

Exploring and Expanding Park Use Through Interactive Game Apps

Bringing new audiences to County Parks and extending visits

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Executive Summary

This report compiles ways to use technology, specifically a scavenger hunt game, to bring new audiences to Montgomery County parks, in an effort to promote increased engagement and longer park visits.

This project capitalizes on the popularity of the interactive game apps and uses a similar game to entice people into the parks and to expand their visits. This report is the initial data collection of a larger effort to create a scavenger hunt application (“app”) that will be developed by another class in Spring 2018. The data comes from 19 park visits and gathers data on location and features within each park. From the field survey, we gathered coordinate information and pictures of the features as well as information was used to create educational and other questions that will be part of the future game app.

The fieldwork focused on specific background questions, and key features were mapped for example, the relationship to population density and the distance to park entrances. The analysis and findings resulted in several recommendations, most notably to consider multiple versions of the app based on age group and categories such as walkable urban parks or historic sites. Other recommendations include suggestions for a continual reevaluation of park amenities, increased promotion, and new ways to market the parks and create new partnerships.

Background and Problem Area

Maryland-National Capital Park and Planning Commission (M-NCPPC), established in 1927, is nationally recognized for its high-quality parks and recreation services. Although the agency has a strong reputation especially with Montgomery County residents, M-NCPPC seeks to use technology to strengthen the popularity of its parks by attracting visitors of all ages for longer periods of time. Building on the popularity of the interactive game app phenomenon, an interactive scavenger hunt game that incorporates elements of the user’s real world, extensive research into unique features in 19 parks was conducted and field tested to assess how to best utilize each park’s services through the appeal of the game. Prior to data collection, team

members identified three key objectives to devise an effective strategy for park and recreational service visitor attraction and retention. The three objectives are: 1) attract and retain visitors of all ages to the park, 2) develop a data inventory for a scavenger hunt application, and 3) collaborate between the urban planning and information science courses to develop the application.

Key Questions

Once the key problem areas were identified and core project objectives outlined, the following list of research questions was developed to guide data collection and site observations. The first key question that the project seeks to answer is whether **different types of parks (i.e. small pockets in urban centers vs. large recreational parks) offer equivalent attractions?** To answer this question the team classified the parks by size and analyzed the number of features in small parks versus the number of features in large parks. The parks classification can be found in the master spreadsheet.

Given that park space and facilities already exist, the second key question is **what would encourage people to use this space more?** In park visits, each team member placed themselves in the perspective of park users to understand what makes a feature attractive to users or what features and/or parks need additional marketing. What type of unique or unknown features exist that the game could help promote?

The third question addresses the duration of park visits, and aims to determine **how visitors can be encouraged to stay longer in parks.** Through park visits, the team paid special attention to the length of stay in the parks during the data collection process, and attempted to draw conclusions about the influence of different parks' feature characteristics to our length of stay.

Finally, the last question is whether **parks are prepared to receive populations of all ages?** During park visits, the team categorized park features by type (i.e. social, contemplative, active, etc.) and paid close attention to feature surroundings to draw conclusions about the park's attractiveness to different populations. These questions were incorporated into our data collection process and the recommendations.

Variables Selected and Analysis Approaches

The County recommended researching 20 parks as part of the project, including urban parks, local parks, regional parks, conservation parks, and special parks. The initial 20 were reduced to 19, due to the Hoyles Mill Conservation Park closing periodically for whitetail deer hunting season. For each of the remaining 19 parks, we identified three to five features, photographed the features, and then categorized each feature by type (i.e. social, contemplative, active). Features were chosen based on information received from the visitor's center, if available, or what we found to be unique or interesting. The team chose features that would require visitors to explore areas of the park farther away from the entrances. We selected features that would not change with the seasons (which excluded some natural features), and for which we could easily craft two multiple choice questions that appeal to both children and adults.

We identified latitude and longitude coordinates for each feature using Google Maps. Once the coordinates were collected, we geocoded the coordinates using ArcGIS Desktop 10.0 and overlaid them on the map of Montgomery County, projected to the geographic coordinate system GCS_WGS_1984.

Interpretation of Results/Mapping Park Features

Once the data on park features was collected, coordinates were geocoded to begin the first step of analysis. Then the park boundary layers of the 19 parks were overlaid onto the geocoded park feature layers, as illustrated in the map below.

Features of Montgomery County Parks

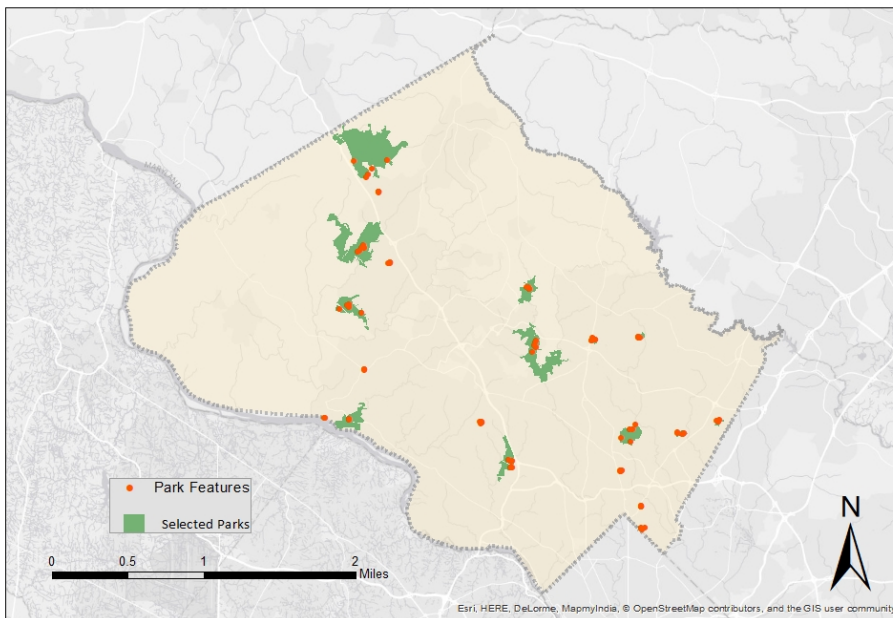


Figure 1: Park features

The map highlights the different sizes of the parks. M-NCCPC has categorized these parks based on size and purpose: regional parks, conservation parks, special parks, urban parks, and local parks. Also, the study's 19 parks are throughout the County providing a representative sample of parks.

The density of potential users around the parks was determined using 2014 U.S. Census Bureau population data, collected in block group format.

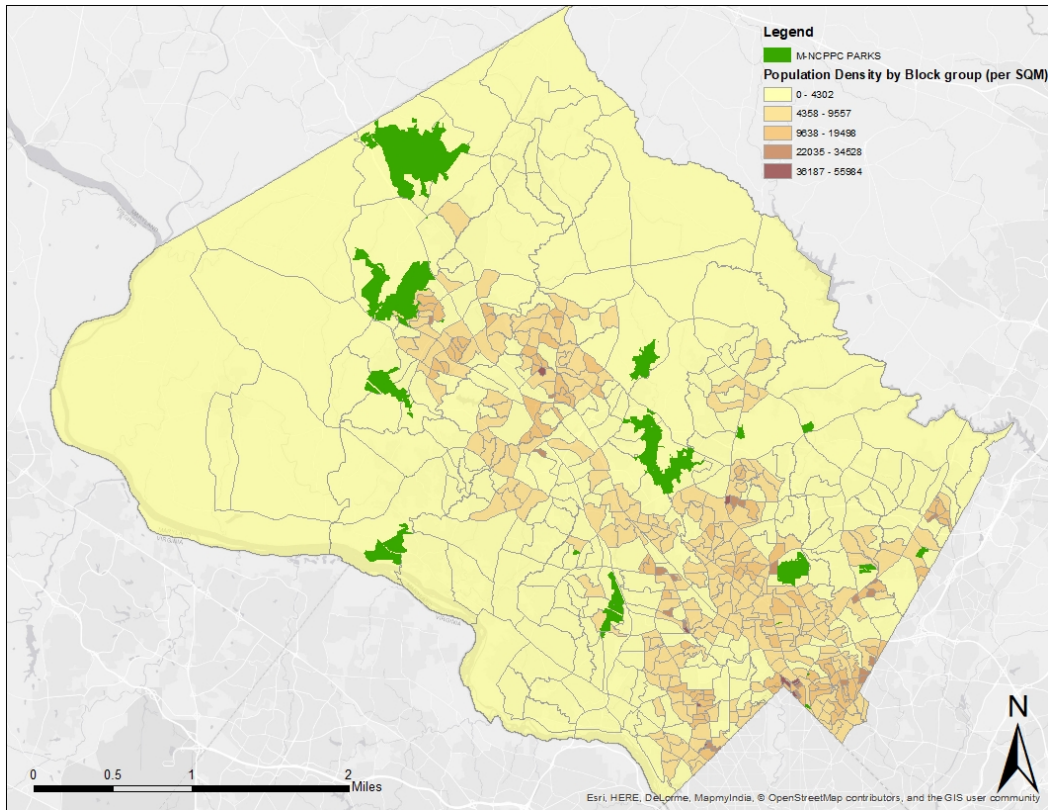


Figure 2: Relationship of parks to population density

A simple spatial observation shows that almost 75 percent of this study’s parks are located close to the County’s densely populated areas. The GIS Kernel Density Tool calculates the density of features in a neighborhood around those features. It was used to calculate the density of features around each output raster cell.

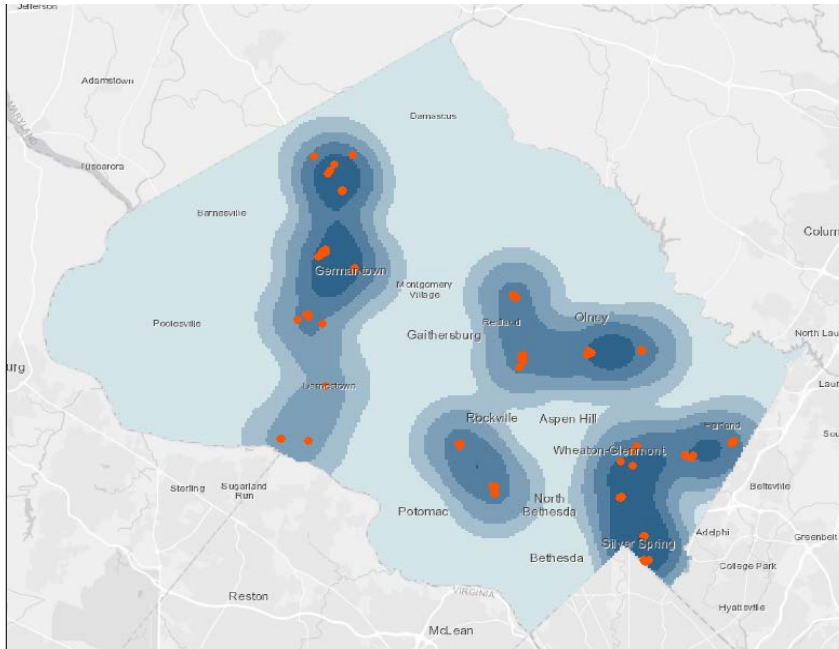


Figure 3: Heat Map illustrating concentration of features

The Kernel Density map of park features measures the distribution of various features in parks. The map above shows that features spread throughout the County.

Features of Montgomery County Parks

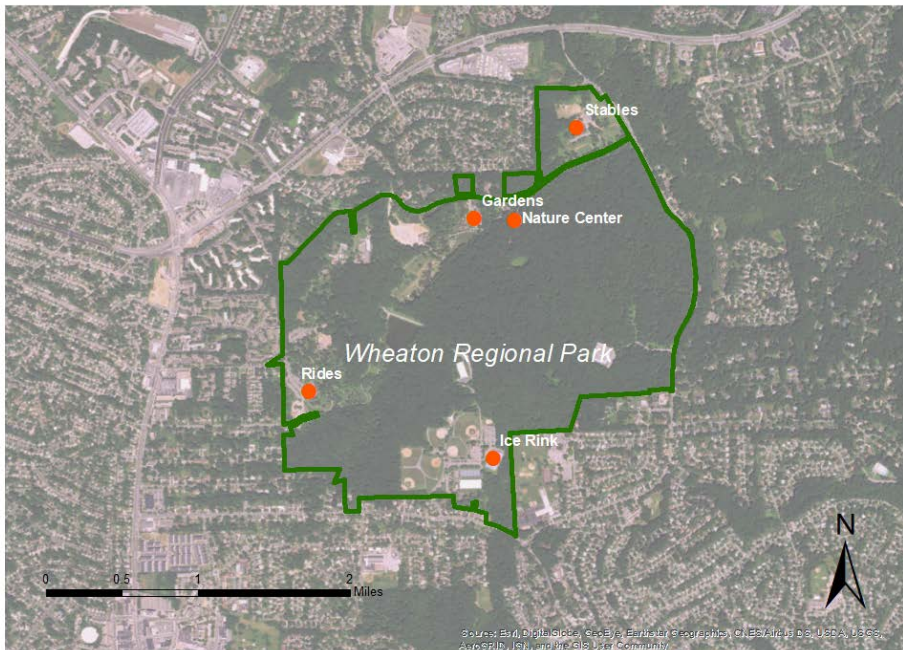


Figure 4: Wheaton Regional Park, sample park map illustrating spread of park features

Figure 3 shows the distribution of park features that were collected at various county parks. If the features were well dispersed in the park, it was hypothesized that this would encourage visitors to explore more and increase the visit duration. However, some of the parks were very large; for example, Black Hill Regional Park is spread over 2,000 acres, therefore selecting features that are far from the park entrances or a parking lot could also discourage users from visiting certain features.

To find the distance of features from park entrances, we measured the distance of all of the features and plotted the results. We found that approximately 82 percent of park features are at a comfortable walking distance of 0.5 mile and almost 90 percent of park features lie within a walking distance of 1.0 mile.

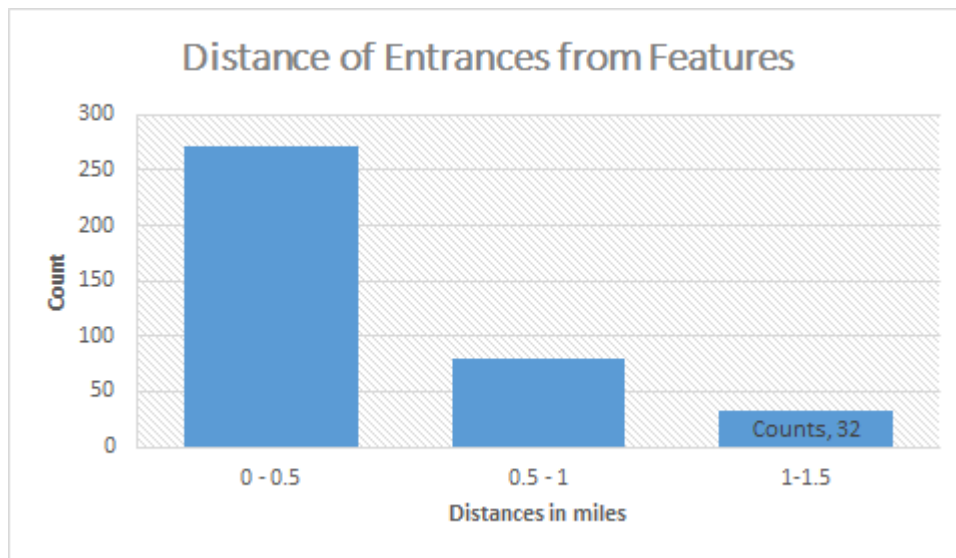


Figure 5: Distribution of park features in relation to park entrances

Results Highlights

Overall, 19 parks were visited, and 92 features geocoded. In classifying parks by size, it was discovered that 12 of the 19 parks were small, and seven were large. It was also determined that the small parks contained 58 of the total number of geocoded features, and large parks contained 34 of the total number of geocoded features.

Through the data collection process, it was also determined that park features are under marketed. When visiting the parks, the team discovered that current park maps are often missing

some interesting features. As a result of the field visits, the team was encouraged to return for more in-depth visits.

Through the mapping process, the team discovered that public transportation accessibility could be improved. Parks located in densely populated areas are easily accessible, while parks farther from the urban core were inaccessible by public transportation.

In park visits, it was determined that the duration of stays in parks was highly dependent on the number of features and distance between them. As expected, parks that offer more features in a larger area retain users for longer periods of time.

Finally, a variety of feature types were geocoded, including social, contemplative, and active features. Social features included checkerboard tables, picnic areas, dog parks, and fishing piers. Contemplative features included art sculptures, gardens, and historic buildings. Active features included sports fields, bike racks, and playgrounds.

These parks offer a diversity of feature types to attract users of different ages. However, it was observed that some of the features do not accommodate older populations. For example, teams observed a lack of seating to accommodate seniors or parents at children's features.

Recommendations for M-NCPPC

Based on data collection and observation, there are several recommendations for park improvements. First, a number of park features lack adequate seating. Some features have no seating at all or seating in disrepair. For example, at Little Bennett Regional Park, when visiting the Jumping Pillow, there was no seating and several adults were sitting on the ground.

The second recommendation is to ensure all park features are listed on park pamphlets, websites, and promotional materials. Many park features are missing from associated websites, pamphlets, or maps distributed at the parks. Also, promoting M-NCPPC parks by hosting festivals or public events could draw a wider variety of guests with diverse interests to the parks. Additionally, we noticed there were no opportunities for feedback on park amenities from visitors. Opportunities to engage and survey users are key and could be easily done through traditional methods.

In addition, during park visits, we noticed a large number of historic features. We propose creating connections between the historic features throughout the M-NCPPC system. One way to accomplish this would be to add a scavenger hunt map to the app that highlights historic features. Also, creating tours across park boundaries that connect historic features may increase the visibility and use of those features and parks.

We recommend two future research tasks after the release of the park application. As use of the application increases, characteristic data from its users should be collected. This data can help determine who is using the application. Determining the age of frequent users will allow new park features to be added that target specific age cohorts. Finally, further collection of features and amenities and an assessment of their use should be regularly updated to expand the application's potential uses and audience and to ensure the park remains responsive to users' interests and needs. Different versions of the app could be developed for different age groups and also for different areas, such as historic sites or walkable urban parks.

Park Feature Highlights

A brief overview of the parks visited and their highlights follows.

Agricultural History Farm Park

The Agricultural History Farm Park is a 455-acre park in Derwood. The park offers a variety of gardens that educate visitors about habitats for plant and animal species. The park also has historic items on display, in addition to live farm animals.

Black Hill Regional Park

Black Hill Regional Park has more than 2,000 acres for outdoor recreation and social gatherings. Visitors enjoy spectacular views of Little Seneca Lake and the many picnic shelters, volleyball courts, play grounds, and trails. This park also provides canoe, kayak, and rowboat rentals from Black Hill Boats and the opportunity to explore the lake's natural beauty by following the Black Hill Water Trail.

Blockhouse Point Conservation Park

This 630-acre park in Potomac, is adjacent to the C&O Canal trail and Potomac River. It offers natural features, such as the Paw-Paw Trail, and historic features, such as Civil War ruins. It was difficult to provide features for the purposes of this project since most were natural and might change over time.

Cabin John Regional Park

Cabin John Regional Park in Bethesda is a large regional park with varied features and resources, from sports facilities, playgrounds, and campgrounds to natural areas and walking trails. Some of the interesting features include the ice skating rink, tai chi court, and miniature train ride, along with a dog park, party room, and a totem pole, among others. It also includes pavilions and a picnic area, along with the usual playing fields and a playground.

Calverton-Galway Park

This 61-acre park is located in Silver Spring. Due to poor maintenance, it was difficult to choose features for this project. The park includes sport fields, a tennis court, a playground, and a picnic area with two grills. This park is accessible by bus.

Darnestown Square Heritage Park

Darnestown Square Heritage Park is a small, urban park in Darnestown next to a shopping center. It is dedicated to explaining Darnestown's unique history. Through historic markers and art sculptures, visitors learn about Darnestown's involvement in the Civil War. The site also features pathways, bicycle racks, and benches for visitors. It is accessible by bus.

Dowden's Ordinary Special Park

This is a 2.8-acre interpretive park in Clarksburg is on the site of a former "ordinary" or 18th century tavern. The park's purpose is to preserve and interpret historic and archeological resources as well as provide passive recreation for the adjacent community. It includes unique and striking features including a "ghost" structure of the former "ordinary," a cannon replica from

the 1700s highlighting the significance of Dowden’s Ordinary in the French and Indian War, the Daughters of the American Revolution (DAR) monument to honor war heroes, a preserved archaeological site, and a concrete elephant statue replicating a sketch of the first elephant in North America.

Ellsworth Urban Park

Just steps away from downtown Silver Spring, Ellsworth Urban Park puts a modern spin on recreational parks by offering state-of-the-art playground equipment such as Koman Bloqx urban climbing blocks, a park checkerboard table for older youth/adults, and two tennis courts. Most notably, Ellsworth Urban Park offers a sizeable dog park for both large and small dogs, the first of its kind in the County, according to M-NCPPC. The dog park consists of water fountains, benches, and an artificial turf play mound. Prior to the development of the dog park and new playground equipment, the area included a large lawn area, deteriorating benches and playground equipment. This park is accessible by Metro and bus.

Evans Parkway Neighborhood Park

This five-acre neighborhood park in Silver Spring was designed with a sustainability focus, in addition to offering a playground and sports facilities. Interesting features include a rain garden and interactive elements, such as the colorfully-painted “echo center” where visitors can hear their voices echo when standing in the center. This park is accessible by bus.

Falls Road Park

Falls Road Park is a 20-acre recreational park, surrounded by homes in suburban Potomac. With a playground, multiple sports fields, fitness equipment, and bicycle storage, this park is ideal for children and families. This park is accessible by bus.

Germantown Town Center Urban Park

This 8.8-acre urban park opened to the public in the fall of 2015. Located within walking distance to nearby housing, the Germantown Regional Library, the Black Rock Centre for the Arts, and numerous local business and restaurants, this park offers an area where community members can enjoy events, be active, and more. The park features unique lighting and is open after hours.

Jessup Blair Local Park

Jessup Blair Local Park is a 15-acre neighborhood and urban park in downtown Silver Spring. The Jessup Blair House at the park's center was one of three summer country homes of the prominent Blair family and was once a public library. The park maintains signage on local history, and a playground, soccer fields, and basketball courts for active recreation. It is accessible by Metro. Suggestions for improvement include making greater use of the park for community festivals and events, including a "Founder's Day" to celebrate local history. Other suggestions include finding additional appropriate and sensitive uses for the historic home that maintain the structure's historic integrity. The location and structure could be a site for a museum of local history.

Little Bennett Regional Park

This 3,700-acre park, located in Clarksburg, offers a variety of activities for all ages, such as hiking and camping. The park area has a multitude of features on local history, such as the Kingsley School in Froggy Hollow. The team found various interesting features such as the Jumping Pillow and the Yurt Campground.

Martin Luther King Jr. Recreational Park

This 95-acre recreational park in Silver Spring includes indoor and outdoor swimming pools, multiple tennis courts, baseball fields, exercise areas, a children's playground, and a small lake. The lake features an energy-generating windmill. This park is accessible by bus.

Olney Manor Recreational Park

This 61-acre park in Olney is devoted to sports and recreation. In addition to the usual playing fields, it includes racquetball courts, beach volleyball courts, a dog park, along with a skate park and an indoor aquatic center with water slides and waterfalls. It hosts varied activities such as a dive club, as well as Olympic, regional, and local softball and tennis tournaments. A recommendation for this and other parks with playing fields is to continually assess their use and

changing trends to best connect with users, as sports and activities change and evolve in the future.

Rock Creek Regional Park

This 1,800-acre park is in Derwood and offers many natural features, such as two lakes with boat rentals, trails, a picnic area, and a nature center. “Go Ape,” a recreation company, offers a treetop ropes course within the park.

South Germantown Recreational Park

The 695-acre park In Germantown offers a mix of activities for various age groups, including an Archery Range, Splash Park and Mini Golf, Adventure Playground, “Mooseum,” and Community Garden. These features are educational, physical, and seasonal that create a year-round recreational hub.

Wheaton Regional Park

This 536-acre park in Wheaton offers a variety of recreational opportunities, including a circa 1915 musical carousel; horse stables with trail rides, riding lessons, and summer camp programs; a historic log cabin once home to an African-American landowning family in the late 19th century; Brookside Gardens with horticultural displays, an indoor conservatory, and seasonal exhibits; and an athletic complex with multiple sports fields and an ice arena.

Woodlawn Manor Cultural Park

Woodlawn’s unique elements lie in its farmland and setting that are akin to stepping back in time to a very different Montgomery County. The park, located in Sandy Spring, provides information on Quaker settlements in the area and highlights African American enslavement. One of the park’s most unique elements, the stone bank barn, built in 1832, is an unusual architectural style for Maryland. It is one of only a handful of stone bank barns in the state, and serves as a museum of the area’s history. Outbuildings, gardens, and a garden statue surround the house. Resident horses graze in the pastures and the park has a unique trail focused on the experience of traveling on the Underground Railroad. The trail is part of the National Park Service National Underground

Railroad Network to Freedom, as well as part of the 25-mile Rachel Carson Greenway corridor. It is recommended that the park coordinate with other parks to create a tour of related sites, for example an African American history tour, or tour of Rachel Carson Greenway sites. In addition, the site could make use of university partnerships as site visit locations for field trips and class projects.

Conclusion

In conclusion, our field investigation of 19 parks resulted in a review of 92 features. The resulting data collection and compilation includes spreadsheet of the coordinates, categorization of features, and trivia questions for each feature that will engage the game users and encourage more in-depth visits to the parks. Overall, the team had the opportunity to visit parks and to learn about area history.

Recommendations include additional amenities to make the parks more user-friendly for all age groups, a continual reevaluation of use of the features, and increased park promotion through public outreach, events, and partnerships.

We also recommend developing different versions of the app for various audiences and themes, e.g. historic sites. The background work from this project will serve as the basis for the future scavenger hunt app, which will be a unique way to bring new audiences to County parks, to allow visitors to explore the parks in new ways, and ensure that the parks are serving increased audiences.