

Chapter 5

Outdoor Recreation and Environment



INTRODUCTION

The Maquoketa area is home to a picturesque natural landscape that includes rolling hills, limestone cliffs, forests, and rich farmland. These natural features drew people to the area long before Maquoketa was incorporated as a city in 1857. Native American artifacts discovered in the area indicate that people have been in the Maquoketa area for hundreds, if not thousands of years. In City of Maquoketa's early days, the resources that attracted people to the area were vital to its development. Early industries manufactured products from locally harvested limestone and timber in factories powered by the Maquoketa River.

While Maquoketa has changed significantly in the more than 160 years since it was founded, the area's natural features are still critical to the city's culture and economy. One example, Maquoketa Caves State Park, attracts thousands of visitors every year and is consistently listed as one of the state's top tourist attractions.

The natural environment is an important issue for Maquoketa, but it can also be something people take for granted. The Outdoor Recreation and Environment chapter will focus on three main areas: 1) Protect the natural environment and ensure that all Maquoketa residents have access to clean air, water, and soil; 2) Plan for and mitigate damage from natural hazards, especially flooding; and 3) Build and maintain the facilities that allow residents and visitors to gather and enjoy the area's unique natural features.

AIR QUALITY

Overall, Maquoketa has very good air quality. Because of its rural setting, the City tends to have better air quality than heavily populated urban areas. However, poor air quality does occur in the Maquoketa area. Poor air quality is unhealthy for everyone, especially children, the elderly, and people with respiratory conditions like asthma. Clean air requires local and regional efforts. To maintain the area's good air quality and to reduce the number of poor air quality days, community members will need to work together and with the Iowa Department of Natural Resources (DNR) and the US Environmental Protection Agency (USEPA) to create workable solutions for air quality issues.

Air pollution comes from a combination of different sources including forest fires, cars and trucks, wood burning stoves, open burning, and industrial sources. Weather is also an important factor. Winds can quickly disperse smoke from a fire, but stable wind conditions can keep smoke close to the ground for an extended time. Wind can also carry air pollution over long distances. In recent years Iowa has seen several poor air quality days caused by wildfires in California and Canada.

The Clean Air in the River Valley (CLE4R) program is a collaborative between the University of Iowa and East Central Intergovernmental Association to improve air quality in the Upper Mississippi Valley. The goal of CLE4R is to use technology and education to improve air quality, which makes for healthier living and can attract businesses to the area.

CLE4R suggests several actions that can be taken to address air quality issues including:

- Know where to find information about air quality such as the Air Quality Index (AQI) www.airnow.gov.
- Know and watch out for sensitive groups including people with heart and lung disease, the elderly, children, and pregnant women
- Limit backyard burning and follow all local ordinances.
- Use water or other dust control on construction sites.
- Support street sweeping programs and dust suppression on dirt roads.

The City of Maquoketa protects air quality by limiting open burning in the city. The City's ordinance prohibits burning except for specific instances such as recreation and cooking, and limits other types of burning to times when weather conditions are favorable.

In addition to addressing sources of air pollution directly by limiting burning and protecting sensitive groups, Maquoketa can prevent air quality issues over the long-term through land use planning. The City's Future Land Use Map is an effective tool for mitigating air emissions exposure. When identifying areas for commercial and industrial development, the City should consider the air quality impact of potential future development on adjacent residential areas.

Zoning is another effective tool for addressing air quality issues. The City can use zoning to prevent emissions producing uses and residential uses from locating next to each other. The City could also work with property owners through the zoning approval process to design facilities in a way that mitigates air quality risks.

The Iowa DNR lists several examples of solutions to reduce air quality impacts on its website¹:

- Placing a process vent away from the direction of the local playground.
- Requiring setbacks between the project fence line and the population center.
- Limiting the hours of operation of a facility.
- A dry cleaner could open a storefront operation in a community with actual cleaning operations performed at a remote location away from residential areas.
- Enhanced building ventilation or filtering systems in schools or senior care centers can reduce ambient air from nearby busy arterials.
- Landscaping and regular watering can be used to reduce dust at a building construction site near a schoolyard.

WATER QUALITY

Clean water is important to human health, but is also necessary for many other reasons such as aquatic life, recreational use, wildlife habitat, economic value, and aesthetic value. Water quality is measured by various standards, but primarily involves studies concerned with excessive sediment and nutrient deposits or bacteria levels. Clean and clear waters ultimately limit aerobic bacteria, which consume dissolved oxygen. Higher dissolved oxygen levels within aquatic habitats allow for a more diverse range of aquatic life and a healthier atmosphere for the land animals and humans who frequent these environments.

Within Maquoketa, storm water runs into small streams and creeks that eventually flow into larger streams like Prairie Creek, the Maquoketa River and eventually the Mississippi River. The land area drained by streams and rivers is called a watershed.

The area's watersheds play critical roles in protecting water quality. As rainwater or snow melt runs through the watershed it can pick up pollutants and deposit them in streams, lakes, or groundwater. Addressing sources of pollution throughout a watershed is key because most sources of pollution are widespread across a watershed area.

The City of Maquoketa and other local agencies have taken steps to address water issues at the watershed level by participating in the Maquoketa River Watershed Management Authority (MR WMA). MR WMA is one of 20 WMAs across Iowa. WMAs are voluntary, intergovernmental agreements between counties, cities and soil and water conservation districts that conduct watershed-based planning. The MR WMA was formed in September 2017 and has 38 members including the City of Maquoketa. The MR WMA serves as an advisory committee to help educate and inform community leaders and residents within the Maquoketa River Watershed. The MR WMA coordinates informational meetings with expert presenters, volunteer river clean-up events, and volunteer water quality testing.

SOIL QUALITY

Water quality is often closely tied to soil quality. Soil contamination from old industrial sites or old storage tanks causes problems when it leaches into groundwater or rivers. The soil itself can also contaminate water. Increased sediment in rivers and lakes caused by erosion can have adverse effects on water quality. The community can help improve soil quality by identifying and mitigating soil contamination and by preventing soil erosion.

Soils and vegetation can act as a water filter. As storm water slowly percolates through good quality soil, pollutants and sediment are filtered out before they can contaminate ground water.



The Maquoketa River

HAZARD MITIGATION

A key step in developing future community plans is identifying potential hazards and ensuring that the community grows in a way that mitigates the impacts of those hazards. Hazard mitigation is a multi-jurisdictional process that includes federal, state and local governments, volunteer organizations, and businesses. Jackson County Emergency Management Agency (EMA) coordinates these efforts in Jackson County.

Jackson County EMA and partner jurisdictions, including the City of Maquoketa, lay out the area's hazard mitigation strategies in the Jackson County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).²

The Jackson County MJHMP assesses the risks to communities from natural hazards and identifies actions that can be taken in advance to reduce future losses. The law requires all local governments and districts to have an approved Multi-Jurisdictional Hazard Mitigation Plan to be eligible for federal disaster assistance and hazard mitigation funding programs. The plan identifies risks from a wide range of hazards, but lists levy failure, flash flooding, and river flooding as the top hazards for the City of Maquoketa.

Flooding

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. Eastern Iowa has experienced numerous flood events and the loss of millions of dollars in property and crop damage over the past 25 years.

The two primary types of flood events are river and flash flooding. River flooding is typically the result of a large amount of rainfall or snow melt that causes river levels to rise and overtop their banks. Flash flooding is usually caused by intense thunderstorms that dump a large amount of rain on an area in a short amount of time.

River flooding is typically more predictable than flash flooding. River flooding usually occurs in flood plains that have been previously mapped, and the National Weather Service monitors and forecasts river levels and issues flood warnings.

Flash flood events tend to be faster moving and less predictable. During intense thunderstorms, dam failure, or ice jams, flooding can occur in a matter of minutes creating very dangerous situations.

Floodplain areas susceptible to river flooding are also at risk of flash flooding, but flash flooding can occur in areas outside the floodplain. During heavy rain events, storm water can overwhelm drainage systems causing flash flooding. The Jackson County MJHMP identifies Maquoketa locations with a history of flash flooding:

- South Fifth and Washington streets
- Eddy and South Vermont streets
- 200th Avenue and Family Dollar Parkway
- Horseshoe Pond Park

The City of Maquoketa has an earthen levee that runs along the Maquoketa River. According to the MJHMP, the Maquoketa River and Prairie Creek flood a minimum of four times annually. While the levee has not failed, it has been topped and the potential for failure exists. In 2010 when the Lake Delhi Dam, upriver from Maquoketa in Delaware County, failed, there was also significant flooding in the City of Maquoketa. As a result, the City administrative team has worked extensively on flood mitigation. On the south side of Main Street, between the sewage plant and Hurstville Road, the City extended the levee to prevent back flow.

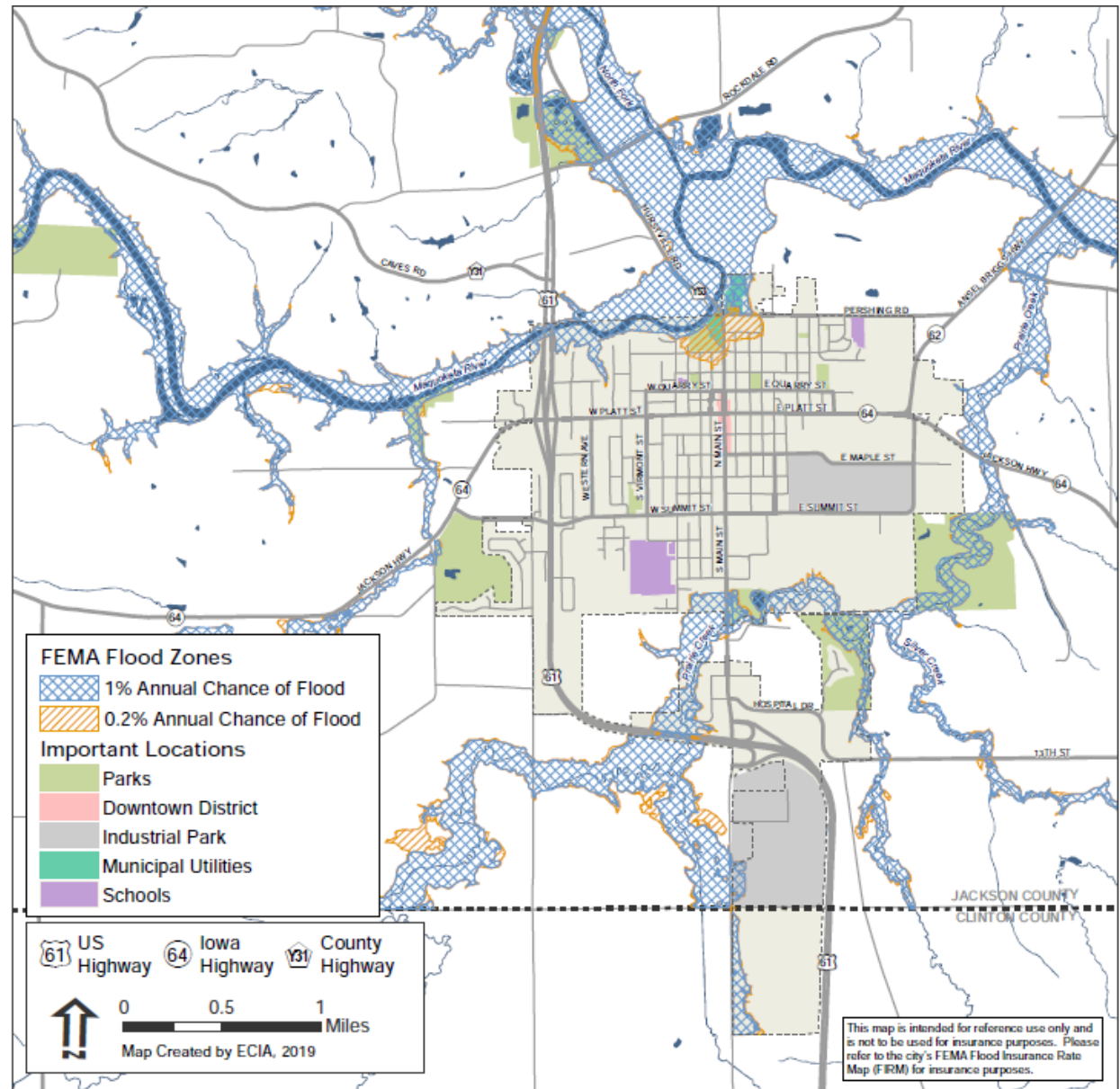
OUTDOOR RECREATION AND ENVIRONMENT

Flood Map

Figure 12 maps Maquoketa's floodplains as determined by the Federal Emergency Management Administration (FEMA).³ FEMA published preliminary updates to Jackson County's floodplain maps in the fall of 2018. As of spring 2019 FEMA had not yet finalized these maps.

Observations from the flood map.

- Municipal utilities are at risk of flooding. The city's water plant, wastewater plant, and light plant are located within the 1% or 0.2% flood risk zones.
- Flooding could impact future development areas on the city's south side. The area west of S. Main Street and south of the existing city has been identified as a future development area. Portions of this area are at risk from flooding from Prairie Creek.



Source: FEMA Preliminary FIRM maps.

Figure 12. Maquoketa Flood Risk Map

STORMWATER INFRASTRUCTURE

Managing stormwater within a city requires a well-designed and maintained storm drainage system. Stormwater management is necessary because the city's buildings, streets, and parking lots create impervious surfaces that do not allow rain water to soak into the soil as it would if it fell on a natural landscape. A good stormwater management system can help reduce flooding and protect water quality.

Engineers design storm drainage systems based on the amount of rain runoff expected from the land. Runoff quantity is determined by several factors including the amount of rain expected, soil conditions, vegetation, and the percent of the area covered by impervious surfaces.⁴ A parcel of land's runoff coefficient estimates the amount of water falling on the surface that will not be absorbed. Down-town areas may have a runoff coefficient as high as 95 percent while forested areas may have a runoff coefficient as low as 5 percent.⁵

A typical city storm drainage system consists of street gutters and storm sewers that carry water to a natural channel, ditch, stream, or river. The system may also include detention basins or ponds that collect stormwater during a rainstorm and release it slowly to prevent flooding and to allow some sediment and other pollutants to settle out. The City works with developers to install storm drainage infrastructure as land is subdivided and developed. The city is then responsible for maintaining the system after the development is complete.

Maintenance of stormwater infrastructure is a challenge for all cities, Maquoketa included. Many of the City's existing storm sewers are undersized and in need of replacement. The City should include stormwater infrastructure in its CIP

process and look for opportunities to combine it with other infrastructure projects. With the Iowa 64/Platt Street Corridor Project, the City is taking the opportunity to replace all of the infrastructure as the street is reconstructed.

Green Infrastructure

In addition to a well designed and maintained storm sewer system, Maquoketa can also look to improve water quality and reduce flooding by managing stormwater through natural processes. In the stormwater management world, natural features like soils and vegetation are often referred to as "green infrastructure."

Green infrastructure can include natural landscapes such as wetlands, forests, and prairies that hold the soil, slow the flow of runoff, filter out pollutants and promote infiltration and evapotranspiration. Green infrastructure can also include human-built features that mimic natural processes. Figure 13 provides examples of green infrastructure.

Many green infrastructure strategies serve multiple purposes. For example, Hurstville Interpretive Center's pond, prairie, and wetland areas provide great recreation and education opportunities while also serving as green infrastructure that helps manage stormwater. The City can choose from a wide variety of green infrastructure strategies. Some examples include:

- Acquiring land and conserving natural features like wetlands.
- Planting trees.
- Including green infrastructure elements in the design of buildings and streets.
- Providing training and incentives for residents to install rain gardens, permeable pavements, or rain barrels on their property.



Figure 13. Green Infrastructure Examples

PARKS

Parks provide opportunities for residents and visitors to experience the area’s unique natural features. Parks can also serve as gathering spaces. From a small family celebration at a local park to a summer concert in the Downtown Greenspace, outdoor gathering spaces allow people in the community to interact and build relationships that are the foundation of a strong community. Table 4 includes a summary of the City’s parks amenities.

City of Maquoketa Parks

Maquoketa has nine parks that offer a variety of recreational amenities. A five-member park board oversees the City's parks related activities.

First Ward Park

Maquoketa's First Ward Park is located on E. Quarry Street between Eliza Street and Otto Street. The park features playground equipment, a picnic shelter, basketball courts and restrooms.

Fifth Ward Park

Fifth Ward Park is located on W. Summit Street. The park features playground equipment, tennis courts, a softball field, a picnic shelter, and restrooms.

Second Ward Park – Little Bear Park

Located on W. Quarry Street next to Briggs Elementary School, Little Bear Park features a playground that was redesigned and rebuilt by the Maquoketa community in 2013. The park also features horseshoes, a picnic shelter, paved parking and restrooms.

Crawford Park

Crawford Park is a small neighborhood park located between N. Dearborn Street and N. Walnut Street. The park features playground equipment. Recently, members of the community have identified Crawford Park as needing improvement. Some have suggested that the City should sell the park and invest resources elsewhere. Others see the parks as opportunities for investment. The City Council and Park Commission should work together to come up with a future plan for the park.

Horseshoe Pond Campground

Horseshoe Pond Campground is located on S. Main Street on Maquoketa's south side. Originally constructed by the Izaak Walton league in the 1930s, the park's two-acre pond was acquired by the City of Maquoketa in 1985. The park's campground has 22 electrical sites and 5 primitive sites. In addition to camping and fishing, the park also features playground equipment, picnic shelters, and volleyball.

City Ball Park and Skate Park

The park is located on the north side of on Old Highway 61 adjacent to the Maquoketa River. The park is located on the Maquoketa River Trail near the bicycle and pedestrian bridge over the Maquoketa River.

Maquoketa YMCA

The Maquoketa YMCA is owned by the City and provides many recreational amenities including a full-size gym and indoor aquatic center. More information on the YMCA is provided in the community facilities chapter.

Table 4. Maquoketa Park Amenities

[illegible]

Jackson County Parks

Jackson County Conservation manages 38 sites totaling 2,200 acres in Jackson County. Jackson County Conservation's parks, natural areas, timber preserves, historic sites, river accesses, and campgrounds provide recreational opportunities in close proximity to Maquoketa. The parks listed in this section are located within five miles of the city.

Prairie Creek Recreation Area

Prairie Creek Recreation Area is a 237-acre property located on the southeast side of Maquoketa. Jackson County Conservation accepted the land by donation in 2014 and has made several improvements to the area since taking ownership. The park features a picnic pavilion with fireplace and restrooms, over five miles of hiking trails, a 2-acre fishing pond, archery hunting, and 1.5 miles of Prairie Creek.

Hurstville Interpretive Center

The Hurstville Interpretive Center is located one mile north of Maquoketa on the east side of US Highway 61. The Hurstville Interpretive Center is a multi-use facility that promotes environmental education and resource protection. The Center is open Monday – Friday 9:00 a.m. to 4:00 p.m. with weekend hours from April to November. The nature area surrounding the center includes several features including a fishing pond, the Hurstville Marsh, and the historic Hurstville Lime Kilns.

Joinerville Park

Situated along the Maquoketa River, Joinerville Park is a major recovery point for paddlers that float down the Maquoketa River Water Trail. The park is located four miles west of Maquoketa on Iowa Highway 64. The park features a concrete boat ramp, boat dock, picnic area, and camping.

Hurstville Fishing Pond

The Hurstville Fishing Pond is a 2 acre borrow pit stocked with bluegill, catfish and large mouth bass. The pond is located one mile north of Maquoketa on the west side of US Highway 61 opposite the Hurstville Interpretive Center at the intersection with 63rd Street. The park features a handicapped accessible dock, picnic shelter, and paved parking lot.

Blackhawk Wildlife Area

This 180-acre public hunting area along the South Fork of the Maquoketa River was purchased in four different parcels, including a former Boy Scout camp. The area features two miles of hiking trail, cross country skiing, forested hunting, equestrian use, and bird watching.

Maquoketa River Water Trail

Canoe and kayak enthusiasts can take advantage of a well-developed and maintained river trail system along the Maquoketa River in Jackson County. The two forks of the Maquoketa River meander some 50 miles through the county, meeting at Maquoketa. The river then flows another 30 miles until it reaches the Mississippi River. Paddlers can access the Maquoketa River at numerous places throughout the county. Signs along roadways direct motorists to river access points and signs at each access point provide information for the next access point. The Maquoketa River Water Trail has several recreational features along the route including picnicking, primitive camping, fishing, boating, swimming and canoe and shuttle service from private outfitters. The City of Maquoketa's river access is located on the City's north side off of Shoreline Drive, near City Ball Park.



Kayakers Participate in the Timber City Adventure Race



Kayaker on the Maquoketa River

Maquoketa Caves State Park

Maquoketa Caves State Park is located on Iowa Highway 428 seven miles northwest of Maquoketa. The park's caves, limestone formations and rugged bluffs make it one of Iowa's most unique state parks.

The park contains more caves than any other state park in Iowa. The caves are all different sizes and shapes. Some can be explored by walking while others can best be seen by crawling. A six-mile trail system links the caves, formations, and overlooks while providing an exciting hiking experience. Trail highlights include the dramatic "Natural Bridge" which stands nearly 50 feet above Raccoon Creek, and the 17-ton "Balanced Rock."

The park's interpretive center contains detailed information about the geology of cave formations, park history, and a background of the early inhabitants of the park. Other features include bird watching, camping, hiking, picnic shelters, playground, restrooms, and showers.

Grant Wood Mississippi River Region

The Grant Wood Mississippi River Region (GWMRR) is a multi-jurisdictional, bipartisan, public-private partnership intended to create exceptional places and experiences for Iowans and visitors alike. This collaboration, Iowa's first Parks to People initiative, is working together to erase the boundaries and "enhance, promote, sustain, and connect" the region's cultural, natural and park assets. The region encompasses the three-county area of Dubuque, Jackson and Jones County, known as the Grant Wood Loop.

Since its founding in 2015, GWMRR has helped implement numerous projects across the region including several in the Maquoketa area. The GWMRR has provided financial assistance to projects including: the Hurstville Trail and pedestrian bridge, and improvements at Prairie Creek Recreation Area, Maquoketa Caves State Park, and the Hurstville Interpretive Center.

The GWMRR continues to work towards implementation of the projects in its 2016 master plan. The Grant Wood Loop Master Plan (GWL Master Plan) is a roadmap and living document for collaboration toward a shared vision within the region to be enacted over the next 20 years. The plan includes five priority initiatives that were selected as the kick-off to implementation. One of these initiatives, Prairie Creek Connections, aims to create an activity hub in the heart of the region by linking Prairie Creek Recreation Area, the City of Maquoketa, Hurstville Interpretive Center, Camp Shalom, and Maquoketa Caves State Park with a pedestrian/bike route.



Entrance to Maquoketa Caves State Park

FUTURE RECREATION PROJECTS

Hurstville Trail

The Hurstville Interpretive Center serves as one of the region's premier interpretive and learning centers within Eastern Iowa. A trail connection between Hurstville, City of Maquoketa, and Maquoketa Caves State Park will help encourage community members to walk or ride to the Center and serve as an important link for cyclists within the region. The project was originally conceived as part of the GWL Master Plan.

Jackson County completed the first of three phases of trail construction in 2018. Phase One included the construction of a bicycle and pedestrian bridge and the first section of trail. The bridge provides a safe crossing at the Maquoketa River and connects the City of Maquoketa's River Trail to the Hurstville Trail. The ten-foot-wide paved trail runs from the new bridge to 55th Street along Hurstville Road.

Phase Two will be constructed in 2020, and continue the trail along Hurstville Road from 55th Street up to 63rd Street, and then continue along the North Side of 63rd Street to the Hurstville Interpretive Center. Phase Two also includes on-street bicycle improvements in Maquoketa. The final phase of the Hurstville Trail will connect the Hurstville Interpretive Center to Maquoketa Caves State Park by adding a five-foot paved shoulder along 63rd Street and Caves Road.

Downtown Green Space

The Downtown Green Space is a half-acre site on S. Main Street in downtown Maquoketa that was left vacant following a fire in 2008. Initial efforts to redevelop the site for commercial use did not come together and in recent years the site has been home to community events and public art.

While community members have many ideas for the Green Space, the majority of input collected through the community survey, input meetings and public comments indicated that community would be best served by making the Green Space a park or community gathering place.

Results from the 2018 Community survey found that 66.9 percent of residents preferred that the Green Space be used as a community gathering place or park.

The community developed the following list of recommendations for the Green Space based on the input collected during this planning process.

- **Community Gathering Place.** The Green Space should be a multipurpose venue where the community can come together for events such as festivals, concerts, or a farmers market. This type of use fits with the Green Space's central location.
- **Shade.** Trees would provide a long term solution, but in the short term tents or other shade structures could be used during events.
- **Paved walkways.** Paved walkways through the green space would improve accessibility.
- **Public restrooms.** Currently there are no public restrooms in the Main Street area. Portable restrooms are brought in for special events. More permanent restrooms could be used during special events and would benefit downtown visitors and shoppers the rest of the time.

Outdoor Swimming Pool

Community input collected for the plan indicated that the community was fairly divided on the idea of an outdoor swimming pool. Many residents strongly support the idea of a public pool, while others have concerns about the up-front construction costs and ongoing operations and maintenance costs.

Based on the level of interest from the community, the City should continue to evaluate options for an outdoor pool, but it should also consider other types of facilities like splash pads. In its evaluations, the City should also consider the potential effect a new outdoor pool could have on existing recreational facilities like the YMCA.

Teen Space

One of the reasons that many residents supported the outdoor pool was that they felt it would provide a place for the community's teenagers to gather. An outdoor pool is one option for providing a space for teenagers, but the community can evaluate other ideas as well. Possible ideas include an improved skate park, recreation programs targeted at teenagers, and renovating a vacant building into a teen space.



Maquoketa River Bike and Pedestrian Bridge

OUTDOOR RECREATION AND ENVIRONMENT RECOMMENDATIONS

Clean Air, Water, and Soil

- Consider impacts of future development on air and water quality in the land use planning process.
- Use the city's zoning ordinance to prevent air quality issues by separating incompatible uses and designing facilities to mitigate risks to residential areas and sensitive populations.
- Continue to work with the Maquoketa River Watershed Management Authority on watershed conservation projects throughout the area.
- Promote awareness of the effects of air quality on public health, especially for sensitive populations.
- Consider green infrastructure elements when designing buildings and infrastructure.

Hazard Mitigation

- Design buildings, parking lots, and streets that manage and minimize storm water runoff.
- Steer development away from hazardous areas through policies, ordinances, or incentives.
- Reduce flood hazards by enhancing protective natural green infrastructure like wetlands, vegetation on steep slopes, and other natural areas that promote ground water infiltration.
- Periodically review and revise the Jackson County Multi-Jurisdictional Hazard Mitigation Plan.

Parks

- Provide an integrated system of parks, trails, and gathering spaces that provide city residents and visitors with the opportunity to experience the area's unique natural features.
- Continue to coordinate with regional partners such as Jackson County Conservation, the Grant Wood Mississippi River Region, and the Iowa DNR to improve the area's parks.
- Look for opportunities to acquire and preserve lands that contribute to the area's natural character.
- Support continuing improvement programs for park maintenance, equipment, and facilities.
- Encourage city residents to participate in community beautification through community clean-up events, gardening clubs, friends groups, and other volunteer opportunities.

Notes

1. See "Community Land Use Planning for Air Quality" 9-11.
2. See "Jackson County Multi-Jurisdictional Hazard Mitigation Plan."
3. The flood map included in this plan is to be used for reference purposes only. Official FIRM maps should be used for insurance purposes. FEMA distributes FIRM maps through its online Flood Map Service Center. <https://msc.fema.gov/portal/home>
4. Impervious surfaces do not permit the passage of fluids. Streets, parking lots, buildings, and some types of soils like silt and clay are examples of impervious surfaces.
5. See Anderson Chapter 6 for a detailed explanation of how storm drainage systems are designed.