Location and Context

The Mississippi River gorge extends from the base of St. Anthony Falls to the east side of St. Paul, and the Mississippi Gorge Regional Park is located along the gorge within the City of Minneapolis. (figure 2-1). The gorge is characterized by steep wooded bluffs overlooking the river, a connected system of parkways and trails, floodplain forests in the river flats, and urban parks on the bluffs and in the flats. It offers residents and visitors an opportunity to enjoy nature in the city and the ability to access the Mississippi River. The gorge is unique as the only river gorge along the entire length of the Mississippi River, and has geological, cultural, and historical significance in the Twin Cities region.

MGRP in Minneapolis encompasses approximately 265-acres and 5.5 miles of riverfront flanking both the east and west banks of the Mississippi River. It is part of a larger continuous regional park system along the river, abutted by Central Mississippi Riverfront Regional Park to the north and Minnehaha Regional Park to the south. It is bordered by Bridge No. 9 on its northern edge and Minnehaha Regional Park on its southern edge, and roughly bound by West River Parkway on the west side of the river and East River Parkway on the east side of the river within the City of Minneapolis.

The park is lined by several South and Southeast Minneapolis neighborhoods, including Cedar-Riverside, Seward, Longfellow, Cooper, Howe, Hiawatha, University, and Prospect Park/East River Road. Adjacent neighborhood land use character ranges from single-family residential, to multi-family residential, to mixed-use/commercial, to large scale college/university buildings. The University of Minnesota and Minneapolis Rowing Club both operate existing boathouse facilities within the park.

MGRP lies within a unit of the National Park Service system, the Mississippi National River and Recreation Area (MNRRA) - a 72-mile stretch of the river corridor reaching from Dayton/Ramsey to just south of Hastings, MN. MGRP is served by two National Scenic Byways – The Grand Rounds and the Great River Road. It is also served by the first and only state bikeway, the Mississippi River Trail.
Figure 2-1. Study Area Map
Cultural and Historic Resources

This section provides an overview of the park area history, including cultural resources that have been identified within Mississippi Gorge Regional Park. Additional information about cultural resources within and adjacent to MGRP can be found in Appendix A, including applicable legislative requirements regarding cultural resource preservation and an overview of previous cultural resources investigations in the vicinity. The cultural resources of the area, and the stories they evoke, informed the interpretive theme and subthemes as a way of engaging visitors and enhancing their experience at MGRP.

Overview of Area History

The lakes, rivers, and topography of Minneapolis are a result of the movement of glaciers during a series of ice ages thousands of years ago. The Mississippi River once flowed through present-day South Minneapolis and was diverted eastward to its present course because of a glacial advance some time before 35,000 BCE. The gorge itself was created as the Mississippi River slowly undercut the Platteville Limestone ledges sitting atop the softer layers of shale and St. Peter Sandstone. The fall of water over the edge of the limestone is known today as St. Anthony Falls, or Owamni, and started its gradual recession in Saint Paul before it was encapsulated in concrete over a century ago. The MGRP area has a long American Indian history and is tied to the industrial, recreational, educational, and residential development of Minneapolis and Saint Paul as well. The river through the park area changed with the construction of the federal lock and dam system starting in the late 1800s. Mississippi Gorge Regional Park and its associated parkways provide numerous views and experiences of the river and its bluffs and flats.

For thousands of years prior to the arrival of Europeans, ancestors of the Siouan people (including the Missouria, Otoe, Iowa, and Dakota) were living on the land that would later become known as Minnesota, or Mni Sōta Makoce, the Dakota name given to their homeland meaning the land where the waters reflect the clouds. Their history ranges from mobile, compact bands of hunter-gatherers about 12,000 years ago, to denser settlements proficient in ceramic manufacturing and corn-based horticulture by the 400s CE into the late 1700s. American Indians in what is now south-central Minnesota demonstrated resiliency and a complex understanding of the ecological and social environments in which they lived. The area surrounding and including the confluence of the Mississippi and Minnesota Rivers is known as Bdote by the Dakota people; it is the spiritual center of their universe and their birthplace. The earliest Euro-Americans in the land that was to become Minnesota were French missionaries and fur traders during the mid-to-late 1600s, followed by British, and later American, traders and explorers in the 1700s and 1800s. The Dakota, a word for ally, are called the friendly people and were populating the area when French fur traders traveled through and when the American military established itself. Dakota people still live and work here now and visit and honor their historic landscapes and places where ceremonies were held and burials took place. The arrival of Euro-Americans, who by the 1800s dramatically altered the environment and social landscape through the fur trade, warfare, settlement, and treaties, forced American Indians to find new ways to adapt to an increasingly altered homeland. During the mid-1600s, the westward expansion of the fur trade and a growing European presence, as well as conflict between tribes resulted in the migration of the Ioway and Otoe south and west into Iowa and Nebraska. During this time, the Dakota more permanently settled in the area, due in part to the establishment of the Ojibwe in north and central Minnesota, and maintained a strong presence until treaties, war, disease, and forced removal decimated their home in the 1850s and 1860s. The Dakota War of 1862 was a boiling point in the Dakota peoples’ history. It resulted in the largest mass execution by the US government to date and the outright exile of the Dakota people after the US Congress revoked all treaties with them. To the Dakota, Mni Sōta Makoce was lost, and their homes and families permanently altered.

The pioneer settlers were drawn to the Mississippi River and its potential to provide the power and access to transportation for their developing industries. As a result, they settled the first towns that would become St. Anthony and Minneapolis on both banks of the Mississippi...
Logs were cut from forests to the north and floated down the river to construct buildings as well as supply the burgeoning lumber industry. Additionally, the river turned turbines that powered the flour mills, for which the area is well-known. The powerful St. Anthony Falls, however, proved challenging for steamboat navigation and hampered development of Minneapolis' manufacturing industry. In the 1850s, industry and community leaders began talking about a lock and dam system.

Shippers and civic boosters promoted the idea with the hope that such a system would make Minneapolis the Mississippi River’s head of navigation. However, the millers at St. Anthony Falls were concerned about competition from a new source of water power and lumbermen were worried they would no longer be able to float their logs down the river to booms above Saint Paul for collection. Meanwhile, Saint Paul businessmen and boosters were afraid their city would lose its stronghold of navigational power to Minneapolis.

After several decades of political debate and intercity rivalry between Saint Paul and Minneapolis, in the 1890s, the federal government initiated the construction of a lock and dam system. One lock and dam would be located near Meeker Island, which was proximate to the Minneapolis city limits, and the other farther south near the mouth of Minnehaha Creek. The Meeker Island Lock and Dam (originally called Lock and Dam No. 2) was completed in 1906, but abandoned in 1912 and partially demolished because it was too low to support hydropower. At the same time, efforts were redirected toward building a high dam at the Minnehaha Creek location, which would be more conducive to hydroelectric power because of its steep slope and narrow gorge. This dam, known as Lock and Dam No. 1, was completed in 1917 with a deeper channel that would supply hydroelectric power less expensively and allow navigation as far as the Washington Avenue Bridge in Minneapolis.

Recreation and the Grand Rounds

In 1883, shortly after the Minneapolis Board of Park Commissioners (MBPC; now the Minneapolis Park and Recreation Board was formed, it hired renowned landscape architect Horace William Shaler Cleveland to plan the city’s comprehensive park system. Cleveland’s plan was composed of a 20-mile loop of parkways to provide access to lakes and parks.

His plan became known as the Grand Rounds. Cleveland’s early maps of the park system depicted a continuous ribbon of recreational space. The park system was designed to highlight and connect Minneapolis’ dramatic natural features, such as the
Mississippi River Gorge, and picturesque landscapes. As part of his plan, Cleveland encouraged the inclusion and preservation of the Gorge and its wooded banks to provide “beneficial, invigorating winds” during the summer months. Consequently, in 1892, the MBPC initiated the acquisition of both banks of the river through the Minneapolis City Council to incorporate them into the park system and “to prevent the contamination of the City’s water supply.”

When Theodore Wirth became superintendent of the parks system in 1906, he embarked on an ambitious plan to add additional parkway land and significantly improve the existing parks and parkways, including those near what is now Mississippi Gorge Regional Park. Horse-drawn traffic gave way to automobile traffic, which led to paving the parkways and required more road maintenance. Wirth also initiated the construction of the Winchell Trail. This pedestrian pathway runs from Franklin Avenue to Godfrey Parkway (at the northern edge of the of Minnehaha Regional Park) in between West River Parkway and the river. Built in 1912-1914, it is named for Minnesota state geologist Newton Horace Winchell. The trail was rebuilt in 1936-1938 by the Works Progress Administration (WPA). Despite the MBPC’s original intention to prevent contamination, by around 1920, the river had become quite polluted from the City’s sewage disposal, which caused reduced flowage and impacts to air quality. This problem was resolved through the construction of the interceptor sewage disposal system in 1934-1938, which conveyed sewage and stormwater to the Metropolitan Treatment Plant in Saint Paul instead of the Mississippi River.

In addition to securing parkland adjacent to the river, MBPC initiated plans in the late 1800s to develop parkways adjacent to the parkland. In 1899, East River Parkway between University Avenue Southeast and Franklin Avenue was built. In 1909-1910, the parkway was extended southward to the city limits. Limestone walls were installed at the edge of the bluff to the north of Franklin Avenue in 1940-1941 by the WPA. West River Parkway between Godfrey Parkway and Lake Street was constructed in two phases between 1903 and 1906. Between 1936 and 1939, following the river cleanup, the WPA extended West River Parkway from Franklin Avenue to just beyond 4th Street South. The WPA also modified the parkway to improve drainage and stabilize the slopes, and installed many of the stone retaining walls and stone parapets along the parkway. Both East and West River Parkways follow the curve of the river, providing scenic views of the river for people driving, bicycling, or walking along the roads.

In addition to vehicular parkways, the Grand Rounds also accommodated bicycle traffic, including along East River Parkway north of Franklin Avenue. By 1907, the MPBC converted the bicycle paths to bridle paths for horseback riding; they were removed by the mid-1900s. Bicycles regained popularity in the 1960s, resulting in the construction of new bicycle paths throughout the Grand Rounds in the 1970s.

Cleveland’s original plan for the park system included Riverside Park, along the west side of the river near present-day Franklin Avenue. The land for Riverside Park was acquired in 1884 and was originally bounded by 6th and 8th Streets on the south, 27th Avenue South on the west, and 29th Avenue South on the east. It was doubled in size in 1911. To fulfill Wirth’s passion for recreation, a playground was installed in 1906 and athletic fields and facilities were added in 1913.

Minnehaha State Park (today named Minnehaha Regional Park), which is sited around Minnehaha Falls and south of 46th Street in Minneapolis, was added to the municipal park system in 1889. The falls were identified by Cleveland as a key feature of the Gorge as well as the park system. The land for East River Flats Park, just south of the University of Minnesota, was also acquired in 1899. It was planned to be developed into a recreational area, particularly for “pleasure boating.”
Formal plans to develop a playground, an arboretum, and athletic fields never came to fruition. Today, the University of Minnesota Boathouse is located near the east end of the park.

In the early 1970s, the MPRB made significant changes throughout the Grand Rounds system, including narrowing roads, installing new walkways and bikeways, and updating benches, signs, and picnic tables.

Additionally, new lighting was installed and parking was added along East and West River Parkways. Intersections were also redesigned to maintain the continuity of the parkway system and signage was improved.

Today, the Grand Rounds remains one of the oldest, largest, and most intact linear park systems in the country. The Grand Rounds consists of 50 miles of parkways and nearly 6,000 acres of associated parkland, including Mississippi Gorge Regional Park.

**University of Minnesota**

The University of Minnesota was founded in 1851 and was under construction on the east bank of the Mississippi River starting in 1854. Construction continued steadily as the University expanded, and the buildings generally reflected popular architectural styles. The University expanded across the Mississippi River to the west bank in the 1960s. This led to the reconstruction of the Washington Avenue Bridge, which is the only known double-decker bridge entirely within the state and allows for pedestrian traffic on one level and vehicular traffic on the other.

In 1957 the University of Minnesota Men’s Rowing Crew was established. It marked the start of a great new competitive tradition on the water of the Mississippi River. The Crew was housed in a Quonset building and a metal storage building for years until 2007 when they moved into the University’s boathouse within East River Flats Park. In 2018 the boathouse was renamed the Irene Claudia Kroll Boathouse in honor of her strong support for education and opportunities for women. Women’s Rowing became a UMN sport in the 2000-01 season. Both the men’s club team and women’s varsity team have received numerous awards and honors over the years.


**Minneapolis Rowing Club**

The Minneapolis Rowing Club (MRC) got its start on Bde Maka Ska in 1877 under the name Lurline Boat Club. Declining interest and two wars brought the club to a temporary closure at the turn of the 20th century. In 1928 after World War I, the club made its return and was formally incorporated a decade later in 1938 as the Minneapolis Rowing Club. The rowing facility at Bde Maka Ska moved to the MRC’s current location along the west bank of the Mississippi river in 1965. In 1997 their boat house burned and was replaced with the one currently settled along the shore, an award-winning example of progressive architecture. For more than 50 years the MRC has been a leading partner for rowing and recreation along the Mississippi River gorge in Minneapolis and St. Paul.
Bohemian Flats
A community of immigrants formed across the river from the developing University of Minnesota on a low-lying river terrace beginning in the 1860s. Despite being referred to as “Bohemian Flats,” the community was home to recent immigrants from several European countries. The largest groups of immigrants were Czech, Slovak, Swedish, and Irish.

Residents worked at nearby breweries and by gathering lumber and logs that had floated downriver from the upstream sawmills to sell or use for heating and home construction. The land on which Bohemian Flats was located was owned by St. Anthony Water Power Company, which rented wood houses along dirt streets to residents for $12 per year in the 1880s. Because the river regularly flooded, the community did not have many large buildings except for a church, a few stores and saloons, and a brick apartment building.

This community, which had a population of 1,200 by 1900, was likely the largest of the river flats settlements along the Mississippi River. In the early 1930s, the City cleared the land to build a municipal barge terminal. The last resident did not vacate the flats until 1963, and today the area is home to Bohemian Flats Park.
Cultural Resources

Cultural resources identified within or adjacent to MGRP include four historic districts and associated contributing and noncontributing properties, five historic bridges, and the ruins of a lock and dam. There are also five archaeological sites within the project area. Please see Appendix A for additional information regarding the historical significance of each resource.

Mississippi Gorge Regional Park is part of the Mississippi segment of the Grand Rounds Historic District, which is eligible for listing in the National Register of Historic Places (NRHP). This segment includes West River Parkway from Godfrey Parkway at the south end to Franklin Avenue; the extension of West River Parkway from Franklin Avenue to just north of the intersection with South 4th Street; the Winchell Trail, a historic pedestrian pathway along West River Parkway; Riverside Park north of Franklin Avenue; and East River Parkway from Emerald Avenue Southeast to University Avenue Southeast. Contributing properties within and adjacent to the MGRP include West River Parkway, East River Parkway, the Winchell Trail, two parks, a restroom building, a limestone retaining wall, a railroad bridge, and several commemorative boulders. The Cappelen Memorial Bridge/Franklin Avenue Bridge is a contributing property to this district as well as individually listed in the NRHP; it is further detailed below. Noncontributing properties include three bridges and two boathouses, all of which were built within the last 50 years.

The Minnehaha Historic District is listed in the NRHP and located at the east end of Minnehaha Parkway near Hiawatha Avenue, Minnehaha Drive, and Godfrey Parkway, to the west of the Mississippi River. This district contains the ruins of Godfrey’s Mill, two historic houses, a train depot, and a landscape feature (the Minnehaha Falls and Glen). The Minnehaha Historic District is also part of the Grand Rounds Historic District. Contributing properties to the Grand Rounds Historic District that are within the boundaries of the Minnehaha Historic District include the five properties mentioned above, the entire Minnehaha Park, Godfrey Parkway, a park pavilion, bridges, and statues. Noncontributing properties include a picnic area, bandshell, and a garden.

The University of Minnesota Old Campus Historic District is also listed in the NRHP and is roughly bounded by University Avenue Southeast to the northeast, the Dinkytown Greenway to the northwest, East River Parkway to the southwest, Arlington Street and just south of Pillsbury Drive Southeast to the south, and just east of Church Street Southeast to the southeast. Contributing properties include 12 buildings, a statue, a fence, a fountain, and a monument.

The Northrop Mall Historic District is also listed in the NRHP and is located directly south of the University of Minnesota Old Campus Historic District. It is roughly bounded by East River Road on the west, Pillsbury Drive Southeast on the north, Union Street Southeast on the east, and Delaware Street Southeast on the south, and is part of the University of Minnesota’s Minneapolis campus. This district contains 16 contributing buildings, three contributing landscape features, and one noncontributing landscape feature.

Additionally, there are four individual properties that are listed in the NRHP: the Intercity Bridge/Ford Bridge, the Cappelen Memorial Bridge/Franklin Avenue Bridge, the Cedar Avenue/10th Avenue Bridge, and the Meeker Island Lock and Dam (Lock and Dam No. 2) ruins. All of these properties are located within or adjacent to Mississippi Gorge Regional Park. There are also two NRHP-eligible bridges that cross the Mississippi River Gorge: the Washington Avenue Bridge and the Northern Pacific Railroad Bridge No. 9.

Four archaeological sites, all of which are post-contact, have been documented within or adjacent to MGRP. One potential pre-contact archaeological site has been reported in MGRP, but has not been field-confirmed. There are no known traditional cultural properties. Further information about known historic properties and previous cultural resource investigations can be found in the Appendix.
10th Ave. Bridge
Figure 2-2. Parks, Trails, and Open Spaces
Parks, Open Spaces, and Trails

An assessment of existing parks, open spaces, and trails which make up the Mississippi Gorge Regional Park is described below:

Existing Parks and Open Spaces

The Mississippi Gorge Regional Park is large enough that there are several different component park and open spaces within the regional park. Existing parks and open spaces range from the urban Riverside Park, one of Minneapolis’s oldest neighborhood parks, to the natural “Oak Savanna”, a sensitive remnant prairie and savanna landscape. These spaces provide people with important places to recreate, gather, socialize, and experience nature. The following pages include a more detailed description of existing parks, open spaces, and trails within the regional park.

General Issues

Issues and opportunities were identified in the assessment of existing parks, open spaces and trails in MGRP, including the following:

- Various materials used at different times on different sections of the park/parkway, including:
  - Light fixtures
  - Seating
  - Site walls
  - Signage/wayfinding
  - Railings
  - Fencing
- Bohemian Flats Park lacks programming and facilities.
- East River Flats Park lacks programming and facilities.
- Poor connections between Upper Riverside Park and Annie Young Meadow.
- Restroom buildings at Riverside Park and East River Flats are in need of restoration or repair.
- Winchell trail railing/fencing is inconsistent and worn. Many areas that are paved are covered in soil and plant material. Further, the natural surface alignment of the Winchell Trail is not well defined.
- Winchell Trail pavement is inconsistent, worn/eroded and in some instances, fencing and railings are missing.
- ADA compliance is not consistent throughout the regional park.
- Some safety concerns in areas of the park (i.e. along Winchell Trail).
- Signature red aggregate pavement on West River Parkway is not installed on all of West River Parkway, and it is not used with any consistency on the East River Parkway.
- East River Parkway lacks the extra-wide curb used on West River Parkway. Invasive plant species have overtaken parts of the regional park displacing native trees, plants, and grasses.

General Opportunities

- Signature curb should be used throughout the park.
- Strengthen park identity through consistent use of materials and elements.
- Expand and modernize picnic facilities throughout the regional park.
- Restore riparian areas and add improvements at stormwater outfall locations.
- Enhance wildlife habitat areas.
- Reduce invasive plant species throughout the park – i.e. buckthorn - and incorporate wildlife-friendly erosion controls.
- Expand event programming in the park.
- Ensure trail and walkway gaps are completed and new ADA ramps installed.
- Expand winter recreation opportunities (ice climbing, skiing, sledding) throughout the regional park.
- Explore opportunities for adventure sports opportunities (climbing walls, exercise courses, hiking, etc.).
- Incorporate WiFi in the park (where appropriate).
- Explore geocaching opportunities in the park.
- Incorporate stormwater treatment (raingardens, green streets, permeable pavers, etc.) throughout the regional park.
- Add more play areas/nature based play facilities.
- Incorporate public art in the parks.
- Add more drinking fountains throughout the park.
- Add more and higher quality restrooms throughout the park.
- Enhance natural/scenic areas throughout the park.
- Encourage more native plantings throughout the park.
- Establish designated fishing piers/locations and access points.
- Become ADA compliant where applicable in the park.
- Enhance and define vertical connections throughout the park (stairs, ramps, etc.).
**Existing Trails**

Trails provide important connections to/from and within the park. They are the most heavily used facility in the park, with paved trails providing well-maintained, safe and convenient routes for commuters, and the natural surface trails offering an escape from the urban bustle for recreators, and naturalists to enjoy throughout the year. Trails are linked to adjacent city sidewalks and other regional trails, delivering residents and park visitor’s important connections between the neighborhood and the regional park. Below is a more detailed description of existing trails in the park.

**Paved Trails**

Existing trails within the park include approximately 15-miles of paved trails, consisting of shared-use, pedestrian and bike trails, and sidewalks. Paved trails are located along East and West River Parkways, and within Riverside Park, Bohemian Flats Park, East River Flats Park, and Franklin Flats. The south section of the Winchell Trail is also paved from the trailhead near 44th Street to the Oak Savanna, near 38th Street. Paved trail use includes walking, running, biking, commuting, rollerblading, roller skiing, dog walking, and sight-seeing, among other uses. The trail system is connected to the city sidewalk system and other nearby trails such as the Midtown Greenway, Minnehaha Creek Regional Park trails, Bridge No. 9, Bluff Street Park Greenway, Dinkytown Greenway, Franklin Avenue Bridge bikeways, Lake Street Bridge bikeways, Ford Parkway Bridge trails, and trails within St. Paul’s trail system. A raised bridge-like section of trail connects East River Flats to “Southeast Flats” along the east side of the river near Bridal Veil Falls and the Franklin Avenue Bridge.

**Natural Surface Trails**

The park also includes a number of planned and unplanned natural surface trails, located in "Longfellow Flats," “Southeast Flats,” Annie Young Meadow to Riverside Park, the “Oak Savanna,” and other natural areas within the gorge. The Winchell Trail is also predominantly a natural surface trail from the south end of the Oak Savanna, near 38th Street, moving north to just south of the Franklin Avenue Bridge. Aside from the Winchell Trail, most of the natural surface trails are undesignated and undefined trails, and were not created by the MPRB but by users of the park. Many of these trails are not sustainable and traverse very steep slopes causing erosion and, in some cases, unsafe conditions. Natural surface trail use includes hiking, snowshoeing, Nordic skiing, trail running, mountain biking, and birdwatching, among other uses. Though mountain biking has been seen throughout the park, all existing natural surface trails are designated pedestrian only. Many of the natural surface trails provide access to beaches, floodplain forests, fishing spots, places to get away from the city, and other riverfront destinations.

**Staircases and Ramps**

The park includes numerous staircases and ramps that provide park users with access from upper levels of the Gorge (bluff top) to areas along the river flats below. They provide users with access to the Winchell Trails at several points along its course, access between Riverside Park and Annie Young Meadow, and access to facilities within the park such as stormwater treatment structures, rowing club facilities, beaches, paddle launches, and parks within the Gorge. Stairway materials consist of stone, concrete, metal, and wood. Some of the stairways are historic WPA (Works Progress Administration) structures. Several structures are degrading and in need of replacement or repair.

**Trail Amenities**
Existing trail amenities within the park include wayfinding and signage (including information kiosks), lighting, site furnishings (seating, trash receptacles, and bicycle racks), drinking fountains, portable restrooms, overlooks, interpretive elements, and trail related structures (walls, guardrails and fencing). Many trail amenities are showing signs of their age and are in need of replacement or repair. The park also lacks consistent trail amenity design, quality, and materials. Findings from the community surveys conducted by MPRB reveal a desire for more consistent and better design of trail amenities such as restrooms, drinking fountains, seating, and overlooks.

**Trails Opportunities**

» Clarify and enhance the Winchell Trail (trail surface, fencing, railings, staircases, signage, overlooks, rest areas, etc.) and complete gaps in the trail.

» Employ sustainable trail design.

» Improve trail conditions – paved and natural surface trails.

» Remove unsustainable trails and restore/revegetate the landscape.

» Improve vertical connections between bluffs and river bottom.

» Create loop trails:
  • Utilize existing bridges to complete loops across the river (No. 9, Washington Ave, Franklin Ave, Midtown Greenway rail bridge -if possible in the future, Lake St, Ford Pkwy)
  • Provide connections from trails to bridges (in some cases, vertical circulation)
  • Include maps/color coding/marker on trails
  • Partner with City of Saint Paul

» Abandon and restore landscapes on trails that are not sustainable.

» Consider the multi-functional/seasonal aspect of trail use.

» Shared objectives:
  • Create trails that are easily accessible to trail users of all abilities
  • Provide off-road trail experiences for the more adventurous
  • Provide access to desirable places outside the park itself
  • Potential to serve as stand-alone event venue (i.e. cross-country running trail)

» Balance trail use/location with fragility of the environment/sensitive river ecology.

» Provide more access points to the river.

» Facilitate travel up and down the river corridor.

» Trail surface design – incorporate materials that resist erosion (i.e. improvements to sand trails).

» Create sustainable natural surface trails.

» Address safety issues.

» Education required (trail use, maintenance, etc.).

» Plan some trails for 2-way traffic.

» Signage required (wayfinding, education, safety).

» Consider fence removal in some areas along the Winchell Trail where fencing is unnecessary.

» Address erosion control on trails– trail alignment, grading, materials, etc.

» Create identifiable trail entries/trailheads – nodes (signage, mapping, seating, bike racks, trash receptacles, etc.).

» Consider trail identification markers (on trees) and distance markers.

» Consider special aggregates to identify trails.

» Advocate to extend the Midtown Greenway in order to create additional trail loops around the park.
Bohemian Flats Park

Existing Conditions

Bohemian Flats Park lies at the north end of the MGRP, located on the river flats, below the West Bank of the University of Minnesota, along West River Parkway. The property has a storied history as a place that attracted immigrant families who worked in the City, then as an industrial storage and barge terminal, to its current use as a riverfront park. Bohemian Flats Park is approximately 15 acres in size with 2,500 feet of riverfront and is accessed off West River Parkway. It is an open site with the potential to be a more active park than it currently is. It has a structured riverfront wall, railing, and walkway along its east edge, offering continuous views up and down the river corridor. Parkway trails along the parks west edge see activity throughout the day. River boat tours are operated at the park today and it features several amenities that can support that business, such as parking, tour boat vending offices, and restrooms. The park contains several amenities and features, including the following:

» Walking and biking paths
» Small non-motorized watercraft launch/beach
» Tour boat office and tour boat access
» Portable restrooms/screening structures
» Picnic shelter/tables
» Seating/benches
» Flexible open space/turf areas
» Bulkhead wall/railing and walkway along riverfront
» Sidewalks connecting parking to the riverfront
» Lighting for park, parkway and parking lot
» Pay parking lot
» Trash receptacles
» Park identity signage
» Information/wayfinding kiosk
» Drinking fountain

Issues and Opportunities

» Create a community gathering space.
» Active recreation uses (sand volleyball, play area, etc.).
» Create an indoor multi-use spaces that can be used for recreational, social, and cultural programming.
» Consider an outdoor performing arts space.
» Address ADA accessibility issues – provide accessible walkways, ramps, and picnic facilities
» Enhance the non-motorized watercraft launch area/beach.
» Consider prairie or native plantings in the park.
» Provide more shade in the park.
Annie Young Meadow

Existing Conditions
Annie Young Meadow (formerly Lower Riverside Park), is located on the narrow river flats south of Bohemian Flats Park, along West River Parkway, and below Riverside Park. Annie Young Meadow is approximately 5 acres in size with nearly 1,500 feet of riverfront and can be accessed off West River Parkway, or from Riverside Park via the historic WPA staircase. The park contains several examples of WPA structures, including the staircase, terraced stormwater structures, and stone walls. It is a passive use park with mature shade trees and places for picnicking. It is also a favorite location for shore fishing along the riverfront. It is a popular park for local residents from the Cedar-Riverside and Seward communities to meet and socialize. While the park offers picnicking facilities, they are in a state of disrepair and do not meet standards for accessibility. The park contains the following existing amenities and features:

- Picnic tables
- BBQ grills
- Portable restroom
- Shade trees and turf areas
- Wooded hillside
- Drinking fountain (inoperable)
- Several historic WPA structures (staircase, terraced water steps)
- Lighting
- Park identity signage

Issues and Opportunities
- Better connect Riverside Park and Annie Young Meadow.
- Address ADA accessibility issues - provide accessible walkways, ramps, and picnic facilities
- Replace failing site furnishings (picnic tables, drinking fountain, bbq grills, etc.)
- Improve the landscape between Annie Young Meadow and Riverside Park.
Riverside Park

Existing Conditions
Riverside Park is one of the City’s oldest parks and truly serves as a neighborhood park for the surrounding community. The original plan for Riverside Park was created by landscape architect, HWS Cleveland, who had included the park in his 1883 “suggestions” for a system of parks and parkways for the city. Cleveland commented on his original plan for the park that “the paths are few—the intention being that visitors should ramble at will in the woods and on the lawns.” From the time the park was acquired, it was intended to be the northern anchor for a parkway that would extend downriver eventually to Minnehaha Creek and Fort Snelling. The park is approximately 28 acres and sits within a small neighborhood bordered by University buildings and a hospital to the west, I-94 to the south, and lower Gorge park spaces to the north and east. The park rests on the bluff above the river and has nice views of the Gorge. The park can be accessed off S. 8th Street, S. 6th Street, or 27th Avenue. It can also be accessed via a historic WPA staircase from below, at Annie Young Meadow. Riverside Park has large grassy areas and mature shade trees. It has places and facilities for a variety of active and passive uses, including:

- Basketball court
- Soccer field
- Softball field
- Wading pool
- Playground/tot lot
- Restroom building/pump house
- Picnic tables/seating
- BBQ grills
- Trails
- Volleyball courts (grass)
- Shade trees, turf and flexible open spaces
- Walking paths
- Lighting
- Park identity signage

Issues and Opportunities
- Restore/repair restroom building.
- Better connect Riverside Park and Annie Young Meadow.
- Address ADA accessibility issues - provide accessible walkways, ramps, and picnic facilities
- Address parking issues.
- Restore sand volleyball courts.
- Consider additional picnic facilities, an additional basketball court, pollinator garden space, a labyrinth, and picnic areas.
- Clear invasive plant species to open up views to river from bluff top.
East River Flats Park

Existing Conditions

The East River Flats Park has been the subject of many park plans in its history, including a large central playground for the city on the river flats with an exercise track, gymnasium, bath house and boat house. The park is the current site of the University of Minnesota’s rowing teams. East River Flats Park lies just below the University and is one of the few opportunities within the Gorge to view the river below the limestone bluffs. It is also one of the best places to access the water and launch small non-motorized watercraft. Its large, green, open spaces have been the venue for informal recreation and even music concerts over the years, attracting use from college students attending the nearby U of M campus. This 18-acre park is accessed off East River Parkway. Although the park lies next to the University of Minnesota, its relationship to the campus has never been fully realized and there are opportunities to strengthen the connection through future park improvements. Existing park facilities include:

- Shade trees, turf and flexible open spaces
- Pay parking lot
- Stormwater infiltration areas/raingardens
- Interpretation (needs replacement)
- U of M Boathouse
- Pedestrian and bicycle paths
- Boat launch
- Seating/picnic tables
- Trash receptacles
- Lighting
- River access
- Park identity signage

Issues and Opportunities

- Program East River Flats Park (picnic facilities, sand volleyball, kickball, other).
- Clear invasive plant species to open up views of river from park.
- Replace interpretive elements.
- Better connect the park to the University of Minnesota campus.
- Reopen the restroom.
- Address ADA accessibility issues - provide accessible walkways, ramps, and picnic facilities
- Improve signage and wayfinding downriver
“Southeast Flats”

Existing Conditions

Throughout the planning process this park space was referred to as “Southeast Flats.” It is an approximately 30-acres in size and located on the river flats south of the Franklin Avenue Bridge, on the east side of the river. It is accessed via paved, shared-use trail from East River Flats Park, a staircase near the Franklin Avenue Bridge, and by a narrow maintenance roadway on the far southeast end of the open space area that descends steeply from the top of the bluff to the river flats. The open space is relatively undeveloped, with the exception of the access structures and the paved trail that runs down the middle of the open space. The paved trail is connected to East River Flats Park by a raised trail section that runs along the east side of the river between the two open spaces. The landscape at “Southeast Flats” is a mix of prairie and floodplain forest. Portions of the site may be seasonally affected by high water flooding. Existing facilities and open space character at “Southeast Flats” include:

» Trails – shared-use paved and natural surface
» Picnic tables/seating
» Rolling floodplain landscape
» Forested areas, open spaces, riparian edges
» Boardwalk connector
» Bridal Veil Falls access
» Staircase and ramps
» River access – ability to touch water

Issues and Opportunities

» Enhance Southeast Flats with informal picnic areas and an enhanced riparian edge.
» Consider additional natural surface trails.
» Conduct maintenance on staircase.
» Replace benches (exposed foundations).
» Consider stormwater outfall enhancement.
» Consider shore fishing access/fishing piers.
» Restore/preserve floodplain forest and prairie.
» Address ADA accessibility issues.
“Oak Savanna”

Existing Conditions
The “Oak Savanna” area is a unique and sensitive landscape that includes remnant prairie and oak savannah areas on a hilly site tucked between West River parkway and the bluff top, near E. 36th Street. It is an open space within the regional park consisting of scattered oak trees above a layer of rare remnant prairie and restored prairie. The trees are spread out enough so that there is no closed canopy and the grasses and forbs receive plenty of sunlight. The savanna is a transition ecosystem between the tallgrass prairie and woodland environments and is an important habitat for both woodland and prairie animal and insect species. The remnant prairie is a rarity in our urban landscape and something that is irreplaceable. The area is popular with bird watchers and naturalists and represents an excellent opportunity to preserve, protect, and restore the natural resources of this special landscape. The area is accessed via natural surface trails and is quite hilly, so ADA accessibility is a challenge. Some of the existing trails were beaten down by users and not formally installed to any sustainable standard. These rogue trails are not sustainable and should be considered for closure and plant restoration. Existing features in the “Oak Savanna” open space area include:

» Rolling hills/bluffs
» Remnant prairie
» Prairie restoration
» Oak savanna
» Natural surface trails (some are unsustainable)
» Seating
» Interpretation - environmental
» Signage (although the area is poorly signed today)
» Parking lot at entry
» Kiosk at parkway

Issues and Opportunities
» Protect and preserve the remnant prairie.
» Close unsustainable trails and restore landscapes.
» Replace interpretive-educational signage.
» Maintain natural surface trails for access.
» Enhance birding opportunities.
» Replace failing fencing and rails along Winchell Trail or where unnecessary.
Figure 2-3. East and West River Parkways
West and East River Parkways

The West and East River Parkways run alongside both banks of the Mississippi River, providing multi-modal movement in the park. Each parkway includes a roadway for vehicular movement, linear green spaces, shared-use paved trails, and amenities such as wayfinding kiosks and signage, lighting, seating, bicycle parking, waste receptacles, restrooms, and drinking fountains. There are approximately 8.5 miles of parkway in the regional park, serving as active greenways that run the length of the park. Park users walk, hike, bike, inline skate, roller-ski, dog walk, gather, and view the river gorge (among other things) along the parkways. The parkways are key features of the historic Grand Rounds Scenic Byway and Great River Road. Throughout the year they provide the venue for events such as the Twin Cities Marathon and the Minneapolis Bike Tour. They connect people to and from the park and provide access to key destinations within the park and adjacent neighborhoods. Signature features of the parkways include red aggregate used on the roadways, custom-wide curbs, custom park entry signs and wayfinding kiosks. Other features and amenities found in the parkways include:

- Separated and shared-use paved trails
- Sidewalks
- Small parking areas
- Kiosks/wayfinding/signage
- Roadway and pedestrian lighting
- Site furnishings – bike racks, waste receptacles
- Fencing/guard railings
- Overlooks/seating (benches)
- Public art
- Interpretive elements
- Wide planted medians (in some locations)
- Shade trees
- Parkway/roadway with on-street parking (in some locations)

Issues and Opportunities

- Pave all parkways with signature red aggregate and custom wide curb and gutters.
- Enhance wayfinding.
- Establish consistent use of materials, graphics, etc.
- Establish high quality materials for fencing, rails, walls, and site furnishings.
- Maintain existing historic light fixture/pole and ensure consistency throughout the park.
- Parkway traffic may be high during morning and evening rush hour
Multi-Modal Transportation

Connections to and from the regional park from surrounding neighborhoods are important to park vitality and park user safety. Park assessments included an evaluation of multi-modal transportation conditions within and adjacent to the park, including the movement of pedestrians, bicycles, automobiles, and public transportation options. The following provides more detail on existing conditions, issues, and opportunities to enhance connections in and near the park.

Existing Conditions

Mississippi Gorge Regional Park is situated within a mix of transportation facilities, including Interstate 94; A-Minor augmenters such as Lake Street and Hiawatha Ave; and A – Minor relievers such as Franklin Ave., Minnehaha Ave. and University Ave; and Major collectors such as West and East River Parkways. Additionally, numerous local city streets provide direct access to the park as they intersect with the parkways. The full complement of project area roadways are identified in Figure 2-6, Area Transportation Facilities, which are color coded per the 2018 Functional Classification System Map for the Twin Cities Metropolitan Area.

The daily traffic volumes and safety incidents along the parkways are shown on Figure 2-9 Bike and Pedestrian Crash Analysis. The two sites where bicycle and pedestrian volumes were recorded are north of Lake St. and near 38th St. The bicycle and pedestrian volumes are higher at Lake Street which is nearer to the University Campus and Downtown, though still relatively high at 38th St where there are 1,470 and 440 estimated average daily bicyclists and pedestrians, respectively. This is likely due to the daily use of MGRP itself and also the proximity to Minnehaha Falls. The auto traffic volumes are typically between 3,650 and 5,300 along much of the study area with a much higher number, 9,700, near the Ford Parkway Bridge and Minnehaha Falls. This volume increase may be due to the bridge connection over the river, the presence of Minnehaha Falls Park and/or the use of the parkway by commuter traffic avoiding Hiawatha Ave., however, an origin and destination study or “Street Light” data would be needed to confirm the composition of this traffic.

Three years of pedestrian and bicycle crash data are also displayed on Figure 2-8. Crash data is provided by the MnCMAT system and was filtered to provide a summary of crashes that involved bicyclists or pedestrians. None of the crashes included fatalities and the majority of crashes reported were identified as possible injury or non-incapacitating injury crashes. A more detailed review of the locations with multiple crashes such as Lake St/ and 44th Ave. where three crashes occurred over three years or along Oak Street may indicate potential countermeasures to address safety in these locations.
Of the seven bridges spanning the Mississippi River within the park (Bridge 9, Washington Ave., I-94, Franklin Ave., Midtown Greenway rail bridge, Lake St., and Ford Parkway) only Franklin Ave., Lake St. and Ford Parkway afford access to the park’s sidewalks, trails, and green spaces. Recent bike and pedestrian improvements to the Franklin Avenue Bridge have increased this facility’s role as a primary non-motorized river crossing for park users. The Lake St. Bridge is accessible to park users on the west side via parkway pedestrian crossings and on the east side by stairways directly connected to trails running along N. Mississippi Blvd. in St. Paul. These trails continue northward transitioning to E. River Parkway at the southern boundary of MGRP. The north-west corner of the Ford Parkway Bridge provides a trail connection to MGRP via its north side.

West and East River Parkways serve as the primary connectors to MGRP from the local street system. While park boundaries typically extend beyond these parkways, the two parkways help to visually demarcate the outer edges of the park. West River Parkway’s distinctive 12-inch wide curb and red colored paving further reinforce a sense of place and identity. This parkway is also part of the Minneapolis Grand Rounds parkway system. Applying this same set of detail design characteristics to East River Parkway would strengthen continuity and identity between the east and west sides of MGRP.

Community survey responses indicated that most respondents utilized the local street and sidewalk system for accessing the park. As such, a master-planning level analysis of intersections between connecting city streets and project area parkways was conducted (excluding County Roads) to identify areas of concern and consideration for future safety improvements. Of the 32 intersections reviewed, fifteen were identified as having issues worthy of additional review and analysis building upon this master planning effort (typically by Minneapolis Public Works). These intersections are described in Figure 2-7 Intersection Study and Analysis. Additionally, there has been an ongoing study for improvements at the County Road 5 / Franklin Ave. and East River Parkway intersection. While neither of these roadways are under the jurisdiction of MPRB, it will be important for MPRB to continue its interface with all the parties involved to ensure MGRP trails and associated amenities are adequately considered and addressed as this future infrastructure project evolves.

Nine Metro Transit bus routes provide stops within a half mile (ten-minute) walk of MGRP. The Green Line light rail line provides station stops at the West and East Bank of the University of Minnesota. The extensive number of transit lines and stops offer an opportunity for informing and promoting metro-wide, car-free accessibility to MGRP.

In addition to transit access, there are approximately 11 Nice Ride bike share stations and dockless bike share hubs (locations occasionally adjusted) within a half mile of MGRP including seasonal docking stations at Bohemian Flats and Minnehaha Regional Park. These facilities offer easy access for cyclists wishing to tour the park’s extensive system of paved trails as well the entire Grand Rounds.

As described in the Parks, Trails, and Open Spaces section of this plan, an extensive system of paved and natural surface trails provide opportunities for walking, rolling, and biking within MGRP. In addition to recreational needs, these trails help reduce single occupant vehicle trips, allowing workers and students to commute between home, work, and school. Franklin Ave., the Midtown Greenway, and 42nd Street provide bike facilities connecting to MGRP.
**Figure 2-4. Multi-Modal Transit Analysis**

**MULTI-MODAL SYSTEM**
- nice ride station
- metro transit
- bus stop

**1/2 mile walk shed**
- 0.125 mile
- 0.25 mile
- 0.5 mile

**1 mile walk shed**

**Enhance / Improve:**
- Provide Regional Park wayfinding signs at bus stops within the 1/2 mile walk shed.

**Add facilities and amenities:**
- Provide additional Nice Ride stations at bus stops within the 1/2 mile walk shed.

**Improve accessibility:**
- Provide additional Nice Ride stations at key locations along West River Parkway such as Franklin Ave., Lake St., 34th St, Winchell Trail Head and East River Parkway at East River Flats, Franklin Ave and Midtown Greenway.

**OPPORTUNITIES:**

- **Enhance / Improve:**
  - Increase motorist education and training of bicycle and pedestrian rights
  - Increase cyclist education and compliance of traffic control markings and signage
  - Improve consistency of traffic control markings and signage

- **Add facilities and amenities:**
  - Highlight pedestrian visibility, markings and signing at cross walks

- **Improve accessibility:**
  - Provide additional Nice Ride stations at key locations along West River Parkway such as Franklin Ave., Lake St., 34th St, Winchell Trail Head and East River Parkway at East River Flats, Franklin Ave and Midtown Greenway.

**Bike and Pedestrian crashes were mainly caused by these top 3 factors:**
- no clear contributing factor
- failure to yield right of way
- driver inattention (bikes)
Figure 2-5. Transit Routes
Figure 2-6. Functional Roadway Classification Map in Minneapolis
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Figure 2-7. Intersection Study
Intersection Analysis

22nd AVE. S
- Connects multifamily residential, 10th Ave Bridge, Bluff Street Bike-way and Non-Motorized Bridge 9 to W. River Parkway and Bohemian Flats
- 22nd Ave S stop controlled
- Crosswalk on north leg
- Combined bike and pedestrian facilities
- Replace “Bump” signage with down arrow
- Concerns of sight distance/speed of 22nd Ave S around curve and at library driveway, speed on Pkwy

4TH AVE. S
- Connects U to M West Bank, Washington Ave Bridge, Medical campus to W. River Parkway
- 4th ST S stop controlled
- Crosswalk on north leg
- Separated bike and pedestrian facilities
- Concerns of sight distance/speed of 4th St S around curve, speed on Pkwy

OAK ST. SE
- Connects Franklin Ave Bridge, U of M East Bank, Stadium Village, Medical campus to E. River Parkway
- Key entry portal to U of M campus
- Oak St SE stop controlled
- Two-way protected bike-way on Oak St SE
- Crosswalks on all three legs
- Concerns of speed of turns onto Oak St SE from Pkwy

25TH AVE. S
- Connects Seward neighborhood to W. River Parkway
- Key entry portal to popular local commercial street and Seward school
- Concern of 5-way intersection 4/5 controlled
- Concern of high volume traffic during rush hours, in particular conflicting with students

ST. ANTHONY AVE.
- Connects St. Paul Grand Round and Prospect Park East to the E. River Parkway
- Portal to Town and Country Club
- Concern unmarked crossing of E. River Parkway
- All way (3) stop controlled

26TH AVE. S
- Connects Hwy 55 and Seward Neighborhood to W. River Parkway
- Concern of sight-line due to rail bridge and curve of street alignment and uncontrolled approach of W. River Parkway

27th AVE. S
- Connects Bracket Park, Longfellow and Cooper neighborhoods to W. River Parkway
- Connection to Midtown Greenway Westbound
- Concern for pedestrian/bicyclist safety at the major point of access to the Midtown Greenway
- Compliance at all-way stop control for auto and bicyclist movements is impacted by speed and approach angle of bicyclist and motorist expectation

E 29TH ST.
- Connects Cooper neighborhood and Lake Street commercial corridor to W. River Parkway
- Key entry portal for neighborhood
- Concern with “cut through” traffic during rush hour

N. RAMP - LAKE ST. BRIDGE
- Connects to Lake Street/ Marshall Avenue Bridge and St. Paul
- Concern with sidewalk as trail for bike use
- W. River Parkway uncontrolled
- Concern with tight sight lines and 180+ degree back sight and motorist compliance at crossing

S. RAMP - LAKE ST. BRIDGE
- Connects to Lake Street/Marshall Avenue Bridge and St. Paul
- Concern with sidewalk a trail use for bike use
- Concern with unmarked crossing and motorist compliance at crossing

32ND AVE. E
- Connects Cooper and Longfellow neighborhoods to W. River Parkway
- Key entry portal to Danish American Center and Minnehaha Academy North Campus
- 32nd St. is top controlled
- Crosswalks on two legs
- Concern of unmarked crosswalks for pedestrians

36TH ST. E
- Connects the Howe neighborhood, Dowling Elementary School, 39th Street LRT/Blue Line Station, Transit Route 23 to W. River Parkway
- Key entry portal to 38th Street Business District
- 38th St. stop controlled
- Crosswalks on two legs
- W. River Parkway has pedestrian crossing signs both ways

38TH ST. E
- Connects to Howe neighborhood, Dowling Elementary School, 39th Street LRT/Blue Line Station, Transit Route 23 to W. River Parkway
- Key entry portal to 38th Street Business District
- 38th St. stop controlled
- Crosswalks on two legs
- W. River Parkway has pedestrian crossing signs both ways

42ND ST. S
- Connects the Hiawatha neighborhood and River-Lake Greenway to W. River Parkway
- Key entry portal to Hiawatha Elementary School, Minnehaha Academy, and Becketwood Senior Housing
- 42nd St. stop controlled
- W. River Parkway has pedestrian crossing sign northbound only
- Concern of no marked pedestrian crosswalks

44TH ST. E
- Connects the Hiawatha neighborhood to W. River Parkway
- 44th St. stop controlled
- Concern with curve in W. River Parkway and it is uncontrolled
- Due to curve and grades, no access to the trail at this intersection results in unusual movements
Figure 2-8. Bike and Pedestrian Crash Analysis

**OPPORTUNITIES:**

*Enhance / Improve:*
- Increase motorist education and training of bicycle and pedestrian rights.
- Increase cyclist education and compliance of traffic control markings and signage.
- Improve consistency of traffic control markings and signage.

*Add facilities and amenities:*
- Highlight pedestrian visibility, markings and signing at cross walks.

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*Source: The City of Minneapolis*
Issues and Opportunities

Expanding and improving existing river crossings for pedestrians and cyclists received strong community interest during the master planning process including:

» More direct connections between Bridge No. 9 and West River Parkway, and East River Road.
» A direct vertical connection to the Washington Avenue Bridge using a stair and/or elevator.
» Using the existing rail bridge for extending the Midtown Greenway across the river into St. Paul.
» Introduce a marsupial style hanging bridge below the deck of the Lake Street Bridge.

Additional multimodal issues and opportunities include:

» Continued coordination with Minneapolis Department of Public Works for pedestrian, bike and motor vehicle facility improvements where local streets intersect East and West River Parkways.
» Continued coordination with University of Minnesota for improvements adjacent to their property, especially at East River Road north of Arlington Street
» Continued coordination with Nice Ride and other bike/scooter share programs for additional bike hub and or bike docking facilities within MGRP.
» Coordination with Metro Transit for integrated park and transit stop wayfinding features.
Figure 2-9. River Views and Access
River Views and Access

Viewing the river gorge from many different perspectives and the ability launch a canoe in the river are attributes that attract people to MGRP. The river gorge is a special landscape and being in it is a special experience. Floating on a canoe between its treed slopes is the kind of nature experience very few cities can offer. The following provides more detail on existing conditions, issues, and opportunities related to views of and access to the river.

Existing Conditions

There are several places to view the river within the regional park. Bluff top outlooks, bridges, beaches, and open spaces offer many opportunities to take in the river corridor. And despite its challenging topography, there are places where one can access the river to launch a canoe or kayak, or even be near the water.

Places to view the river:
» Bridge No. 9
» Washington Avenue Bridge
» Franklin Avenue Bridge
» Lake Street Bridge
» Ford Parkway Bridge
» Bohemian Flats Park
» Annie Young Meadow
» Riverside Park
» East River Flats Park
» “Southeast Flats” – Below East River Parkway
» “White Sands Beach”
» Minneapolis Rowing Club
» “Longfellow Beach”
» Winchell Trailhead
» Overlook near “Oak Savanna”
» Several overlooks along East and West River Parkways

Places to access the river (touch the water):
» Bohemian Flats Park – non-motorized boat launch at beach
» East River Flats Park – from U of M Rowing Facility and other shoreline places
» “Southeast Flats” – Below East River Parkway
» “White Sands Beach”
» Minneapolis Rowing Club
» “Longfellow Beach”

Views from the River:
» Mississippi River Water Trail
» Watercraft
Issues and Opportunities

There are challenges and opportunities to improve river views and access and it helps to understand what the barriers are to existing views and access. The steep slopes of the river gorge create barriers between surrounding neighborhoods and the park land along the river flats. Accessibility is a challenge throughout many areas of the park. Wayfinding that helps park users locate places to access the river is lacking throughout the park. Numerous river overlooks and seating areas with viewing opportunities are obstructed with dense growth of invasive plant species. Opportunities to enhance and improve river views and access include, but are not limited to, the following:

» Provide more opportunities to safely interact with the river and get onto the river.
» Provide additional facilities (staircases and ramps) to access the river bottoms.
» Create more and better designed riverfront access locations.
» Provide ADA accessibility to more places along the riverfront.
» Create more formal river overlook locations and facilities.
» Provide identifiable names for key overlooks.
» Clear invasive plant species, particularly at overlooks and seating areas along the river bluffs.
» Provide better identification and wayfinding to key river access locations – trails, boating, fishing, beaches, and other opportunities to touch the river.
» Enhance existing small watercraft launch areas – access, parking, seating, wayfinding and AIS signage, trash receptacles, racks or posts to lock a boat to, etc.
Fishing Pier
Figure 2-10. Existing Wayfinding and Site Amenities
Wayfinding and Site Amenities

Wayfinding signage and site amenities are critical elements in the park contributing to accessibility, comfort, and safety for park users. They orient park users to the park and nearby neighborhood destinations and convey a sense of place and identity within the park. Existing wayfinding and site amenities in the park include directional and entry signage, information kiosks, lighting, seating, bicycle parking, restrooms, drinking fountains, and more. The following provides more detail on existing conditions, issues, and opportunities to enhance wayfinding signage and site amenities in the park.

Existing Conditions

Wayfinding signage and site amenities in MGRP are located throughout the park, but focused in the more active areas of the park (Bohemian Flats, Riverside, Annie Young Meadow, East River Flats, “Oak Savanna”, and the Winchell Trail). The more natural open space areas within the park appropriately offer fewer amenities and signage elements. Existing elements include the following:

Wayfinding/signage
- Park identity signs located at park entrances
- Kiosks located at key locations along the parkways – park entries and some trailheads
- Wayfinding signs at key intersections
- Trailhead signage (i.e. Winchell Trail)
- Directional signage along some trails
- Interpretive signage at key locations (i.e. "Oak Savanna")
- Regulatory and directional signage along parkway/roadways

Site amenities
- Picnic shelter (Bohemian Flats) and tables (Bohemian Flats, Annie Young Meadow, Riverside Park, “Southeast Flats”)
- Site/street lighting – parkways, parking lots, some park spaces
- Restrooms (portable) at 5 locations along the west side of the river
- Restrooms (permanent) located in East River Flats Park and Riverside Park
- Drinking fountains – located at few locations in the park
- Seating/benches – located throughout the park
- Bicycle racks – located at resting areas, trailheads, parks, etc.
- Surface parking lots (Bohemian Flats, East River Flats, Oak Savanna, Winchell Trail Trailhead)
- On-street parking along parkways and adjacent neighborhood streets
- Site walls, fences, and guardrails
Issues and Opportunities

Expanding and improving wayfinding signage and site amenities received strong community interest during the master planning process. For instance, more and higher quality restrooms and additional drinking fountains were requested by park users throughout community engagement efforts. The following provides more detailed information on issues and opportunities.

Issues

» The existing wayfinding and signage package is incomplete and lacks consistency - quality, design, materials, scale, etc.
» The signature park materials (kiosks and park identity signs) are attractive but need maintenance and updating.
» Wayfinding to help people locate where they are in the regional park as well as river access points is lacking.
» Site lighting is inconsistent – quality, design, materials.
» Signature light fixtures along major portions of the parkways are timeless, attractive and shed the light downward, where it’s needed. However, light fixtures located at Bohemian Flats Park and East River Flats Park appear dated and create night sky light pollution.
» Given heavy park use, the park is lacking in restroom and drinking facilities. For instance, there is only one restroom located on the east side of the river.
» Most existing restrooms are portable and located for convenient access to maintain, without consideration of good site planning or design.
» Inconsistent materials and design quality of site walls, fences and guardrails.

Opportunities

» Build off and improve the park elements that are working well today (signature lights, kiosks, park identity signs, parkway design, etc.) and provide consistent themes with design elements and materials throughout the park - site furnishings, lighting, signage and wayfinding, paving, fencing and railings, walls, and stairs, etc.
» Continue to develop Regional Park identity and use of high quality materials – timber, metal, stone.
» Add picnic shelters and tables in parks – Bohemian Flats, Riverside, Annie Young Meadow, East River Flats.
» Incorporate new technologies and recycled materials within the park.
» Add more signature kiosks at key locations in the park.
» Add universal wayfinding throughout the park.
» Add wayfinding at key intersections along the parkways to better connect and identify nearby local destinations (i.e. neighborhood nodes, commercial districts, civic destinations, features, etc.).
» Provide better identification and wayfinding to key river access locations – boating, fishing, beaches, and other opportunities to touch the river.
» Provide self-guided interpretation tours.
» Provide mobile/web-based tours.
» Provide more informational signage on the history and environment of the river gorge.
» Add more seating throughout the park.
» Add high quality/permanent restroom facilities in key locations in the park.
» Add more drinking fountains throughout the park.
» Improve accessibility throughout the park.
» Add bike racks and bicycle repair/pump stations throughout the park.
» Add waste/recycling receptacles and doggie bag dispenser stations throughout the park.
» Limit scale of signage appropriately according to location and site aesthetics.
Figure 2-11. Land Use Context
Land Use Context

The land use context surrounding the Mississippi Gorge Regional Park includes residential neighborhoods, public institutions, schools, parks, and mixed-use commercial districts adjacent to or near the regional park. At the north end of the park the University of Minnesota campus straddles both sides of the Gorge, connected by Bridge No. 9 and the Washington Avenue Bridge. Just to the west of Bohemian Flats Park, and within walking distance from the park, is the growing mixed-use and densely developed Downtown East neighborhood. To the north and east of the river, Dinkytown and Stadium Village are quickly growing with new places for people to live, work, and shop. Just to the west of the river, near the I-94 bridge, the densely populated and diverse Cedar-Riverside neighborhood enjoys close proximity to Riverside Park, Annie Young Meadow, and West River Parkway. Moving south from these more densely developed neighborhoods, the adjacent land use context becomes lower density, single family home neighborhoods. Yet these neighborhoods include mixed-use commercial nodes and corridors offering shops, services, and restaurant destinations conveniently located next to or near the MGRP.

It is important to understand the land use context surrounding the regional park, and plan for ways to better connect the park to surrounding neighborhoods and provide park programs and facilities to serve park user needs. The following provides more detailed information on existing land use context, issues and opportunities to enhance connections to surrounding land uses.

Existing Conditions

MGRP lies adjacent to several diverse residential neighborhoods, schools, and parks including:
» Downtown East (Downtown East Commons Park)
» University
» Marcy Holmes
» Cedar Riverside (Murphy Square)
» Prospect Park/East River Road (Pratt Elementary School, Luxton and Tower Hill Parks)
» Seward (Seward Montessori School, Matthews Park)
» Cooper (Minnehaha Academy and Cooper Community School, Brackett Field Park)
» Longfellow (Anishinabe Academy and Longfellow Alternative HS)
» Howe (Sanford Middle, Howe and Dowling Elementary, Longfellow Park and Seven Oaks Oval)
» Hiawatha (Minnehaha Academy, Hiawatha Elementary School and Hiawatha School Park)

MGRP is also located next to a number of major colleges and universities including:
» University of Minnesota – East and West Banks
» Augsburg College
» St. Thomas University
» St. Catherine University
Several neighborhood/commercial destinations and gathering areas are located near the river gorge, including:

» Sea Salt at Minnehaha Park
» 42nd Avenue (at 34th and 38th Streets) neighborhood nodes
» East 25th Street neighborhood node
» East Lake Street and Marshall Avenue commercial districts
» Franklin Avenue/Riverside Avenue commercial districts
» Stadium Village commercial district
» Dinkytown commercial district
» TCF Stadium
» US Bank Stadium

Issues and Opportunities

Opportunities to enhance/improve connections to surrounding land uses include, but are not limited to:

» Provide wayfinding at key intersections along the parkways that identify neighborhoods and area destinations
» Provide wayfinding at area destinations that connect people to the river gorge
» Provide on- and off-street bikeways that connect to area destinations
» Enhance connections between the park and nearby transit stop locations
» Develop and/or implement safe-routes-to-school programs
» Complete gaps in the sidewalk and trail systems
» Ensure ADA compliance on all sidewalk and trail systems
» Coordinate event planning with neighborhood and business associations and other organizations
» Promote and provide education regarding neighborhood and park connections, programs and events
Nearby neighborhood street
Regional Park Character

The gorge is a truly unique reach of the Mississippi River; it is the only gorge along the entire river. The gorge was formed as St. Anthony Falls slowly undercut the underlying layers of limestone, shale, and sandstone, resulting in the falls, upstream by approximately 4 ft per year. Historically, the Mississippi River through the gorge was a steep, 6-mile reach of boulder and cobble streambed characterized by shallow, swift moving water. Accounts by steamboat pilots in the mid 1800’s describe the banks of the Upper Mississippi as choked with trees, with hundreds of islands, side channels, and backwaters (Anfinson, 2003).

During the beginning and middle of the 20th century, lock and dam structures were built within the gorge with the goals of improved shipping navigation and hydropower. St. Anthony Falls was capped and stabilized by a concrete spillway, and upstream and downstream dams were constructed. These changes caused significant geomorphic changes within the river as the shallow, swift-moving water was converted to deep, slow-moving water. The river bed from Bohemian Flats to the base of St. Anthony Falls, once characterized by boulders and cobbles, was buried with fine sediment transported by the river and deposited within the backwater pool of Lower St. Anthony Falls Lock and Dam. Downstream of Bohemian Flats, the lower gradient gravel and sand bed segment, including mid-channel islands and adjacent forested floodplain wetlands, were submerged below the raised water surface. The river is now characterized by slow water velocity, sloping banks, and a bed composed of impounded silt and sand.

The Mississippi Gorge Regional Park character is shaped by the natural and human-made interventions as well as settlement and development patterns that have continually shaped the gorge and associated park spaces. The character of the park is tied to a number of variable conditions, including its topography, vegetation, relationship to the river, surrounding land uses, and park programs and facilities. It is important to understand the different park character zones and how they may influence park programs, facilities and events. Four different character zones and their attributes have been identified in the regional park (Figure 2-12 Regional Park Character). They include:

» Natural Park
• Woodland – mesic forest
• Steep slopes
• Drainage ravines
• Natural surface trails

» Trail Corridor
• Greenway (shade trees and turf areas)
• Linear park flanked by neighborhood development
• Mostly on the bluff top
• Parkways and paved trails
• Walking, biking, inline skating, and roller skiing, dog walking, etc.

» River Bottom
• Floodplain forest
• Riparian edges
- Areas of prairie grasses
- Beaches
- Stormwater outfalls
- River access
- Fishing, boating (rowing, canoeing, kayaking), hiking, biking

Urban Park
- Open green space
- Turf and shade trees
- More park programs and facilities (picnic areas, courts, etc.)
- Community gathering places
- Active park uses (volleyball, soccer, basketball, play areas, etc.)
Figure 2-12. Regional Park Character
Figure 2-13. Regional Park Character Section Analysis
Figure 2-14. Ecological/Natural Resources
Ecological/Natural Resources

The Mississippi gorge is a unique ecological feature, and supports an abundance of wildlife and natural amenities. The two primary features of the gorge are the Mississippi River, an aquatic resource, and the adjacent wooded bluffs, which provide a complimentary terrestrial component. The upper Mississippi River contains an abundance of fish species, although the number has been reduced with the construction of locks and dams, and the inundation of the historic rapids. Native freshwater mussels are present, including several threatened and endangered species that persist within this reach of the river. Wetlands are also present in some fringe areas, but are generally restricted to river margins and shallow backwater areas.

Plant Communities

Figure 2-14 Ecology: Plant Communities illustrates the variety of terrestrial ecosystems present within the gorge. The most obvious plant communities are the wooded slopes and flats representing Mesic Forest, Dry-Mesic Forest/ Woodland, Flood Plain Forest, and Altered Forest/Woodland vegetation. The steep slopes contain a mixed oak forest, which was historically more open and had areas of savanna when natural fires controlled the growth of shrubs and understory vegetation. With fire suppression, the wooded features have developed less fire-dependent communities such as maple, elm, and basswood, and have allowed a thick understory of young trees and shrubs to develop. While some of this understory is composed of native shade-tolerant species, it has also lead to the establishment of the non-native European buckthorn shrub, and other invasive herbaceous species such as garlic mustard. Restoration projects to control invasive species have been implemented, as have larger projects to restore portions of the historic oak savanna and prairie. Areas of natural floodplain forest remain, and include an abundance of eastern cottonwood and silver maple trees, two species that have evolved to withstand the seasonal flooding that occurs regularly in the low areas along the Mississippi River.

Wildlife

Wildlife are abundant within the gorge, and include a prevalence of species that have adapted to thrive in proximity to people within an urban setting, see Figure 2-15 Ecology: Wildlife. Most noticeable are the larger mammals such as white tailed deer, but also predators such as coyote and red fox, and prey such as cottontail rabbits, grey squirrel, skunk, and woodchuck. Raccoon and opossum are common, and along the river, species that use both the aquatic and terrestrial habitat such as mink, beaver, and muskrat are present. Although not seen during the daytime, several species of bat also utilize the river corridor for foraging, and use the adjacent wooded bluffs for roosting and hibernation. Wild turkey were extirpated from Minnesota, but in the 1970’s the Minnesota Department of Natural resources reintroduced them into the state. From this successful program, wild turkey have become established within the state, and are a component of the wildlife that occur within the gorge. The park also offers a excellent habitat for many species of bees and butterflies and other insects.

Birds

While wildlife is thriving within the gorge, one of the most unique attributes is the use of the corridor during fall and spring bird migration. The Mississippi River flyway is a critical migratory corridor a critical migration corridor for approximately 180 migratory bird species, including 40% of North Americas waterfowl, which use the river as a natural navigation tool. While the majority of these birds will pass through the area, they do
congregate, and seek food and shelter in this area. This is particularly important in an urban setting, as rest areas with suitable resources to support the migration are fewer than in less populated areas. Nesting species are also prevalent, in part due to the diversity of habitat present. This supports species that may have specific requirements such as woody cover, proximity of water or wetlands, open fields for foraging, and areas of cover to protect from predators. Year round resident species also thrive within the gorge due to the availability of food and habitat in all seasons.

Fish
The historical conditions in the gorge supported around 120 fish species that relied on the oxygenated water, coarse bed material, and diverse habitat. Today, only 30 of the original 120 species are found in the gorge. The reduction of fish species is likely due to two primary factors. First, urbanization and increased agricultural use has led to a decline in water quality since settlement. Second, the dams have converted this section of the Mississippi River from a riverine or lotic habitat to an impoundment or lentic habitat. The effects of dams on large rivers include elimination of upstream fish and aquatic organism migration, warming water temperatures due to increased solar exposure and increased water residence time, covering of important fish spawning substrate by fine sediment, homogenization of adult fish habitat, reduction in dissolved oxygen and increase in biological oxygen demand, and reduced mussel larvae migration due to blockage of host fish passage. The result of this change in river conditions has created a system which favors lake species and larger river fish species which prefer deep water habitat.

Ongoing Ecological Studies
A more detailed natural areas assessment and management planning process has been underway coincident with the development of the MGRP Master Plan. When completed in 2019, the Natural Areas Management Plan Phase 2 will provide ecologically based assessments and management recommendations for MPRB natural areas including MGRP. During the MGRP master planning process, MPRB staff sat on Project Advisory Committees for both projects and provided periodic updates to the MGRP master planning team and Community Advisory Committee to facilitate coordination between the two planning studies. The MGRP Master Plan is coordinated with the first phase of the Natural Areas Management Plan as well as initial natural areas rankings from Phase 2.

Issues and Opportunities
» Continue management of invasive species
» Intensify natural area restoration and management activities at other focus areas to improve ecological health and user experience
» Convert select areas of turf (slopes, edge buffers, etc.) to bee lawns or prairie, where appropriate
» Continue strengthening vegetated corridor connectivity and continuity
» Strengthen safe road crossings and require wildlife-friendly erosion control for birds, amphibians, and reptiles
» Strengthen tree canopy continuity (where possible)
» Continue managing urban forest (street and park trees)
» Continue managing invasive species (buckthorn, honeysuckle, etc.)
» Continue expanding and enhancing pollinator-friendly habitat
» Continue controlling/reducing night lighting to reduce light pollution
» Increase neighbor education / awareness and appreciation

Mussels
Mussels are sensitive to changes in water quality, hydrology, and substrate and can be a good biological indicator of overall river health. Mussels live on the bottom of lakes, rivers, and streams and filter organic matter which improves water quality. Mussels use fish as hosts to carry mussel larvae and spread offspring, which means fish passage barriers are barriers to mussel recovery within the river system. Freshwater mussels once thrived in the gorge with 41 native species documented. In the early 1900s the mussel populations downstream of St. Anthony Falls were nearly eliminated due to rising pollution levels. Recent improvements to sewage treatment and water quality have helped populations make recoveries. In a study conducted in 2000 and 2001, 18 of the original 41 species were found upstream of Lock and Dam No. 1, compared with 23 species found downstream where the Mississippi is connected to the mussel-rich St. Croix River.

Enhance / Improve Mississippi Flyway habitat:
» Support avian feeding, nesting, and resting needs
» Strengthen tree canopy continuity (where appropriate)
» Continue managing urban forest (street and park trees)
» Continue managing invasive species (buckthorn, honeysuckle, etc.)
» Continue enhancing river shoreline
» Continue controlling/reducing night lighting to reduce light pollution
The Mississippi Flyway extends from the Gulf of Mexico to Canada, providing habitat for more than 325 migratory bird species, 180 of which have been observed within the Gorge.

85% of bird species found within the Gorge are non-permanent residents who utilize the Mississippi Flyway for migration.

Figure 2-15. Ecology: Wildlife
Figure 2-16. Potential shoreline changes with dam removal - River Character Section Locations
Figure 2-17. Existing Conditions and 1895 shoreline Sections

A. Bohemian Flats Park River Section

B. Lower Longfellow Beach River Section

C. The Winchell Trail Head River Section

*The cross sections above illustrate the current shoreline and water levels (with dams) and the 1895 shoreline and water levels (pre-dams).

Hydrology and Potential Dam Removal

Hydrology

For the purpose of master planning the pre-dam water line from 1895 was used to illustrate a river landscape without dams. Figures 2-16 and 2-17 show the differences between current conditions with dams and the river’s condition in 1895.

The hydrology of the gorge has changed since European settlement. In the past 70 years, flows in the upper Mississippi have increased by 24% due to changes in land use, drainage, and climate. The installation of dams within and above the gorge have changed the speed and depth of flow on the river; however, the dams were not designed for the purpose of flood control. The river through the gorge still sees seasonal changes in the volume of flow, but with the dams in place, the changes in water depth are within a few feet of the normal pool depth.

History of Dams

The history of the dams within the gorge begins in the late 19th century with people’s desire for extending shipping navigation up to and past St. Anthony Falls. The steep slope and limestone boulders of the gorge made Saint Paul the upstream extent of navigation before the construction of lock and dam structures.

Timeline of Dam Construction in the Gorge

» 1907: Meeker Island Lock and Dam constructed
» 1912: Meeker Island Lock and Dam abandoned
» 1917: Lock and Dam No. 1 (Ford Dam) constructed
» 1924: Ford Motor Company completed hydropower plant on Lock and Dam No. 1
» 1956: Lower St. Anthony Falls Lock and Dam constructed
» 1963: Upper St. Anthony Falls Lock constructed
» 2015: Upper St. Anthony Falls Lock and Dam closed to navigation
Current Status of Dam Infrastructure

None of the Lock and Dam structures fall directly within the regional park, however Lock and Dam No.1 is adjacent to the south tip of the park. Upstream of the Park, within Central Mississippi Riverfront Regional Park, are Lower St. Anthony Falls Lock and Dam and Upper St. Anthony Falls Lock and Dam (see Figure 2-17 for locations). Portions of the abandoned Meeker Island Lock are visible during low water, but are mostly submerged by the backwater created by Lock and Dam No.1. In 2015, the Upper St. Anthony Falls Lock was closed to navigation. This closure was due to the threat of invasive Asian carp migrating up past the falls, and the lack of commercial shipping through the lock. This closure has reduced commercial navigation traffic through Lower St. Anthony Falls Lock and Dam and Lock and Dam No. 1. The dams are operated and maintained by the Saint Paul District of the United States Army Corps of Engineers (USACE), which is currently conducting a disposition study to investigate future options for the Upper St. Anthony Falls Lock and Dam. The disposition study originally covered all three of the lock and dams, however, recently the USACE has narrowed their study to the Upper St. Anthony Falls Lock and Dam. A disposition study for the Lower St. Anthony Falls Lock and Dam and Lock and Dam No. 1 will be conducted in the future. The disposition studies will determine if it is in the federal interest to keep the asset, partially keep the asset, or fully dispose of the asset. The term disposition means to dispose of real property in an “as is” state. It does not mean the physical removal of the lock and dam.

Figure 2-18. Meeker Island Lock and Dam Under Construction on River

Figure 2-19. Lock and Dam No. 1 also known as the Ford Dam (Source: Wikemedia Commons)
Stormwater Conditions

The segment of the Mississippi River that runs within the park boundaries receives runoff from the City of Minneapolis, the University of Minnesota, and the City of St Paul. The watershed containing the City of Minneapolis and the University of Minnesota consists of approximately 6,700 acres of land. Runoff in the watershed results from storm events occurring over a variety of urban land uses. Runoff is conveyed primarily by underground storm sewer pipes that drain under MGRP area through 66 known outfalls. The outfalls range in diameter from 12 inches to 96 inches and larger box and tunnel/horse-shoe shaped culverts. Figure 2-21 shows the location of the stormwater outfalls and the gorge’s many natural springs.

There are a few outfalls that discharge runoff generated within MGRP. These outfalls are typically collecting runoff from the parkways and parking lots or draining park land depressions. Depressions often are perceived as a nuisance because they tend to be wet and/or soggy and often flood during precipitation events. A large percentage of MGRP surface area drains overland into the river. Severe storm events often wash fertilizers, pet and geese waste, and woodchips into the river.

Runoff carries diverse pollutants resulting from human activities, including the wear and tear of vehicles circulating in the watershed, new construction, the degradation of buildings over time, and pet/animal waste. Often, during large storm events, soil erosion and trash are conveyed by the storm sewers to the river. Due to the steep bluff topography, many of the storm sewers have steep slopes in their final segments before reaching the river. Steep slopes result in high velocities that make it difficult to remove the pollutants carried by the runoff.

The Minneapolis Park and Recreation Board (MPRB) and the City of Minneapolis are co-signatories on the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit. As part of the program, the MPRB has performed NPDES MS4 permit stormwater monitoring. The purpose of the stormwater monitoring is to characterize the quantity and quality of runoff associated with the different types of land uses. The results of the studies indicate the need to implement Best Management Practices (BMPs) to reduce the amount of pollutants reaching the river. The best and most economical way to trap and treat pollutants is at the source. In most cases, the sources of pollution originate outside the boundaries of MGRP. A vast educational program is part of the MS4 permit to encourage residents to adopt lawn care and rain trapping practices that remove pollutants and minimize erosion. Engineered BMPs such as rainwater gardens, infiltration trenches, and rain storage are gaining popularity with the residents and are being requested in many re-development projects. In the MGRP master planning process, many community members emphasized their hope to see additional treatments at stormwater outfalls to help address stormwater runoff as it meets the river.

A portion of precipitation that falls on pervious or grassy areas infiltrates and runs on top of the bedrock that is often exposed in the bluffs. This shallow groundwater manifests as a seep or a spring and its easy to spot during winter when it tends to freeze and form ice walls. Figure 2-20 shows the location of some known springs.
Figure 2-20. Springs and Stormwater Outfalls

- Erosion is occurring at some outfall locations.
- Apply a treatment train approach (Buffer strips, Screened inlets, Vegetated swales, Etc.)
- Install more best management practices (Raingardens, Infiltration basins)
- Reduce impervious areas (Permeable pavement, Gravel paths)

Site issues/Observations:
- Install Stormwater specific signage

Site opportunities:
- Camouflage existing outfalls
- Create more overlooks and viewing platforms (Piers, Docks)
- Install water features (Splash pads, Babbling brooks, Waterfalls, Etc.)

Water quality improvements:
- Upgrade stormwater infrastructure

Precedent photos:
- Education

Existing conditions:
- Camouflage existing outfalls
- Create more overlooks and viewing platforms (Piers, Docks)
- Install water features (Splash pads, Babbling brooks, Waterfalls, Etc.)

Upgrade stormwater infrastructure

Install Stormwater specific signage
Issues/Site Observations
» Runoff from impervious areas inside and outside the park is not treated and is piped directly into the river
» Runoff from pervious areas inside and outside the park carries trash and debris into the river
» Some areas within the regional park are primarily covered in turf grass
» Outfalls occur in varying riverbank zones
» Erosion is occurring at most outfall locations

Site Opportunities
Water Quality Improvements
» Apply a treatment train approach (buffer strips, screened inlets, vegetated swales, etc.)
» Install more best management practices (raingardens, Infiltration basins)
» Reduce impervious areas (permeable pavement, gravel paths)

Upgrade Stormwater Infrastructure
» Camouflage existing outfalls
» Create more overlooks and viewing platforms (piers, docks)
» Install water features (splash pads, babbling brooks, waterfalls, etc.)

Education
» Install stormwater specific signage