

ABSTRACT

With an emphasis on immersive, natural resource-based recreation that integrates ecosystem services, this 20-30 year plan for the parkway, trails, and open spaces along Minnehaha Creek envisions a dramatic reconnection of park function and ecology, creating a place that embraces water, wildlife, and people. By redesigning the trail system and recreational amenities to work with flooding rather than fight against it, the Minnehaha Parkway Regional Trail Master Plan, once implemented, will reduce the frequency and intensity of flooding experienced in nearby neighborhoods, restore habitat connectivity, and make south Minneapolis more resilient to climate change.

Project Name

Minnehaha Parkway Regional Trail Master Plan

Location

Minneapolis, MN

Entry Category

Planning and Urban Design

NARRATIVE

Nestled within the Minnehaha Creek watershed, and an integral part of Minneapolis' historic Grand Rounds, the 5+ mile Minnehaha Parkway Regional Trail (MPRT) corridor spans the length of the city. MPRT has become a beloved fixture of the Parkway system, whose ecological and recreational significance has evolved since the 1890s without any formal planning guidance.

Embarking on a three-year project, the landscape architects assembled a team of water resource engineers, ecologists, fluvial geomorphologists, traffic engineers, and cultural resource specialists to coordinate a multi-agency collaboration with the Minneapolis Park and Recreation Board (MPRB), the City of Minneapolis, and Minnehaha Creek Watershed District (MCWD). This essential partnership enabled the team to take a transformative approach. The resulting master plan mobilizes the capabilities of the three agencies around a shared vision, creating capacity for identified projects to stack functions, harness efficiencies, and make more happen over the next 20-30 years.

As a regional trail, Minnehaha Parkway attracts more than 1.3 million visitors annually. The team prioritized community engagement, gathering input from a broad range of users at a variety of scales, including youth and BIPOC who have been historically excluded from property ownership around the Creek due to racial covenants. A Community Advisory Committee played a primary role in the plan over the course of 12 public meetings. The team held 32+ pop-up events along the Creek corridor, developed online engagement that involved more than 2,000 participants, and hosted multiple open houses. A series of Youth Creek Tours brought young people from across the city to experience the Creek, and site meetings were held throughout the process to discuss specific ideas with stakeholder groups. Public participation was the most influential driver of the plan's trajectory and outcomes. To ensure as many voices as possible were heard, the project schedule was stretched to accommodate additional studies, events, and public meetings.

The landscape architects took a holistic approach to ensure overlapping ecological and cultural systems could be optimized for mutual benefit. Throughout the master planning effort, MPRT was examined through the following lenses:

Natural Resources and Water Resources

After historical straightening of the creek, entire neighborhoods were built over former channel alignments and on drained wetland soils, which has resulted in significant flooding. These issues are only projected to get worse, as models predict that by 2050, adjacent subwatersheds will experience a five-fold increase in land impacted by 100-year storms.

The plan takes an aggressive, multi-faceted approach to address water quality and volume, adding 1.7 miles of creek length through proposed remeanders, restoring wetlands, adding infiltration basins, and integrating underground flood storage. Fully implemented, the efforts will address water quality (including all TMDL requirements) before stormwater enters the Mississippi River, repairing resiliency to this climate-vulnerable landscape. By transitioning underutilized turf areas to pollinator lawns and expanding native habitat, the plan shifts a conventional maintenance regime to one focused on targeted habitat management.

Connectivity and Access

The plan takes an inclusive approach to multi-modal design, moving beyond ADA requirements to recommend amenity intervals and safety features that aim for all people to feel welcome and comfortable enjoying the trail. The plan prioritizes pedestrian and bicyclist safety with crosswalk improvements and intersection realignments, and improves ease of use by better connecting trails to public transit, on-road facilities, and bike-share systems. Proposed trail alignments were designed in response to flood modeling, with the aim of keeping paths out of the floodplain, while maintaining a quality experience for users.

Recreation and Activities

Today, MPRT emphasizes passive recreation, which complements the naturalistic setting; but active recreation is limited. Despite being a regional trail, Minnehaha Parkway actually functions more like a neighborhood park in some areas, and has the space to fill recreational gaps in the park system. Community input revealed a strong need to activate spaces with features that attract young people, allow everyone to experience the water, and respond to growing interest in adventure-related recreation. The master plan's "Activity Nodes" offer nature-based play, public art, and new recreation like single-track bike trails, a bike skills course, and bouldering. The Activity Nodes consolidate programming safely out of the floodplain, while reclaiming land along Minnehaha Creek for restored habitat and floodable passive recreation, layering ecological function and park programming to promote resiliency.

Cultural and Historic Resources

Interpretive planning focuses on the interconnected historical, cultural, and ecological stories of the Creek. The plan proposes carefully-sited interpretive overlooks, daylighting a tributary where visitors can experience the water, and a StoryWalk centered around Indigenous ties to this land and work of local artists.

Minnehaha Parkway Regional Trail

Preferred Concept Framework

For the purposes of master planning, the corridor-wide study area for Minnehaha Parkway Regional Trail has been split into 4 segments. These segments have distinct site characteristics, with variation in topography, existing recreational activities, trail connections and creek access. Throughout the corridor, a number of focus areas have been identified where closer design study was performed.

Preferred concepts have been developed at the segment scale and focus area scale. These preferred concepts were developed after gathering community feedback on preliminary site concepts that were launched in January and February of 2019.

A number of corridor-wide diagrams have been created to provide context for the following proposed elements: Creek Restoration + BMPs, Outfalls and Pipersheds, Creek Access, Activity Areas, and Parkway Vehicular Circulation

Corridor Wide Vision

The corridor wide vision has been created through input received from the Community Advisory Committee (CAC), and input gathered through community engagement.

The development of the master plan should:

- Seek to restore the ecological function of the creek corridor for improved wildlife, flood resilience, and water quality
- Provide safe routes and entries to and within the corridor
- Thoughtfully incorporate recreation opportunities that complement nearby parks and provide increased interaction with the creek
- Enhance the corridor's function as a natural oasis and wildlife habitat
- Support region-wide and local users of all ages, abilities, and backgrounds
- Acknowledge the creek's history while celebrating its unifying ability through interpretation, art, and programming
- Balance the needs of the creek corridor, creek users, and nearby residents
- Promote continued agency collaboration, particularly with water management



MINNEHAHA PARKWAY REGIONAL TRAIL

KEY TO SEGMENTS AND FOCUS AREAS

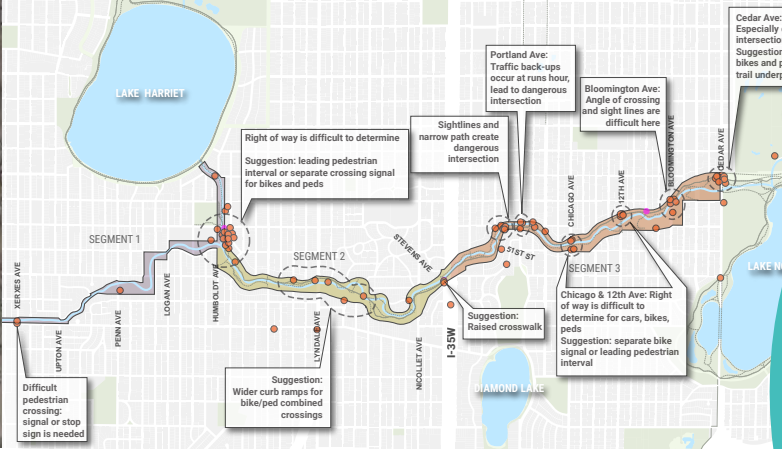
DRAFT 5/30/19



Minnehaha Parkway Regional Trail spans 5+ miles of the city, making the organization of segments and focus areas essential to planning the corridor.



50TH AND MINNEHAHA PARKWAY AT LYNNHURST: SOCIAL PINPOINT COMMENTS



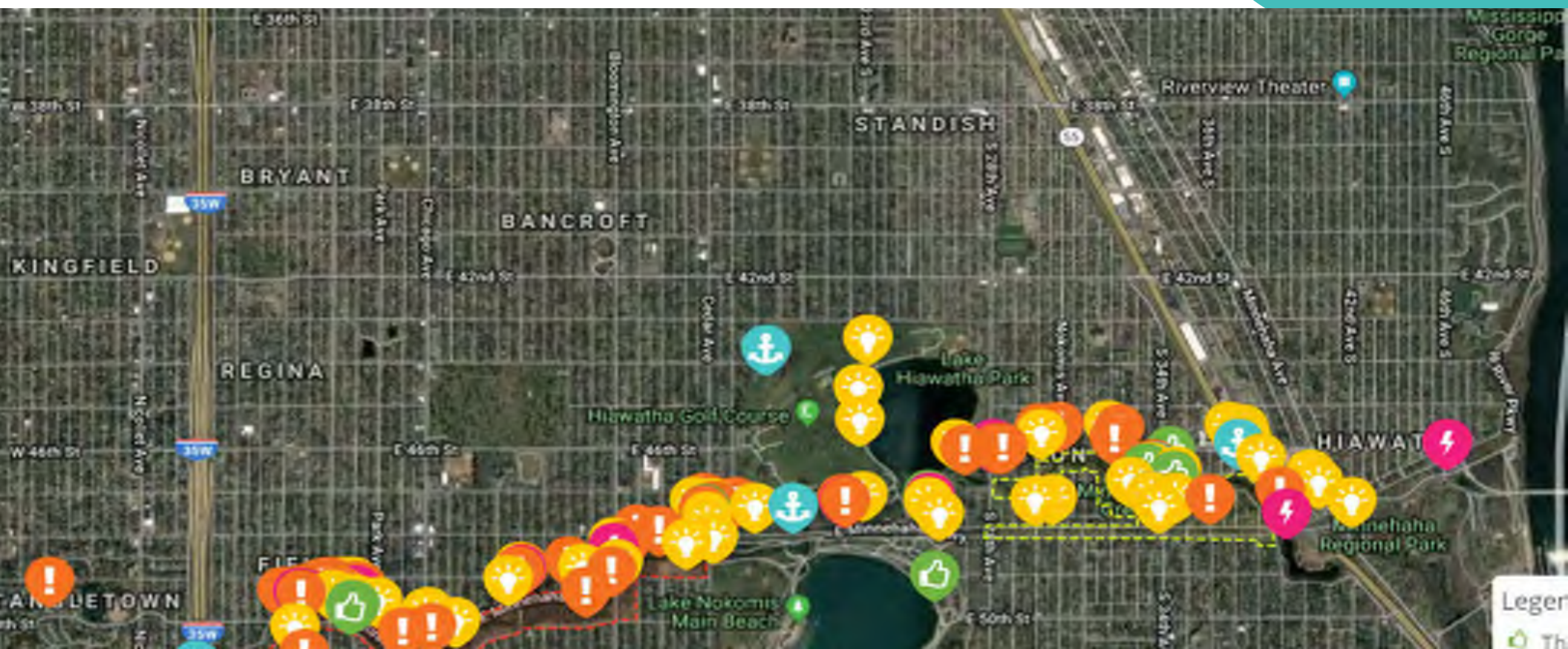
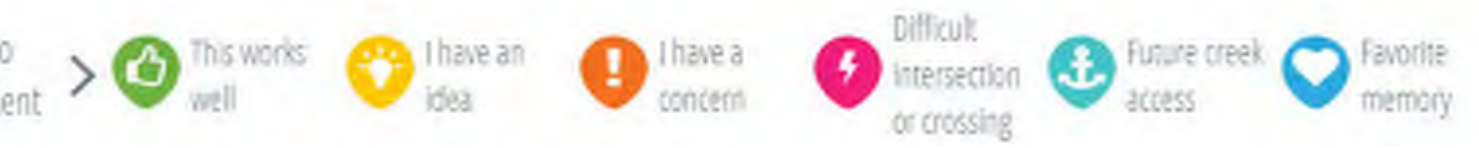
SOCIAL PINPOINT PARTICIPATION

327 comments were collected over

593 unique users.

On average, participants spent a little over

22 minutes per visit to the website





WALK
BIKE
PLAY
HANG OUT

EXPERIENCE THE CREEK



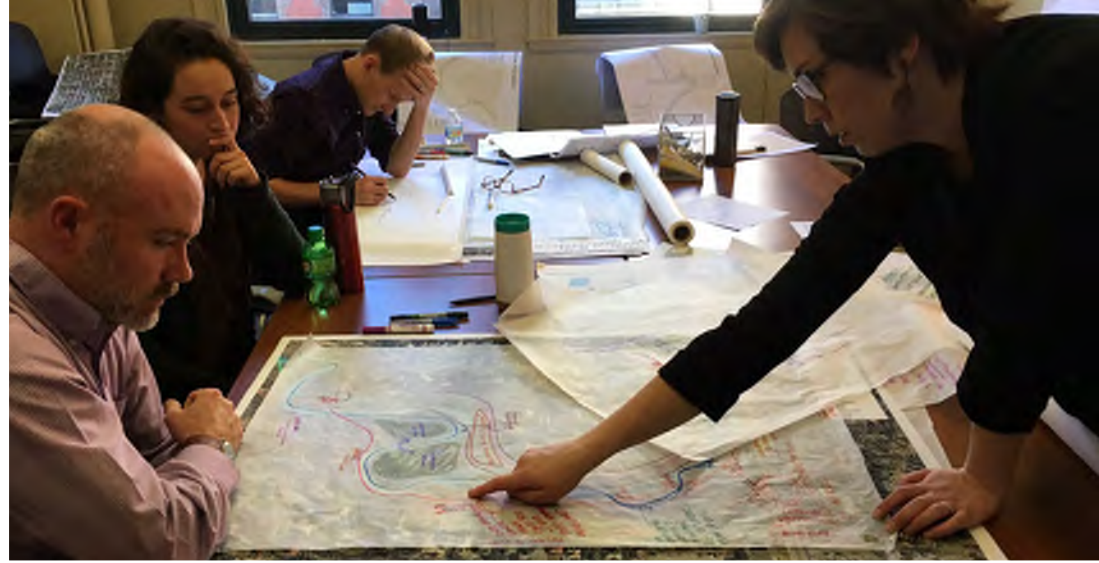
Tours, pop-up bike parks, Experience the Creek events, and site meetings all took place along the corridor as part of community engagement.

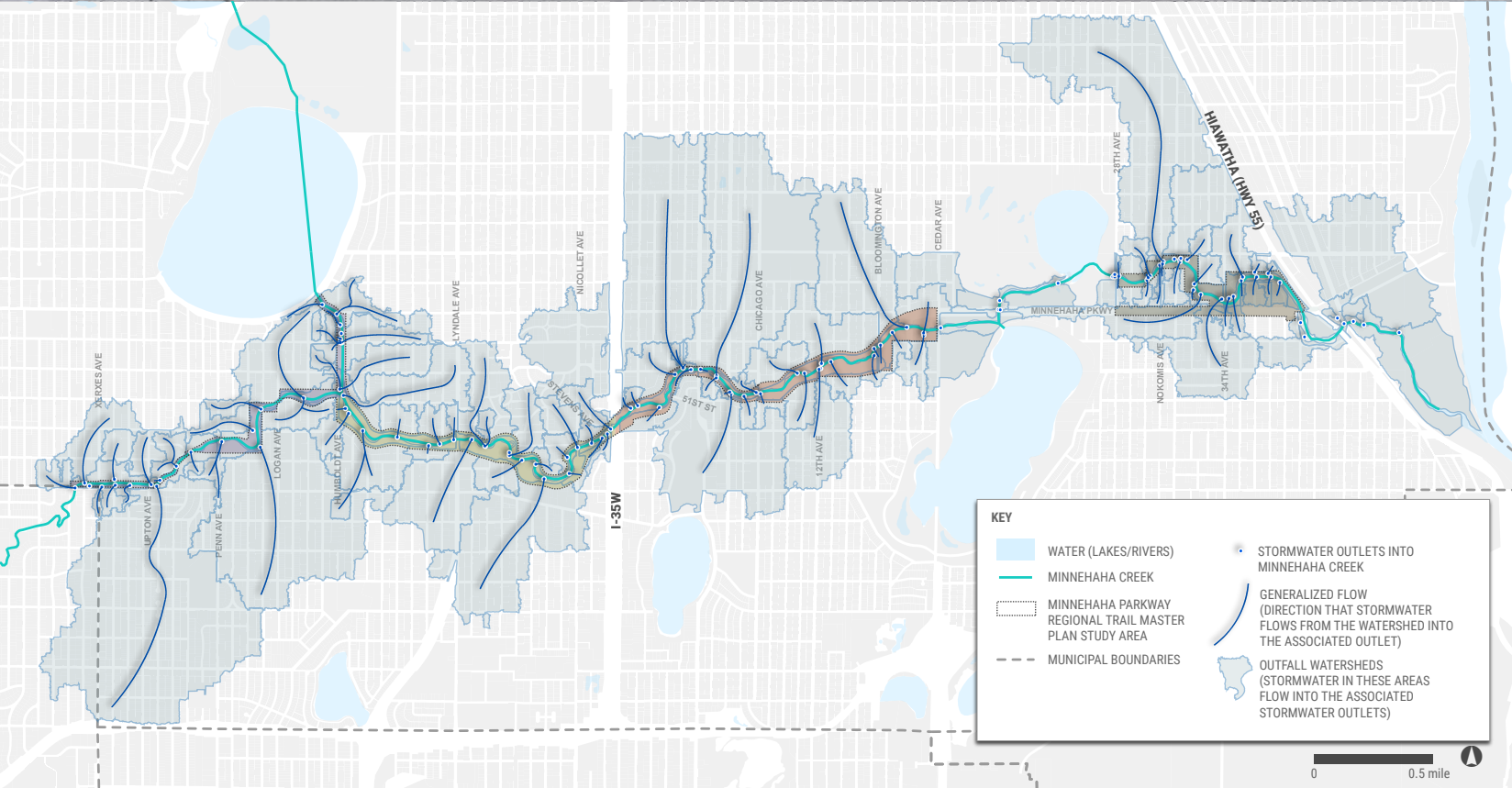
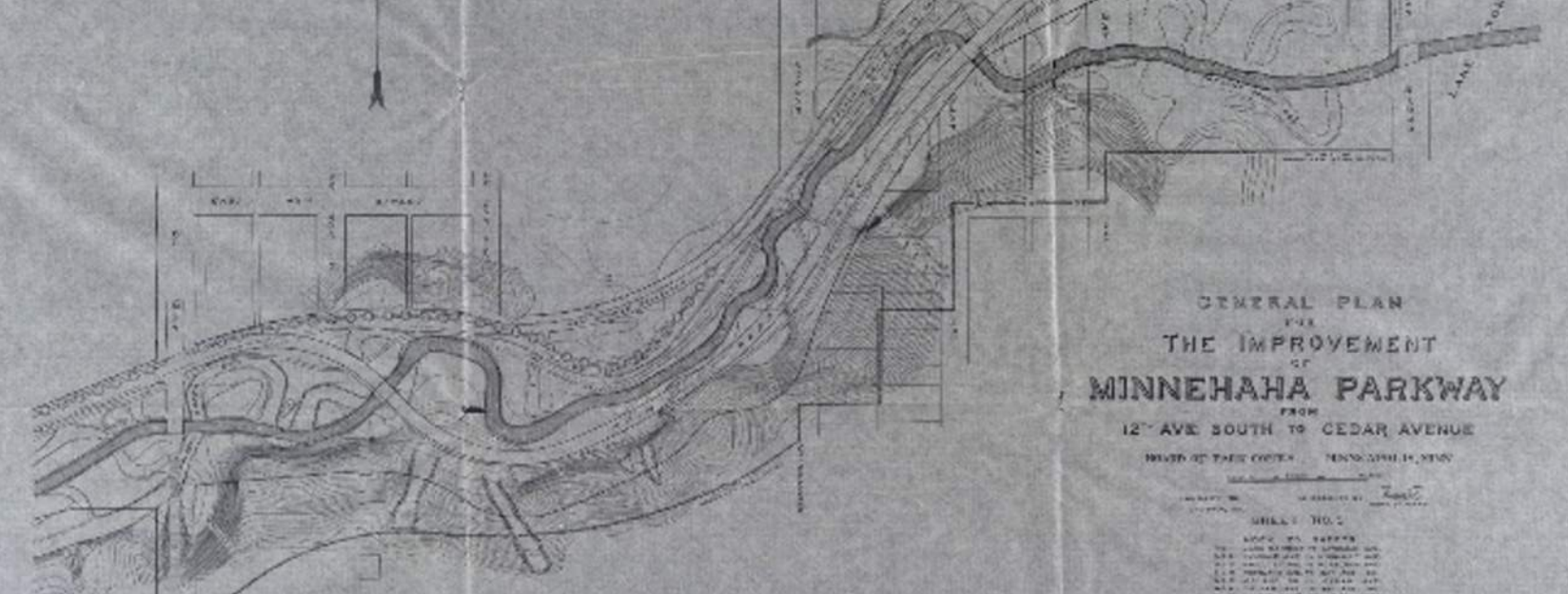
Near Humboldt Ave S and W Minnehaha Parkway

SUNDAY | 11 am - 2 pm
OCT. 14th

@ MINNEHAHA PARKWAY

Join us for an afternoon of fall colors, fun and exploration at Minnehaha Creek. Naturalist-guided walks, arts and crafts, macroinvertebrate observation and more. Open and free for all. Refreshments provided.





Historic straightening of the creek combined with increased urbanization across the watershed has led to severe flooding like you can see in the picture on the right, from 2014, which required FEMA relief funds to aid cleanup.

INVESTING IN HEALTHIER WATERS

Once implemented, the creek restoration and BMPs proposed in this master plan will likely help the City of Minneapolis and MPRB achieve their Total Maximum Daily Load (TMDL) reduction goal.

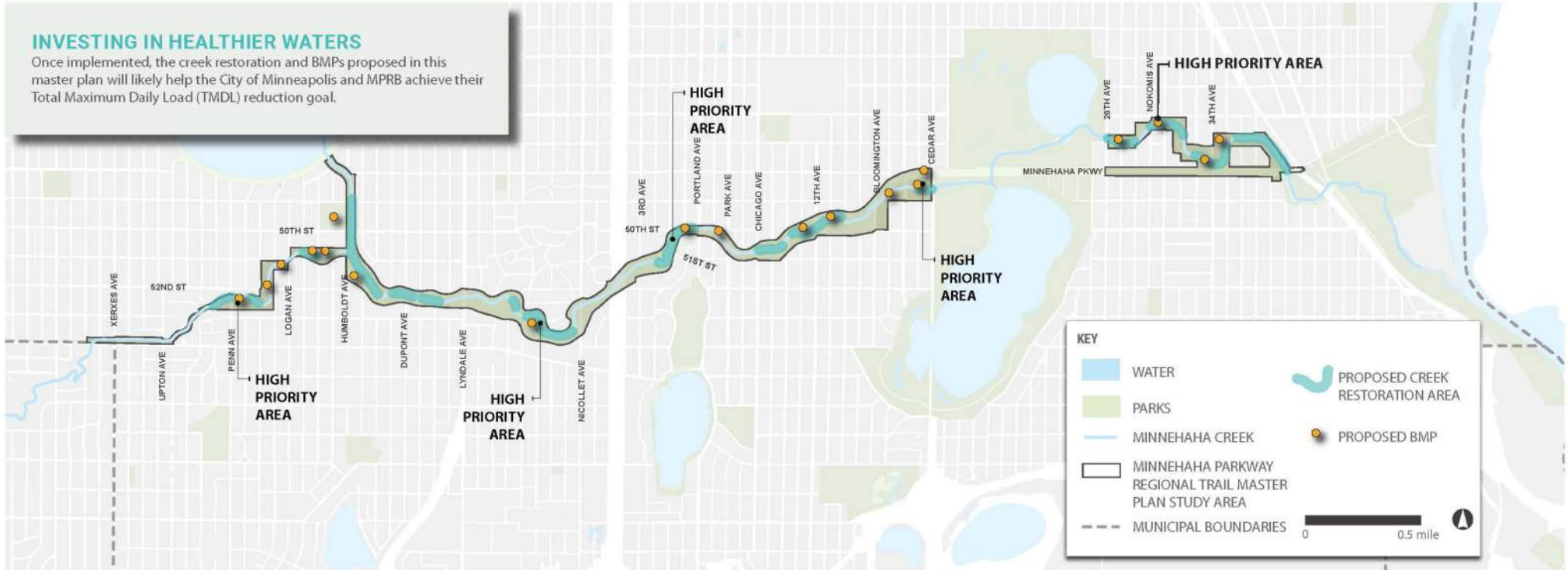


Figure 5.7 Corridor-wide Creek Restoration and Best Management Practices



Creek Re-meander: Year 1



Creek Re-meander: Year 2



Creek Re-meander: Year 3



Image of an existing Minnehaha Creek re-meander upstream in St. Louis Park

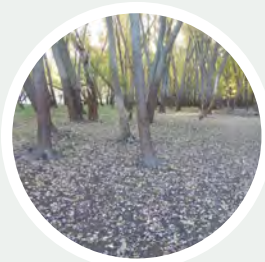
CREEK RE-MEANDERS

The meandering, or curving of a stream is an important factor in the stream's physical (erosion and sediment deposition) and ecological dynamics (habitat). Adding natural sinuosity (i.e. the degree of meandering) effectively reduces the slope of the stream. A reduction in slope can result in a slowing of streamflow velocities, effectively reducing bank and streambed erosion. Additional natural features, including riffles, pools, bars, and other in-stream habitat features work to enhance stability. Proposed re-meanders in this Master Plan are based on the historic sinuosity of Minnehaha Creek.

The plan takes an aggressive, multi-faceted approach to flood control and water quality, adding 1.7 miles of creek length through proposed re-meanders of the creek, many of which restore Minnehaha Creek to its historic alignment. BMP additions include restored wetlands, new infiltration basins, and underground flood storage.

MANAGING NATURAL RESOURCES

Originally, stormwater management in cities addressed potential flooding issues only, and meant moving as much water as possible off the landscape as quickly as possible. Today, stormwater management has evolved to integrate several additional factors. While still addressing potential flooding, contemporary stormwater management works to reduce the volume of runoff sent downstream by infiltrating or storing stormwater, reduces flow rates by slowing or detaining runoff, and integrates opportunities to improve water quality, conserve or restore habitat, and incorporate recreation.



RESTORED FLOODPLAIN FOREST

Floodplains are an integral part of healthy rivers and streams. They store and slow floodwaters, improve water quality, safeguard people and property, provide vital habitat, recharge groundwater, and provide unique opportunities for recreation. This Master Plan aims to move trails and other features out of the floodplain where possible, and invests heavily in the restoration of floodplain forest along creek re-meanders and other disturbed areas.



UNDERGROUND STORAGE SYSTEMS

Underground storage systems directly contribute to addressing stormwater volume and rate issues by capturing and storing stormwater collected from surrounding impervious areas. Underground storage systems are an effective alternative to surface ponds in areas where space is at a premium, like at Lynnhurst Park. With the stormwater facility below ground, the space above the facility can continue to be used for diamond and field sports.



STORMWATER WETLANDS

Stormwater wetlands are constructed stormwater management practices that are considered an end-of-pipe best management practice to address water quantity and water quality issues. The storage capacity provided by stormwater wetlands can help reduce downstream stormwater volumes as well as peak runoff rates. Stormwater wetlands offer high pollutant removal efficiencies for pollutants and particulates, including nitrogen, phosphorus, oil and grease – with relatively low maintenance costs.



WOODED RIPARIAN BUFFERS

Canopy cover along creeks helps to shade the water, keeping it cool, and promoting a healthy and comfortable environment in which aquatic species can thrive. Adequate riparian buffers include layers of forb, shrub, and tree species that hold soils in place, sequester carbon, scrub pollution from the air, and contribute to the healthy function of the hydrologic cycle. The canopy associated with the creek floodplain also provides a habitat corridor for many animals including mammals, aquatic species, riparian species, birds, and insects.



BIOENGINEERING TECHNIQUES

Bioengineering techniques use natural fabrics to temporarily stabilize banks while plants establish. Long-term shoreline stability is achieved through vegetation growth. Careful grading of the soils, limited use of rock, installation of erosion control blankets or matting, and planting of live stakes, plugs, and seed, work together to revegetate the shoreline and hold it in place without the use of hard armoring like concrete walls or steel pilings.



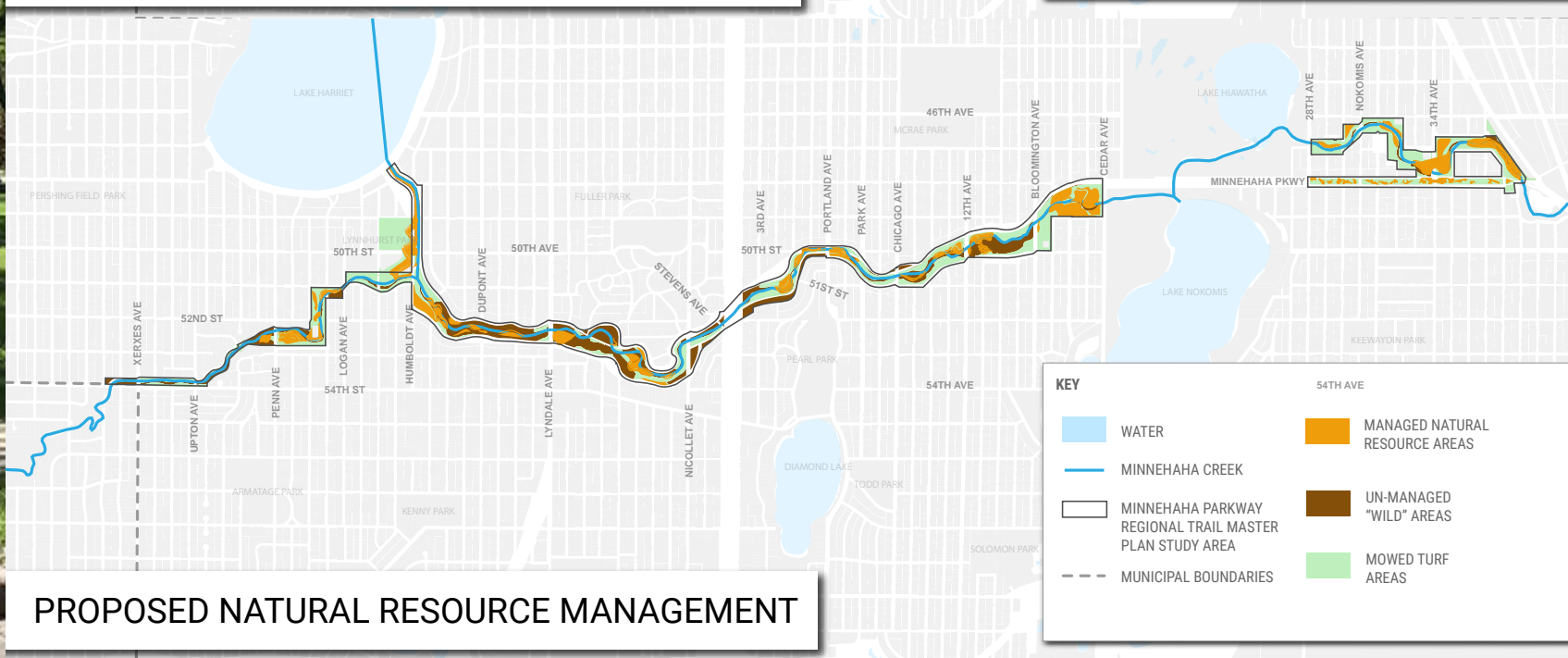
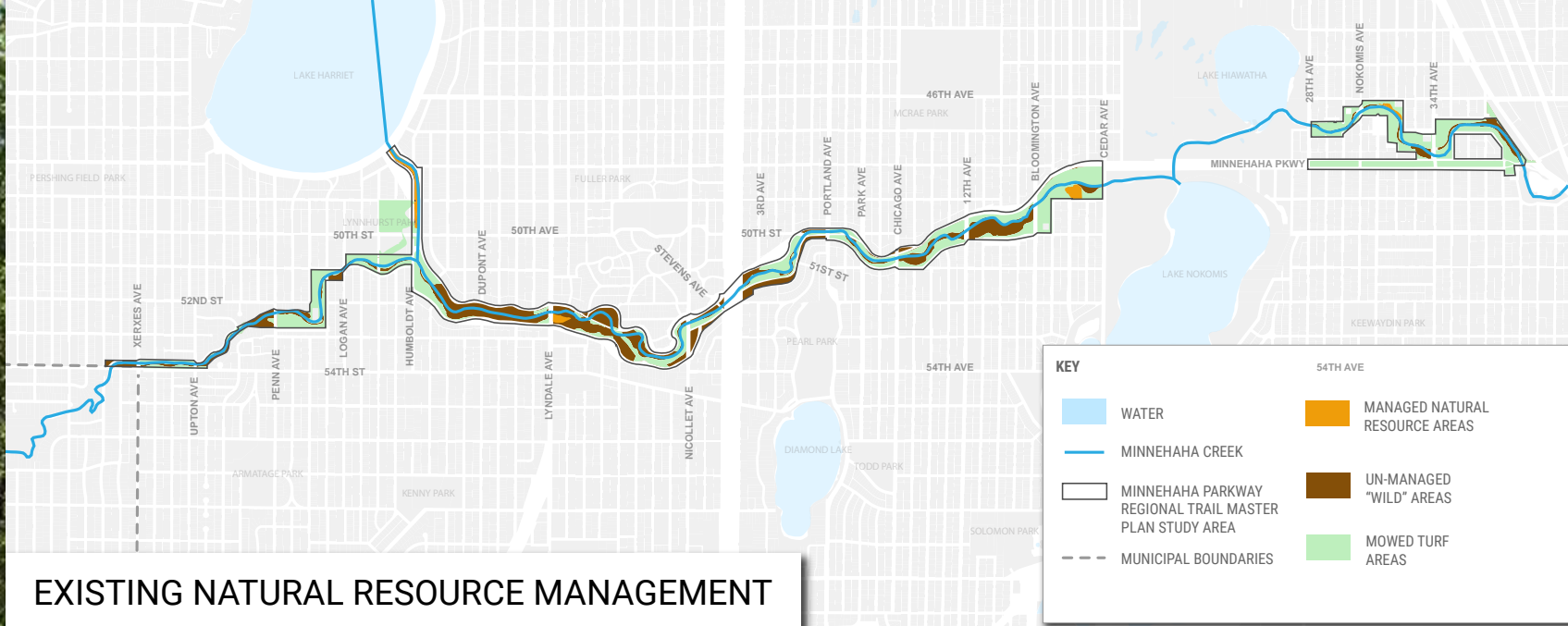
RESTORED WETLANDS

Wetlands protect and improve water quality, provide fish and wildlife habitat, store floodwaters and attenuate downstream flooding, help maintain surface water flow during dry periods, and enhance recreational opportunities. Restoring wetlands that have been removed or degraded results in the reinstatement of these valuable ecosystem services.

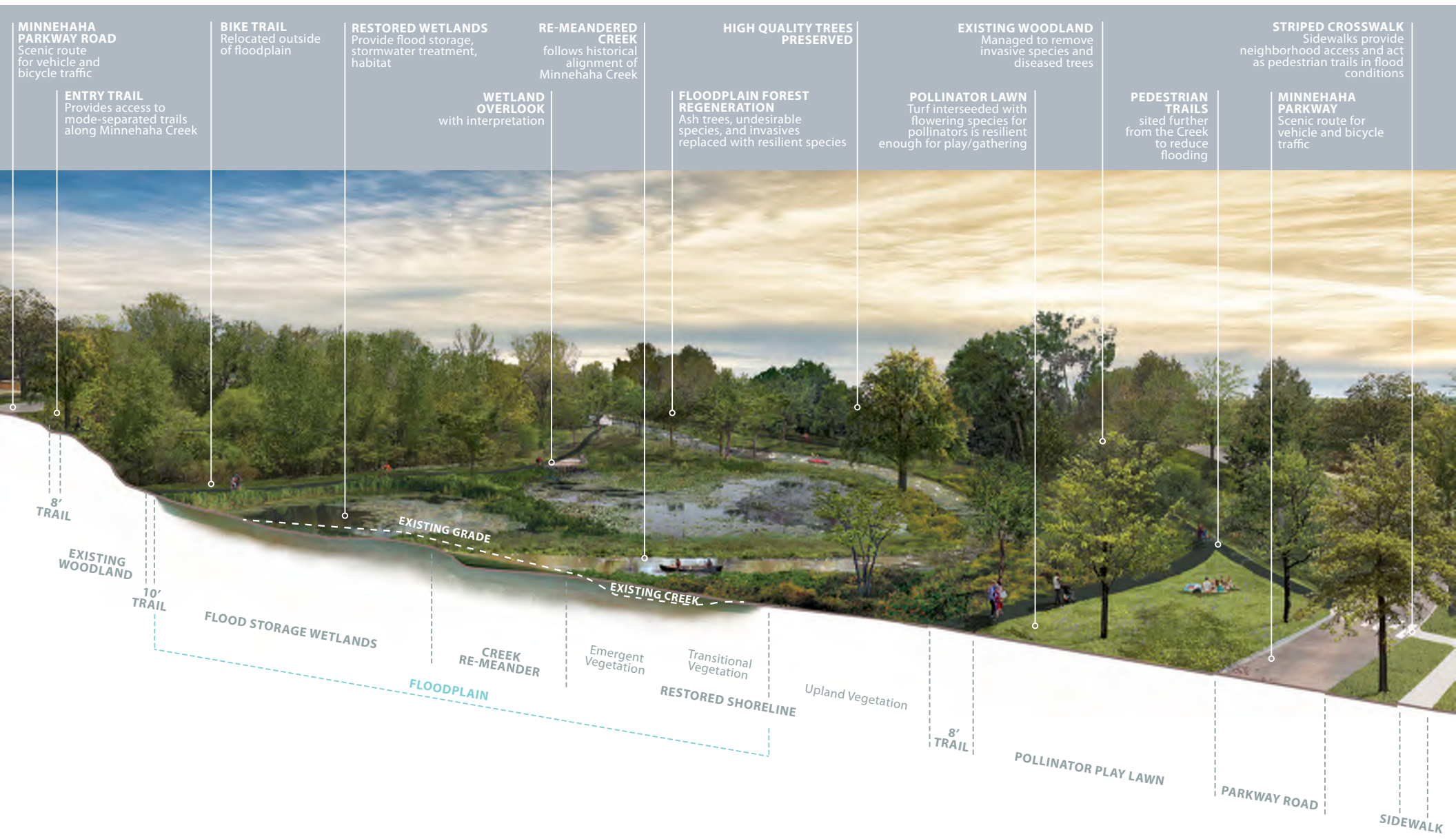


POLLINATOR LAWNS

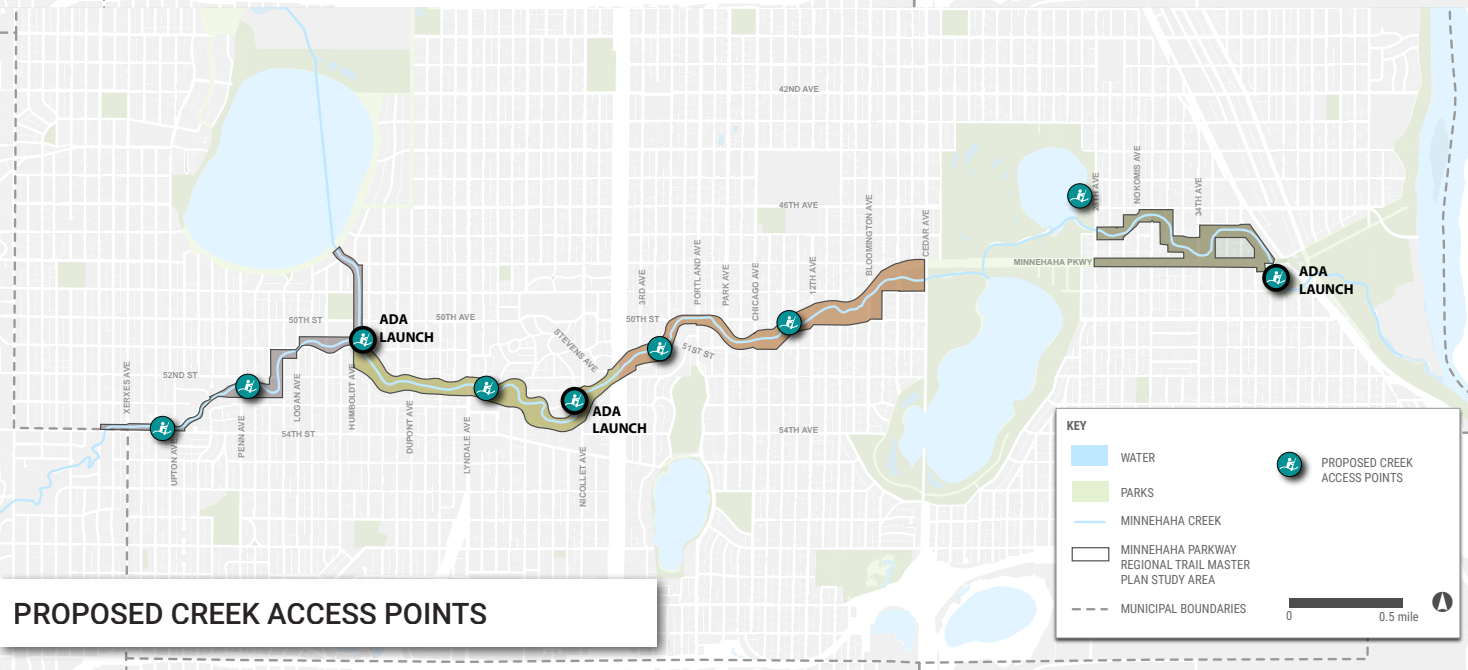
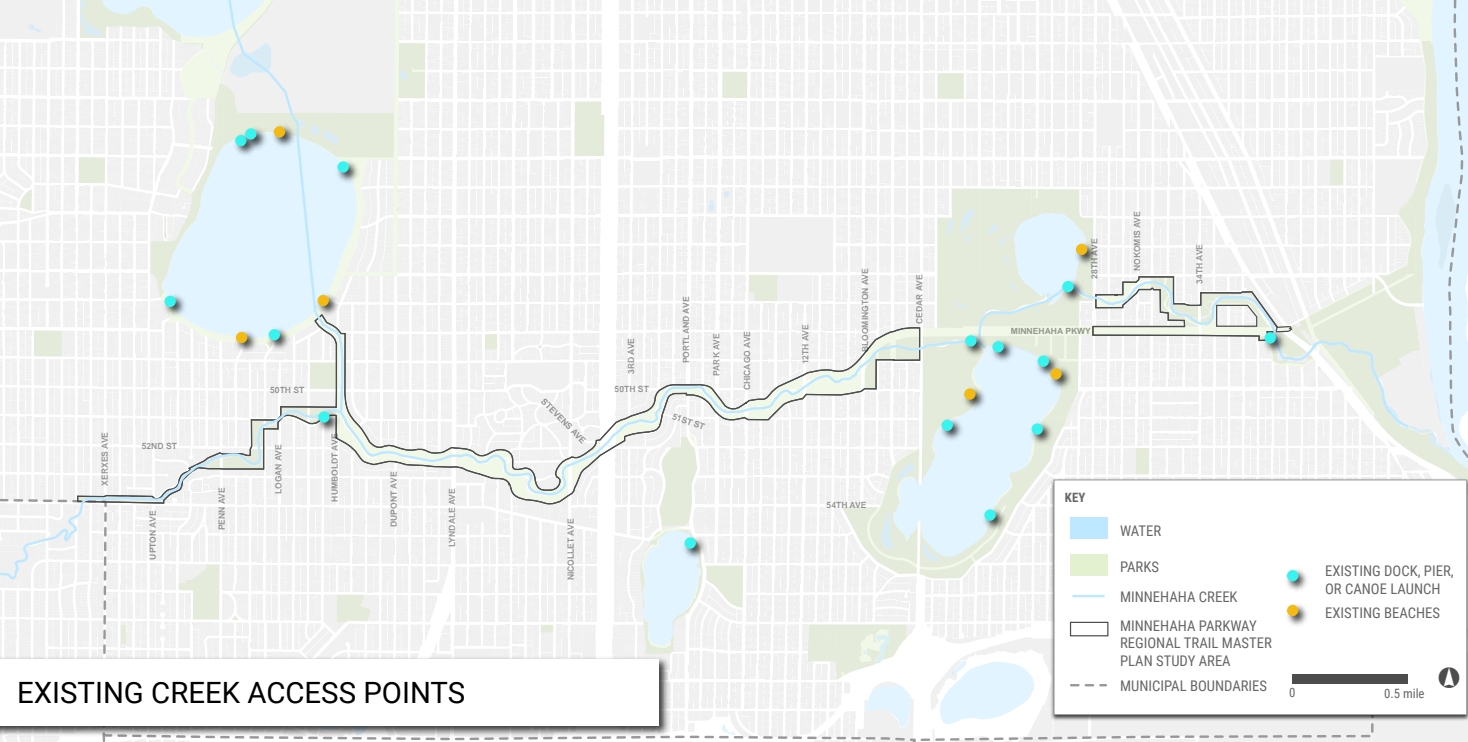
Pollinators move pollen from the male part of a plant's flower to the female part of the same or another plant, resulting in fertilization. This movement of pollen is necessary for the production of fruits, seeds, and many of the foods that we eat. Bees, butterflies, beetles, moths, bats and some birds are all pollinators. The flowering plants that comprise bee lawns are resilient enough to be used in recreational multi-use field spaces, are aesthetically similar to existing turf (if not more attractive), and have the added benefit of providing habitat and food sources for these valuable species.



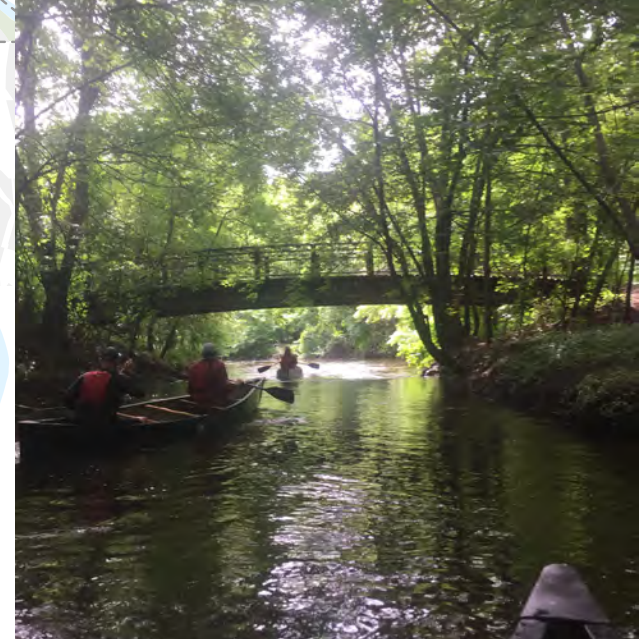
By transitioning underutilized turf areas to pollinator lawns and expanding native habitat, the plan shifts away from a mowing-intensive, fossil fuel reliant, conventional maintenance regime to one focused on targeted habitat management.

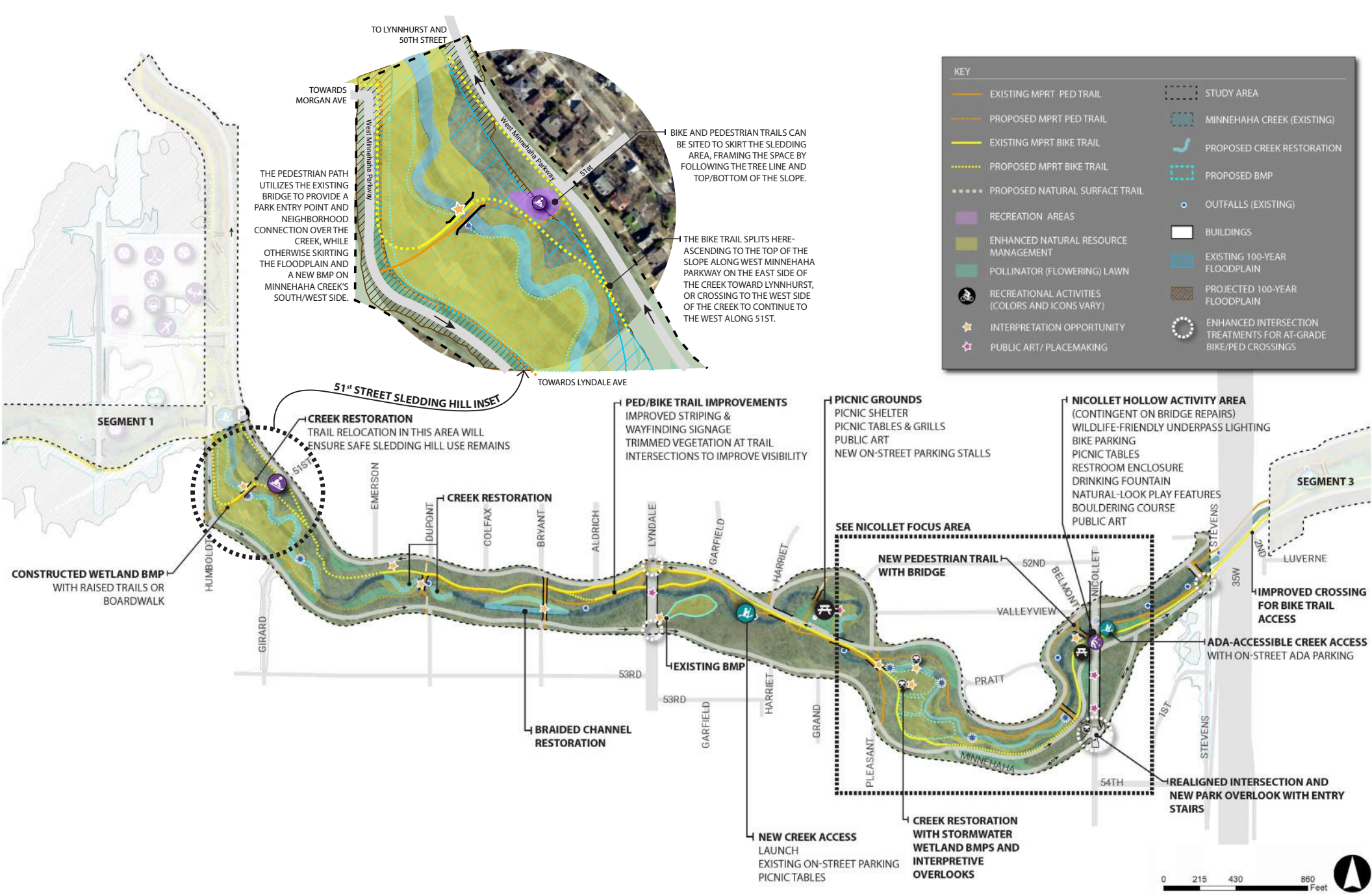


This cross-section through Segment 2 of the MPRT illustrates many of the defining moves of the master plan, including a re-meandered creek that creates space for flood storage wetlands, trails relocated outside of the floodplain, turf converted to native habitat or pollinator lawn, and the addition of an interpretive overlook.



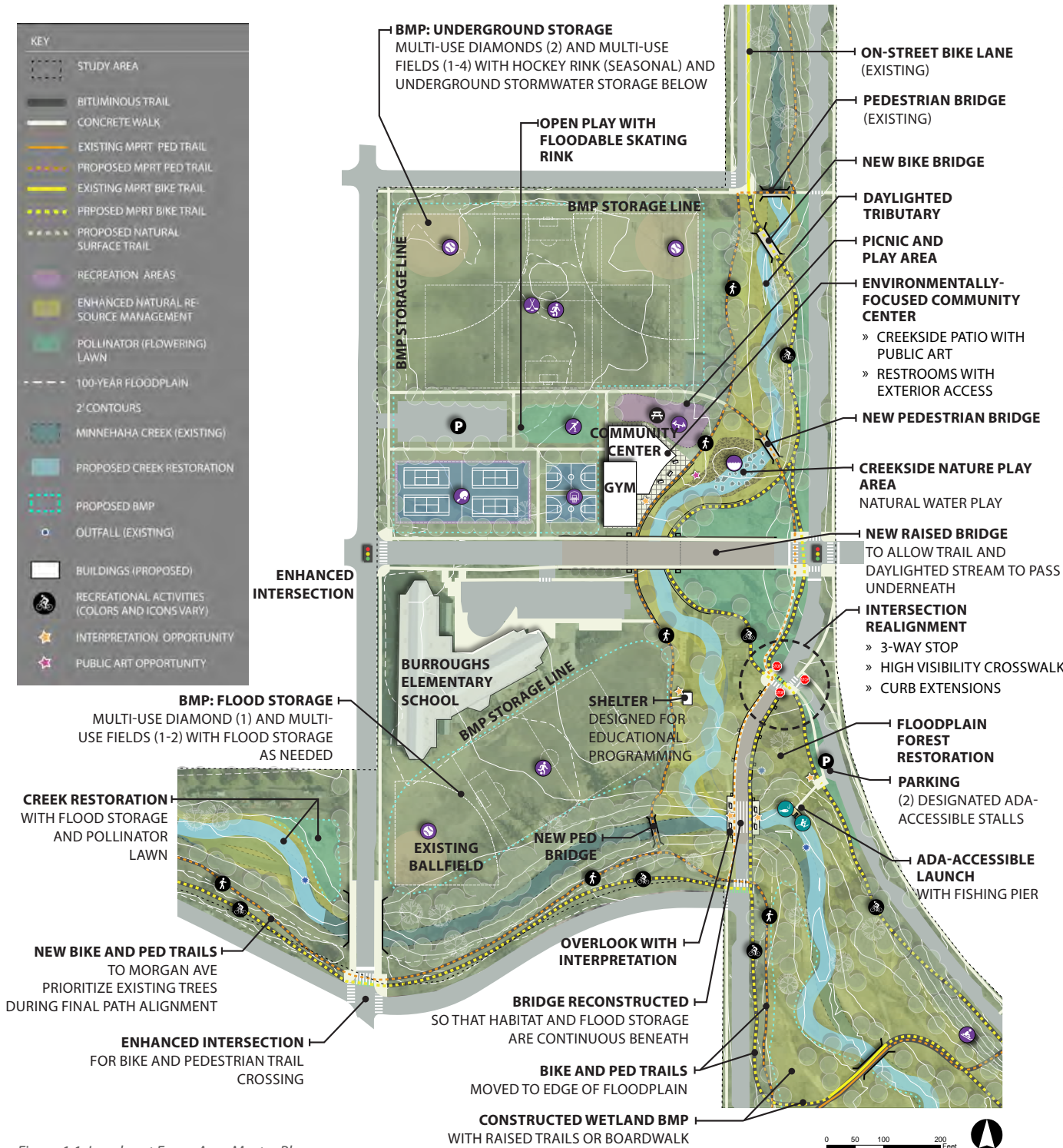
Floating along Minnehaha Creek is one of Minneapolis' great recreational treasures. In an effort to expand this transformational experience to more people, the plan proposes eight creek access points, including three ADA-accessible launches distributed throughout the corridor.





The master plan includes segment maps that outline the broad recreation, connectivity, natural resources, and interpretive moves proposed. Individual focus area plans provide additional detail.

KEY	
[Dashed Box]	STUDY AREA
[Solid Black Line]	BITUMINOUS TRAIL
[Solid Grey Line]	CONCRETE WALK
[Dashed Yellow Line]	EXISTING MPRT PED TRAIL
[Dotted Yellow Line]	PROPOSED MPRT PED TRAIL
[Solid Yellow Line]	EXISTING MPRT BIKE TRAIL
[Dotted Yellow Line]	PROPOSED MPRT BIKE TRAIL
[Dotted Green Line]	PROPOSED NATURAL SURFACE TRAIL
[Purple Circle]	RECREATION AREAS
[Green Circle]	ENHANCED NATURAL RESOURCE MANAGEMENT
[Light Green Circle]	POLLINATOR (FLOWERING) LAWN
[Dashed Grey Line]	100-YEAR FLOODPLAIN
[Dashed Grey Line]	2' CONTOURS
[Blue Line]	MINNEHAHA CREEK (EXISTING)
[Light Blue Area]	PROPOSED CREEK RESTORATION
[Dotted Blue Line]	PROPOSED BMP
[Circle]	OUTFALL (EXISTING)
[Grey Box]	BUILDINGS (PROPOSED)
[Bicycle Icon]	RECREATIONAL ACTIVITIES (COLORS AND ICONS VARY)
[Star Icon]	INTERPRETATION OPPORTUNITY
[Star Icon]	PUBLIC ART OPPORTUNITY



A joint planning process for the Lynnhurst Focus Area (a flood-prone neighborhood park along the Creek) resulted in flexible rearrangement of Lynnhurst's fields and courts and integration of underground flood storage. Active uses are grouped safely out of the floodplain, while land along the daylighted tributary accommodates floodable passive recreation.

Figure 1.1 Lynnhurst Focus Area Master Plan





The master plan shifts the paradigm of traditional park design beyond recreation to achieve harmonious integration of both land and water. The ecosystem services that result from this approach will profoundly benefit the health and well-being of all who interact with the Minnehaha Parkway corridor.



SEGMENT 4 PROJECTS

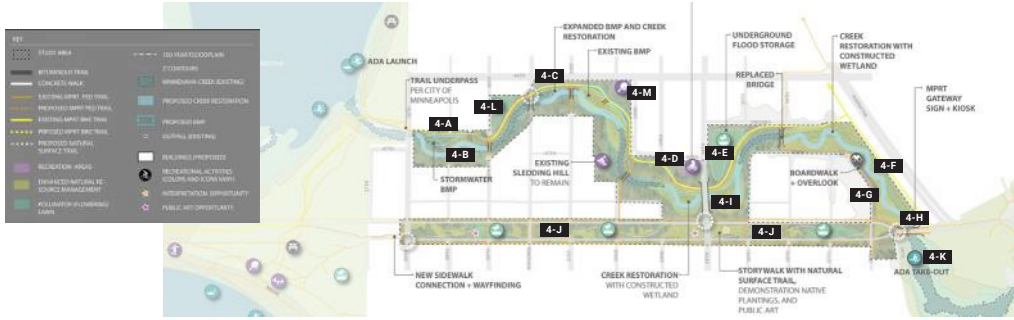


Figure 7.8 Segment 4 Projects

SEGMENT 4 GENERAL PROJECTS

- Projects that are not included in the above project list are considered 'General'
- Outfall Repair
 - Intersection Treatments
 - Native plant community restoration and transition areas for pollinator lawns
 - Trail repair or maintenance of existing facilities to remain as-is
 - Bridge repair at 36th Avenue



Precedent examples of proposed features in Segment 4

TAG	PROJECT NAME	EXTENTS / DIMENSIONS	PROJECT TYPE	RELATED PROJECTS	THEMES				MPRB	MCWD	CITY OF MPLS	EST. COST	
					Trail	Water	Wetland	Other					
4-A	Ped and Bike Trail 28th Ave to 30th Ave	Reconstruction of bike and ped trails to accommodate restoration/BMP areas (1800LF)	Complex	4-B	Trail	Water	Wetland		X			\$216,000	
4-B	Remainder and BMP 28th Ave to 30th Ave	Remainder (710LF) and stormwater BMP (0.5ac) between 28th Ave to 30th Ave	Collaborative	4-A		Water	Wetland					\$662,000	
4-C	BMP and Creek Restoration Nokomis to 32nd Ave	Remainder (885LF) and stormwater BMP between Nokomis and 32nd Ave and restoration area (1.7ac)	Collaborative			Water	Wetland			X		\$962,000	
4-D	Bike Park at 34th Ave	Conversion of existing tennis court at 34th Ave into Bike Skills Course	Stand Alone			Water	Wetland		X			\$300,000	
4-E	Underground Flood Storage at 34th Ave	Underground flood storage BMP (1.5ac) with pollinator lawn at grade	Collaborative			Water	Wetland			X		\$4,792,000	
4-F	Creek Restoration 36th Ave to Hiawatha	Creek restoration with constructed wetland (5.8ac with 1,635 LF remainder)	Collaborative	4-H		Water	Wetland					\$1,733,000	
4-G	Pedestrian Trail and Boardwalk 39th Ave	Trail reconstruction (635 LF) and boardwalk (500 LF) with wetland overlook to accommodate adjacent restoration work	Complex	4-F, 4-H	Trail	Water	Wetland	Other				\$316,200	
4-H	MPRT Gateway Sign and Kiosk at 39th Ave	Gateway sign and MPRB Kiosk at 39th Avenue	Stand Alone	4-G, 4-K		Water	Wetland	Other				\$50,000	
4-I	Restoration at 34th Ave	Creek restoration (3.5ac) and remainder (1040 LF) at 34th Avenue	Collaborative			Water	Wetland	Other				\$1,094,000	
4-J	Storywalk 28th Ave to 39th Ave	Natural surface trail (4,000 LF) with interpretation, public art, pollinator lawn and native landscape restoration (up to 9.6ac) throughout the Parkway boulevard.	Stand Alone		Trail	Water	Wetland	Other				\$687,000	
4-K	ADA Creek Takeout	Takeout for paddlers at 39th Avenue with ADA accessibility and nearby parking. Last takeout before Minnehaha Falls.	Stand Alone	4-H		Water	Wetland					\$120,000	
4-L	Tennis Court Removal and Pollinator Lawn at 30th Ave	Removal of existing tennis court and seeding for pollinator lawn (0.82 acres) at field along 30th Avenue north of the Creek. Separate pedestrian and bicycle trails to remove pinch points.	Stand Alone			Water	Wetland		X			\$177,000	
4-M	Renovation of Tennis Court at 32nd Avenue	Renovation (resurfacing) of existing tennis courts at 32nd Avenue (3 courts)	Stand Alone			Water	Wetland					\$195,000	
SEGMENT 4 TOTAL													\$11,304,200

Table 7.8 Segment 4 Projects

Implementation of the master plan is a multi-agency effort between the MPRB, City of Minneapolis, and Minnehaha Creek Watershed District. This partnership will facilitate the implementation of complex projects in a comprehensive, coordinated, and efficient manner. The implementation chapter identifies projects, themes, priorities, related work, and associated costs.