve that is Connected and Accessible to All.

Design for Success over Time

Support All-Season Multi-Functional Use

Demonstrate Leadership through egeneration of Healthy Ecosystems for People, Plants & Animals

Restore the Creek and Floodplain

Celebrate & Educate about the Past, Present and Future of the Preserve

Design Vision

Overall Plan

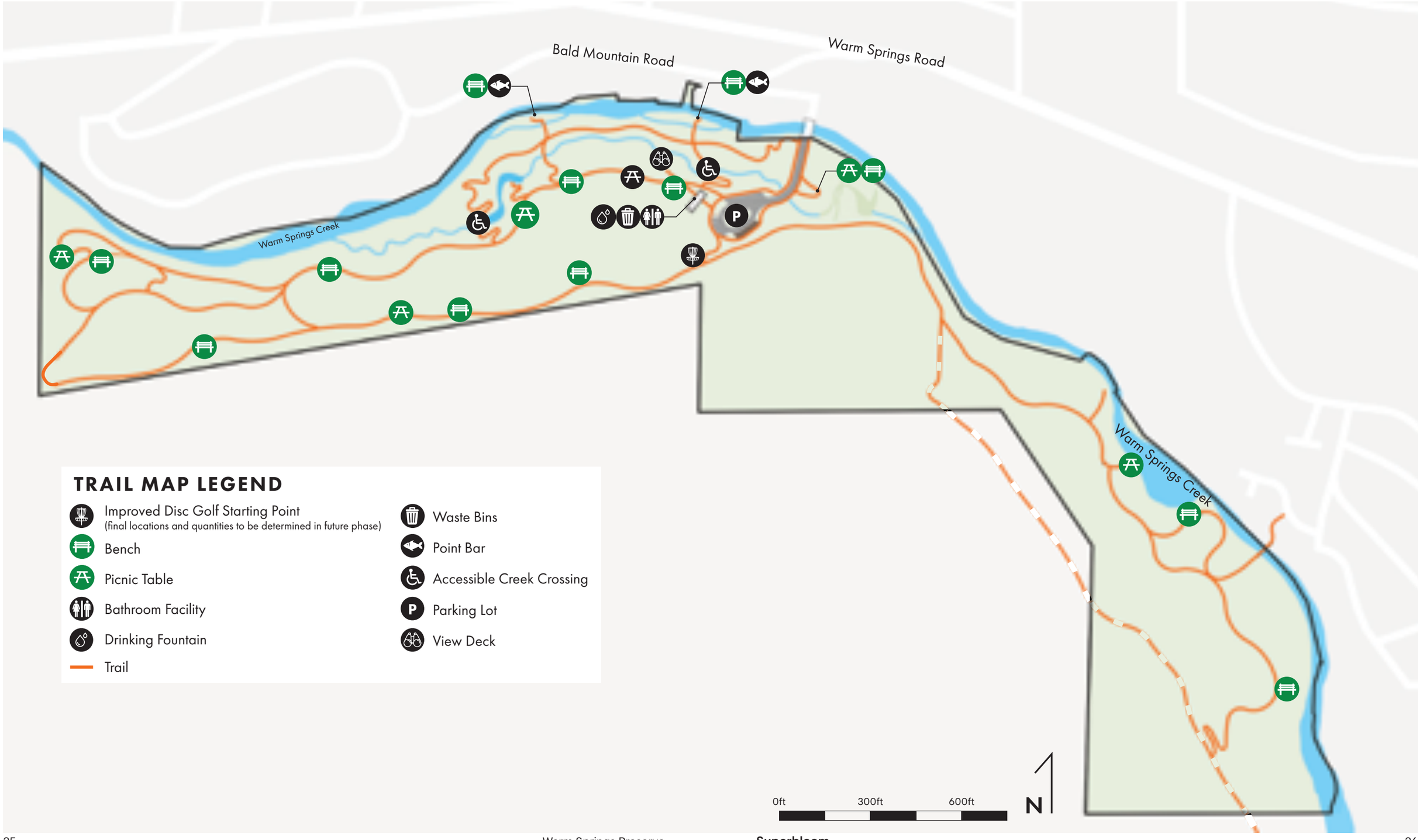
Legend

1. **Fairway** - 9 acres
2. **Middle Terrace** - 4 acres
3. **Lower Creek Edge** - 9 acres
4. **Southern Floodplain** - 14.5 acres
5. **The Woods –** 22 acres
6. **The Creek** - 5.5 acres
7. **Improved Parking & Facilities** - 1 acre

- ADA Trails & Parking
- Bench
- Picnic Table
- Creek Access
- Public Toilets
- Water & Pet Fountain
- Disc Golf Start

Design Vision

Proposed Trail Network

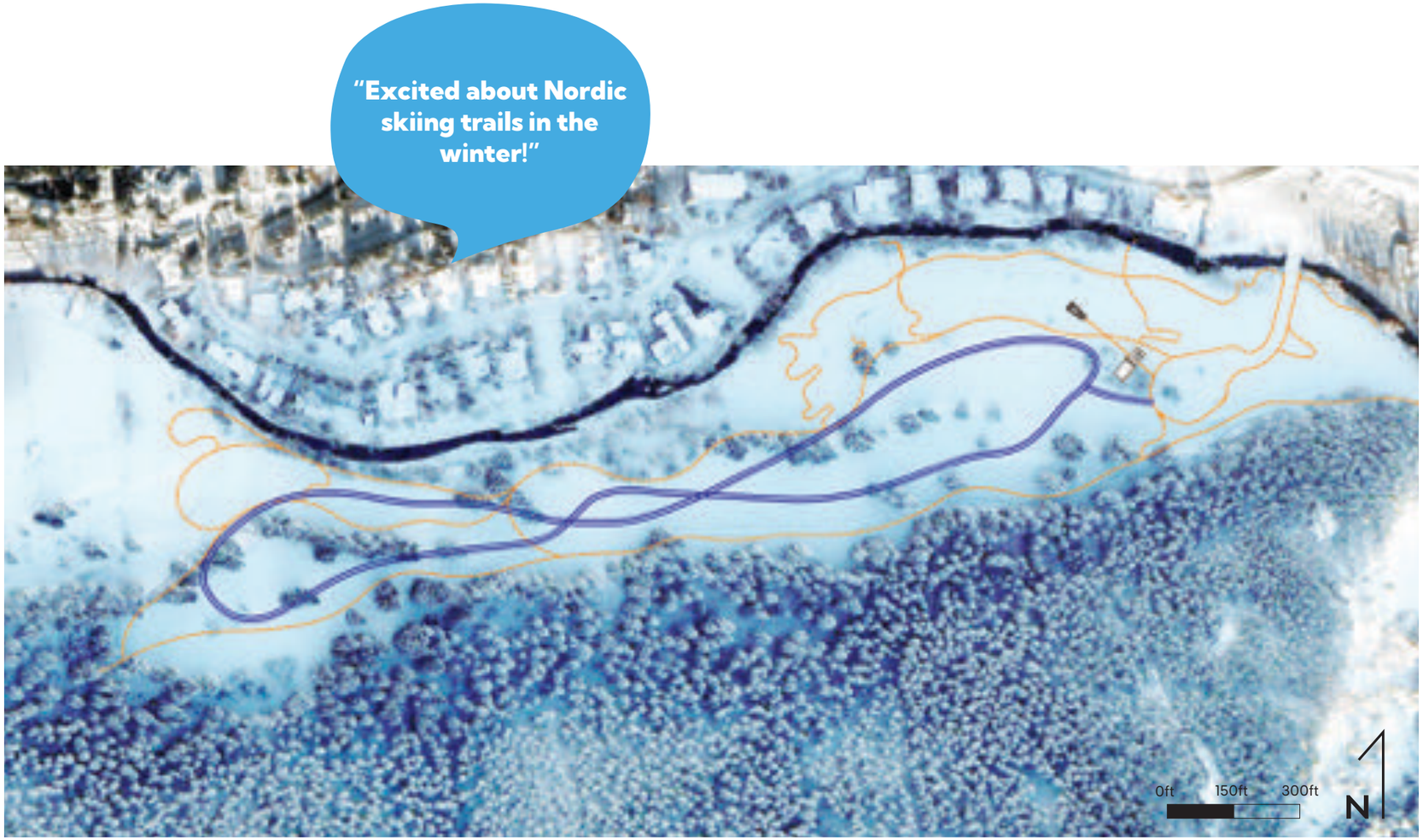


TRAIL MAP LEGEND

- Improved Disc Golf Starting Point (final locations and quantities to be determined in future phase)
- Bench
- Picnic Table
- Bathroom Facility
- Drinking Fountain
- Trail
- Waste Bins
- Point Bar
- Accessible Creek Crossing
- Parking Lot
- View Deck

Design Vision

Proposed Winter Trail Network



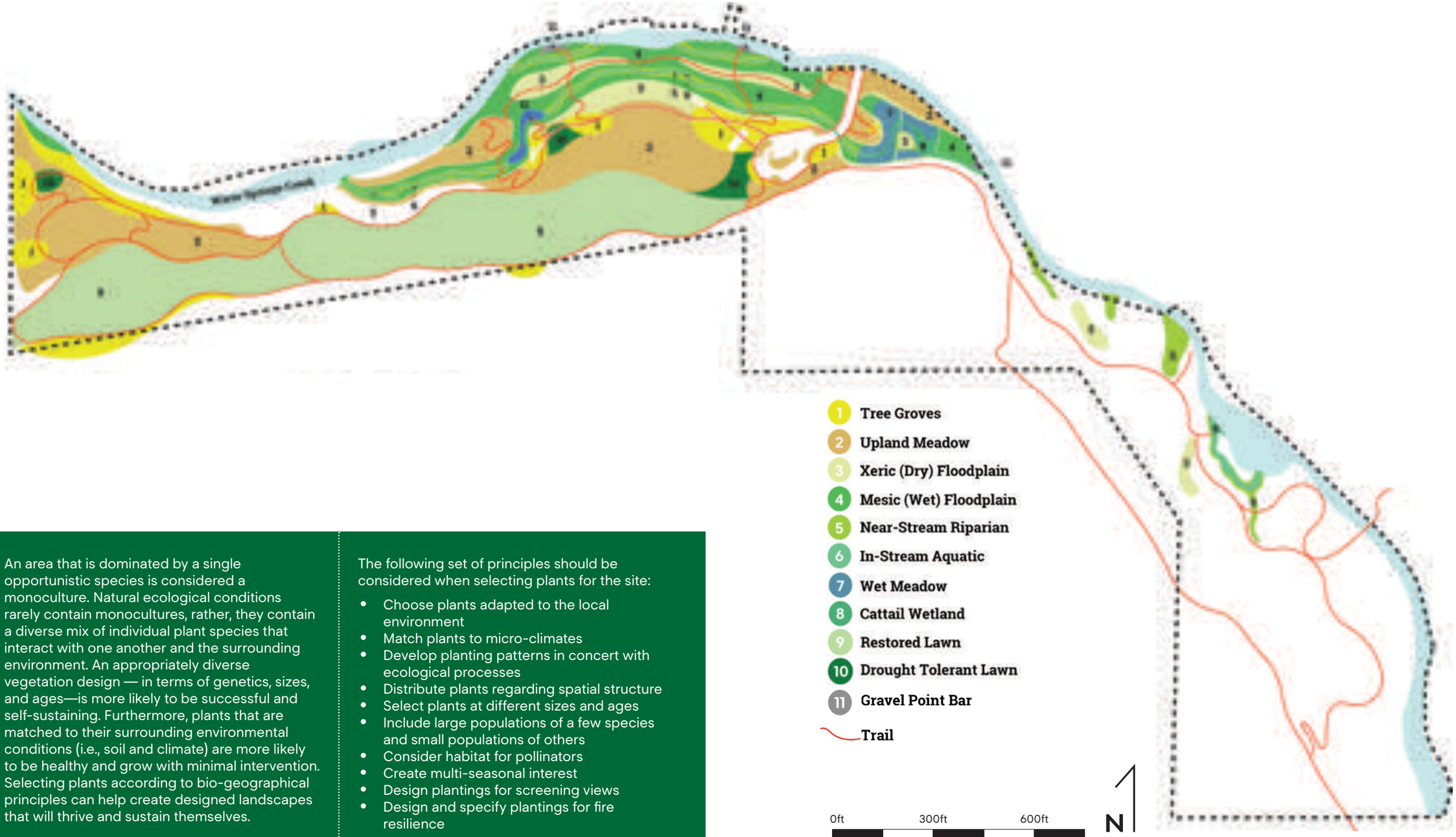
Multi-Use Winter Trails Classic Cross Country Track

Cross Country Trails, 2023

Cross Country Trails, 2023

Planting Character Zones: Plan

The proposed planting design would introduce a variety of native plant communities especially in the restored areas along the creek.



An area that is dominated by a single opportunistic species is considered a monoculture. Natural ecological conditions rarely contain monocultures, rather, they contain a diverse mix of individual plant species that interact with one another and the surrounding environment. An appropriately diverse vegetation design — in terms of genetics, sizes, and ages—is more likely to be successful and self-sustaining. Furthermore, plants that are matched to their surrounding environmental conditions (i.e., soil and climate) are more likely to be healthy and grow with minimal intervention. Selecting plants according to bio-geographical principles can help create designed landscapes that will thrive and sustain themselves.

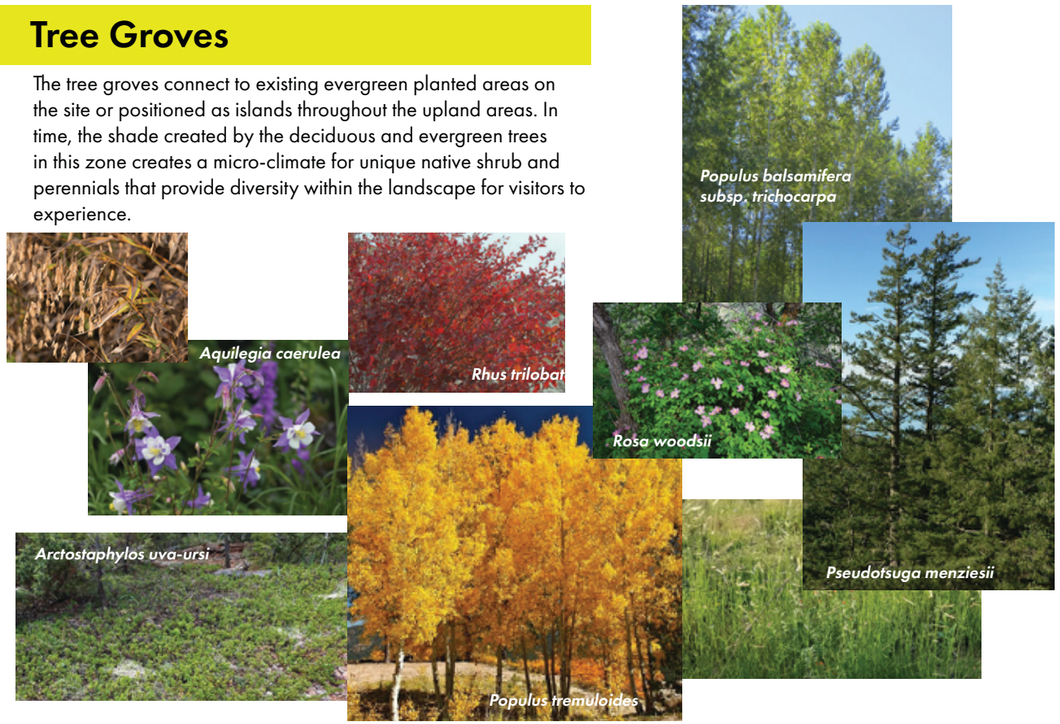
The following set of principles should be considered when selecting plants for the site:

- Choose plants adapted to the local environment
- Match plants to micro-climates
- Develop planting patterns in concert with ecological processes
- Distribute plants regarding spatial structure
- Select plants at different sizes and ages
- Include large populations of a few species and small populations of others
- Consider habitat for pollinators
- Create multi-seasonal interest
- Design plantings for screening views
- Design and specify plantings for fire resilience

Planting Character Zones: Palettes

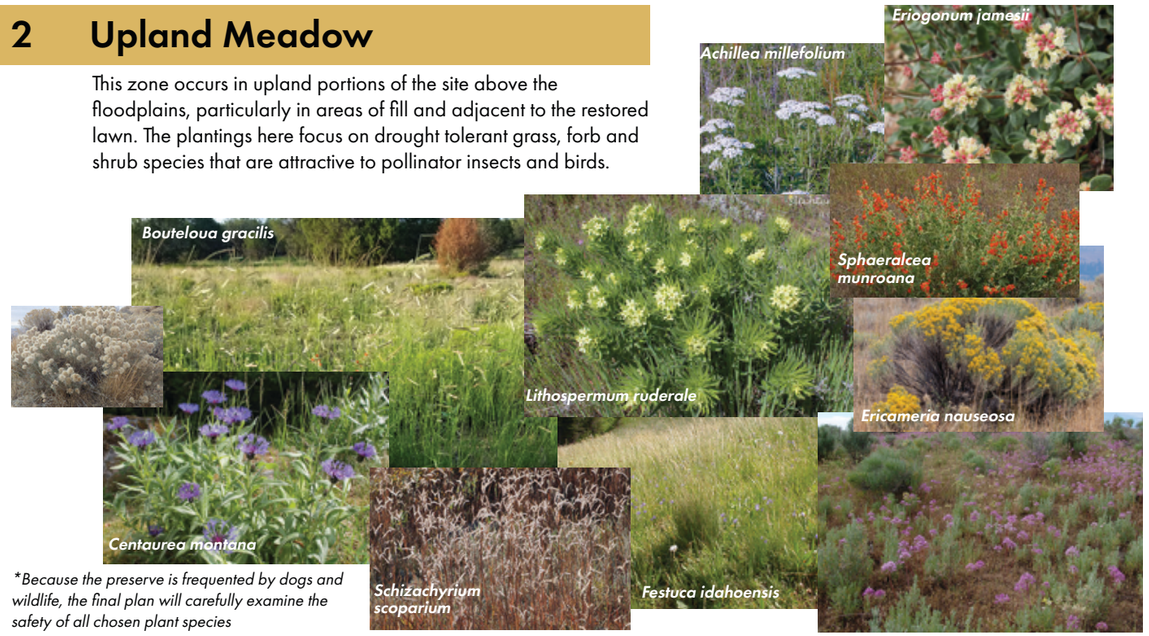
1 Tree Groves

The tree groves connect to existing evergreen planted areas on the site or positioned as islands throughout the upland areas. In time, the shade created by the deciduous and evergreen trees in this zone creates a micro-climate for unique native shrub and perennials that provide diversity within the landscape for visitors to experience.



2 Upland Meadow

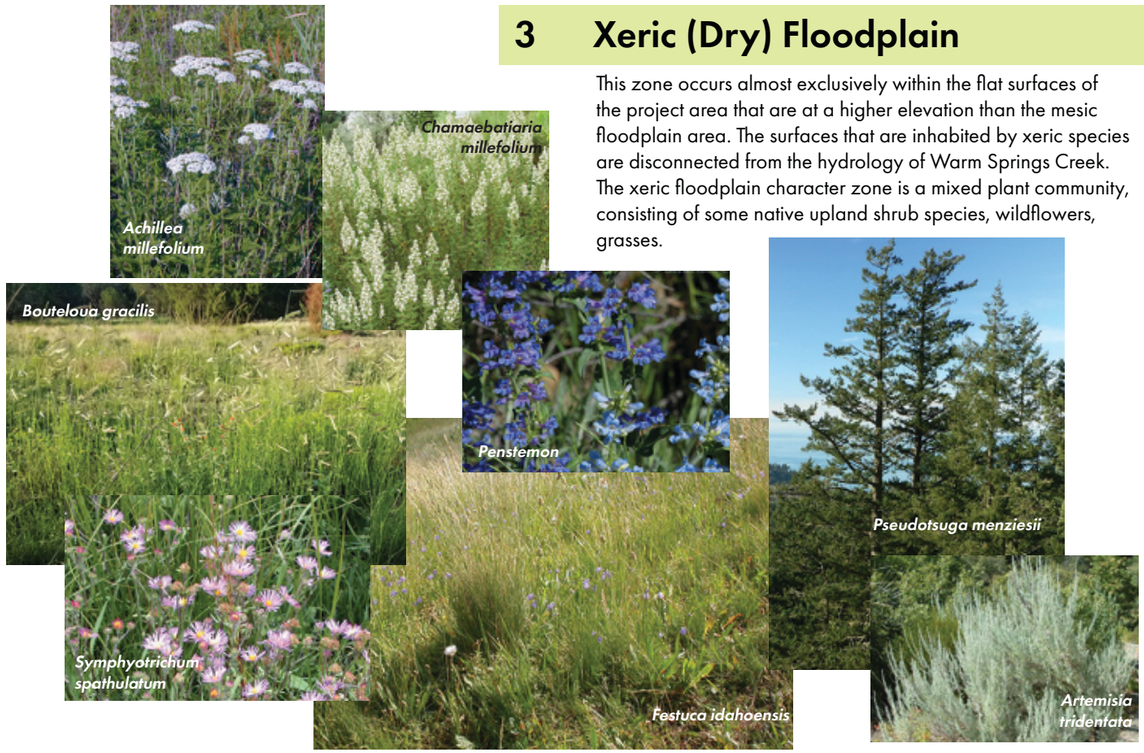
This zone occurs in upland portions of the site above the floodplains, particularly in areas of fill and adjacent to the restored lawn. The plantings here focus on drought tolerant grass, forb and shrub species that are attractive to pollinator insects and birds.



*Because the preserve is frequented by dogs and wildlife, the final plan will carefully examine the safety of all chosen plant species

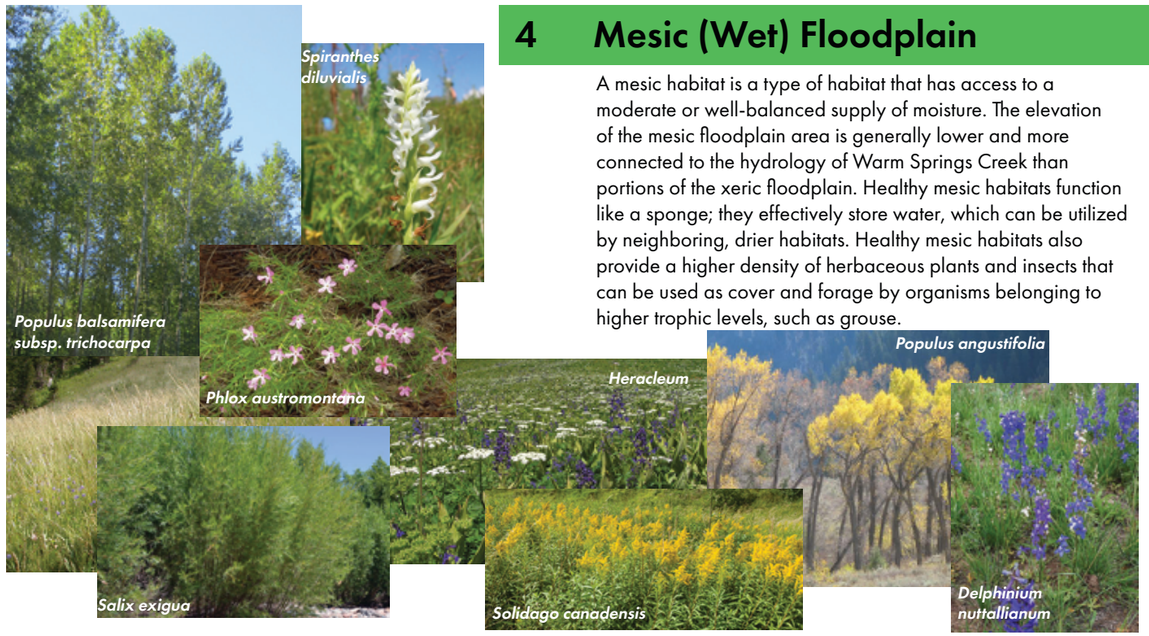
3 Xeric (Dry) Floodplain

This zone occurs almost exclusively within the flat surfaces of the project area that are at a higher elevation than the mesic floodplain area. The surfaces that are inhabited by xeric species are disconnected from the hydrology of Warm Springs Creek. The xeric floodplain character zone is a mixed plant community, consisting of some native upland shrub species, wildflowers, grasses.



4 Mesic (Wet) Floodplain

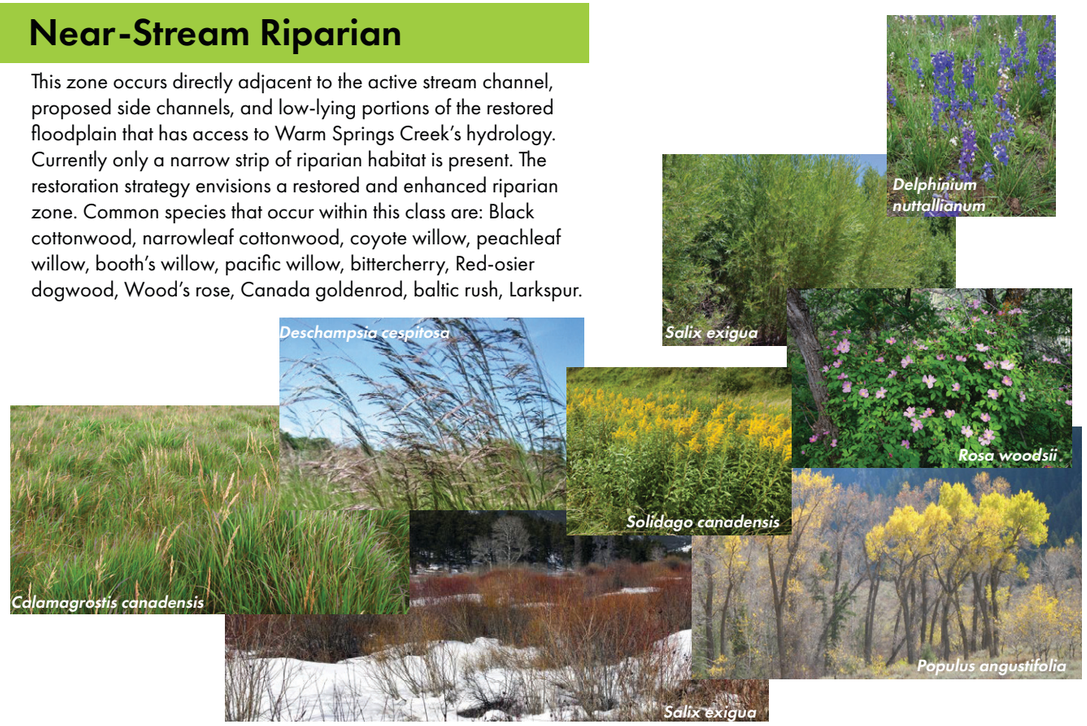
A mesic habitat is a type of habitat that has access to a moderate or well-balanced supply of moisture. The elevation of the mesic floodplain area is generally lower and more connected to the hydrology of Warm Springs Creek than portions of the xeric floodplain. Healthy mesic habitats function like a sponge; they effectively store water, which can be utilized by neighboring, drier habitats. Healthy mesic habitats also provide a higher density of herbaceous plants and insects that can be used as cover and forage by organisms belonging to higher trophic levels, such as grouse.



Planting Character Zones

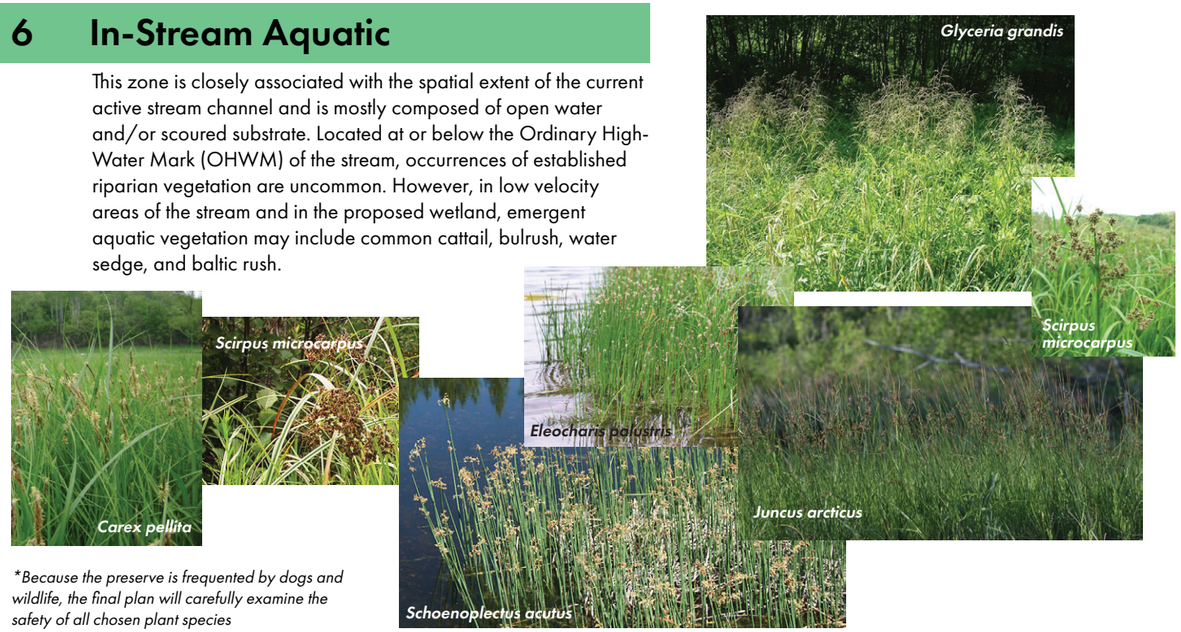
5 Near-Stream Riparian

This zone occurs directly adjacent to the active stream channel, proposed side channels, and low-lying portions of the restored floodplain that has access to Warm Springs Creek's hydrology. Currently only a narrow strip of riparian habitat is present. The restoration strategy envisions a restored and enhanced riparian zone. Common species that occur within this class are: Black cottonwood, narrowleaf cottonwood, coyote willow, peachleaf willow, booth's willow, pacific willow, bittercherry, Red-osier dogwood, Wood's rose, Canada goldenrod, baltic rush, Larkspur.



6 In-Stream Aquatic

This zone is closely associated with the spatial extent of the current active stream channel and is mostly composed of open water and/or scoured substrate. Located at or below the Ordinary High-Water Mark (OHWM) of the stream, occurrences of established riparian vegetation are uncommon. However, in low velocity areas of the stream and in the proposed wetland, emergent aquatic vegetation may include common cattail, bulrush, water sedge, and baltic rush.



*Because the preserve is frequented by dogs and wildlife, the final plan will carefully examine the safety of all chosen plant species

Careful plant selection and harvesting of native seed from the site itself will provide the optimal conditions for success in a dynamic landscape and changing world.

Design Vision

Planting Character Zones Section

This is a conceptual section cut through of the different proposed plant character zones, and some examples of native animals that thrive in these habitats.

Monarch Butterfly

Osprey

Blue Heron

Moose

Whitetail Deer

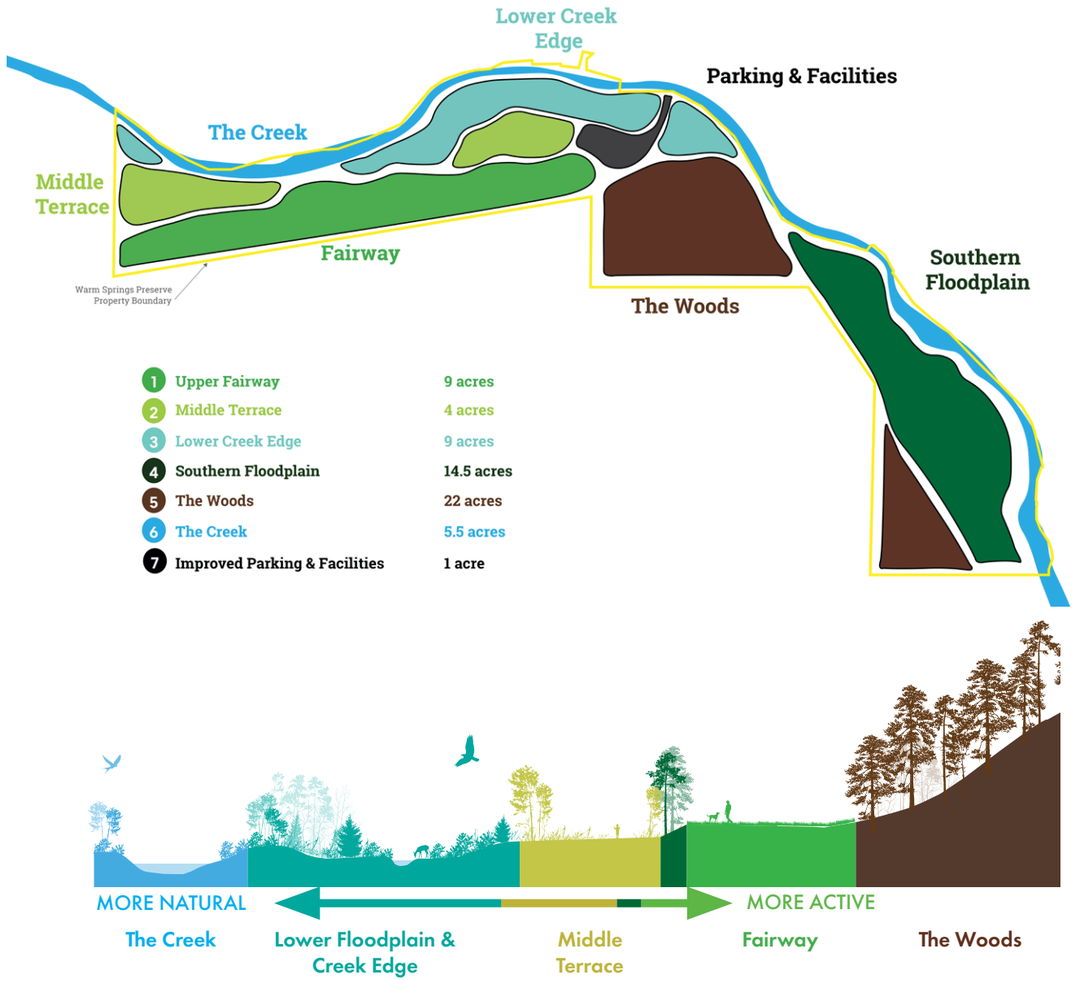
Pileated Woodpecker

Rainbow Trout

Zones

Cultivating a rich open space experience from the river's edge to woodland with four primary zones.

Warm Springs Preserve includes a variety of different landscape conditions, separated by distinct topography and vegetative characteristics. The master vision plan considers each of these areas as different opportunities for new future approaches from preserving the fairway lawn and improving the irrigation system to more extensive restoration in the lower floodplain along Warm Springs Creek.



Fairway

Preserved Upper Terrace Fairway with replaced irrigation system, new donor benches and picnic tables

Earthworks and grading to receive the soil from the excavated floodplain. Planted with native meadow species and pockets of aspen groves.

Middle Terrace

Lower Creek Edge

Restored floodplain ecosystem with new side channels and irrigation pond.

Minimally touched floodplain zone with minor grading updates, floodplain connections, soft surface pathways, invasive species removal, and in-stream fish habitat (wood & boulders)

Southern Floodplain

The Woods

U.S. Forest Service and Bureau of Land Management owned land

Warm Springs Creek with new gravel point bars for people and dog access. Install in-stream fish habitat (wood and boulders)

The Creek

Parking + Facilities

Year-round public restrooms, storage building for maintenance equipment, Donor Recognition Wall, History and Preserve Map, Bike Racks, Leash Hook Board

Zone:
Entry & Parking

The existing entry sequence and parking lot pose substantial maintenance challenges, particularly during the long winter season. To improve the existing parking area and reduce maintenance, the design proposes paving the parking lot; adjusting its shape to increase efficiency; and providing designated accessible parking spaces. A clearly delineated path provides safe pedestrian access around the parking lot and a designated snow storage location will reduce the "walling in" of the parking lot in times of heavy snow.

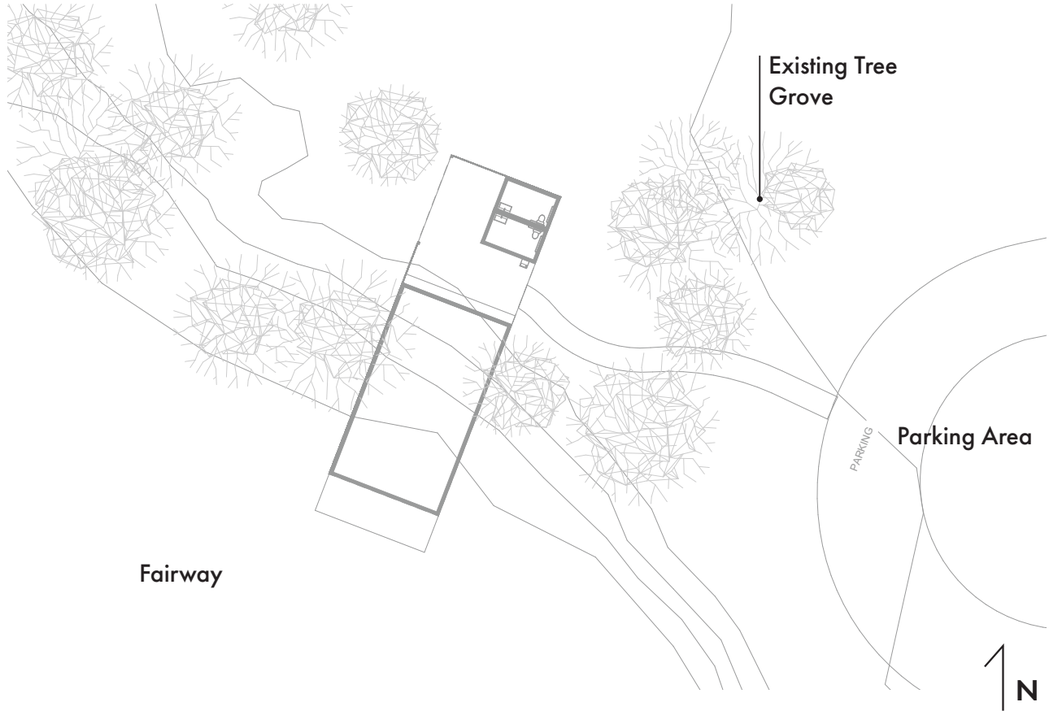
What's planned:

- Two (2) year-round public toilets
- 1,000 sq. ft. (max) storage building for maintenance equipment
- Donor Recognition Wall ($1,000+)
- History and Preserve Map
- Bike Racks
- Leash Hook Board

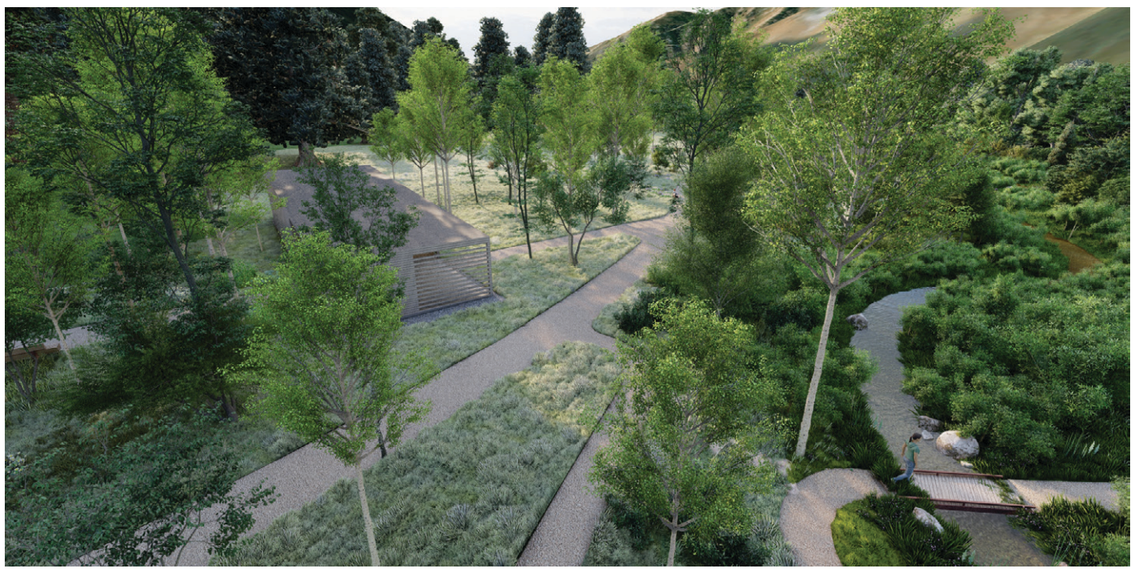
Zone: Entry & Parking – Welcome Building

The proposed restroom and storage building will be compact and efficient while providing needed services and facilities to support the Preserve. It will include two (2) toilets for year round use, storage for maintenance, water fountains for people and dogs, waste receptacles, donor wall to recognize community supporters, a trail map, historical information, bike racks and sheltered seating. The building will have ample screening set within the enhanced grove of trees.

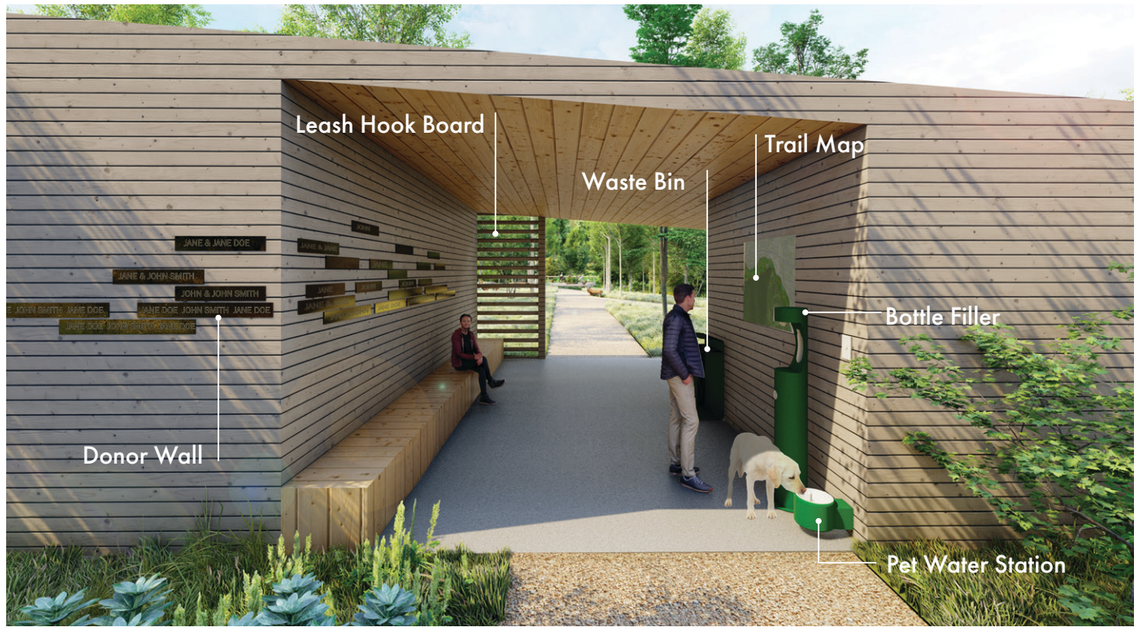
Building Plan View



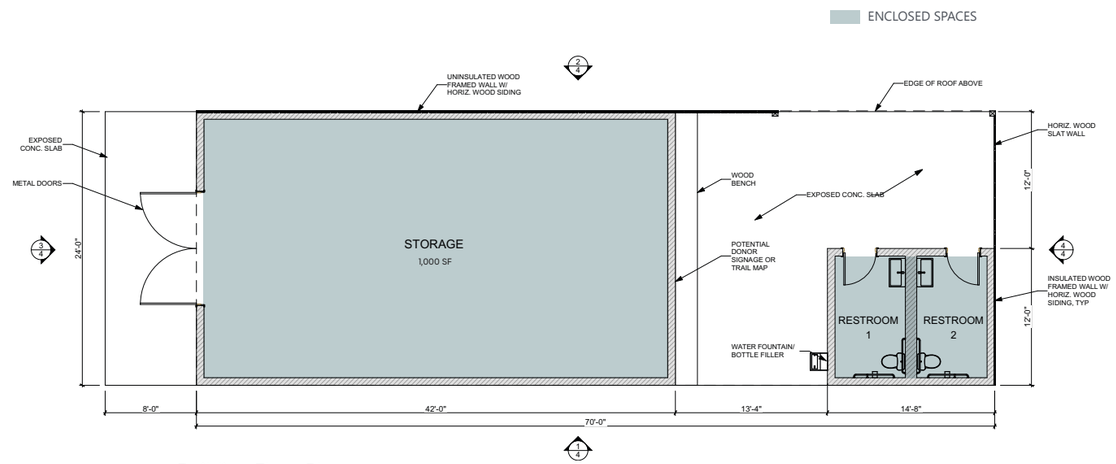
Zone: Entry & Parking – Welcome Building



Illustrative View of East Elevation from Parking



Illustrative View of East Elevation from Parking



Building Floor Plan

Illustrative View of East Elevation from Parking

Zone: Enhanced Floodplain & Lower Creek Edge

The proposed design for the lower creek edge area expands and enhances the floodplain to restore ecological services and wildlife habitat. Excavated materials are relocated to the middle terrace and revegated with native plants.

What's planned:

- Extensive grading & earthworks
- New side channel and pond
- Islands & gravel bars
- Low water crossings for side channels
- Expanded riparian zone including native trees and shrubs
- New beaver wetland

Zone: Enhanced Floodplain & Lower Creek Edge

New Floodplain Channel

Restored Floodplain

Interpretive Sign

Xeric (Dry) Floodplain

ADA ACCESSIBLE VIEWING DECK

FUN FACT

"Warm Springs Preserve is the last opportunity for large-scale habitat restoration in lower Warm Springs Creek"

– Wood River Land Trust

Zone: Enhanced Floodplain & Lower Creek Edge

FUN FACT

Reconnecting the creek to the floodplain will reduce potential flood damage to neighbors, reduce irrigation needs, and benefit fish and wildlife.

New Floodplain Channel

Mesic (Wet) Floodplain

Zone: Enhanced Floodplain & Lower Creek Edge

Mesic (Wet) Floodplain

Footbridge

Soft Surface Trail

Zone: Enhanced Floodplain & Lower Creek Edge

Screened Pump House

Picnic Area

FAIRWAY

Irrigation Pond

"Very excited for flood mitigation and restoration facets of the project. And of course, the off-leash dog access and open space for everyone."

– comment from public survey

Zone: Enhanced Floodplain & Lower Creek Edge

Warm Springs Creek

New Floodplain Channel

Aspen Groves

Woody Debris for Restoration

FUN FACT

Trout love a healthy riparian zone. Densities are 8–10 times higher in healthy creek habitat that includes large woody debris & a healthy riparian zone

Zone: Enhanced Floodplain & Lower Creek Edge

Restored Floodplain

Interpretive Sign

Log and Boulder Seating

Creek Access at Gravel Point Bar

Zone: Enhanced Floodplain & Lower Creek Edge

New Channel Culvert

Wetland Overlook

RIDGE TRAIL TO SOUTHERN FLOODPLAIN

Beaver Dam Relic

Wet Meadow

Cattail Marsh

Superbloom

Zone: Enhanced Floodplain & Lower Creek Edge

Interpretive Sign

Constructed Beaver Dam Relic

Picnic Area

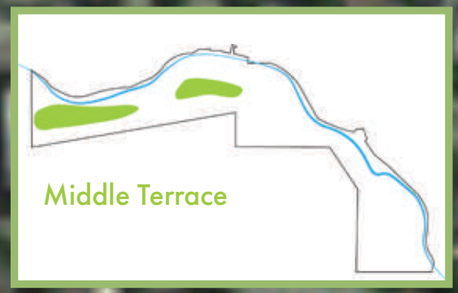
Potential Location
for Existing Public Art

Zone: Middle Terrace

To reduce costs and keep all excavated earth on site, the middle terrace will receive the fill excavated from the restoration. This will be replanted with native grasses and wildflowers as well as expanded aspen groves for shaded sitting areas.

What's planned:

- Potential for seasonal native wildflower meadow
- Enhanced biodiversity & pollinator species
- Minimal irrigation
- Mown pathways



site boundary

AREAS TO RECEIVE FILL FROM EXCAVATED FLOODPLAIN, TO BE REVEGETATED WITH NATIVE WILDFLOWER MEADOW

N

Zone: Middle Terrace

Existing Aspen Grove

Floodplain View Deck

Soft Surface Trails

Fairway

Upland Meadow

Upland Meadow

Donor Bench

Zone: Middle Terrace

Existing Tree Grove

Welcome Building

Native Wildflower Understory

Soft Surface Pathways

"a winding walking path around the circumference of the park is important as a way of providing access to the elderly, disabled, or injured"

– comment from public survey

Zone: Fairway

Ketchum residents and dogs alike cherish the existing upper Fairway. The Fairway provides an incredible experience for off-leash dogs to roam, trail hiking and cross country skiing. The concept design retains the integrity of this landscape, while making it more sustainable. The design proposes test plot opportunities to transition the existing Kentucky bluegrass lawn to a drought-tolerant species. Amenities such as new benches, picnic tables and waste receptacles will improve visitors' comfort. The existing path will be updated to ensure ADA access.

What's planned:

- Maintain upper terrace fairway with some restored edges
- Replace inefficient irrigation system
- Opportunities for benches & picnic tables (material TBD)
- Potential for bear-proof dog waste receptacles
- Update existing path to ensure ADA access

"Strategize how to manage relationships between people, dogs and wildlife"

– comment from public survey

site boundary

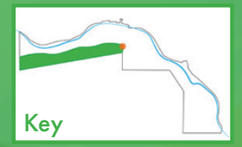
RESTORATION ON FOREST SERVICE LAND

RESTORATION ON FOREST SERVICE LAND

UPDATED ADA TRAIL

N

Zone: Fairway - Irrigation



The Woods

Open Lawn

Middle Terrace

Welcome Building

Parking Lot

Why is the new irrigation system important?

Currently, WSP uses 80% more water per acre than the ballfields at Atkinson Park?

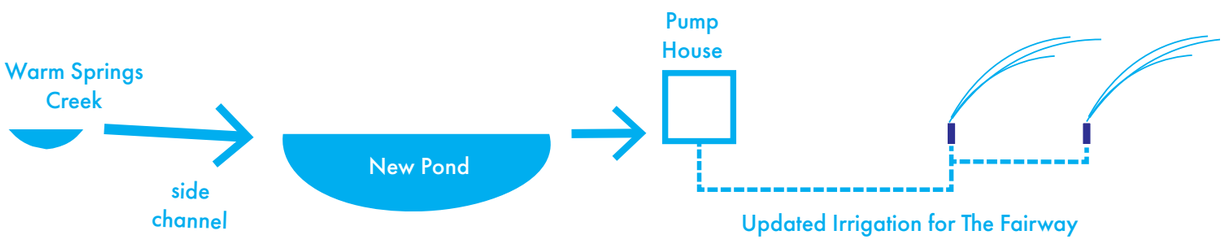
In July 2022:

Atkinson Park:
9.5 acres @ 1.25mil gal
131,500 gal/acre

Warm Springs Preserve:
10.5 acres @ 2.5mil gal
238,000 gal/acre

How the new irrigation system will work:

The new irrigation system will be much more efficient, and will run at only at night!

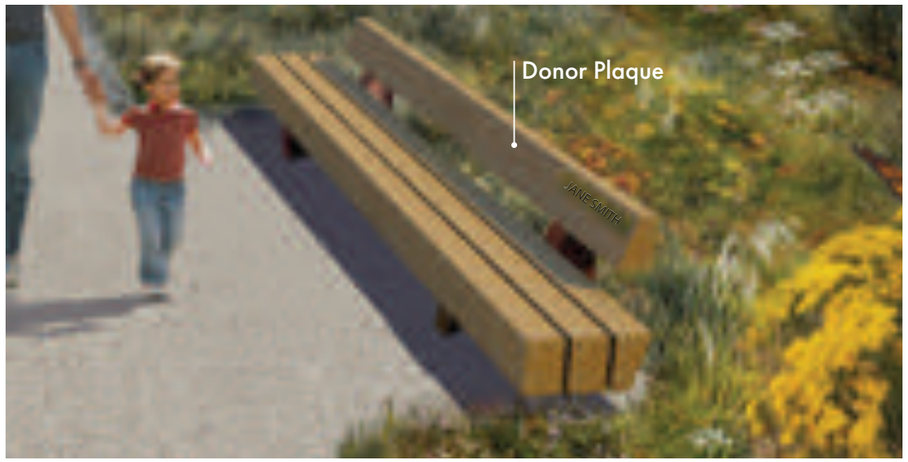


Bear Proof Waste

Dog Station

Disc Golf Basket

Donor recognition elements embody inclusive values by providing a variety of accessible options for all members of the community to be reflected within the landscape.



Zone: Southern Floodplain

The intent for this area is to celebrate and preserve the existing floodplain along the creek while improving access and connections. On the southern property, minimal human influence has allowed much of the native ecosystems to thrive. However, a few minor improvements can substantially influence floodplain connectivity and life safety. The current creek alignment lacks pools and habitat complexity while the floodplain is poorly connected and features a growing weed population. Minor soil excavations, selective weed removal and overseeding of native plant material will reconnect the creek to the floodplain and also allow for the recolonization of native riparian species.

What's planned:

- Light touch, minor enhancements
- Minor grading
- Strategic floodplain connections
- One minimal soft surface pathway to connect at key access points
- Removal of invasive species
- In-stream fish habitat (wood & boulders)


SOFT SURFACE TRAIL


RIPARIAN FOREST

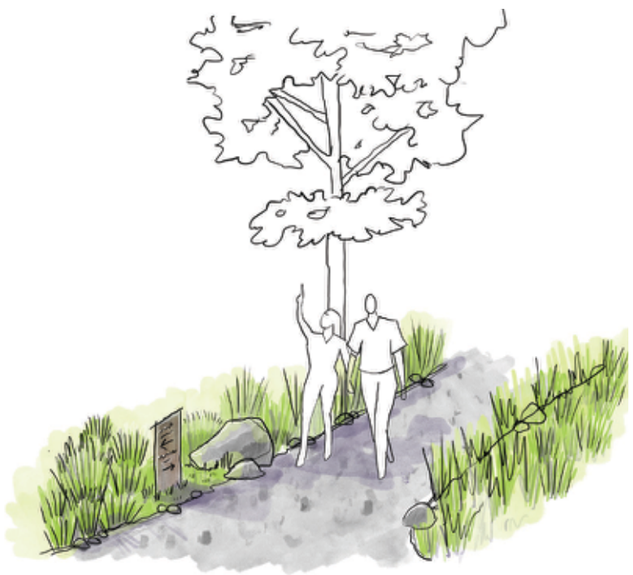


Illustration of Proposed Soft Surface Path through Existing Native Landscape

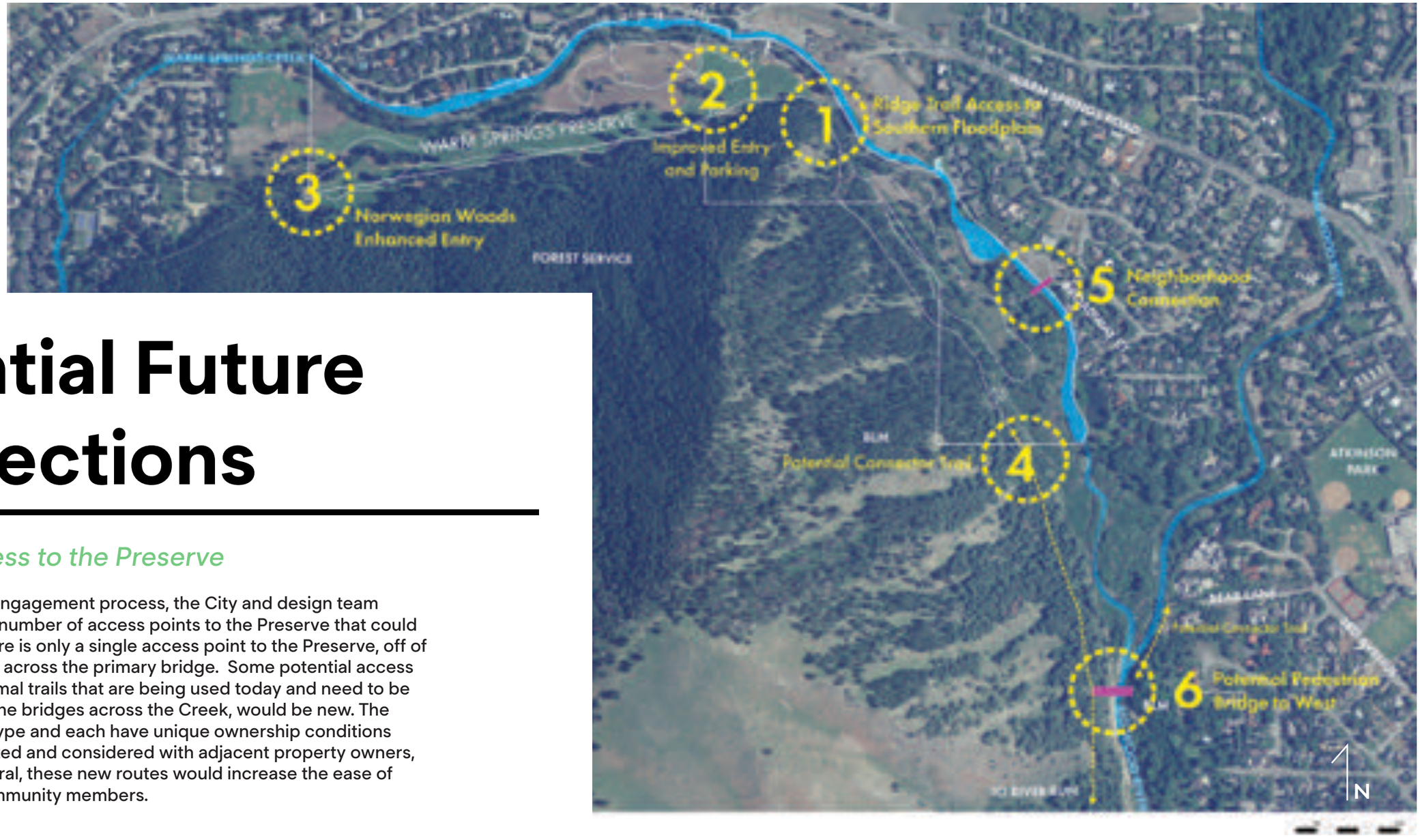
FUN FACT

Providing access to the south side of the Preserve unlocks an additional 36 acres of additional land for passive recreation. That is more than double what is accessible today.

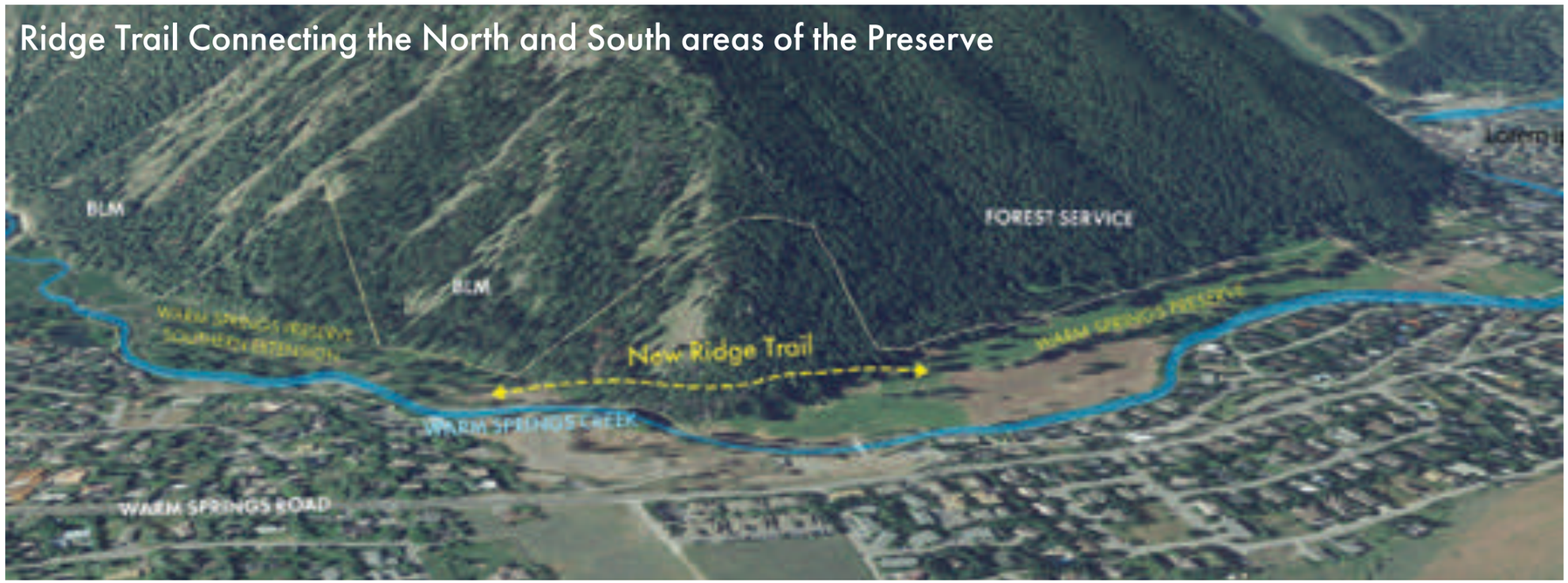
Potential Future Connections

Expanding Access to the Preserve

During the community engagement process, the City and design team heard that there were a number of access points to the Preserve that could be improved. Today, there is only a single access point to the Preserve, off of Warm Springs Road and across the primary bridge. Some potential access points are existing informal trails that are being used today and need to be formalized, others, like the bridges across the Creek, would be new. The opportunities range in type and each have unique ownership conditions that need to be negotiated and considered with adjacent property owners, as well as costs. In general, these new routes would increase the ease of access for Ketchum community members.



Potential Future Connections

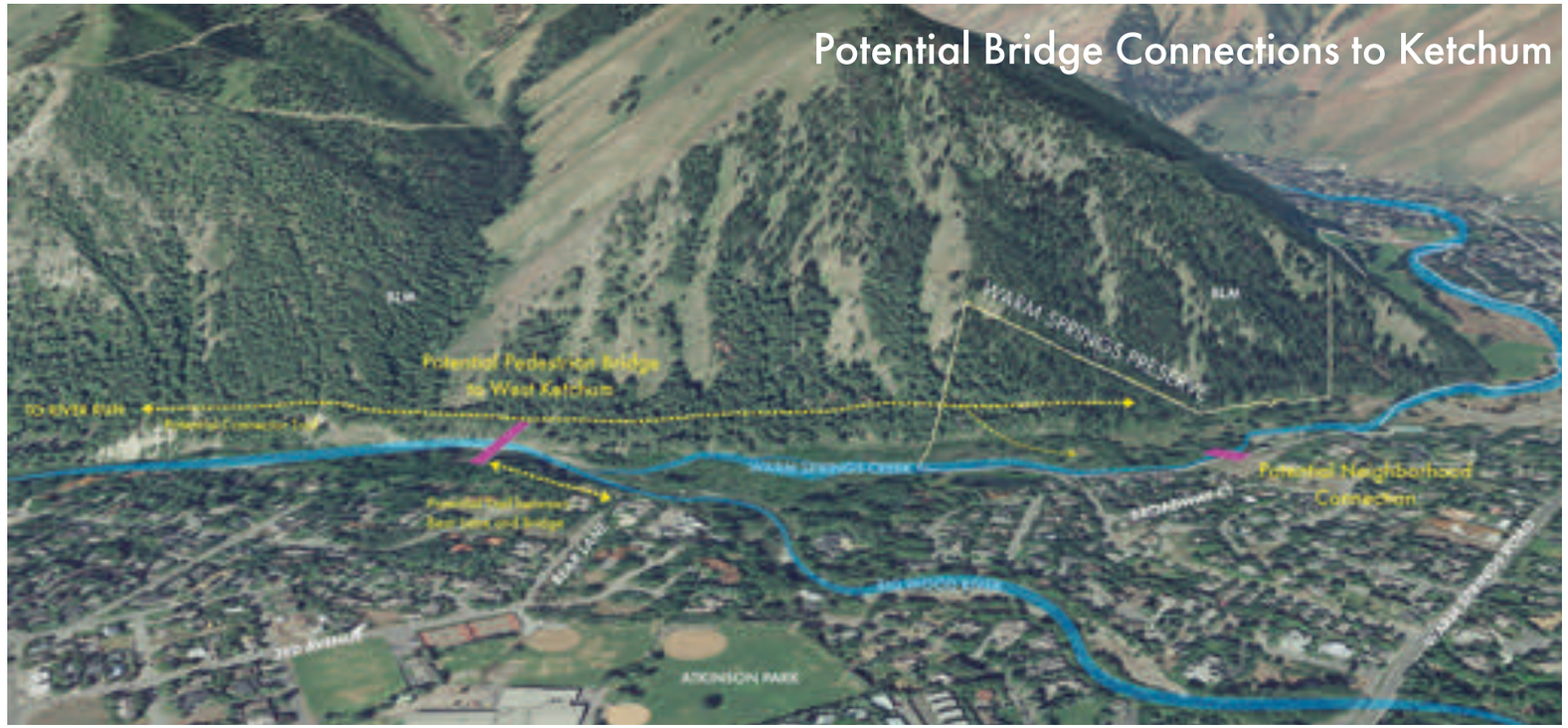


The Ridge Trail

While the City's purchase of the Preserve opened access to the Southern Floodplain's 15-acres, the area is nearly inaccessible. There is a very steep dirt trail that rounds the ridge above Warm Springs Creek and some residents indicate that during low creek flows they can cross the Creek. The Vision Plan includes a new and improved hiking trail that would allow visitors to connect from the North to the South of the Preserve from the parking area, as show in the map to the left.

West Ketchum Bridges

Many community members expressed excitement about creating one, or two bridges that would cross Warm Springs Creek or the Big Wood River to connect to trails in the Preserve. The City and design team studied various options and based on feasibility determined that the two locations shown in the map to the right would be potential bridge locations. The West Ketchum bridge connection below the confluence would be on BLM land and require approval from the BLM. The second neighborhood bridge connection shown requires additional study and community support, but would be located on a City of Ketchum parcel and connect directly to the Preserve.



Poor flood conveyance and higher risk of flood impacts

- Poor flood conveyance and high risk of flood impacts
- Limited juvenile rearing habitat
- Limited spawning grounds
- Poor groundwater recharge
- Low sediment deposition
- Low biodiversity
- Greater risk of bank erosion

Existing Warm Springs Creek

Healthy Stream System

- Improved flood management
- Resilient to wildfire
- High biodiversity
- Extensive range of habitat types and area
- Ideal habitat for fish
- Lower risk of erosion
- Increased groundwater recharge

Example Restored Creek and Floodplain

Restoration

Why Restoration?

From past work on this site and in the area, we know that Warm Springs Creek is highly confined, armored, and incised. Floodplain connectivity is much less frequent than historically, not activating until over a 100-year flood for most of the project site. Fish habitat is generally degraded, with few pools and cover in the stream channel, and very limited off-channel habitat particularly for juvenile fish. The riparian area has also been largely cleared, reducing shade and nutrient cycling, as well as potential fire buffering for neighboring communities. The stream is also perched about 8-12 feet above the groundwater table necessitating special consideration when working in and around the stream bed but also when considering riparian and wetland restoration on the floodplain.

Additionally, potential wildfire on the landscape can dramatically alter the hydrology of the watershed by creating hydrophobic soil conditions.

<u>Logistical</u>
Project Principles based on Stakeholder feedback
City of Ketchum commitments
Improve funding opportunities

<u>Ecological</u>
Improve stream function
Improve fish and wildlife habitat
Dissipate flood risk
Reduce stream energy
Potential water savings

Restoration Outcomes

Active Sediment Bars

Side Channels

Active Floodplain

Dense Riparian Corridor

Restoration

Proposed In Stream Restoration

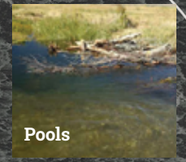
Several improvements can be made along the creek edge to enhance hydrological and ecological health of the creek.

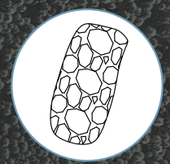
What's planned:

- Improved fish habitat
- Modifications will create more pools and off channel areas for fish rearing
- Greater floodplain connection
- Native riparian vegetation



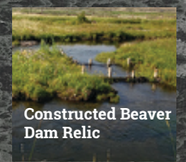


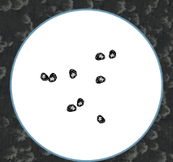




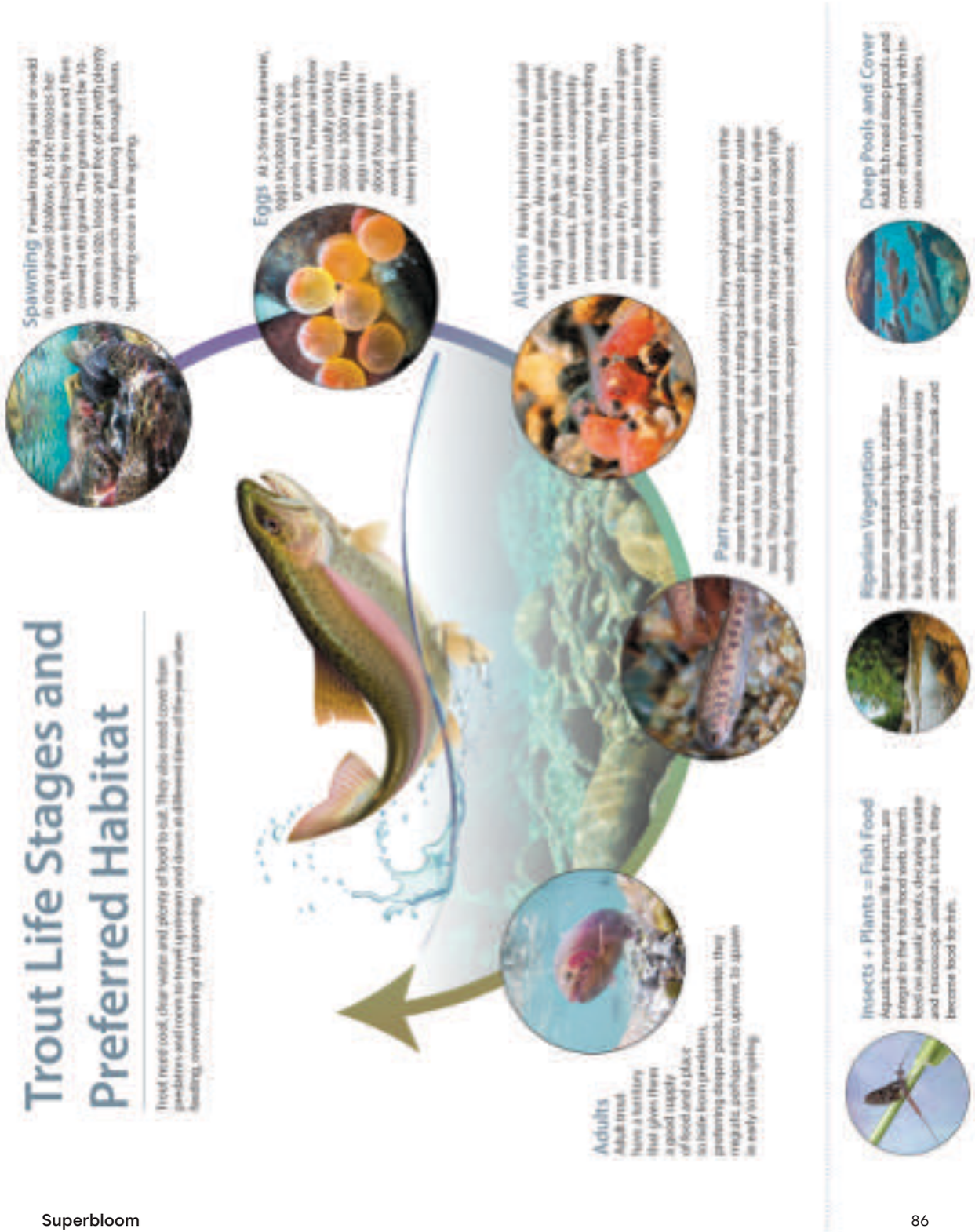







Appendix


Trout Life Stages and Preferred Habitat
Spawning
Eggs
Alevins
Parr
Adults
Deep Pools and Cover
Riparian Vegetation
Insects + Plants = Fish Food

Riparian Stream Edge

Riparian zones are the areas bordering the stream channel and provide many environmental and recreational benefits. The Warm Springs Preserve Master Plan includes natural space near the creek for riparian forest, and meadows that transition to more manicured and park like upland terraces. The most sensitive riparian areas of the Preserve are being restored to a natural condition.

Cottonwod - Willow Riparian Forest

This community occurs at low elevations, along the stream channel, where the water table is high and/or there is year-round water flow. Frequent spring flows provide areas of scour and sedimentation within the channel; this dynamic hydrologic regime contributes to the habitat's structural diversity and high wildlife value.

Botanical Resources

Vegetation within this community is predominantly composed of deciduous species. The tall riparian trees and dense understory result in almost full canopy cover. Typical tree species include cottonwood, willow, bittenberry, rosewood, dogwood, herbaceous shrubs and grasses.

Wildlife Resources

This habitat type is noted for its very high bird species diversity and abundance. Deciduous trees and shrubs are used by nesting migrants for foraging during migration. Mature trees provide numerous cavities for cavity-dependent wildlife such as woodpeckers. Tall trees are used by roosting raptors; stream banks provide nesting for belted kingfishers. A variety of mammals utilize the dense forest for cover, shade and food.

Fisheries Resources

Vegetation rooted at the water's edge provides cover, shade and food for fish. This is especially critical along intermittent streams where remnant summer pools provide refugia for fish. Large wood embedded in the stream bank provides cover and refuge for fish.

Side Channels

Side channel habitats (built specifically for aquatic species and juvenile fish) and riparian habitat are small watered remnants of major river meanders across the floodplain. On the Preserve these sites are constructed channels connecting ponds built specifically for aquatic habitat. These areas provide off-channel habitat for aquatic species and riparian habitat for terrestrial species and increases the diversity of habitat available within the stream corridor.

Dynamic + Continually Changing

Riparian forests grow within an alluvial environment that is continually changing due to the ebb and flow of the stream. Riparian vegetation is constantly being reset by flooding disturbance.

Mature cottonwood stands do not regenerate in place, but regenerate by "moving" up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities.

Periodic flooding events are needed for Cottonwood seedlings to germinate and become established on newly-deposited, moist sand and gravel bars. This cottonwood community can grow into a mature riparian forest.

Floodplain

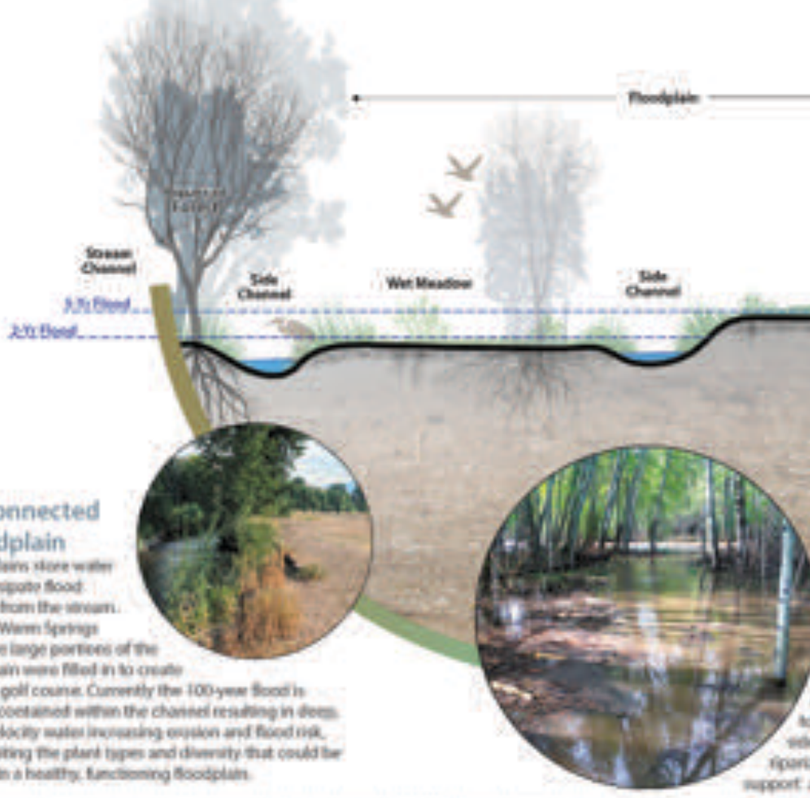
Streams and rivers are much wider than the channels we associate them with. The areas next to streams, which are only covered by water during floods, are also part of the river system. Known as floodplains, in their natural condition they are an important ecological part of the landscape. The floodplain in the Preserve is made up of mesic (wet) and xeric (dry) meadows. Floodplains filter and store water, secure both natural flood protection and the healthy functioning of the stream ecosystems, and help sustain high biological diversity.

Wet Meadow/Wetland

The elevation of the wet meadow or wetland is generally lower and more connected to the hydrology of Warm Springs Creek than portions of the dry meadow. Wet meadow habitats effectively provide drought insurance as land at higher elevations warms due to seasonal or other changes. Wet meadows may include some trees and larger shrubs. The Warm Springs Preserve wet meadow is intended to emulate a beaver wetland; beaver often create or influence wet meadows.

Dry Meadow

Dry meadows occur almost exclusively within the flat surfaces of the project area that are at a higher elevation then the wet meadow and are disconnected from the annual hydrology of Warm Springs Creek. The dry meadow character zone is arid and mixed with some native upland shrub species, wildflowers, and grasses and relatively few trees.



Wildlife Resources

Floodplains provide essential habitat for wildlife. Floodplains are an important source of nutrients and provide multiple habitat niches. A new floodplain will provide off-channel habitat for aquatic species and riparian habitat for terrestrial species.

Disconnected Floodplain

Floodplains store water and dissipate flood energy from the stream. On the Warm Springs Preserve large portions of the floodplain were filled in to create the old golf course. Currently the 100-year flood is largely contained within the channel resulting in deep, high-velocity water increasing erosion and flood risk, and limiting the plant types and diversity that could be found in a healthy, functioning floodplain.

Floodplain Function

Excavation of a new floodplain in the Preserve will reduce the erosive force of the stream and lower the risk of flood damage to neighboring homes and lands. A new floodplain will include side channels, a pond, and a wetland, all surrounded by native riparian vegetation. Semi-annual flooding of the land areas helps to support a diverse array of plant species.

Connected Stream Floodplains

The importance of the hydrologic and ecological functions of floodplains is well understood and there are many benefits to restoring connectivity of floodplains so that they actively flood. This not only supports native riparian and aquatic species, but it also accommodates floodwaters, thereby reducing flood peaks downstream. The Warm Spring Preserve plan recognizes the ecological benefits of floodplain inundation and is planned in a way to provide multiple benefits, such as combining flood risk reduction, ecosystem restoration, and adaptability to climate change. The plan highlights the challenges, opportunities and the many benefits of a reconnected floodplain that include habitat for fish and wildlife, groundwater recharge, carbon sequestration, open space and recreation.