

LAKE ARBOR GOLF COURSE REUSE MASTER PLAN
MITCHELLVILLE, MD
NOVEMBER 2024



View from the future Active-Use Recreation area to the lower pond

LAKE ARBOR GOLF COURSE REUSE MASTER PLAN

NOVEMBER 2024

PRODUCED BY:

MAHAN RYKIEL
ASSOCIATES INC

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PLANNING AND DESIGN TEAM

MAHAN RYKIEL ASSOCIATES

Urban Design, Planning and Landscape Architecture

Scott C. Scarfone, PLA, *Associate Principal*

Benjamin Chronister, PLA, *Associate*

STRAUGHAN ENVIRONMENTAL

Environmental Consulting

Lauren Wirth, *Director, Natural Resources*

Alessandra Ward, *Environmental Scientist*

Hannah McGee, *Environmental Scientist II*

PROS CONSULTING

Financial Consulting

Brian Trusty, *Principal*

Leslie Kane, *Senior Project Manager*

GREENMAN-PEDERSEN, INC.

Civil Engineering + Infrastructure Consulting

Rich Hayes, P.E.

PARK PLANNING AND ENVIRONMENTAL STEWARDSHIP MASTER PLAN PROJECT TEAM

Sonja M. Ewing, AICP, *Division Chief, Park Planning and Environmental Stewardship Division*

Dominic Quattrocchi, AICP, *Land Acquisition/ Land Management and Development Review Supervisor*

Mary Jo Kishter, *Environmental Planner IV*

Robert Patten, *Trail Development Program Manager*

Sean Adkins, *Trails Planner II*

Ellen Huffman, *Trails Planner II*

John Finnerty, *Park Planner I*

Jennifer Bruneau, PE, *Engineering Section Supervisor, Capital Planning & Development Division*

The Maryland-National Capital Park and Planning Commission and the Design Team express their appreciation to the numerous involved residents, community members, and stakeholders who took part in the planning process. Their contributions were invaluable in shaping the vision for a new park at Lake Arbor to authentically represent the community's input and aspirations for the space's future.

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EXECUTIVE SUMMARY

OVERVIEW

The Lake Arbor Golf Course Reuse Master Plan Report (hereafter referred to as 'the report') has been prepared by Mahan Rykiel Associates (MRA) with assistance from Straughan Environmental, Greenman-Pedersen, Inc. (GPI), and PROS Consulting, Inc. on behalf of The Maryland-National Capital Park and Planning Commission (M-NCPPC) Department of Parks and Recreation (DPR).

After the Lake Arbor Golf course closed, it suffered from a lack of maintenance and new safety issues. In 2022, M-NCPPC was asked by the state of Maryland to acquire the property and utilized State Program Open Space Funds. The property consists of approximately 127 acres, located in the Largo-Lottsford area and is adjacent to the Western Branch Stream Valley Park making it a key acquisition further enhancing protections of the Western Branch of the Patuxent River. The property consists of open areas (fairways, greens, etc.), golf cart paths, including an underpass at Golf Course Drive, two ponds associated with the previous golf course use, and a minimal amount of forest, trees and other natural areas. Previously a privately held golf course associated with the Lake Arbor residential community, the golf course has not been in operation for over a decade. It suffers from neglect including but not limited to failing golf cart bridges, trash dumping, and fallen trees and limbs along golf cart paths. M-NCPPC approached the new property with the intent of being better environmental stewards while also desiring to create recreational amenities for the residents of the community. The overarching goals for the project include:

1. Provide active and passive recreational amenities to the general public that offer opportunities for focused recreational use based on feedback from the residents and also meet the Level of Service needs of Service Area No. 6 per the approved 2013 Formula 2040 Functional Master Plan for Parks, Recreation and Open Space and the approved 2022 Land Preservation, Parks and Recreation Plan.
2. Restore and enhance the environmental features on the property, providing a variety of habitats through reforestation, meadow establishment, and wetland creation.
3. Public outreach and community engagement and education, including increasing awareness of community enhancement through natural resource protection and improvement, the connection between human health and being outdoors, and promoting the development of community leaders to build long-lasting environmental stewardship.
4. Provide safe and sustainable recreational amenities and natural areas.
5. Minimize the long-term maintenance costs required for the proposed uses.

This report represents the culmination of collaboration between MRA design team, M-NCPPC Parks and Recreation, representatives from The Lake Arbor Foundation, The Lake Arbor Civic Association, and a multitude of community stakeholders. The participatory design and consensus building process spanned a 6-month public participation process (March-September 2024) and included three public meetings, an

online survey, and multiple input sessions from different M-NCPPC departments. The process provided the community opportunities to share their vision of a community-designed park that also met M-NCPPC's recreational, service, and stewardship goals, as well as their maintenance needs. The report provides a vision and strategy for the future ecological restoration and recreational utilization of the park, reflecting a phased approach. The Master Plan provides guidelines for:

- Short- and long-term physical improvements
- The protection and enhancement of the park's natural resources, which increase the economic vitality of the community

- Development of new recreational amenities
- Establishment of ecologically and economically sustainable management practices

The document will allow M-NCPPC to clearly communicate these goals and objectives to community members, potential funding sources, and other interested parties, while providing a road map to the future of the park's development.

Looking toward the future, M-NCPPC recognizes the importance of enhancing and protecting the new park's ecology, enhancing accessibility, creating and maintaining new recreational amenities, and providing a high level of maintenance for the park's users.



FIGURE 1 View from the former golf course clubhouse area to the lower pond.

PROJECT TIMELINE

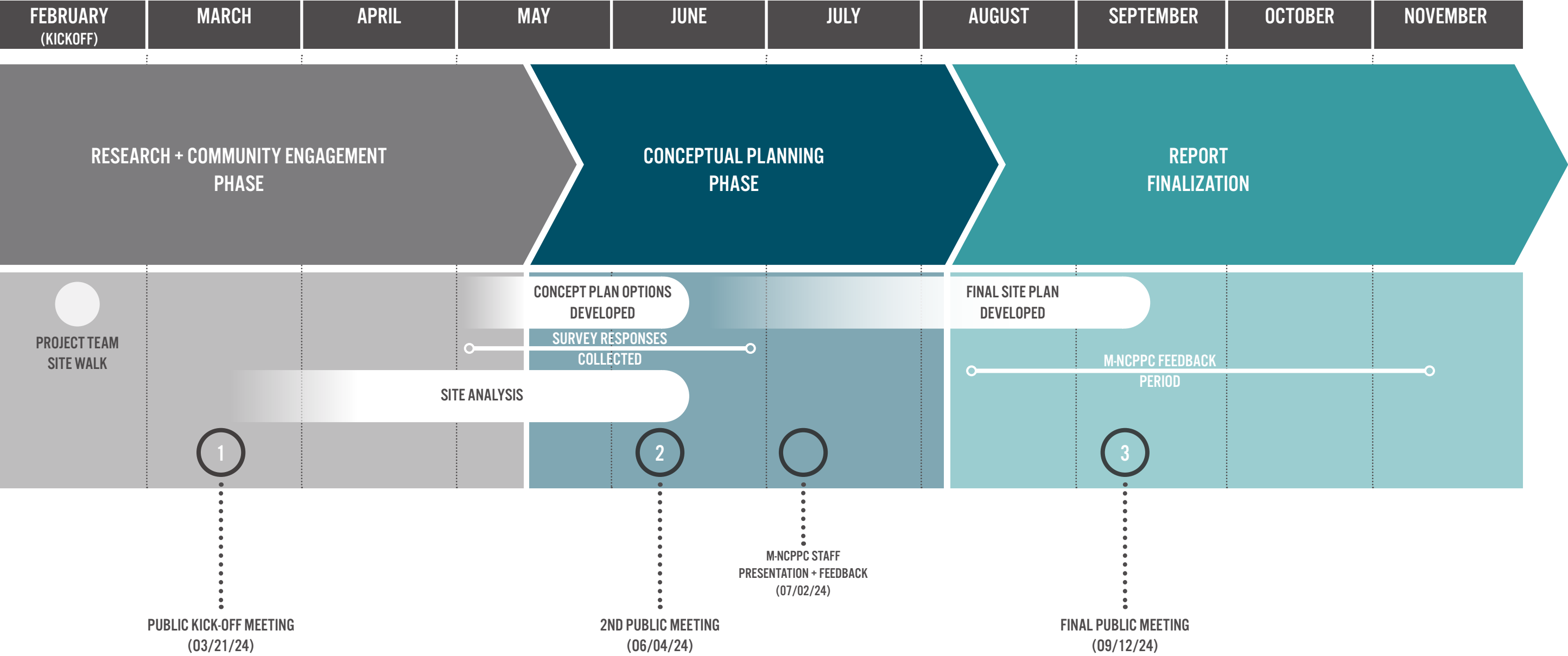


FIGURE 2 Visioning and design schedule for the Lake Arbor Golf Course Reuse master planning process.



Client and design teams walking on a former fairway during the initial site walk

PUBLIC ENGAGEMENT

STAKEHOLDER INPUT

OVERVIEW

Community input was an important aspect in the development of this Master Plan. Extensive efforts were undertaken to provide opportunities for community input through community meetings and surveys. The input gathered from the engagement process described below guided portions of the development program for the park’s Master Plan along with input from the M-NCPPC team. MRA, alongside the M-NCPPC team, developed and facilitated multiple outreach approaches, input opportunities and stakeholder workshops to solicit stakeholder input which are summarized below and further detailed in Appendix A. Generally, stakeholder sentiment at public meetings and surveys identified several major themes, which include:

- The community cares deeply about the interactions between the former Lake Arbor golf course property and their own adjacent residential properties.
- The community is generally in support of habitat restoration and the naturalization of the property.
- There is a need for a balance of both passive and active recreation opportunities that support multi-generational, social interaction.
- New park amenities should not compete with the existing recreation facilities provided by the Lake Arbor Foundation.

The top priorities for a new park identified during the planning process included:

- Safety + Accessibility
- Upkeep, Maintenance, + Cleanliness
- Multi-generational recreation

Stakeholders emphasized that these elements should be available for all people and all ages. The following delineates the types of outreach and subsequent feedback the design team received from the community.

SITE WALK

February 29, 2024

On the day of the public kick-off meeting, members of the project team (MRA, Straughan, PROS, and GPI) walked the site with stakeholders, including individuals from M-NCPPC maintenance staff, the Park Planning and Environmental Stewardship Division, and others. The site walk provided an opportunity for the team to review together and discuss the park firsthand. During the walk, members of the project team documented their observations of the site through notes and photographs. Observations included large specimen trees, potential wetland creation opportunities at site low points, incised streams, and problematic existing trail routing. Aging infrastructure issues including failing bridges and underpasses, as well as a number of sinkholes related to aging pond infrastructure were also observed. Long-term maintenance and safety concerns were also discussed.



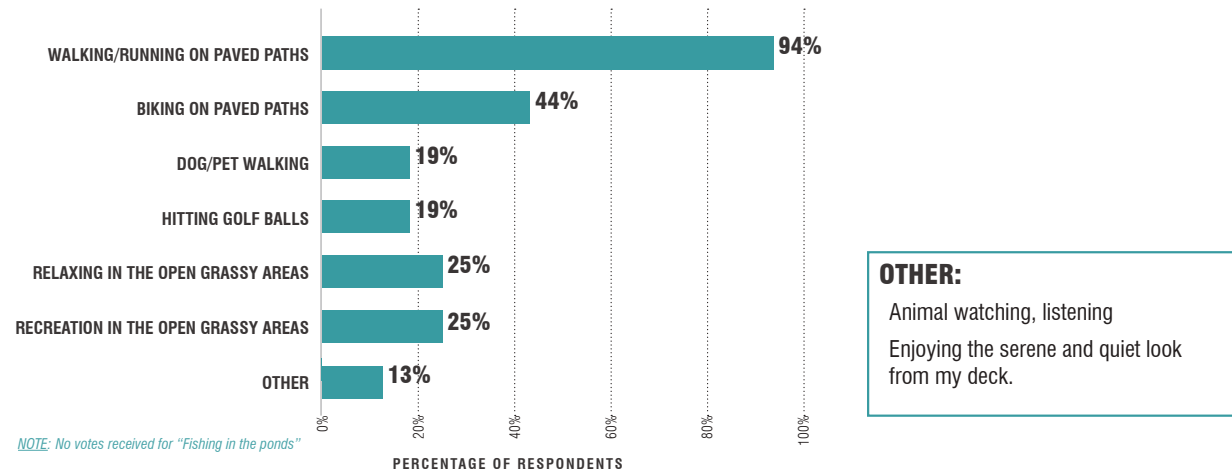
FIGURE 3 Project and client teams walk the Lake Arbor site on February 29, 2024.



FIGURE 4 MRA presents at the first community meeting.

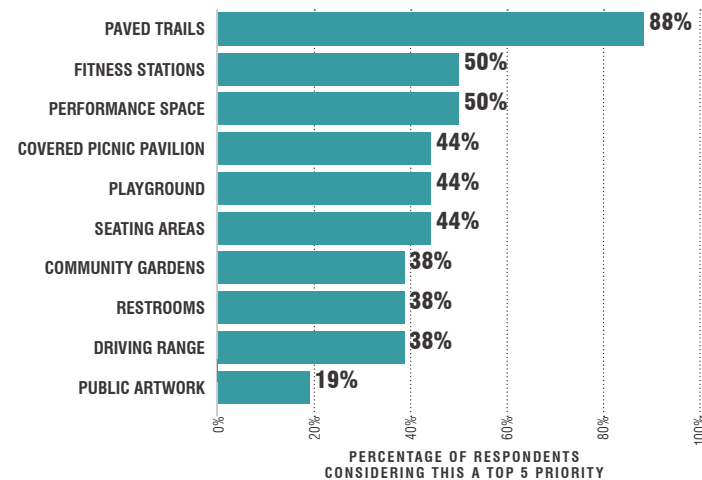
CURRENT USE

How are you currently using the Lake Arbor Park Property?



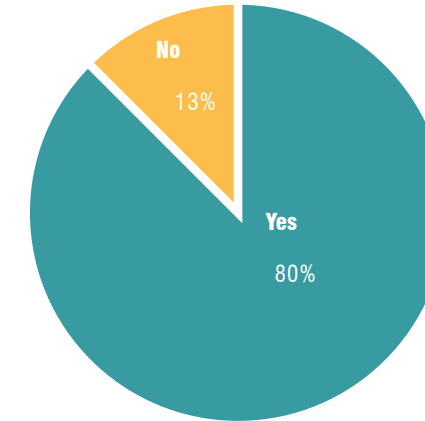
ACTIVITIES/AMENITIES, PREFERENCES

Please rank your preference, with 1 being your top choice, and 5 being your bottom choice, for the following activities and amenities at the new park at Lake Arbor. - TOP 10 RESPONSES GIVEN



NATURALIZED AREA

Do you support M-NCPPC's plans to convert former golf course open spaces to naturalized forest and meadow habitats?



NATURAL AREA USAGE

Within natural areas (e.g., reforested areas, meadows, etc.), please rank your preference (with 1 being your top choice, and 4 being your bottom choice) for the following amenities and activities.

- 1 **Walking / Hiking on natural surface trails & people's choice pathways**
- 2 **Spending time in nature / Immersion in nature**
- 3 **Bird and wildlife watching**
- 4 **Fishing**

FIGURE 5 Public online survey results. Refer to Appendix A for full public online survey results.

PUBLIC OPINION SURVEY

May to July 2024

MRA crafted a survey to solicit user attitudes toward the park. The survey was available online from May to July 2024. The survey only garnered 16 responses. Survey questions (see Appendix B) queried how users were currently utilizing the former golf course space, how they utilized other established parks in the area and what their desired outcomes for the Master Planning process would be. Respondents generally shared a vision of the new park at Lake Arbor as an

accessible, clean, and safe park which provides predominantly passive recreation, with some active recreation. Responses show that users generally come to the park during the day, with weekdays being favored over weekends. Visitors most frequently come to the space during these times to utilize the existing trail network for walking, running, biking, and pet walking. This current usage of the space aligned with how respondents prefer to spend their time in natural areas, relaying a preference for walking or hiking on trails and feeling immersed in nature.

The survey also asked respondents to rank what amenities they would most prefer to see in a new park at Lake Arbor. Top responses include new paved trails, fitness stations, playgrounded space, and a performance space or amphitheater.

One of the most notable results was the positive support for converting the former golf course open spaces to naturalized forest and meadow habitats. This trend again aligns with the high demand for walking and hiking trails and the opportunity to spend time and be immersed in nature. Additional highlights from survey feedback included:

- Community member pride in the diversity of the community
- Preference for multi-generational uses and amenities
- Activities that encourage social interaction
- Agreement that more accessible pathways and amenities are needed
- Support for a potential solar array installation on an appropriate portion of the property

PUBLIC OUTREACH MEETINGS

**OUTREACH MEETING #1:
KICK-OFF**

On March 21, 2024, the MRA and M-NCPPC team hosted a Public Kick-Off meeting at the Lake Arbor Foundation's Dean Room to inform the public about the Master Plan's purpose and objectives, outline the process through which the report would be shaped, and solicit initial comments from the community. The meeting was attended by approximately 50 community members in person and 20 through Zoom, where-by they had the opportunity to share their input through a series of exercises and structured discussions. The exercises included design sliders and an amenity preference board (refer to Appendix A), and were particularly useful in generating information about what types of passive and active amenities the community wanted to see at the new park, as well as the level of naturalization and types of trails that were desired by users. The structured discussion questions shifted to a looser, more open discussion about potential amenities.

**OUTREACH MEETING #2:
CONCEPT OPTIONS PRESENTATION**

The second public meeting was held on June 5, 2024, at the Lake Arbor Foundation's Dean Room. The second meeting had a lower attendance, with community members attending both in-person and through the Zoom platform. The agenda of this meeting included a recap of community input from the prior sessions, a presentation by the design team of site analysis and emerging design ideas, and a discussion from stakeholders and community members.

Results from the previous public meeting, and the resulting preliminary program were shared and discussed with attendees. The project team also shared site analysis diagrams on existing environmental conditions, utilities and

infrastructure issues, and diagrams on existing trails and viewsheds. Two proposed concepts for the overall habitat restoration plan were presented, as well as two proposed concepts for the active use / recreation area. At the conclusion of the presentation, an open discussion was held providing the opportunity for community members to comment on the presented concepts.

**OUTREACH MEETING #3:
PRESENTATION OF FINAL CONCEPTS**

On September 12, 2024, the final public presentation was hosted by MRA and M-NCPPC at the Lake Arbor Foundation's Dean Room, both in-person and through Zoom to present the preferred design concepts to the public. An open house was held before the official presentation to provide opportunities for attendees to observe plans more closely, orient themselves on the site, and ask any questions or bring up any concerns. The preferred program, overall habitat restoration plans, overall trail plans, and a site plan of the active-use recreation area were then presented formally to the community. At the end of the meeting, an open discussion was held where community members could ask questions, provide input, and discuss any concerns.

M-NCPPC INTERNAL MEETING

On July 2, 2024, MRA presented a project update (including analysis and concept drawings noted above) to M-NCPPC staff at their office in Riverdale, MD for their input on park operations and maintenance. Valuable information was gathered on preferred community garden infrastructure, desires for multiple maintenance access points at the new park, concerns with providing an amphitheater or covered performance space, and plumbing and other utilities associated with potential restrooms or comfort stations.



FIGURE 6 MRA presents the initial concept options at the second community meeting.



FIGURE 7 Community members reviewing final concepts during the open house before the third meeting.



View from the future Active-Use Recreation Area overlooking the former driving range (to be reforested)

SITE ANALYSIS

SITE CONTEXT + HISTORY

SITE HISTORY

The original Lake Arbor Golf Course was built circa 1970. The surrounding Lake Arbor subdivision community was constructed during the 1980's and quickly turned into one of the first successful, affluent golf course communities in the area. The development attracted many young, affluent, upwardly-mobile families in the area, many of which were African American.

In November 2005, the golf course was purchased by the Lake Arbor Golf Club, LLC, owned by a local developer and contractor. In 2009, the golf course closed, and a few short years later in 2011, the lender that backed the deal foreclosed on the LLC and the course fell into disrepair (May 2013 M-NCPPC Golf Course Study).

The Maryland-National Capital Park and Planning Commission acquired the property in 2022 via State Program Open Space Funds, and now operates the space with minimal ongoing maintenance through contracts with third party mowing contractors.

SITE CONTEXT

The Lake Arbor site consists of approximately 127 acres, located in the Largo-Lottsford area at the north-east quadrant of Landover Road (MD 202) and Central Avenue (MD 214). The site's northern limit is bounded by Lottsford Road and the eastern edge runs directly adjacent to the Western Branch Stream Valley Park, while other areas of the property weave throughout the community (former fairways) and cross over

several roads including Golf Course Drive (twice) and Winged Foot Drive (once).

Single-family homes border the property along most edges. Central to the site on the eastern edge and adjacent to the M-NCPPC acquired property, the Lake Arbor Foundation (L.A.F.) operates a recreational amenity site, including a community building with a meeting room and associated support facilities, a pavilion, tennis courts, basketball courts, and a pool. The Foundation was founded in 1997 to provide educational, cultural, social, and recreational programs for residents.

Locally, the site is in close vicinity to other parks in the area, including Watkins Regional Park, Enterprise Park/Golf Course, and Allen Pond Park.

BACKGROUND MATERIALS REVIEW

Due to the Lake Arbor site's primary history of being a privately developed and owned golf course, there is a dearth of available records. The design team and M-NCPPC worked in tandem with the Lake Arbor Foundation to gather all the background information available including paper only drawings which had been scanned and archived in various locations. Other available documents include:

- Prince George's County GIS
- Prince George's County Department of Health, Certificate of Compliance Individual Sewage Disposal (July 1980)
- Northampton Cluster Preliminary Plan (December 1976)
- Washington Suburban Sanitary Commission Final As-Built Drawings, Water and Sewage Extension Golf Course Drive and Various Streets (1980)
- M-NCPPC Golf Course Study (May 2013)



FIGURE 8 Context map of the Lake Arbor Site.

ENVIRONMENTAL ANALYSIS

HABITAT CONDITION OVERVIEW

The Lake Arbor site contains four main habitat types: maintained lawn, ponds, streams, and fragmented forests/hedgerows. Because of the site’s history as a golf course, the conditions and boundaries of each habitat type have been artificially altered or created. Habitat types are currently distributed through the site in a mosaic fashion, with sharp boundaries between each habitat and few transition zones. The majority of the site is maintained lawn, with forests around the boundary of the site as described below. Each habitat type is disturbed and fragmented, limiting the ecological value.

EXISTING TREE CANOPY AND LANDSCAPE

MAINTAINED LAWN

The majority of the habitat on site is composed of maintained lawn. Figure 9 depicts a typical condition on the site of a former fairway being maintained as lawn. Lawns typically consist of only a few non-native species and require costly maintenance regimes including water, nutrient, and pesticide input and regular mowing. Because of the necessary upkeep and limited species diversity, lawns are generally considered unproductive habitat types that provide limited ecological value. In most areas, the lawn is bounded by forest stands or hedgerows with no transition zone between habitat types. Transition zones contain vegetation from both habitats, supporting species that may not otherwise be present in either. Robust transition zones populated with native vegetation can also prevent invasive species growth in forest edges, which is a common problem in forests abutting lawns, including those in the Lake Arbor site (Figure 10).

The eastern side of the site overlaps with the FEMA 100-Year Floodplain (Zone AE). Turf grass is a poor repository for floodwater, which increases

surface runoff during precipitation events. Greater volumes and higher flow rates of runoff increase the potential for erosion and flash flooding. Many of the floodplains associated with the streams on the site are currently under-forested, vegetated primarily with grass and maintained as a lawn.

FORESTS

Small forest stands are located throughout the site. As shown in the M-NCPPC Tree Canopy layer (Figure 12), the stands on the eastern side of the site are connected to the Western Branch Stream Valley Park. Moving westward through the site, the stands become smaller and more fragmented as they lose connection to the Stream Valley Park forest.

On the western end of the site, many of the stands are contiguous with the forest stands in the surrounding neighborhoods. Dominant trees within the stands are generally above 12 inches diameter-at-breast-height (DBH). The understory and groundcover vegetation layers have generally low cover. The forest stand edges have a high prevalence of invasive species and vine coverage, which is typical of forest stands without transition zones of native vegetation. There are few standalone trees throughout the site, most are a part of forest stands or hedgerows.

HEDGEROWS

Hedgerows are also scattered throughout the site. Hedgerows are small, scrubby vegetation stands that do not meet the required area or canopy height to be considered forest. Hedgerows are frequently populated with tall herbaceous species, shrubs, and saplings, which can provide beneficial wildlife habitat but may also foster the growth of invasive species such as callery pear (*Pyrus calleryana*) or Japanese honeysuckle (*Lonicera japonica*). Hedgerows can provide corridors for wildlife between forest stands, which is especially beneficial in areas with highly fragmented stands. Figure 11 depicts instances of hedgerows on the site.



FIGURE 9 Former fairway on the Lake Arbor Site that is currently maintained as lawn.



FIGURE 10 Forested areas abutting lawn in the Lake Arbor Site.



FIGURE 11 Hedgerows within the Lake Arbor Site.

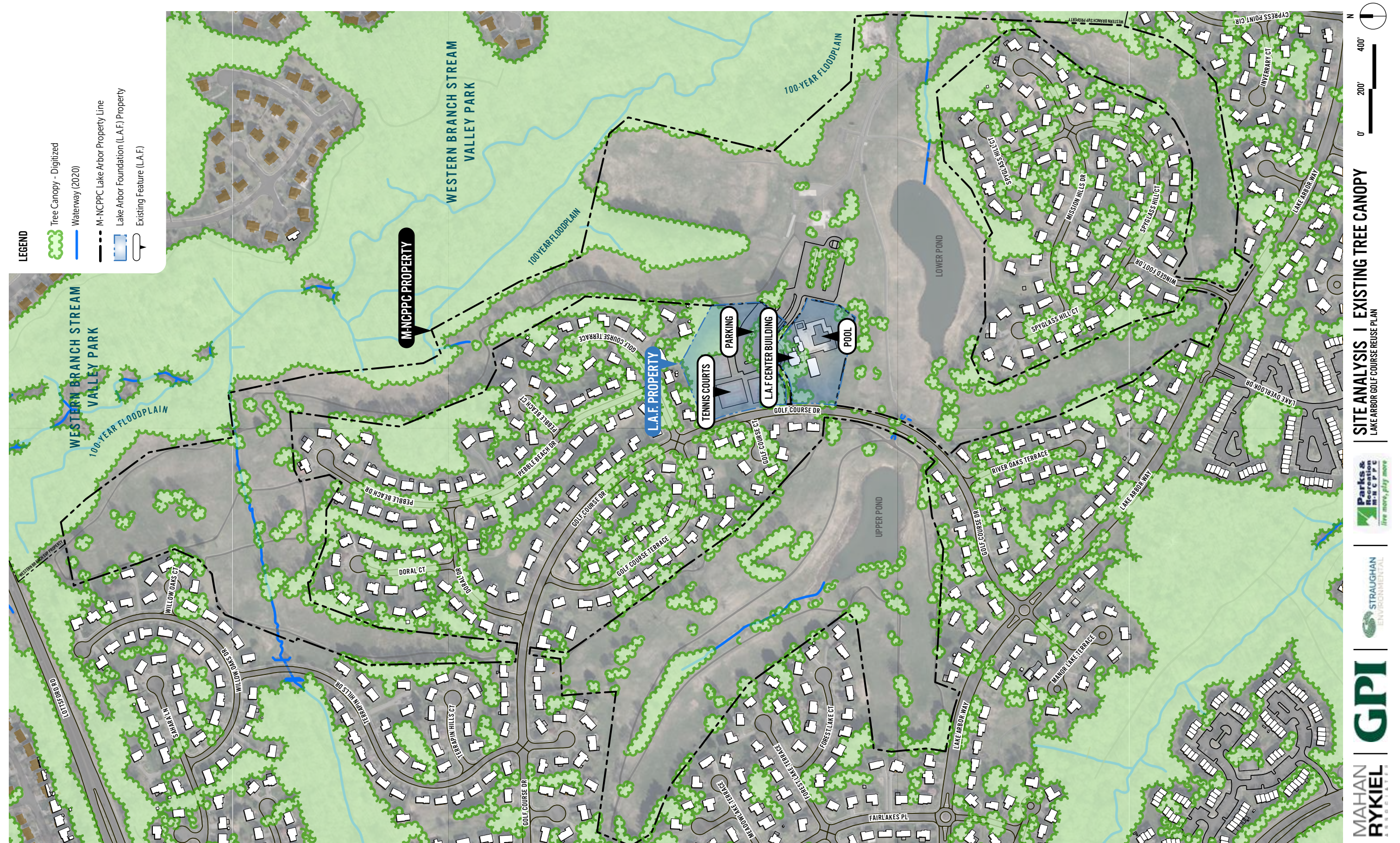


FIGURE 12 Existing Tree Canopy Analysis Diagram.



FIGURE 13 Pond within Lake Arbor Site illustrating typical edge conditions.



FIGURE 14 Daylighted stream outflow from Lower Pond.



FIGURE 15 Incised stream in northern portion of the Lake Arbor site.

EXISTING HYDROLOGY

PONDS AND WETLANDS

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) and Maryland Department of Natural Resources (MD DNR) wetland mapping indicate two ponds in the site, categorized as palustrine, unconsolidated bottom, permanently flooded, excavated systems (PUBHx). A large wetland categorized as a palustrine, forested, broad-leaved deciduous, temporarily flooded system (PFO1A) is located along the eastern boundary of the site, adjacent to the Western Branch Stream Valley Park. The Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) showed two hydric soils mapped within the site.

The two ponds within the Lake Arbor site, referred to as the Upper Pond and Lower Pond, are situated on either side of Golf Course Drive. There are sinkholes associated with the Lower Pond, which are likely the result of subsurface soil washout caused by the underground piped stream that connects the two ponds. Refer to the existing infrastructure analysis and infrastructure recommendations portions of the report for further discussion on the sinkholes. At the Lower Pond outflow, the stream is piped before being daylighted for a short segment, piped, and then daylighted again, as shown in the image in Figure 14.

Neither pond has a substantial vegetation buffer, which leaves them susceptible to unfiltered runoff from surrounding upland areas. This may increase the risk of algae blooms and degraded water quality, which in turn reduces their potential to provide suitable habitat for wildlife and decreases their ecological value. It should be noted that water sampling or analysis for water quality was not part of the scope of this master plan effort. The ponds provide potential habitat for many wildlife species, including ducks, painted turtles and sliders, American toads, southern leopard frogs, and fish. The ability of ponds to provide suitable habitat depends greatly on water quality, which is strongly influenced by surrounding

conditions. Robust vegetation buffers, wetlands, and vegetated floodplains will improve water quality and safety.

A lowland area northeast of the Upper Pond contains saturated soils and areas of ponded water. The area receives overland runoff from the surrounding residential community and drains into the Upper Pond. The hydrologic conditions support the growth of wetland vegetation.

STREAMS

Two unnamed tributaries flow eastward through the site into the Western Branch of the Patuxent River. In the northern portion of the site, the unnamed tributary is incised and eroded, and the banks contain little vegetation. Several pedestrian bridges associated with the original golf course paths span the stream. The erosion of the stream is contributing to the failure of the bridges, creating a safety hazard on the site.

In the southern portion of the site, a piped unnamed tributary connects the Upper and Lower Ponds and is likely contributing to sinkholes near the Lower Pond due to subsurface soil washout caused by failing pipe infrastructure. The outflow of the Lower Pond is also piped underground until it resurfaces into a stream 200 feet east of the Lower Pond. Then, it is piped underground for another 160 feet until it returns to a natural stream. The daylighted stream is eroded and incised at the outflow of the pipe, likely due to the increased flow rates associated with piped streams.

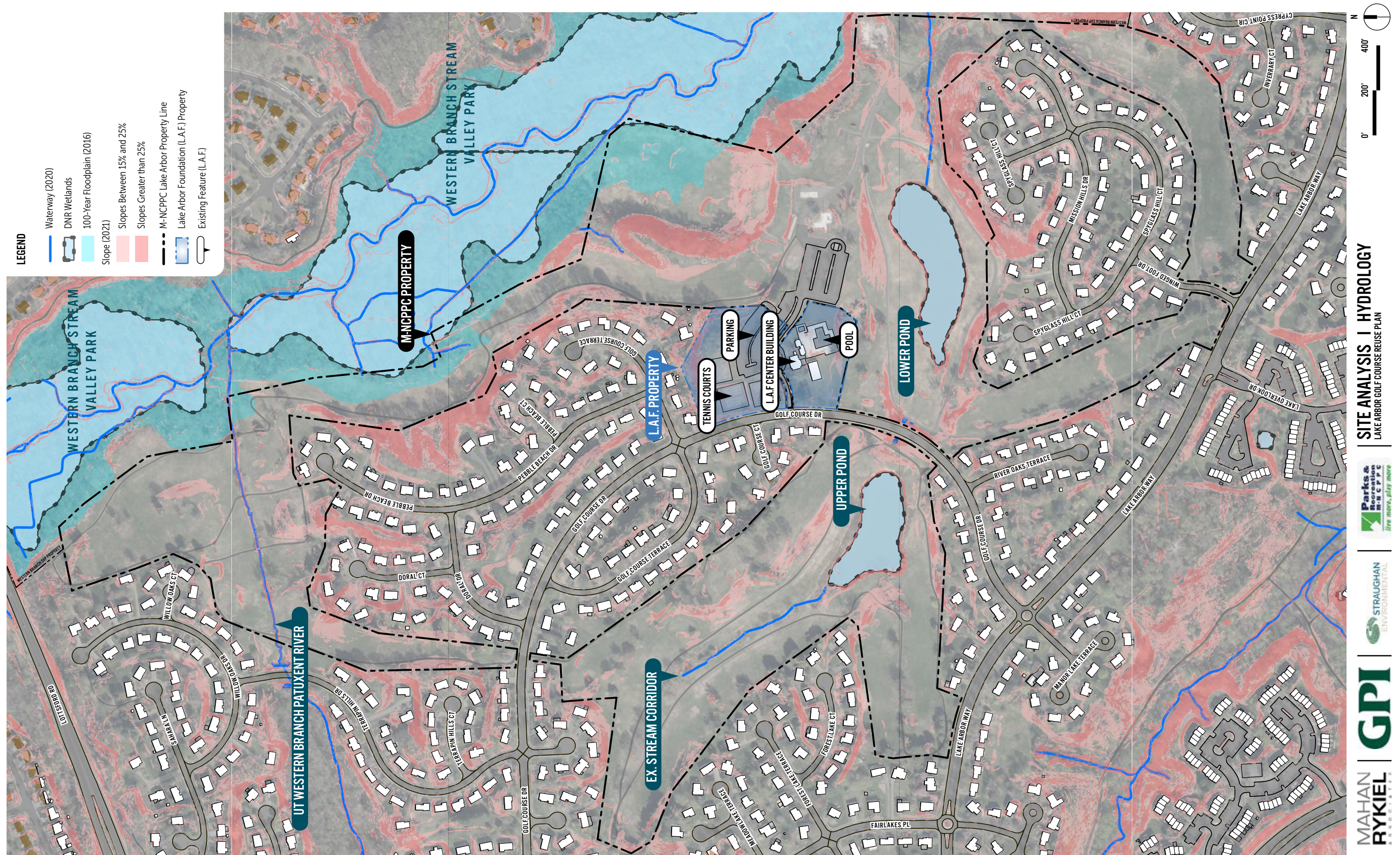


FIGURE 16 Existing Hydrology Analysis Diagram.

LANDSCAPE ANALYSIS

VIEWSHED ANALYSIS

A viewshed analysis was undertaken (see Figure 19) to gain a better understanding of the relationship and views of the properties that immediately about the former golf course. The Lake Arbor site is a large, linear, oddly shaped site. As a result, the site has extensive edge conditions and a wide range of physical and visual interactions with adjacent properties. Nearly every edge of the site, with the exception of the eastern boundary that is adjacent to the Western Branch Stream Valley Park, abuts a residential property.

Each of these properties have some type of view or partial view into the park. The focus of the consultants was to analyze what those views were to gain an understanding of what, if any, and how any proposed design recommendations may impact any single property's view. Three visual categories were established based on what the predominate views consisted of, which included:

- Open view to ponds or former fairways (open space)
- View to existing wooded areas
- View to neighboring properties

These viewsheds and property relationships will help inform the design approaches for locating various landscape strategies on the site while understanding potential impacts to residents (Figure 19).

TRAILS ANALYSIS

EXISTING ON-SITE TRAIL NETWORKS

The Lake Arbor Site contains an extensive network of existing cart paths that traverses much of the site (see Figure 20). These paths have become an attractive asset for the community and are used for walking, running, and bicycling. However, these golf cart paths have not been maintained over the years and are showing signs of age and

will need to be improved, as the trail network will be a main focal point of the park's recreational amenities. Some current issues include:

- Alignments on steep slopes that do not meet ADA accessibility standards
- Deterioration of paving material due to lack of maintenance
- High proximity to neighboring residential properties
- Path alignments that go outside of M-NCPPC acquired property and through HOA common lands that buffer the golf course (Refer to Figure 20)
- Safety issues including sinkholes, fallen trees, and failing bridge connections

While the cart paths appear to offer a somewhat "ready-made" trail network, these shortcomings need to be corrected. In addition to these conditions, many trails are duplicative in their location and function. Their locations need to be evaluated for walking and connectivity to key access points into the community as well as connectivity to greater trail networks that are either existing (including community sidewalks) or planned for the future. The opportunity to connect a public paved path system at the new park at Lake Arbor with the surrounding region should not be missed.

EXISTING REGIONAL TRAIL NETWORKS

The Lake Arbor site is situated in an ideal location close to other regional open space amenities, including Watkins Regional Park and the Western Branch Stream Valley Park. There is an opportunity to provide connectivity with trails in the proposed new park to those in the region by utilizing the existing and planned trail networks to link some of these open space areas. M-NCPPC has plans for proposed shared-use path connections to the north side of the site across Lottsford Road as well as to the south side of the site that could connect to Watkins Regional Park (refer to Figure 21). These pathways will help to increase the network of trails available to the public, a goal in line with the Formula 2040 Plan goals and objectives.



FIGURE 17 Sinkholes and failing pavement illustrate the poor condition of the existing cart path network.



FIGURE 18 Steep section of the existing cart path network.

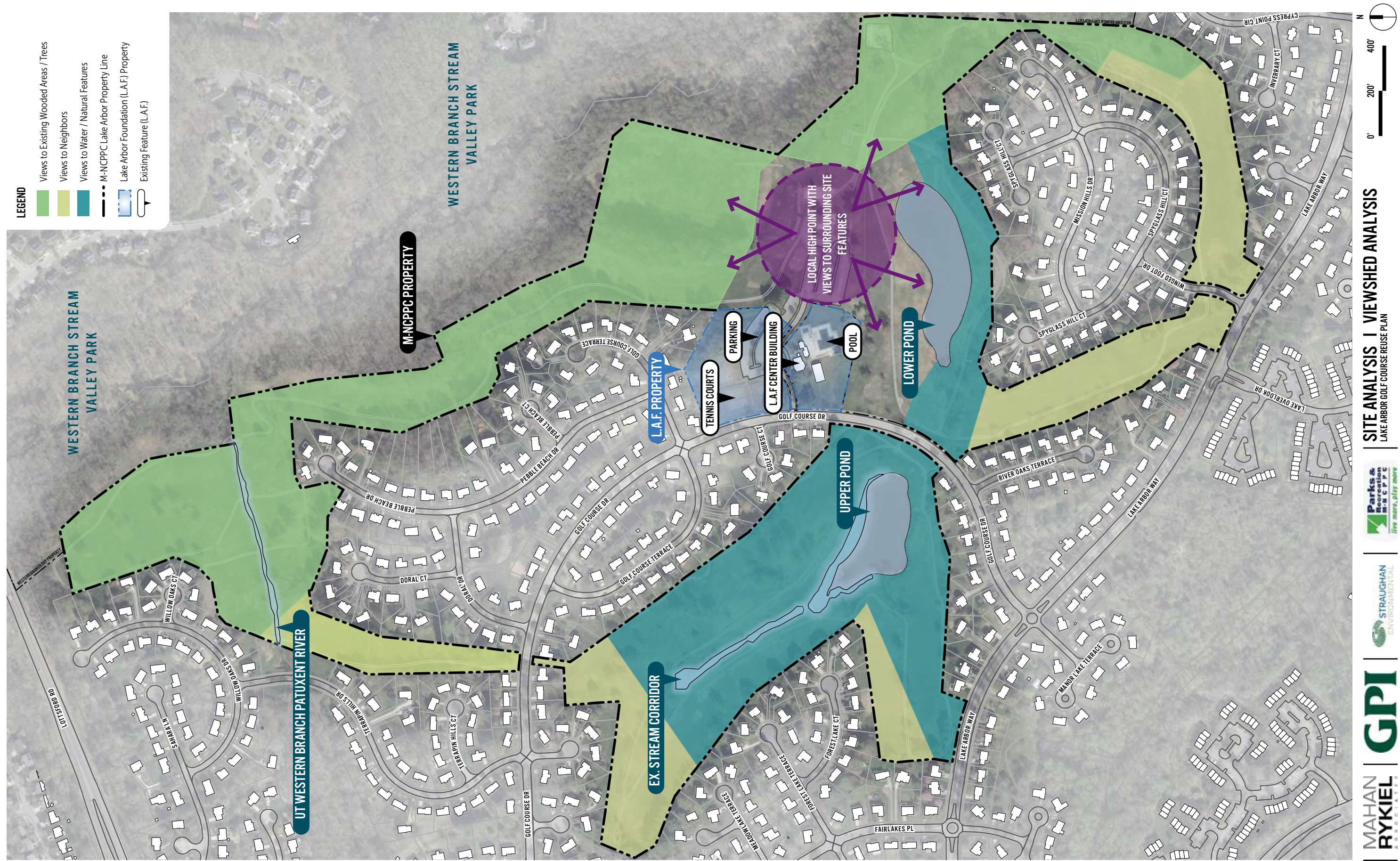


FIGURE 19 Viewshed Analysis Diagram.

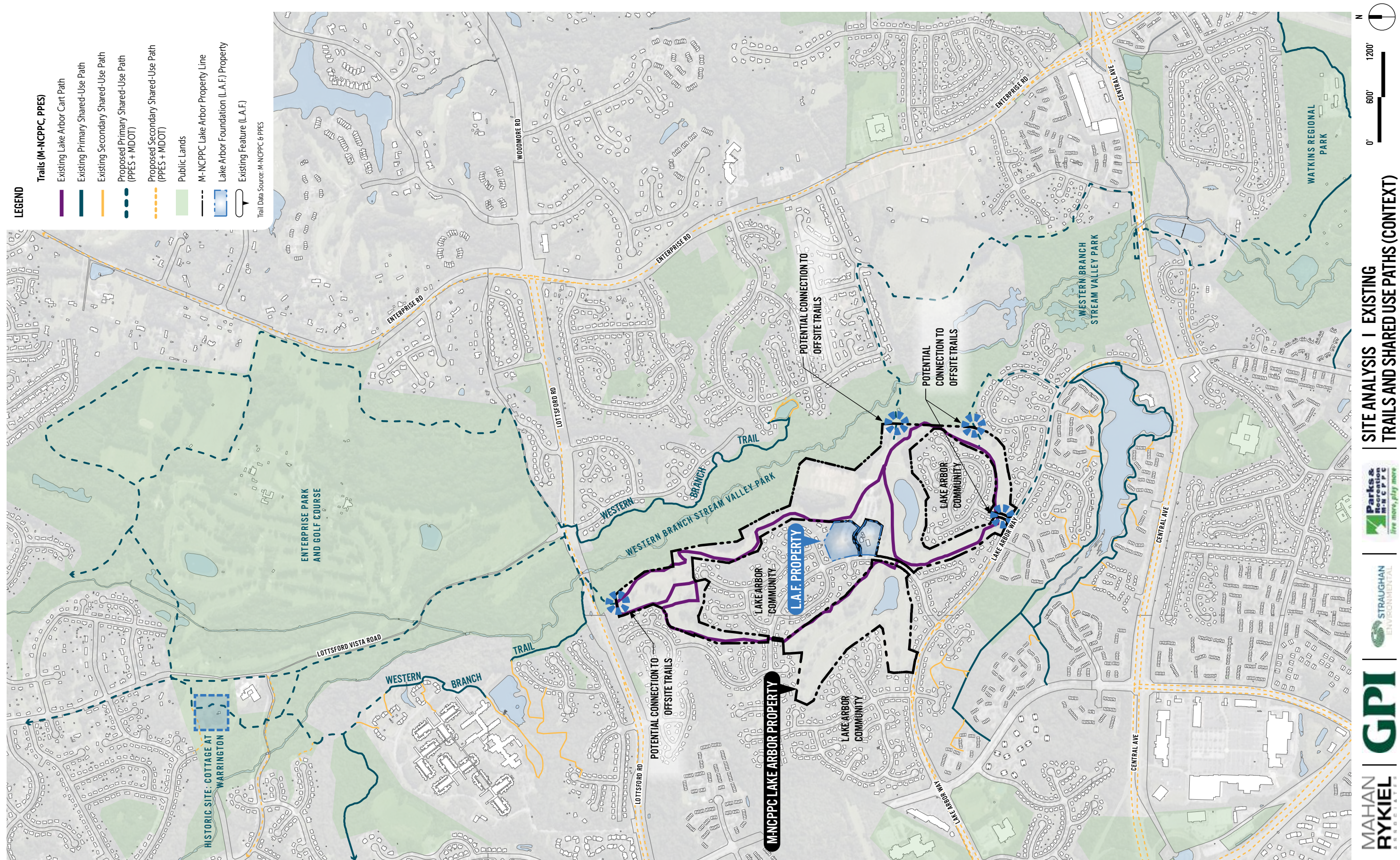


FIGURE 21 Existing Trail Network (Regional) Diagram.

EXISTING INFRASTRUCTURE

OVERVIEW

The design team researched and obtained available records from various resources that shed light on the existing infrastructure of the Lake Arbor Site. Current infrastructure includes:

- Water
- Sewer
- Electric
- Storm water
- Bridges

EXISTING RESOURCES

Existing utilities were mapped on utility exhibits based on operating maps, available subdivision and Washington Suburban Sanitary Commission (WSSC) record drawings, and field observations. A Prince George’s County Health Department site plan from 1997, showing Parcels C & D (Lake Arbor Foundation (L.A.F.) area and adjacent pool) was also used to evaluate existing utilities and infrastructure. This portion of the report focuses on the evaluation of the existing infrastructure on the former Lake Arbor Golf Course site. The Infrastructure recommendations portion of the Vision + Master plan chapter discusses recommendations for further evaluation of the site infrastructure and incorporation into future development.

EXISTING WATER INFRASTRUCTURE

FORMER CLUBHOUSE AREA

Available Washington Suburban Sanitary Commission (WSSC) records show no public water infrastructure was used to serve the L.A.F. site and demolished buildings associated with the former Lake Arbor Golf Course. The Prince George’s County Health Department 1997 site plan shows the L.A.F. property and pool served by well. The plan shows a well adjacent to L.A.F. building to serve both the building and pool, as

well as an additional existing well at one of the demolished golf course club house buildings.

However, L.A.F. reports that a public water connection was made and that the L.A.F. properties are served by public water. Both the public water connection and the existing well could potentially be used to serve future amenities, though further study would be needed to confirm this.

OVERALL SITE

Various water lines traverse the overall Lake Arbor site and are shown on the overall existing utility exhibit (Figure 23).

EXISTING SEWER INFRASTRUCTURE

FORMER CLUBHOUSE AREA

Available records show no public sewer infrastructure was used to serve the L.A.F. and demolished buildings associated with the former Lake Arbor Golf Course. The 1997 plat includes a note "all septic lines and drainage lines to the tanks Appurtenant to Parcel "D" as indicated on the sewer house connection plan will be properly abandoned once the bath house, community center and swimming pool are connected to public sewer system". A sewer house connection plan was not available, and available plans and field investigation show no evidence the public sewer connection was completed. The existing L.A.F. building and swimming pool have a functioning septic, with approximate locations shown on the utilities enlargement (Figure 24). The existing septic field is platted as a revertible easement. This indicates the septic easement could be abandoned with connection to public sewer at Golf Course Drive.

OVERALL SITE

Various sewer lines traverse the overall Lake Arbor site and are shown on the overall existing utility exhibit (Figure 23).



FIGURE 22 Examples of site infrastructure that is failing or in poor condition.

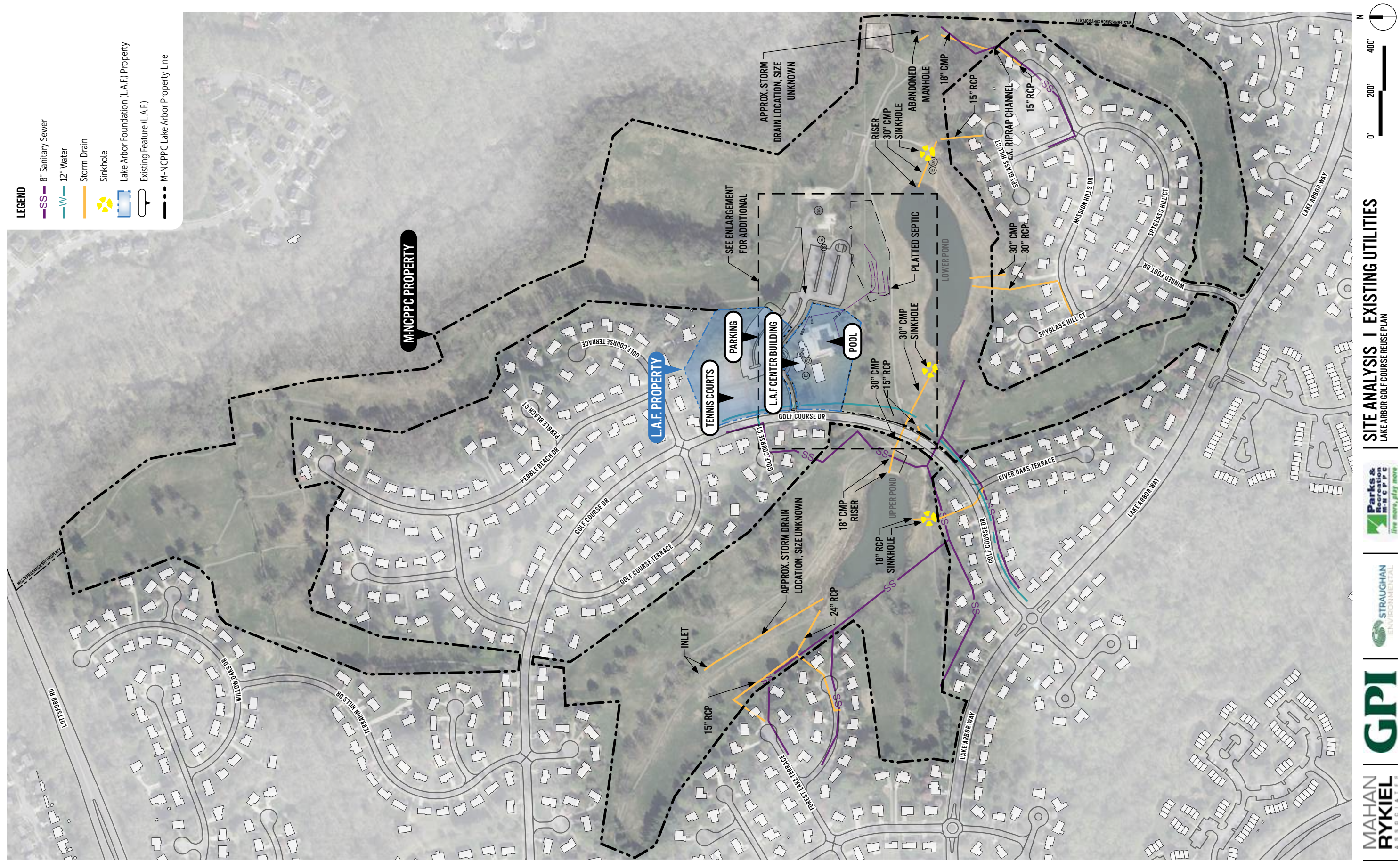


FIGURE 23 Overall Existing Utilities Analysis Diagram.

EXISTING ELECTRIC INFRASTRUCTURE

The L.A.F. building and pool currently have electric service. Available plans show existing electric vault and existing underground electric and utility lines from Golf Course Drive in the direction of pool and the L.A.F. building (Figure 24). These electric and telephone services are the only public utility connections shown on available plans.

EXISTING STORM WATER INFRASTRUCTURE

FORMER CLUBHOUSE AREA

Storm drains were observed in the L.A.F and former golf course clubhouse area. The storm drain alignments in these areas were not shown on record drawings and were not determined in the field, and therefore only surface storm drain inlets and manholes are shown on utility exhibits. No storm drain adjacent to the lower pond below the recreation area was observed in the field. A complete survey and assessment (TV) of existing storm drains is needed for the entire L.A.F. area to the lower pond to determine the existing storm drain layout.

The existing development in the former clubhouse appears to include similar runoff to the proposed development, and it could be assumed the lower pond was designed for the runoff from proposed development.

OVERALL SITE

An existing abandoned and backfilled storm drain manhole was located below the maintenance area to the east of the lower pond (see utility exhibit). Outfall protection was observed around this structure. Field observations showed a storm drain outfall originating from this manhole to the wooded area below the lower pond. No record drawings showing this manhole and storm drain are available. At this time, it appears this storm drain could be removed as part of demolition with the new maintenance area, and a new storm drain added to serve the maintenance area.

Storm drain locations and sizes observed in the field and on record drawings are shown on the

overall utility exhibit and utility enlargement (Figures 23 and 24). An existing 18” reinforced concrete pipe (RCP) storm drain serving River Oak Terrace and Golf Course Drive discharges to the upper pond. A sink hole was observed along the alignment of this pipe. The nature of the sink hole is not known. A pipe failure, or animal burrow are possible.

An existing storm drain in the area above the upper pond appears to be partially silted in. The storm drain here is needed to control water levels and flows through this area of the site.

Existing Ponds

The lower and upper ponds are deficient, and not compliant with current MD378 pond requirements. Site visits revealed 30” corrugated metal pipe (CMP) pond outfalls below the upper pond and lower pond both have sink holes along the alignment of the pipe. The 30” CMP outfall pipe below the upper pond and adjacent to the lower pond has separated. A large sink hole was created by this separation. At the time of the site visit, the pond outfall to the lower pond could not be located and was possibly silted in. It appears the entire flow of the pipe overflows the sink hole and eventually flow makes it to the lower pond. The lower pond outfall also has a visible sink hole along the alignment of the 30” CMP outfall. The source of the sinkhole was not evident, but a pipe failure is a likely cause. Also, the lower pond outfall terminus has a pipe separation in the wooded area. In addition to the pond outfall deficiencies, it was observed that no trash racks were provided at both pond risers.

Current regulations require these ponds to comply with the Maryland MD 378 small pond requirements from January 2000. It appears the ponds were completed in the late 1970’s, and therefore are not built to the MD378 standard. A Maryland Department of the Environment (MDE) memo dated 5/2/2018 and titled “Storm water Best Management Practices (BMPs) and Completion Dates for MS4 Permitting Purposes” describes the requirements for acceptance of ponds designed before 2000. The M-NCPPC

staff were made aware of the deficiencies in the ponds noted above. M-NCPPC has agreed to design modifications and repairs to the ponds under a separate capital project.

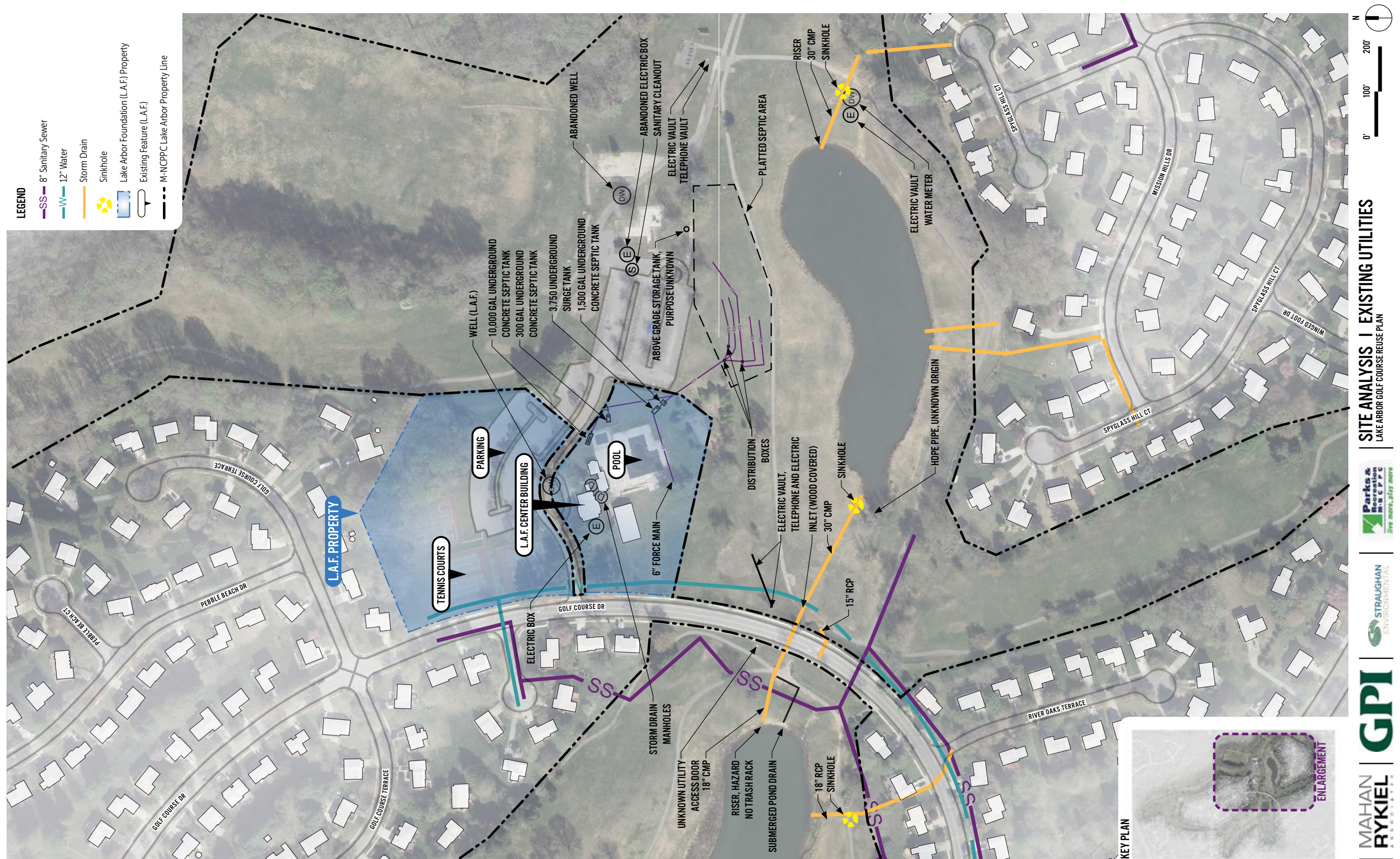


FIGURE 24 Enlargement of Existing Utilities Analysis Diagram.



View of the upper pond from the southeast edge

VISION + MASTER PLAN

VISION

The purpose of the master plan is to identify opportunities and constraints of the site and to recommend protection, ecological restoration, development, and maintenance options for M-NCPPC based on the desires of the community, the agency and what the site can yield. As part of the master planning process, input and ideas were sought from the community, stakeholders, and staff from M-NCPPC to produce a master plan that meets their collective objectives and maximizes the potential of the 127-acre site.

As such, the plan identifies and prioritizes areas of the property for both active and passive recreational amenities, environmental restoration and enhancement strategies, and associated maintenance support facilities. The design concepts and principles presented in the master plan form the basis for further design refinements, additional engineering studies, construction documentation, and ultimately the construction of the Park’s amenities as funding becomes available in subsequent years. The future design, engineering, and budget analysis required prior to implementation of the Master Plan components may result in some modifications to these concepts.

The identified and preferred design program includes programmatic elements/objectives for two distinct areas of the project:

- 1. Overall Park and Passive Use
- 2. Active-Use Recreation Area

Overall Park

- 1. Environmental Restoration
 - a. Reforestation
 - b. Meadow Creation

- c. Stream Restoration
 - d. Wetland Enhancement and Creation
- 2. Sinkhole Repairs
- 3. Trail Network
 - a. Shared-Use Paths
 - b. Natural Surface Trails
 - c. Mowed Meadow Paths

Active Recreation Area

- 1. Community Gardens
- 2. Golf Practice Putting Green
- 3. Nature-Based Playground
- 4. Fitness Station Area
- 5. Comfort Station Area
- 6. Open Play Area
- 7. Flexible Green Space with Seating Areas
- 8. Parking
- 9. M-NCPPC Maintenance Area
- 10. Stormwater Management Areas
- 11. Natural Habitat Areas
- 12. Disc Golf
- 13. Passive Pond Access

This document creates a coherent framework that guides and facilitates decision making for the physical improvement of the park over time. Given the size of the park and the desired amenities, costs associated with the development are likely to be significant. A phased approach, over time, will break down the magnitude of the costs into smaller, more manageable increments over time. This document envisions that the park will be realized in such a manner, with park implementation phasing to be coordinated with obtaining grant awards and annual capital budget allotments.

HABITAT RESTORATION PLAN

OVERALL HABITAT PLAN

As a former golf course, the site is still comprised primarily of maintained lawn which provides limited habitat value and ecological function. The Lake Arbor master plan proposes the creation of meadow and forest habitat, stream restoration, and created/enhanced wetlands. Improvements will be prioritized in ecologically sensitive areas, such as adjacent to the Western Branch stream valley. These habitat improvements will create a natural refuge for people and wildlife, providing aesthetic beauty, biodiversity, water quality improvements, and long-term site stability. Throughout the site, a diverse assortment of native species will be selected that have adapted to local conditions and demonstrated resiliency to climate change. Soil amendments may be utilized in specific locations to enhance existing altered site conditions and support plant growth, health, and survivability. Traditional reforestation methods will be augmented by recently developed experimental methods, such as the Miyawaki Method, that have proven successful in creating micro forests in urban areas.

MEADOWS AND MAINTAINED LAWN

As an alternative to the current abundance of lawn and to reduce maintenance, meadow habitat will be created at specified locations throughout the site as shown on the Habitat Restoration Plans (Refer to Figures 26 and 31-33). Once established, this habitat will enhance viewsheds while providing open sunny areas that attract pollinators and provide food and shelter for a variety of native birds and wildlife. The Upper and Lower Ponds offer the public scenic views and other recreational activities. Viewsheds of this community resource will be preserved by creating meadow habitat around much of the pond perimeter. Two pond access points have been identified for the Upper Pond and one

for the Lower Pond, each with an associated mowed approach. Limiting mowing around the ponds to these approaches will help limit visitor access to only the specified stabilized locations, while enhancement of meadow habitat around the perimeter of the ponds will limit erosion along the embankments, improve water quality, and enhance habitat for aquatic life. Reducing the amount of manicured lawn around ponds has also been found to act as a natural goose deterrent, as geese are reluctant to walk through the high vegetation. Creating a less attractive habitat around the ponds, such as meadows rather than lawn, may reduce geese populations.

Meadow habitat immediately adjacent to the ponds and within other lowland areas on the site will consist of species that thrive in wet conditions. The plant palette will include species such as tussock sedge (*Carex stricta*), which provides habitat for wildlife and a food source for numerous moth and butterfly species, and swamp hibiscus (*Hibiscus grandiflorus*), which provides a food source for hummingbirds and pollinators, wintering sites for beneficial insects, and attractive flowers through the late summer. Further from the pond edge, as the topography transitions to higher grades, upland meadow species will be selected. These include native prairie grasses such as split beard grass (*Andropogon ternarius*), broomsedge (*Andropogon virginicus*), and Indiangrass (*Sorghastrum nutans*), which provide bird habitat and food, and a variety of aesthetic flowers including black-eyed susan (*Rudbeckia hirta*) and milkweed (*Asclepias syriaca*), the host plant for the iconic and declining Monarch butterfly.

Maintained lawn will still be utilized in high use and active recreation areas, areas immediately adjacent to certain walking paths, and approaches to pond access points. It will also be used to divide meadow and forest habitat within the park from adjacent residential properties and along the trail system to enhance the visitor experience.

Refer to Appendix B for Habitat Storyboards with more information and imagery regarding meadow creation plant palettes.



FIGURE 25 Example images of a meadow creation area.

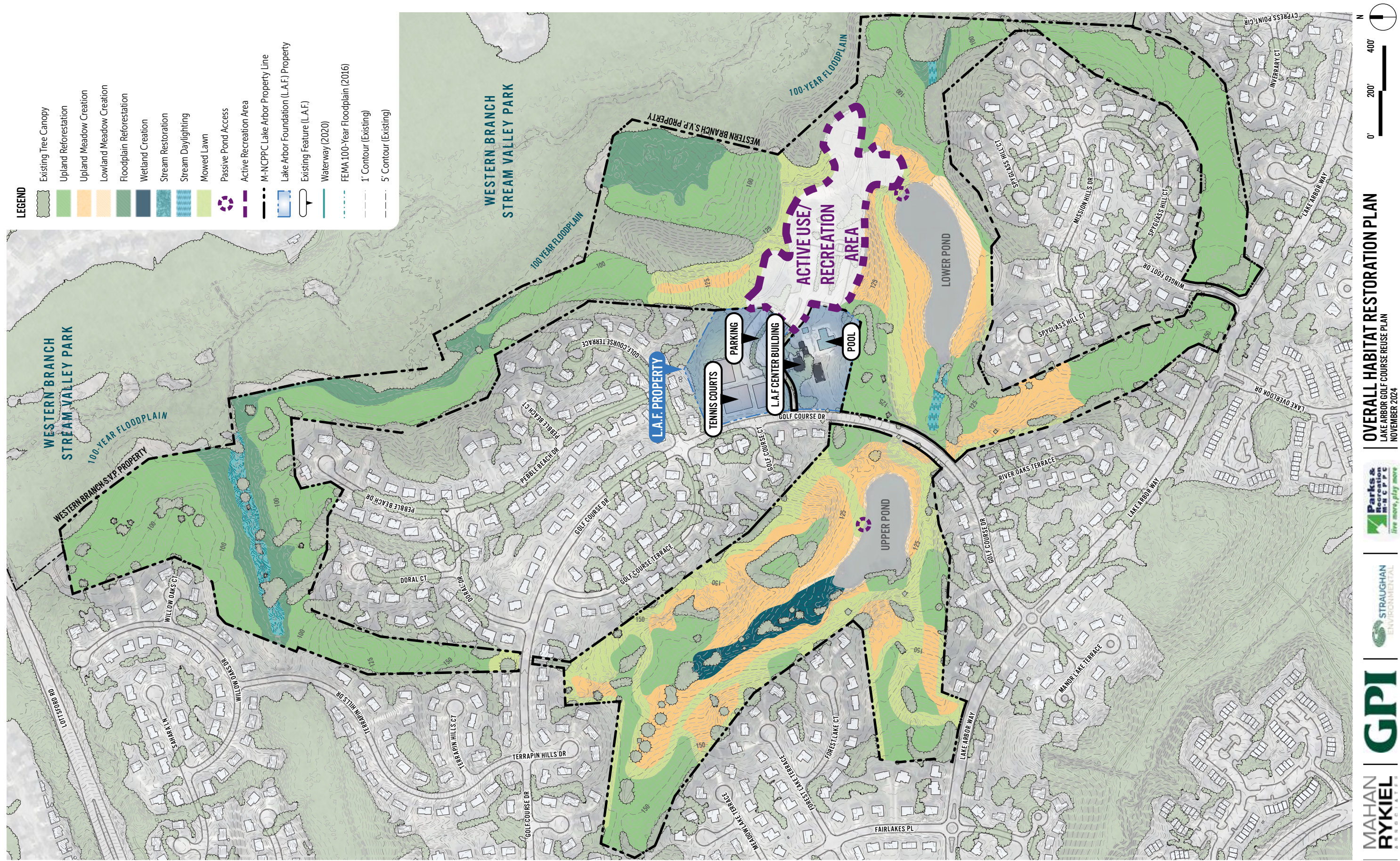


FIGURE 26 Overall Habitat Restoration Plan.

UPLAND AND FLOODPLAIN REFORESTATION

Forest habitats increase biodiversity, improve air and water quality, reduce erosion, and provide flood resiliency while also reducing noise pollution and providing areas for human recreation. They also mitigate the effects of climate change through carbon sequestration and temperature regulation. Contiguous forests, a restoration objective of the plan, amplify these benefits, supporting higher levels of biodiversity and providing greater ecological benefits.

The Miyawaki method, a reforestation technique that mimics natural forest establishment, has proven effective in quickly establishing urban micro-forests by densely planting a mix of shrubs, understory trees, early successional trees, and canopy trees. This method could be incorporated for small pockets of proposed forests in addition to utilizing more traditional methods of reforestation.

Soil amendments may be necessary prior to reforesting specific areas of the site, particularly in areas where impervious surfaces are currently present. Amending soil with organic matter prior to planting is recommended for areas where soil has been severely impaired, or compaction is high. Incorporating organic matter into soil increases aeration, water-holding capacity, and water infiltration, which improves the survival rates of tree and shrub plantings.

While the site is currently dominated by maintained lawn areas, the eastern boundary abuts Western Branch Stream Valley Park, a large, forested valley with a network of streams and wetlands located within the 100-year floodplain. Small, fragmented areas of forest abut the remaining perimeter of the site and small tree stands are found throughout the property. Reforesting areas adjacent to existing forests and connecting forest fragments through reforested corridors provides an opportunity to create large areas of contiguous forest. Contiguous forests support higher levels of biodiversity, and are less vulnerable to weather extremes, wind damage, and invasive species pressure.

Sufficient reforestation would potentially present M-NCPPC the opportunity to create a forest bank with the Planning Department for use on other future park projects.

The northeastern portion of the Lake Arbor site is within an under-forested floodplain. A forested floodplain reduces the risk of flooding by slowing runoff and storing floodwater, and improves water quality by decreasing erosion. The reforestation of the floodplain will create a contiguous forest adjacent to the protected forests of the Western Branch Stream Valley Park, establishing a healthier and better functioning ecosystem.

Throughout the upland areas of the site, reforestation opportunities will be focused on connecting existing isolated trees and forest fragments and creating larger areas of contiguous forests. These areas will provide shade, reduce erosion on steep slopes, support wildlife and increase biodiversity across the site, and enhance recreational opportunities.

The proposed plant palette for the floodplain and upland reforestation areas will include native species that are currently thriving on the site and additional species that are anticipated to adapt well to climate change and will increase the species diversity on the site. Sun tolerant species will be included in both the floodplain and upland reforestation areas to provide vegetative cover for the early successional period that will dominate the site prior to the late successional stage when abundant shade will be found within these habitat areas.

In all reforestation areas, trees will be planted at a minimum of **twenty-five (25) feet** on center. At the edges of the property, no trees will be placed within **twenty-five (25) feet** of the property line to allow for mowing and maintenance during forest establishment, as well as a clear delineation from neighboring properties.

Refer to Appendix B for Habitat Storyboards with more information and imagery regarding reforestation plant palettes.



FIGURE 27 Example images of a reforestation area.



FIGURE 28 Example Stream Restoration with step-pools.



FIGURE 29 Example Stream Restoration with bridge and armored banks (Rustling Leaf stream restoration).

STREAM RESTORATION AND DAYLIGHTING

Stream restoration is designed to return degraded streams to their natural state while equipping them to handle high volumes of water during flooding events. Techniques include removal of obstructions, replanting native vegetation, and providing in-stream structures to enhance a stream's natural riffle-run-pool complexes. Restoring streams can enhance their ecological functions by providing habitat for aquatic wildlife, improving water quality, and reducing flooding. Stream daylighting is performed to restore a piped stream to its natural, above-ground condition, which slows its velocity, restores fish and macroinvertebrate habitat, and reconnects the stream to its floodplain.

STREAM RESTORATION

A 1,500-foot length of stream on the northern portion of the property (a tributary to the Western Branch of the Patuxent River) is straightened, highly incised, eroded, and has inadequate riparian buffer vegetation. The erosion of the stream is contributing to the failure of pedestrian bridges that cross the stream, creating a safety hazard on the site. The goals of a restoration project in this location would include rehabilitating a degraded stream, restoring the floodplain to a more natural state, and improving the resiliency of the natural habitat against flooding and climate change.

Restoration techniques may include widening and gradually elevating the channel to tie into upstream and downstream bed elevations to reconnect the stream with the floodplain. Introducing meanders and a series of riffles, pools, and vane structures would slow the flow of the stream, provide a variety of habitat for aquatic organisms, and create a more stabilized and visually appealing system. Vegetating the stream banks with a combination of riparian seed mixes, live stakes, and tree plantings would create root systems that protect the stream banks. Figures 28 and 29 visually depict some of these strategies.

The majority of the habitat surrounding the stream consists of maintained lawn. Establishing a forested riparian buffer of native vegetation will

provide wildlife value and improve water quality by providing erosion control, flood protection, and pollution reduction. Forested buffers stabilize stream banks, thereby reducing erosion, filter sediment and materials from overland runoff and absorb nutrients, reduce the impacts of flooding by providing temporary storage, provide organic material for fish and other invertebrates, and prevent sunlight from heating the stream thereby improving the conditions for aquatic life.

A lowland plant community will be planted within the floodplain zone adjacent to the stream. This plant palette will include native species such as American sycamore (*Platanus occidentalis*), willow oak (*Quercus phellos*), river birch (*Betula nigra*), red maple (*Acer rubrum*), and other floodplain tree and shrub species, as well as a riparian seed mix that will include a variety of sedges such as Pennsylvania sedge (*Carex pensylvanica*) or plantainleaf sedge (*Carex plantaginea*), and ferns including Christmas fern (*Polystichum acrostichoides*) and New York fern (*Thelypteris noveboracensis*).

STREAM DAYLIGHTING

The piped stream channel connecting the Upper and Lower Ponds is unstable and causing sink holes east of Golf Course Drive at the inflow to the Lower Pond. The outflow of the Lower Pond is also piped underground until it resurfaces into a stream 200 feet east of the Lower Pond, then it is piped underground for another 160 feet until it returns to a natural stream. The piped areas inflowing into the Lower Pond and 200 feet downstream of the Lower Pond present opportunities for daylighting and restoration, reducing the potential for future maintenance issues related to the pipe structure, and restoration of the waterways to natural conditions.

The piped area with sinkholes between Golf Course Drive and the Lower Pond is recommended to be removed (daylighted) and stabilized to allow water to flow freely into the Lower Pond as part of the naturalization of the site. A potential design approach is to install a headwall at the downstream end of the bridge

and install step-pools to direct water as it flows from the Upper Pond to the Lower Pond. Further studies are needed to confirm this suggested approach along with stream channel design.

East of the Lower Pond, the 160-foot stretch of piped stream could be daylighted to reconnect it to the existing natural stream channels upstream and downstream of the pipe. The existing pipe will be removed, the channel regraded, and in-stream structures installed to ensure a stable transition out of and into the existing stream channels. To create a forested riparian buffer, a minimum fifty (50) foot buffer off each side of the daylighted stream will be planted with flood-tolerant trees and shrubs and receive a riparian seed mix.

These daylighted stream sections would provide overall channel stability and continuity. The restored channel will promote fish passage and will also protect against flash flooding as it slows water down and diffuses flow onto the floodplain before it reaches Western Branch.

WETLAND RESTORATION

Wetlands provide a myriad of benefits, including improved water quality, floodwater storage, critical habitat for a variety of plant and animal species, and aesthetic value. Acting as a sponge, wetlands slow the momentum of water which reduces the potential for flooding and limits erosion. The slowed water allows suspended sediment to settle into the wetland soil where nutrients are absorbed by plant roots and microorganisms. Pollutants attach to soil particles, keeping them out of waterways. The abundant vegetation found in wetlands provide diverse habitat for fish, frogs, turtles, waterfowl, and bird species.

The existing wet channel northeast of the Upper Pond receives water from surrounding upland areas and drains into the pond. This topographical depression provides optimal hydrology and habitat for wetland creation and restoration. As noted earlier, an existing storm drain in this area above the upper pond appears to be partially silted

in. The storm drain was installed, it is believed, to control water levels and flows through this area. This drain may be deemed obsolete as part of the wetland creation design/study. A complete survey and assessment of existing storm drain are needed for final design of the wetland creation area.

Micro-topographical relief would be introduced to promote a complex wetland vegetative community, which will include flowering shrubs such as silky dogwood (*Cornus amomum*), sweet pepperbush (*Clethra alnifolia*), and buttonbush (*Cephalanthus occidentalis*), wetland trees including sweetgum (*Liquidambar styraciflua*), persimmon (*Diospyros virginiana*), and smooth alder (*Alnus serrulata*), and a host of herbaceous species such as soft rush (*Juncus effusus*), northern blue flag (*Iris versicolor*), and tussock sedge (*Carex stricta*).

The wetland will welcome an ecological community of blossoming flowers, frogs, birds, dragonflies, butterflies, and other natural wonders. Healthy wetlands provide a uniquely biodiverse habitat with a balanced community that keeps all species in check. For example, mayflies attracted to cattails would be consumed by frogs, which could in turn be consumed by herons. Frogs, turtles, and fish also keep mosquito populations in check as they feast on mosquito larvae. The restored wetland will enhance the Lake Arbor Property aesthetically as it promotes biodiversity, water quality, and flood abatement functions.

Refer to Appendix B for Habitat Storyboards with more information and imagery regarding Wetland restoration plant palettes.

TOTAL HABITAT AREA:

MEADOW CREATION: 17.3 ACRES

UPLAND REFORESTATION: 47.2 ACRES

FLOODPLAIN REFORESTATION: 7.6 ACRES

WETLAND CREATION: 1.7 ACRES

+/- 900 LINEAR FEET OF STREAM RESTORATION

+/- 400 LINEAR FEET OF POTENTIAL DAYLIGHTING



FIGURE 30 Example images of wetland creation.

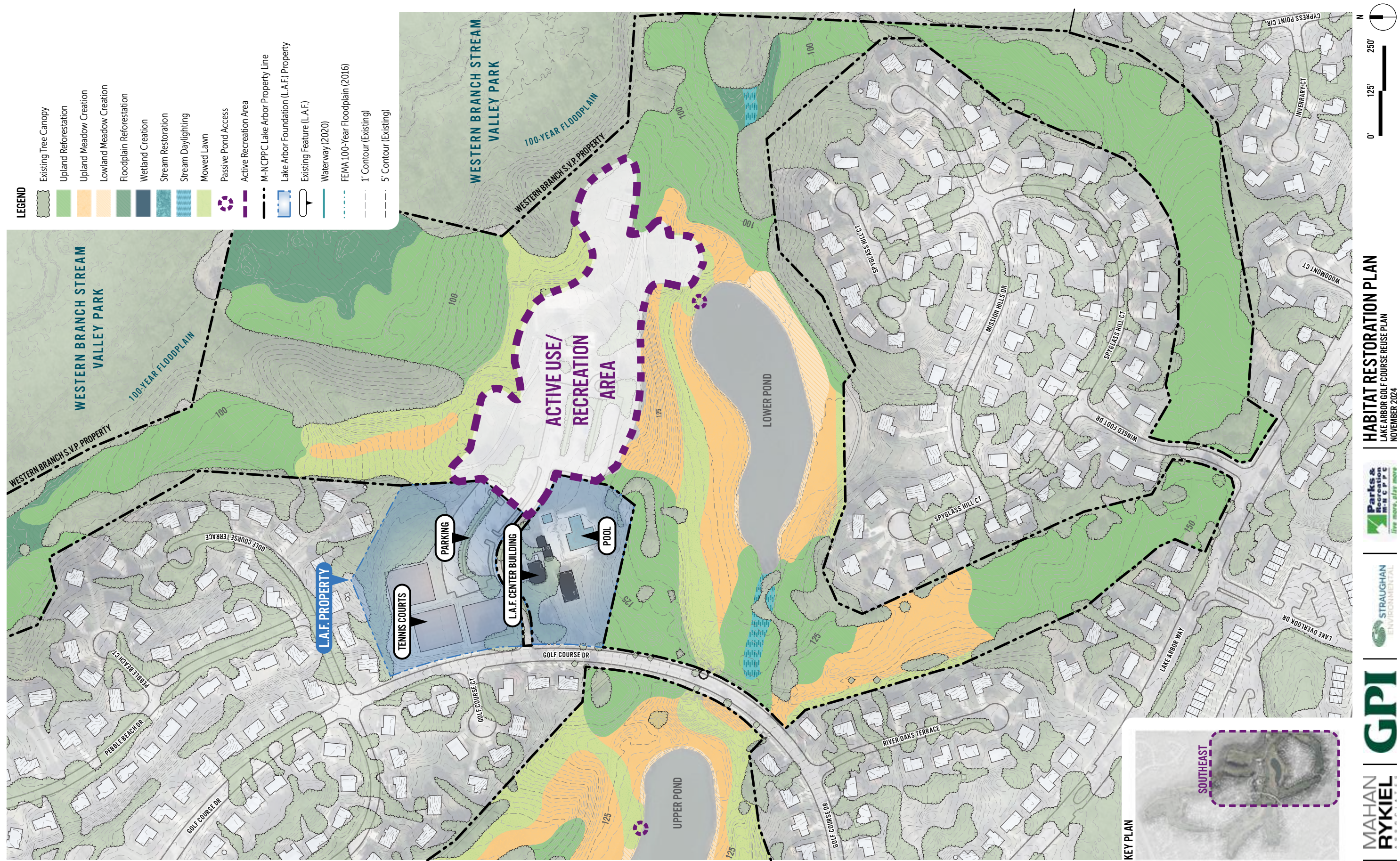


FIGURE 31 Enlargement (Southeast) of the Habitat Restoration Plan.



FIGURE 32 Enlargement (Southwest) of the Habitat Restoration Plan.



FIGURE 33 Enlargement (North) of the Habitat Restoration Plan.

TRAILS PLAN

OVERVIEW: CREATING A 21ST CENTURY TRAIL NETWORK

As discovered during the public engagement process, the existing golf cart path network comprises the single most significant and popular amenity in the current Lake Arbor open space, and therefore deserve a high amount of attention and investment. The design process included meetings and multiple iterations of proposed trail network layouts by the design team and M-NCPPC trail planning staff. This process complemented and built upon the proposed habitat restoration plan, incorporating existing path networks and the proposed habitat restoration plan to maximize the trail experience. The ultimate objective for the trail network is to provide safe, well-planned, and clearly identified trail experiences that vary in natural experience and difficulty, and offer shaded seating opportunities in a variety of settings along the entirety of the trail network. Because proposed parking on the site is limited, and because both M-NCPPC and the immediate neighboring communities do not want the park to generate a lot more traffic through the neighborhood, having bicycle and pedestrian links to neighborhoods north, east, south and west of the new park is key to ensuring that the park is well used and serves the whole regional community. Connections to the neighboring communities and existing and planned regional trail networks are essential, and are shown on Figure 43. These connections need to be accessible by biking, walking, skating, and running, from all of the surrounding neighborhoods.

TOTAL TRAIL NETWORK
SHARED-USE PATH: 3.1 MILES
MOWED MEADOW TRAIL: 0.5 MILES
NATURAL SURFACE TRAIL: 0.7 MILES

To achieve this goal will require removal of many of the existing golf cart paths, reconstruction of other existing golf cart pathways, and construction of new trails. This plan proposes the creation of a diverse and varied set of biking, walking, and nature access paths that are described as follows:

- Low-Stress, Low-Challenge Loop (Paved)
- General Shared-Use Paths (Paved)
- Mowed Meadow Trails
- Natural Surface Trails

TRAIL TYPES

Much of the existing cart path system will need to be removed and replaced along alignments with accessible slopes and that complement and show off the restoration of natural park habitats. Some new paths will be built with improved neighborhood access and safe street crossings. A variety of surface types will be used to support bicycling, roller skating, strolling, fitness walking and running, and nature access and enjoyment.

LOW-STRESS, LOW-CHALLENGE WALKING LOOP (PAVED)

The low-stress, low-challenge walking loop is a 1/4-mile walking loop surrounding the main cluster of fitness stations and nature-based playground in the Active-use Recreation Area (See Figure 46). It is in close proximity to the parking area including ADA accessible parking spaces, and will meet all current ADA standards. It provides connections from the Active-Use Recreation Area to the larger trail network. This trail provides a user experience that navigates through a variety of habitat types in both sun and shade with available benches and resting points and views to the lower pond. This path will be asphalt or a resilient track surface.

SHARED-USE PATHS (PAVED)

The shared-use path network is the main trail type throughout the Lake Arbor park. These will be paths that are sized (anticipated 8-10' width) to accommodate multiple uses, including walking, running, and bicycling, as well as

maintenance and emergency access throughout the park. Multiple linked loops provide a variety of distances and natural experiences through new reforestation areas and new meadow creation areas, as well as around the pond and proposed wetland creation areas. They will be paved with asphalt and meet public right-of-way standards. Due to steep slopes in some parts of the park extensive switchbacks may be necessary to meet

the standard 5% running slope. Signage will be included that warn park users of any upcoming challenges so they can choose to avoid them if needed. Final routing may need to be adjusted during the final design if those areas are deemed necessary to meet ADA requirements.



FIGURE 34 Example images of shared-use paths through forested areas and open lawns.

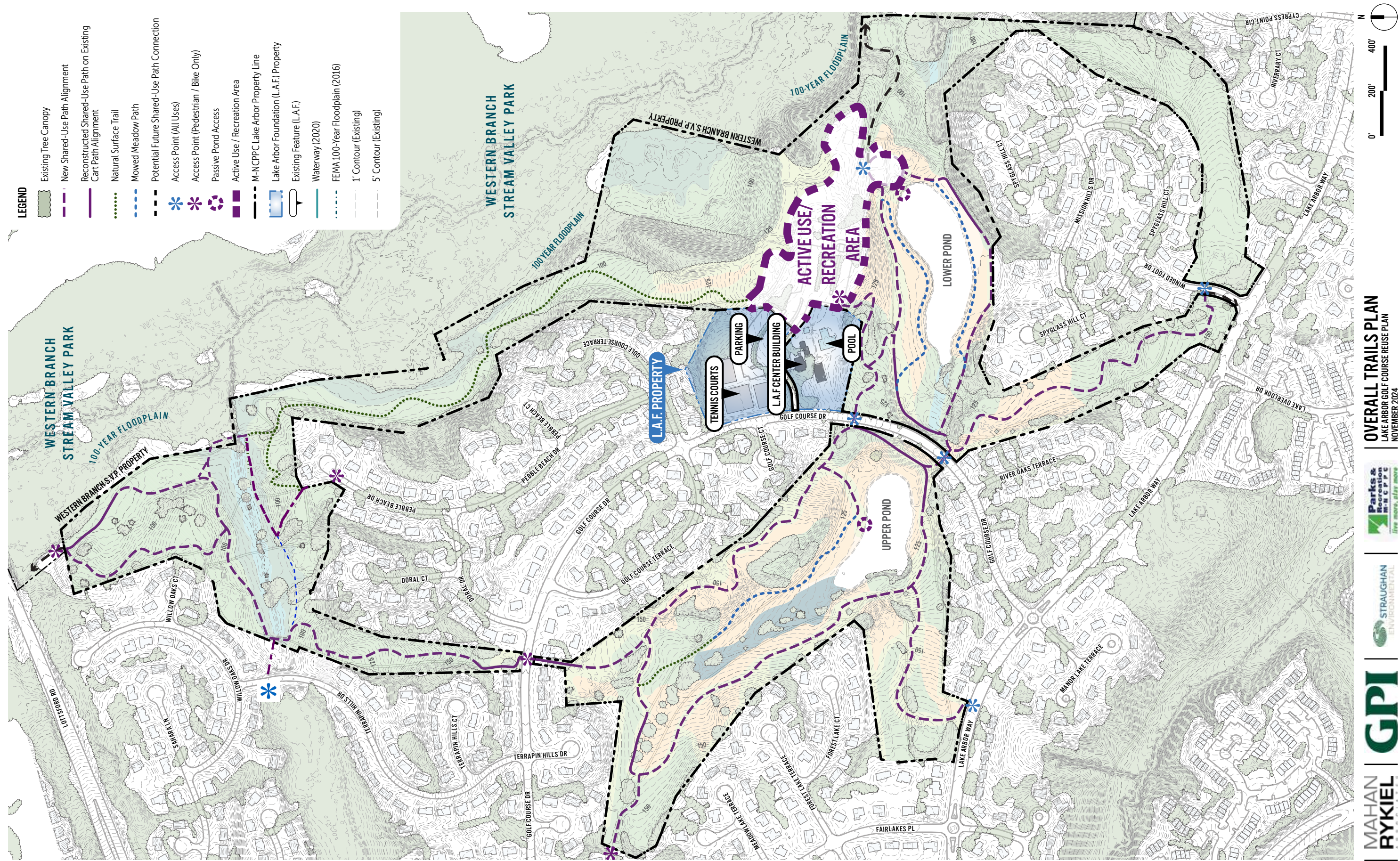


FIGURE 35 Overall Trails Plan.

NATURAL TRAILS

The natural surface trail network will operate in tandem with the shared-use path network to provide a mix of natural experiences in both meadow and woodland areas. They are also located in areas of meadow creation and reforestation that are outside of the proposed primary shared-use path network. They will consist of mowed-meadow trails and natural surface (earthen) trails, and can include educational and interpretive elements such as plaques and signs about local flora and fauna or themes including cultural and natural education. All of these trails will meet recreational trail guidelines.

MOWED MEADOW TRAILS

The mowed meadow trails will consist of mowed pathways through the meadow areas. They will be planted with turf grass and mowed more frequently than the surrounding meadow to provide a clear walking trail. They will meander through the meadow areas and will provide an immersive natural experience through the meadow more readily than the paved trail types. Mowed meadow trails will provide opportunities for users to deviate from the shared-use path network at various points to gain a closer experience of nature, most significantly around the existing ponds and proposed wetland creation area.

NATURAL SURFACE TRAILS

These trails will be part of the phased implementation of the trail network. They will take advantage of both existing wooded areas and proposed reforestation areas. Ultimately, these trails will have a natural surface such as dirt or gravel-reinforced dirt. As the proposed reforestation areas become established, these trails will need to be maintained with typical mowing regimes that are used on the mowed meadow paths. These maintenance practices will need to remain in place until the tree canopy is fully established and allows for a typical natural path surface to be created.



FIGURE 36 Example images of mowed meadow trails.



FIGURE 37 Example image of natural surface trails in woodland areas.

TRAILHEADS AND ACCESS POINTS

The Master Plan proposes a number of new entrance points to the proposed trail network, which includes:

- The community entrance at the cul-de-sac on Pebble Beach Drive.
- An official entrance off the existing path network by Fair Lake Terrace.
- A new entrance at the south west portion of the site off Lake Arbor Way.
- Two new crosswalks and entrance points off Golf Course Drive.
- A new community entrance at the southern tip of the site off of Winged Foot Drive,
- The main trail head in the Active-Use Recreation area (refer to Figures 35 and 40-42 for these locations).

New access points have been located where proposed trail alignments are most readily accessible to existing pedestrian networks. Some access points will be predominately used by the Lake Arbor community (e.g. the entrance on Pebble Beach Drive), while others provide access points for the surrounding communities.

Three of the proposed trail access points will require easement agreements that allow M-NCPPC and public users to pass through private or private-public HOA property to connect public right-of-way with M-NCPPC public park land. These include the following:

- On the west side of the park the path link from Fair Lake Terrace to the shared-use paths in the park.

- The potential link on the north side of Lottsford Road.
- The maintenance access point along Terrapin Hills Drive.

TRAILHEADS

All access points will be accessible by general park users (pedestrians and cyclists), while only some will allow maintenance, emergency, park police, and county police access (Refer to Figures 35 and 40-42). Design features of these trailheads will include, but are not limited to:

- Boundary indicators such as fencing, trees and shrubs or other barriers to delineate private residential properties from the public park.
- P-Gates with locking mechanisms to keep out public vehicles, allow trail users in safely and conveniently, and allow maintenance and emergency vehicles access with a key.
- Standard M-NCPPC signage displaying park rules, the name of the park and the M-NCPPC branding logo. They will also include trail system maps with a YOU ARE HERE symbol to orient park users.
- Street addresses and names will be provided along with 911 and Park Police calling guidance to request help in an emergency.
- Mile markers or other progress indicators will be provided along the trail system to enable those calling for emergency services to identify where they are in the park

Figure 39 depicts a typical trailhead layout.

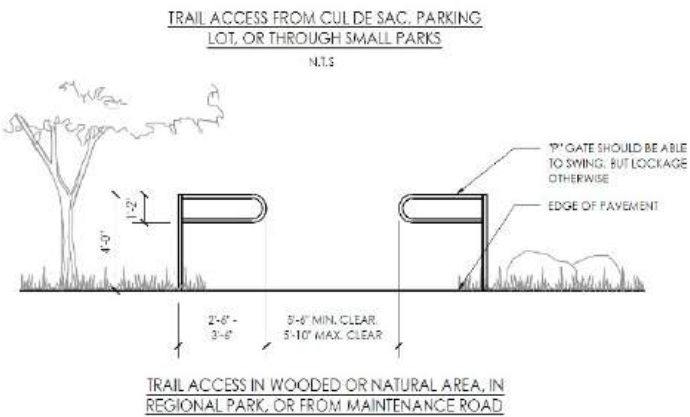


FIGURE 38 Example of a P-Gate entrance design and trailhead example image.

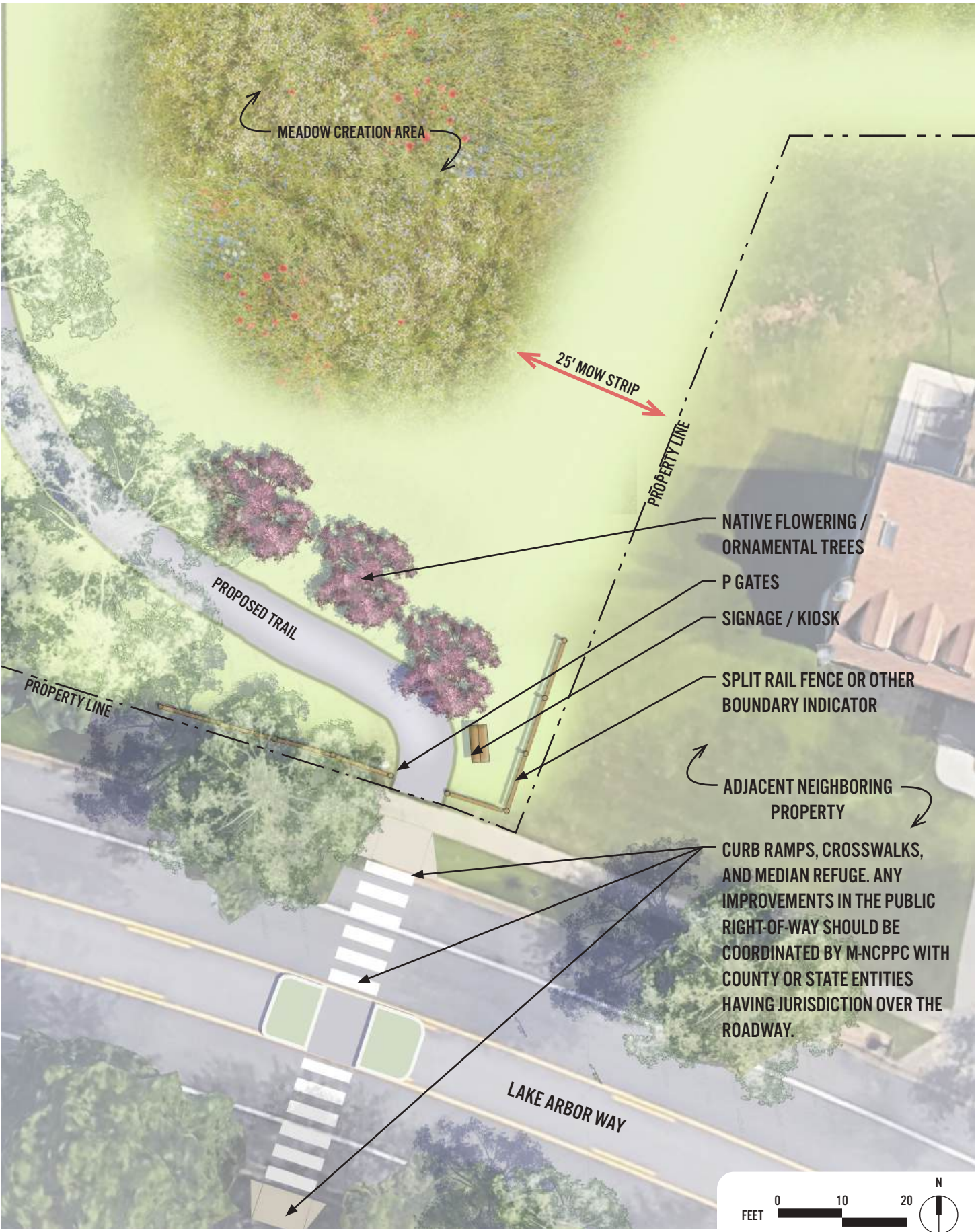


FIGURE 39 Diagram of typical trailhead improvements.

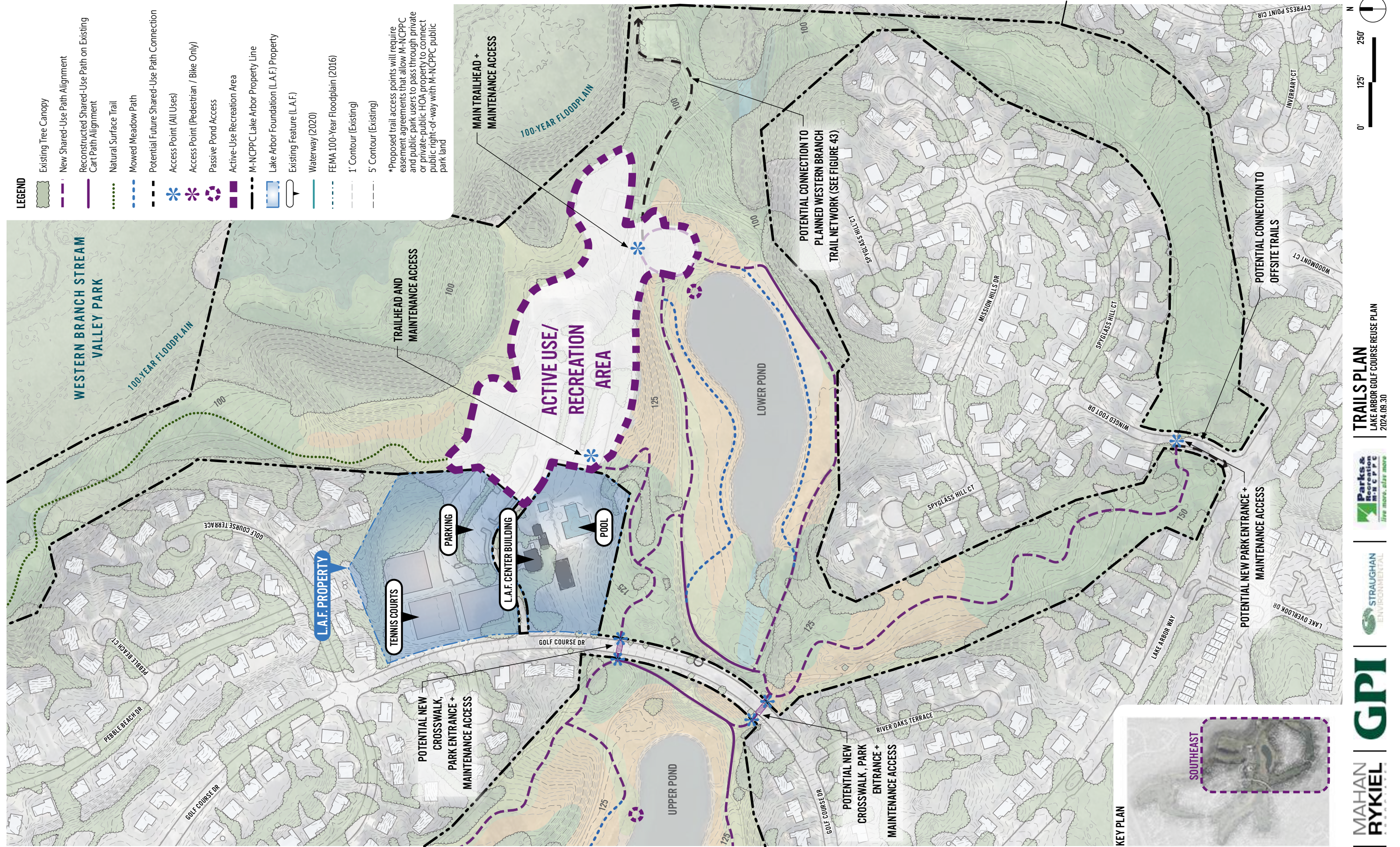


FIGURE 40 Enlargement (Southeast) of the Trails Plan.

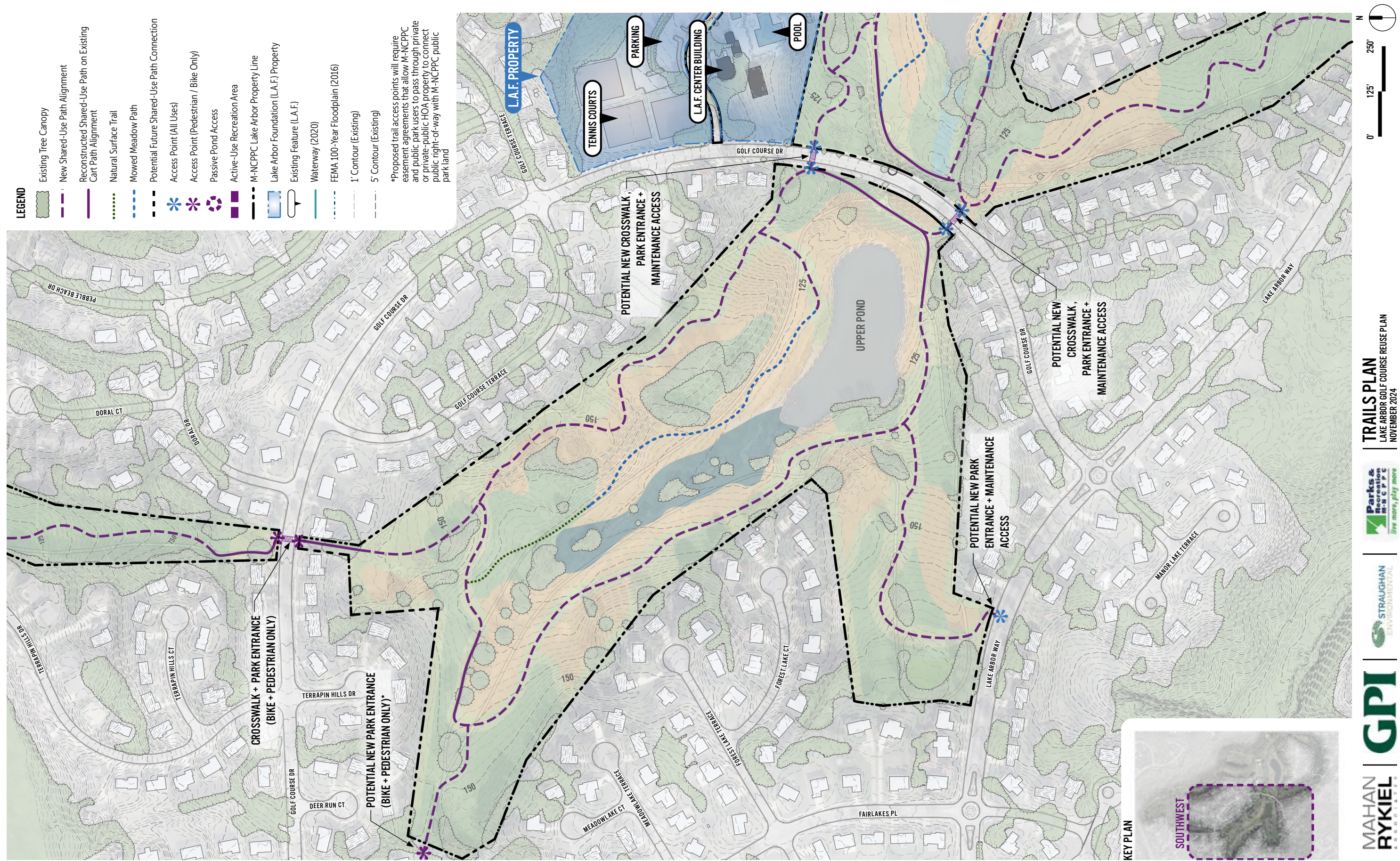


FIGURE 41 Enlargement (Southwest) of the Trails Plan.

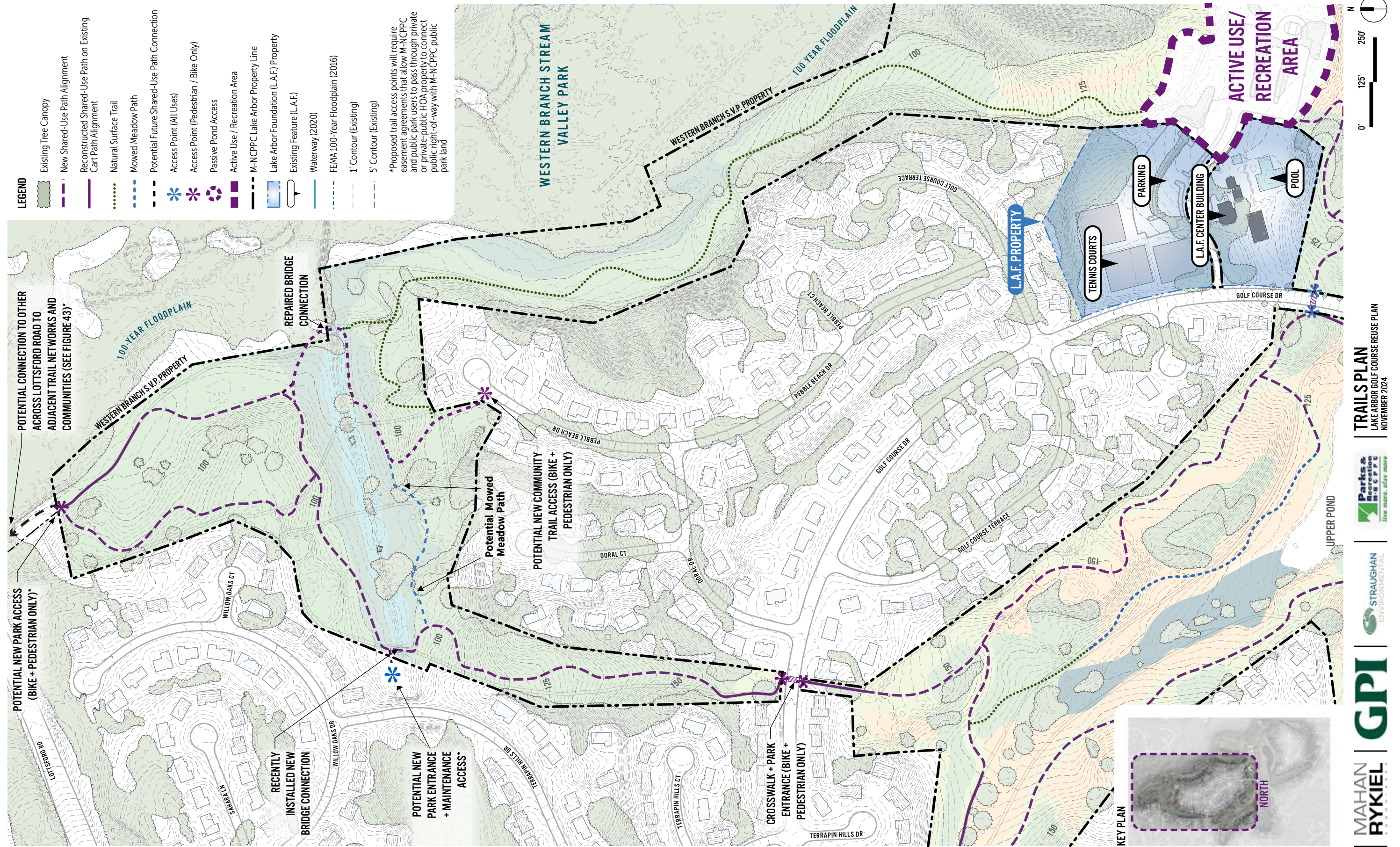


FIGURE 42 Enlargement (North) of the Trails Plan.

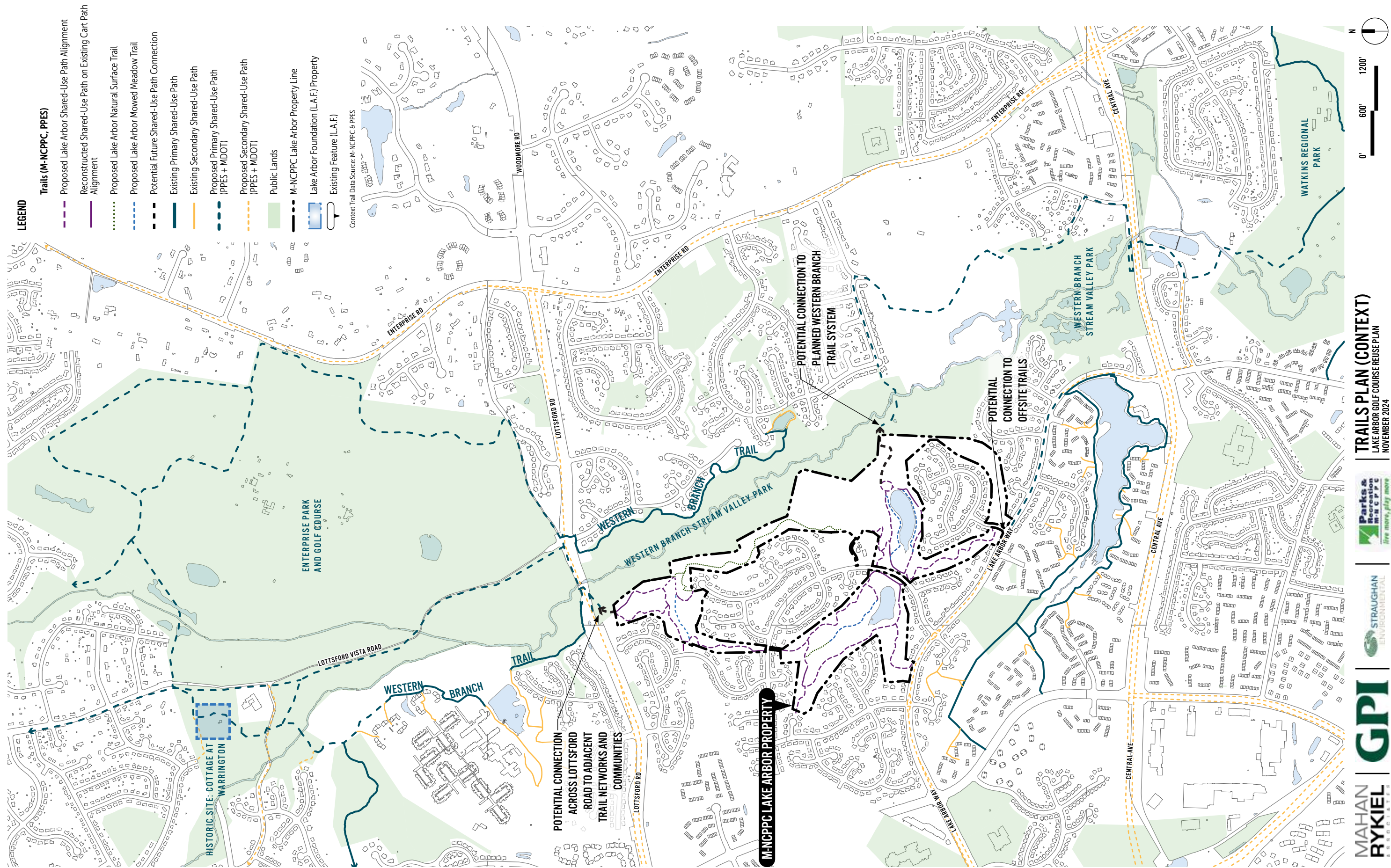


FIGURE 43 Map showing the proposed Lake Arbor Trail system in the context of the greater regional trail network and potential linkages.

ACTIVE USE RECREATION AREA

OVERVIEW

The proposed Active-Use Recreation Area is an approximately 6-acre area situated directly adjacent to the east of the existing Lake Arbor Foundation site. The site sits on top of a ridge line that falls away to the north and south and is the location of the former golf clubhouse and associated parking lot. The Active-Use Recreation area, based on expressed desires gathered from community input, will contain:

- Community Gardens
- Golf Practice Putting Green
- Nature-Based Playground
- Fitness Station Area and Walking Loop
- Comfort Station Area
- Open Play Area
- Flexible Green Space
- Parking
- Maintenance Area
- Main Trailhead + Trail Connections
- Stormwater Management Areas
- Natural Habitat Areas
- Disc Golf Course (Start + Finish)
- Shaded seating + rest opportunities incorporated throughout the entire Active Use Recreation Area

Figure 46 shows a site plan of the Active-Use Recreation Area.

COMMUNITY GARDENS

The community gardens were a highly desired element by the community and a staple of many other M-NCPPC parks. They will provide opportunities for Lake Arbor residents and the community at large to lease a plot for the growing of flowers and vegetables in a community-oriented setting. The approximately 1/2-acre area will include a total of thirty (30) 20-foot x 20-foot in-ground plots with a central grass aisle surrounded by an 8-foot high deer fence with a

vehicular gate and multiple pedestrian entrances. Mulch, grass, or crushed stone pathways (2-3 foot wide) will divide the plots from their neighbors. Accessible gardening options, including raised beds as pictured to the right will also be included.

Other suggested support services provided with in the fenced area will include an adjacent open area that can accommodate service vehicle turn-around and loading and unloading for community garden users. A vehicular access gate will be provided in the fence as well as a curb cut to the main entry drive to allow vehicular access into this area. This space can also be used to locate storage sheds, compost and mulch bins, as well as movable picnic tables and shaded seating for small garden-related gatherings and workshops. A water connection will need to be provided in this area as well. These support services will need to be refined in the final design of the community gardens. A 10' wide planted buffer between the community garden and the entry drive will help screen this area from other users.

GOLF PRACTICE PUTTING GREEN

A golf practice putting green is proposed in the southwest corner of the recreation area. This approximately 10,000 square foot area is located at the edge of the ridge that the active use recreation area is located on and will provide a free-to-use, self-directed golf amenity for the Lake Arbor neighborhood and surrounding communities with pleasurable views overlooking the lower pond. The practice putting green will be open to the public as part of this new public park.

The practice putting green will be artificial turf to lower maintenance requirements and include undulating topography for a variety of putting experiences. Future planning efforts should focus on reaching the 10,000 square foot size of this area and coordinating it with the size of the proposed parking and storm water management area as well as existing topographical constraints. Benches shaded by nearby existing and newly planted trees will be provided to allow users opportunities to rest in the shade.



FIGURE 44 Example images of community gardens and associated support area.



FIGURE 45 Example images of the golf practice putting green.





FIGURE 47 Example images of the nature-based playground area.



FIGURE 48 Example images of the nature-based playground area.

NATURE-BASED PLAYGROUND

The master plan proposes a 10,000 square foot nature-based playground for the active use recreation area that is centrally located, in close proximity to the proposed parking and comfort station, and is nestled between clusters of large existing specimen trees. The playground is envisioned to include accessible, nature-based playground equipment that is divided into a larger (7,500 square foot) age 5-12 use zone, and a smaller (2,500 square foot) age 2-5 use zone. The entire play area will be accessible for children with all levels of abilities. The play surface will have playground protective surfacing, either solid poured-in-place resilient surfacing or a loose-fill play surfacing, such as wood chips. Accessible connections to the surrounding low-stress, low-challenge walking loop, fitness station area, comfort station area, and seating area will be provided. In addition to the large existing trees, newly-planted shade trees or shade structures or sails will be included to provide shade for both children at play and adults and older populations that may be watching over them.

FITNESS STATION AREA

One recurring theme through the public engagement process was the desire for multi-generational fitness opportunities. Directly adjacent to the nature-based playground area is a 3,000 square foot fitness station area. This area will include an assortment of accessible fitness and exercise equipment that offer a workout experience for users of all ages and abilities. Direct, accessible pathways will connect this area to the nature-based playground area and the low-stress, low-challenge walking loop. Seating opportunities will be provided in the shade offered from the large existing trees nearby, and shade structures can be incorporated into the final design to provide additional shaded rest opportunities.

COMFORT STATION AREA

An area for a potential public comfort station is suggested in close proximity to the golf practice

putting green, the nature-based playground area, and the fitness station area. This comfort station may potentially be connected to the existing water lines servicing the existing Lake Arbor Foundation property to provide water. There is also an existing septic easement on the site that the comfort station could tie into. Approvals and permits would be required to evaluate if there is capacity for the park to use the septic field. However, a more cost-effective option may be a waterless, vault toilet with hand sanitizing stations, or a composting toilet. There are a variety of prefabricated concrete units on the market that are typically found in public parks that can be utilized for this purpose. Figure 49 illustrates some examples of these pre-fabricated structures. A solar system could be incorporated into the design to provide power for lighting and ventilation fans as well.



FIGURE 49 Prefabricated comfort station examples.



OPEN PLAY AREA

In the northeast corner of the recreation area adjacent to the existing parking lot, a 1/2-acre open lawn area is proposed. This area is intended to accommodate passive, un-programmed recreation like frisbee, soccer, and other sport activities, yoga, and picnicking.

This area can be utilized in future phases to support an expansion of the community gardens area, a 1/2-acre dog park for both small and large dogs, or another use that is deemed desirable by both M-NCPPC and the Lake Arbor community.

FLEXIBLE GREEN SPACE

At the low end of the active-use recreation area is a large 1/4-acre open lawn space that slopes toward and overlooks the lower pond. This area will be a flexible green space that can provide room for neighborhood or regional activities like yoga in the parks, larger social gatherings, small music performances, public art, and other uses. At the north end of this space, adjacent to the parking lot, a small plaza with seating and shade structures will be provided that allow for pleasurable views overlooking the lawn area, the adjacent meadow areas, and lower pond.

This area has the potential, if desired, in future phases to accommodate a pavilion or small stage, or another use that is deemed desirable by both M-NCPPC and the community.

PARKING

Two of the abandoned parking areas are being proposed to be re-purposed at the active-use recreation area. The first takes advantage of the existing lot area and topography to provide approximately 32 spaces including 2 ADA-accessible spaces that would service the golf practice putting green, nature-based playground, and the fitness area. A second, new parking lot on the northern side of the entry drive provides approximately 20 spaces that would service the open play area and community gardens. All parking areas have the potential for overhead solar arrays that would serve the dual purpose of

shading the parking lot as well. Solar installations should be investigated further in future design efforts for the Active-Use Recreation area.

A third parking lot is proposed at the end of the entry drive that provides approximately 15 spots including an ADA-accessible space that would service community gardens, flexible gathering space, and disc golf. These parking lots are suggested to be typical asphalt lots, with all storm water run-off being managed by adjacent linear storm water management facilities.

It is envisioned that if any large programmed events on either the open play area or flexible green space increase usage significantly, the adjacent existing parking lots associated with the Lake Arbor Foundation property could potentially be used to accommodate overflow parking needs.

MAINTENANCE AREA

A +/- 17,000 square foot (0.4-acre) maintenance area (final grading and storm water management requirements may influence this acreage) is proposed to provide M-NCPPC with a maintenance and storage area to service the active-use recreation area as well as the larger park area. The maintenance area is located at the northeast and lowest part of the active use area, and will be buffered by tree planting areas including both evergreen and deciduous trees. A small storm water management area is envisioned to accommodate storm water runoff from this area. The final design of this area should include further coordination with M-NCPPC maintenance teams and consideration of the size of the largest vehicle that may need to access this area with a turn around in front of or as part of the maintenance area.

MAIN TRAILHEAD + TRAIL CONNECTIONS

The active-use recreation area contains the main trailhead as well as a number of secondary access points connecting to the larger site trail network throughout the community. These connection points will be clearly labeled and provide signage

FIGURE 50 Example images of the open play lawn



FIGURE 51 Example images of the flexible green space and associated seating area.



FIGURE 52 Aerial rendering looking south over the Active-Use Recreation area and surrounding disc golf course and pond.



FIGURE 53 Aerial rendering looking south over the Active-Use Recreation area and surrounding disc golf course and pond with labels of the different program elements.

and maps to orient users on the site and describe the various experiences available. See the Trailheads + Access Points section of this report and Figure 39 for more details.

STORMWATER MANAGEMENT AREAS

Though there is a significant amount of impermeable area being removed from the existing (former golf course clubhouse) site (refer to the impermeable surface removal diagram in Appendix D), the new parking areas and maintenance area are adding new impermeable surface. Storm water from all of these areas will be managed by on-site storm water management facilities. These areas can include informational signage on the storm water management practices being used to help educate the community and other users on the benefits of effective storm water management.

NATURAL HABITAT AREAS

Any area within the active-use recreation area that is not dedicated to active programming will be reconstituted with either reforestation or meadow creation areas that are incorporated into the larger habitat restoration plan (See Figure 26)

DISC GOLF COURSE

The master plan proposes a 9-hole casual disc golf course of approximately 2,500 feet of play at the new park at Lake Arbor. The start and ending points of this course are located within the active-use recreation area. The starting point will have a signage kiosk with a map depicting the routing.

Figure 55 shows the planned routing of the disc golf, as it runs through and around the active use recreation area. The course takes advantage of existing topography and existing wooded areas, as well as proposed reforestation and open lawn areas to provide a variety of playing experiences. The course difficulty will be beginner-rated, with a mix of par 2, par 3 (average 250 feet) and par 4 holes.

Future planning efforts should engage a disc golf course designer to ensure that the course achieves the maximum potential and prevent any safety concerns with adjacent uses. Shaded seating areas should be provided at each hole and tee and along the course routing to provide users rest opportunities as well.



FIGURE 54 Disc Golf example images.

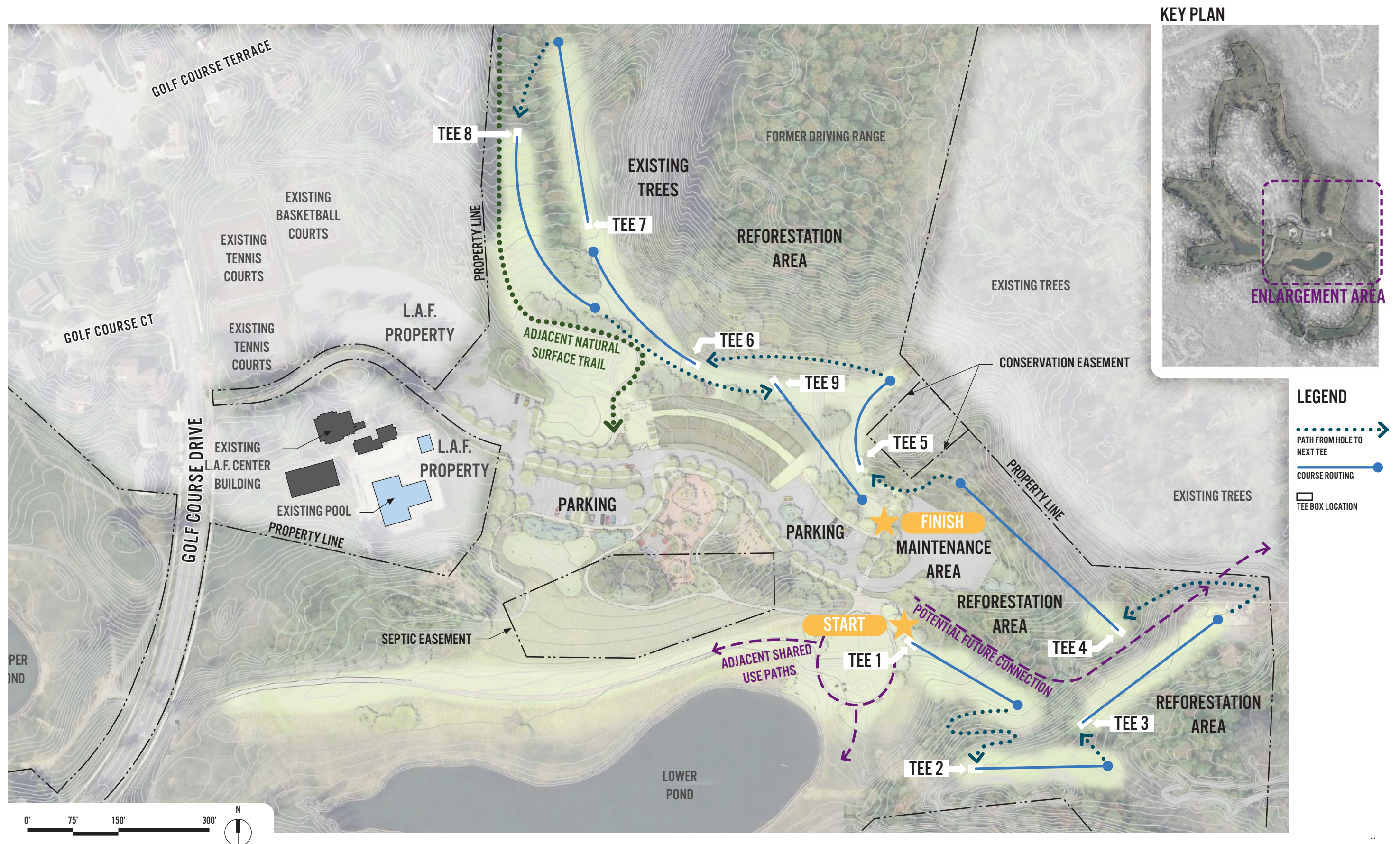


FIGURE 55 Disc Golf Course Layout Plan.

INFRASTRUCTURE RECOMMENDATIONS

WATER INFRASTRUCTURE RECOMMENDATIONS

ACTIVE-USE RECREATION AREA

As discussed in the existing infrastructure analysis section of the report, there is an existing well at the demolished former clubhouse. The location of the abandoned well is acceptable to serve irrigation needs for the community gardens and a potable connection for a comfort station.

If the well is not abandoned, it is recommended that the well be tested for potable water and if acceptable to Prince George's County Health Department, could provide potable water for the community gardens as well as the comfort station.

A drawdown test of the well at the L.A.F. property could show the well acceptable for use at the community gardens and comfort station as well.

If the well is not deemed an acceptable approach, the community gardens and potential comfort station could be served by a water service extension from the L.A.F. property.

OVERALL SITE

Various water lines traverse the site and are referred to in the existing infrastructure analysis section of the report. The existing water lines can remain undisturbed with the current layout of proposed improvements for the site. Modifications of trail alignments may result in grading changes on the site. WSSC relocation section approval is required for changes to grades over existing water lines.

SEWER INFRASTRUCTURE RECOMMENDATIONS

ACTIVE-USE RECREATION AREA

As discussed in the existing infrastructure analysis portion of the report, a platted revertible septic easement currently exists on the site, that can be reverted when the area is connected to the public sewer system. This indicates the septic easement could be abandoned with connection to public sewer at Golf Course Drive, though this connection could not be made without disturbance to Golf Course Drive.

Hence, the proposed comfort station could be designed to allow effluent to be stored and pumped to the existing septic field, though this would have to be studied in future efforts and appropriate approvals or permits acquired as the existing septic field is currently designed to serve the L.A.F. property. If needed, the septic field would allow gravity flow to serve the comfort station. The use of fountains and community garden irrigation needs do not require a sewer outfall and could use dry wells as needed.

OVERALL SITE

Various sewer lines traverse the site and are referred to in the existing infrastructure analysis section of the report. The existing sewer lines can remain undisturbed with the current layout of proposed improvements for the site. Modifications of trail alignments may result in resetting sewer manhole covers and checking sewer minimum and maximum cover. WSSC relocation section approval is required for changes to grades over existing sewer lines.

ELECTRIC INFRASTRUCTURE RECOMMENDATIONS

Existing electric and telephone services can be expanded to serve proposed improvements in the Active-Use Recreation area.

STORM WATER INFRASTRUCTURE RECOMMENDATIONS

ACTIVE-USE RECREATION AREA

A complete survey and assessment (including closed circuit television inspection) is needed and recommended for the entire L.A.F property area and active-use recreation area down to the lower pond to determine the existing storm drain layout. At final design, an assessment of the utility of the existing storm drain system can be determined, and additional storm drains designed to ultimately discharge to the lower pond.

The existing development in the recreation area appears to include similar runoff to the proposed development and it could be assumed the lower pond was deigned for the runoff from proposed development. An assessment of these runoff characteristic can be determined at the time of the M-NCPPC Capitol Project that includes modifications to the lower pond. At this time, storm water management water quality treatment micro-scale devices are proposed in the active-use recreation area of the proposed development. Sizing of these devices can be reduced if water quality credit from the lower pond can be documented.

OVERALL SITE

An existing storm drain along the proposed wetland creation area above the upper pond appears to be partially silted in. The storm drain here is needed to control water levels and flows through the wetland area. A complete survey and assessment (including closed circuit television inspection) is needed for final design of the wetland creation area here.

Existing Ponds

As stated earlier in the report, both the upper and lower ponds do not meet the MD378 standards. M-NCPPC staff were made aware of the deficiencies in the ponds noted, and M-NCPPC has agreed to design modifications and repairs to the ponds under a separate capital project. As a result, no pond repairs are included in this report.

Modifications to ponds to meet MD378 could include, but are not limited to:

- Adjustment to pond risers
- Inclusion of trash racks
- Pond embankment height elevation changes
- Water surface elevation changes

These recommendations should be given further study as the master plan is implemented. Appendix D provides a summary overview of the analysis of the stormwater and pond infrastructure completed by W.F. Wilson & Sons, Inc. This study was commissioned and managed by M-NCPPC as a separate but parallel effort to this master plan report.

EXISTING BRIDGE INFRASTRUCTURE RECOMMENDATIONS

BRIDGES

The existing trail bridge north of Pebble Beach Drive that is proposed to be utilized on the overall trails plan (highlighted on the enlargement shown in Figure 42) will require replacement. A survey and assessment of the existing concrete abutments will determine if they can be used for a replacement bridge.

It is recommended that M-NCPPC engage consultants for future analysis and engineering of this bridge.

Two other existing bridges, to the east and west of the proposed replaced bridge, are in disrepair and will require complete removal. One bridge (the west bridge closest to Terrapin Hills Drive) has already been replaced with a bridge that, in addition to being part of the trail network, has the capacity for maintenance vehicles to use it to access other parts of the property.

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View looking south along existing cart path on the eastern portion of the site; Western Branch Stream Valley Park to the left

OPERATIONS, MAINTENANCE + FINANCIAL PLAN

OPERATIONS AND MAINTENANCE PLAN

OVERVIEW

The Operations and Maintenance Plan portion of this report contains five major elements for the purposes of informing operational and management planning of the new park at Lake Arbor.

These include:

1. Review assessment of current management of the park
2. Future State of the park as an asset to the Lake Arbor community and the greater public
3. Operational Standards
4. Management Strategies for future park
5. Financial Pro Forma

The primary emphasis for this park’s transition from a golf course to a public park will involve tree planting, meadow creation, storm water control, and limited appropriate recreational development focused on trails and compatible recreational amenities in a safe and well maintained environment.

ORGANIZATIONAL ASSESSMENT

The Organizational Assessment reviews the current management of property and looks forward to the future operations of the park as a part of this master planning. The analysis is the basis for the recommendations that support the desired future of the new park at Lake Arbor. This includes the maintenance of the park and any staffing that may be necessary for operational efficiency and sound maintenance practices of

the park. The operational model of the new park at Lake Arbor property is currently and expected to remain an **open access / unstaffed model**. This means the park does not have controlled entry but has several entry points for access. Additionally, the park’s model is considered “unstaffed” as the Park is expected to continue to share staff with other parks in the M-NCPPC system.

OPERATIONAL ASSESSMENT

Current operations are for minimal grounds maintenance and maintaining the safety of the property. The park, in this plan, is being envisioned to complete its transition from its original purpose as a community golf course to a M-NCPPC park.

Reduced maintenance inputs throughout the park have been identified as a top need.

Operations for the re-use of the former golf course will include tiers of maintenance tailored to the specific needs of the habitat improvements made and facilities included in the Active-Use Recreation area, as well as the shared use paths, natural surface trails, and mowed meadow trails.

Operations will specifically address hazards such as sink holes, erosion due to failed pipe and drainage structures, diseased and damaged trees, invasive species management, and materials left on site from previous use. These will be addressed systematically during the park improvements.

Public input identified three top aspects for M-NCPPC to focus on for the new park:

Proper Maintenance and Upkeep:

To date the abandonment of the golf course operations has left a property that has seriously degraded. Sink holes, pipe failures, erosion,

etc. have caused the surrounding community concern. They want to be sure that as M-NCPPC takes over the operations that a primary focus is maintenance.

There is a stated desire to reduce mowing, increase forested areas, wet and dry meadows, and pollinator plantings. These are top priorities for the park. The design is particularly focused on a future reduction in the full mowing regime that was inherited from the essential basic management of the property as related to its history as a golf course. With the new plan in place, mowing maintenance will be reduced from approximately 100 acres (of the total site area of 127 acres) to the plan’s estimated 15 acres needing regular mowing maintenance.

Safety:

The previous owners of the property did not maintain the golf course land for many years. As upkeep of the former golf course declined over the years, safety for users became an issue. M-NCPPC has been addressing immediate safety concerns since acquiring the property. M-NCPPC has replaced a bridge, closed off unsafe bridges and areas, filled in sink holes and posted safety warnings where needed. M-NCPPC has been committed to the safety of the property and will continue to focus on safety both in terms of land management and maintenance, addressing safety issues for all users of the park. These concerns have included:

- Safety relating to the underpass along Golf Course Drive addressed by M-NCPPC by re-routing the trail over Golf Course Drive and removing trash that had been dumped in the area
- Control of visitors’ vehicular access and parking as the master plan is implemented

- Requests for park safety and police presence on a regular basis
- Consideration for adjacent property owners

Funding:

Given the historic issues with the private golf course maintenance and management, the public wants to be sure that the park receives full funding for upkeep. Funding for the park needs to be assured for the future.

MAINTENANCE ASSESSMENT

Historic maintenance deficiencies are listed below:

Stormwater and Pond Maintenance:

- Water runoff control
- Steep pond edges due to a lack of any safety benches around the pond perimeter
- Pipes and conveyance failures
- Invasive plants in wetland areas

Natural Areas:

- Many areas with invasive plant species
- A lack of tree maintenance
- Excessive and unnecessary mowing
- Lack of habitat diversity
- Impacts of dog walking: leash management and dog waste control

Built Environment:

- Paved cart paths in poor condition
- Bridges in poor condition
- Sitting areas haphazard and unmaintained
- No signage or directionals
- Trash control lacking

PLANNING ACTIONS

The report for the new park at Lake Arbor has taken input both from the community and M-NCPPC. The report focuses on the key areas to develop for the park. Through the public input process the following planning measures have been incorporated in this master plan report:

Storm water and Pond Maintenance:

- Identification of future stormwater management in compliance with the County and State
- Pond edge restoration
- Daylighting of streams and right sizing of culverts, pipes, outlets
- Invasive plant control and native planting designs in wetland areas

Natural Areas:

- Invasive plant management and native plantings
- Tree maintenance to manage dead, dying, and diseased trees
- Reforestation plantings
- Modified mowing regimes based on high use areas; mowing reduction in areas that are meadows
- Planning for native habitat diversity and management
- Trash receptacle placements and maintenance
- Shaded seating areas

Built Environment:

- Carefully planned paved, natural surface, and mowed meadow trails as well as water body crossings based on improving existing cart paths and ad hoc trails
- Shaded seating areas sited to focus on natural amenities
- Active recreational components designed in proximity to the primary access to maintain the natural aspects of the remaining park (See Active-Use Recreation section of this report)
- Shaded seating areas incorporated into all active use areas

- Disc golf course
- Create spaces for visitors to the park to spend time in nature and enjoy views while protecting homeowners’ privacy
- Natural areas for bird and wildlife watching

OPERATIONAL AND MAINTENANCE STANDARDS

The Operational and Maintenance Standards section is based on industry standards for similar parks across the country.

PARK OPERATIONAL STANDARDS

Best practices operational standards assist park systems in operating high quality parks for their communities. Pertinent standards are listed below

BEST PRACTICES STANDARDS FOR PARK OPERATIONS

For all amenities and services, the following park standards should be in place to promote a high-quality park experience and consistency for staff, volunteers, and visitors:

- Any guided or facilitated programs should have a staff/volunteer-to-participant ratio that is appropriate for participants to feel safe and attended to.
- Customer feedback methods should be in place to seek input from visitors on their expectations of park services and the results of their experience. This should include pre- and/or post-evaluations where appropriate. Scan codes for feedback and reporting problems at the park from visitors’ phones are an efficient method to provide feedback.
- All park policies and usage regulations are available and accessible to visitors.
- New temporary and seasonal staff, volunteers, and any contract employees working with children and/or individuals

with disabilities will have certified background checks.

- Staff and volunteers, per M-NCPPC policy, that have regular visitor contact will be dressed in an appropriate park uniform that includes a name tag.
- Performance measures tracked will be shared with staff and volunteers.
- All regulatory requirements for programs and services are complied with.

OPERATIONAL MODEL

It is recommended that staffing for the park’s maintenance increase to maintain a well-managed park and be consistent over time to ensure that the public’s use of the property is welcoming and safe. Investing in additional maintenance staffing for the park is critical for the success of the park, stewardship of the open spaces, and public satisfaction. This will require close attention to the maintenance of the park during the implementation of the master plan. Maintenance staffing can be augmented by a volunteer program that includes assisting in providing basic park maintenance and visitor engagement / support.

The operations and management of the new park at Lake Arbor should be managed with the following primary purposes:

Park Stewardship:

- Sound stewardship of the natural resources of the park as planned in the master plan
- Provide a clean and safe visitor experience for all users
- Provide park users with access to nature and outdoor recreation opportunities
- The park should be maintained to support and enhance quality of life for the local community and greater region by continuing to provide open and green spaces, access to nature, and public recreation opportunities
- As a new public park, the larger community will have access to

additional open spaces and park amenities in the area

Park Maintenance:

- Maintenance equipment may be stored on site in a new storage building in the area marked on the plans. Alternatively, or until the storage area is constructed, equipment for maintenance should be stored as closely as possible to the site to provide for quick maintenance at this park and nearby M-NCPPC owned natural spaces.
- In natural areas, maintenance and management will:
 - Mow areas identified for regular mowing maintenance to ensure there is a manicured appearance to those areas
 - Mow meadow areas as prescribed for the meadow types planted in each meadow area
 - Maintain seating and gathering areas throughout the park, providing shade where possible
 - Maintain trees by following urban forestry standards and regularly checking for hazards near paths, amenities, and high traffic areas
- For the Active-Use / Recreation Area, specific maintenance recommendations will vary and are dependent on the final design elements contained within. It is recommended that, once those specific elements are designed, a maintenance plan specific to the Active-Use / Recreation Area elements is developed accordingly.

POLICIES FOR RENTALS AND SERVICES

The Department of Parks and Recreation management policies and technologies allow fair and consistent communications from the public regarding rentals and reports of problems at parks. The new park at Lake Arbor will need to adhere to DPR’s policies for any rentals and services offered at the park. DPR’s policies for rentals, concessions, and partners are currently located on their website:

<https://www.pgparcs.com/facilities-rentals/rental-permits-policies-2>

In this master plan rentals are specifically planned for community garden plots that have been requested during the public input process. Responding to these requests, community garden plots are considered an integral part of the park. DPR requires proof of residency to rent community garden plots and has specific processes for the use of community garden plots. Current requirements are online reservations starting in January of each year. The annual growing season is March 1 through December 15.

STAFFING AND MANAGEMENT STANDARDS

With the planned changes suggested in this Master Plan report, the new park at Lake Arbor should initiate a **Natural Resource Management and Maintenance Plan** that provides the goals and guidance on natural resource management and maintenance of the Park. This plan should include the development of ongoing maintenance operations, Urban Forest Management Standards, and the development of maintenance zones.

Ongoing Maintenance Operations

The establishment of the ongoing maintenance operations regularly include:

- Maintaining an active invasive species management plan to continually improve the quality of the natural resources at the Park.
- Development of a Water Quality and Shoreline Management Plan for the streams, ponds, and wetland areas.

- Utilization of a maintenance management system to strategically prioritize and allocate staff resources to necessary maintenance tasks, as well as track capital asset life cycle.
- Regular inspection of built infrastructure to identify maintenance priorities.
- Regular inspection of wetlands and stormwater management systems to identify any blockages or failures that may impact safe use of the park.
- Utilization of volunteers where appropriate and possible to improve maintenance staff efficiency.

Urban Forest Management Standards

Establishment of urban forest management standards that include:

- Species diversity
- Storm resiliency
- Environmental benefits
- Watershed protection
- Ecological health
- Tree replacement lists prioritizing native species

Maintenance Zones

Establishment of maintenance zones within the park that correlate with regular maintenance attention and activities performed. Three maintenance levels are generally defined. The difference between levels is frequency of maintenance as determined by ability. Maintenance Standards have these general characteristics:

- **Level 1 Maintenance:** High Profile Areas
 - These are maintained areas where the entire area is visible to foot traffic such as entrances to the park, signature facilities, and areas regular mowing maintenance is prescribed on the plan. Example of Level 1 maintenance activities include: Mowing and edging once or twice per week depending on

growing season and rainfall. A recommended 95 percent turf coverage at start of season with 5 percent weeds and 0 percent bare area, edging at each mowing, tree pruning cycle once annually , litter pickup twice per week.

- **Level 2 Maintenance:** Moderate to Heavy Use areas.
 - Example maintenance activities include mowing and edging of meadow areas as prescribed by the meadow type in the Natural Resource Management and Maintenance Plan or USDA, 88 percent turf coverage at start of season with 8 percent weeds and 4 percent bare area, tree pruning cycle every seven years, litter pickup and visual checking by staff at least monthly.
- **Level 3 Maintenance:** Low Use Areas
 - Typical for low usage areas without trails or naturalized areas or when funding is limited. Example maintenance activities include mowing and edging every 10 days, edging during mowing in off-season, tree pruning cycle every 10 years, litter pickup semi-annually and visual check of area quarterly or as required by public feedback for areas.

OPERATING HOURS

The new park at Lake Arbor will maintain standard operating hours from sunrise to sunset.

MAINTENANCE EQUIPMENT

A maintenance storage facility should be constructed on site as a satellite area for maintenance support. Critical maintenance equipment for this park should be stored and maintained on site when possible, to diminish the

inefficiencies of crews transporting equipment from other sites. Park staff will be providing most of the day to day maintenance of the park as is currently being planned. This will include maintenance of the disc golf course, entrance drive and parking, access points throughout the park, maintenance of playground equipment and other site amenities, routine trash pickup, natural area maintenance as needed. There will also be contract maintenance with a small amount of continued mowing, tree specialists, water resource specialist as the park needs. These contracts will be managed by M-NCPPC, and equipment will be provided by the contractors.

TECHNOLOGY, PUBLIC INPUT, AND FEEDBACK

Since the park is not anticipated to have dedicated staff, it is suggested that M-NCPPC implement a more detailed and informational web process for the park. This can include QR Scan codes at various locations throughout the park that provide information in multi-lingual formats as well as offering visitors the opportunity to provide feedback on maintenance needs and any problems or concerns they may have in the park.

FINANCIAL PRO FORMA

OVERVIEW

The Financial Pro Forma or Operations Plan for the new park at Lake Arbor is built on the estimated expenses for the park as shared with the design team by M-NCPPC and the plan for the upgraded park site and operations. These expenses are estimated for operations as there is no programming currently being planned.

The Maryland-National Capital Park and Planning Commission’s management of the acreage at Lake Arbor has been achieved with a mowing contract for the full 127 acres of the former golf course open space and a minimal staffing level estimated to include 23% of the staff time of 4 full-time employees and 2 seasonal employees.

A primary objective of this planning process was to carefully examine the park as a whole and identify areas that could be re-planted and managed for better habitat value, better user experience, and to reduce mowing. This has been achieved and results in reducing mowing to approximately 15 acres of regularly mowed areas. This reduction in acreage and mowing frequencies should reduce the mowing expenses from the current \$96,950 to approximately \$25,000. The reduction in mowing will also provide higher habitat values along with plant and animal diversity.

However, along with the reduction in mowing costs there will be increased maintenance costs in other areas as the park infrastructure is built out and staff engagement with the increased infrastructure maintenance is needed. Both the habitat management changes, and the staffing changes are further detailed below.

STAFFING AND MAINTENANCE EXPENSES

Current shared maintenance staffing and maintenance contracts will result in slightly reduced costs with the implementation of this plan. However, staff allocations will change as the park plans are implemented.

Some details on current estimated annual staffing and expenses for the maintenance of Lake Arbor’s park property were shared by M-NCPPC. Alongside this information were the changes in management for portions of the park including the maintained areas, the low mow/seasonal mowing meadow areas, and the management of the reforestation areas. While these are all estimates, they inform the future of the park management expenses based on expenses for similar park operations within the region and the country. These are operational expense estimates, not capital expense costs.

CURRENT STAFFING EXPENSES:

Current staffing expenses are based on information shared by the client estimate staffing costs for the park to be approximately **\$85,882**. The table in Figure 56 shows current staffing costs based on 2024 salaries and time allocations shared by M-NCPPC.

FUTURE MAINTENANCE STAFFING ESTIMATES

This plan includes fewer acres of regular mowing by introducing a reduced mowing regime to increase the natural features of the landscape. Reduced mowing decreases the annual cost of that part of maintenance.

The addition of the Active-Use Recreation Area increases maintenance and staffing needs in that area of the park.

Therefore, the operational scenario is created under the assumption that there will be:

- Less regular mowing
- More maintenance in active use areas and management of shade seating areas throughout the property
- No programming

Staffing needs are anticipated to change as shown in the table in Figure 57.

Future maintenance staffing costs are likely to increase to a future estimate of **\$120,427.64** based on 2024 salaries.

Personnel / Staff Position	Hourly Rate	Annual Salary	Current Approximate Time Allocation to Lake Arbor	Current Approximate Staff Cost for Lake Arbor
Park and facilities Maintenance Leader	\$41.48	\$86,278	23%	\$19,843.94
Principle Park Facilities Maintenance Worker - CDL	\$36.88	\$76,710	23%	\$17,643.39
Senior Parks/Facilities Maintenance Worker I	\$33.33	\$69,326	23%	\$15,945.07
Senior Parks/Facilities Maintenance Worker I	\$33.33	\$69,326	23%	\$15,945.07
Seasonal Intermittent Worker	\$17.25	\$35,880	23%	\$8,252.40
Seasonal Intermittent Worker	\$17.25	\$35,880	23%	\$8,252.40
Total Current Salaries				\$85,882.28

FIGURE 56 Current staffing expenses for the Lake Arbor site.

Personnel / Staff Position	Hourly Rate	Annual Salary	Current Approximate Time Allocation to Lake Arbor	Current Approximate Staff Cost for Lake Arbor	Future Time Allocation to Lake Arbor	Future Approximate Staff Cost for Lake Arbor (based on 2024 Salary numbers)
Park and facilities Maintenance Leader	\$41.48	\$86,278	23%	\$19,843.94	50%	\$43,139.00
Principle Park Facilities Maintenance Worker - CDL	\$36.88	\$76,710	23%	\$17,643.39	30%	\$23,013.12
Senior Parks/Facilities Maintenance Worker I	\$33.33	\$69,326	23%	\$15,945.07	55%	\$38,129.52
Senior Parks/Facilities Maintenance Worker I	\$33.33	\$69,326	23%	\$15,945.07	0%	\$0.00
Seasonal Intermittent Worker	\$17.25	\$35,880	23%	\$8,252.40	30%	\$10,764.00
Seasonal Intermittent Worker	\$17.25	\$35,880	23%	\$8,252.40	15%	\$5,382.00
Total Current Salaries				\$85,882.28	Approx Total Future Salaries	\$120,427.64

FIGURE 57 Approximate future staffing expenses for the new park at Lake Arbor.

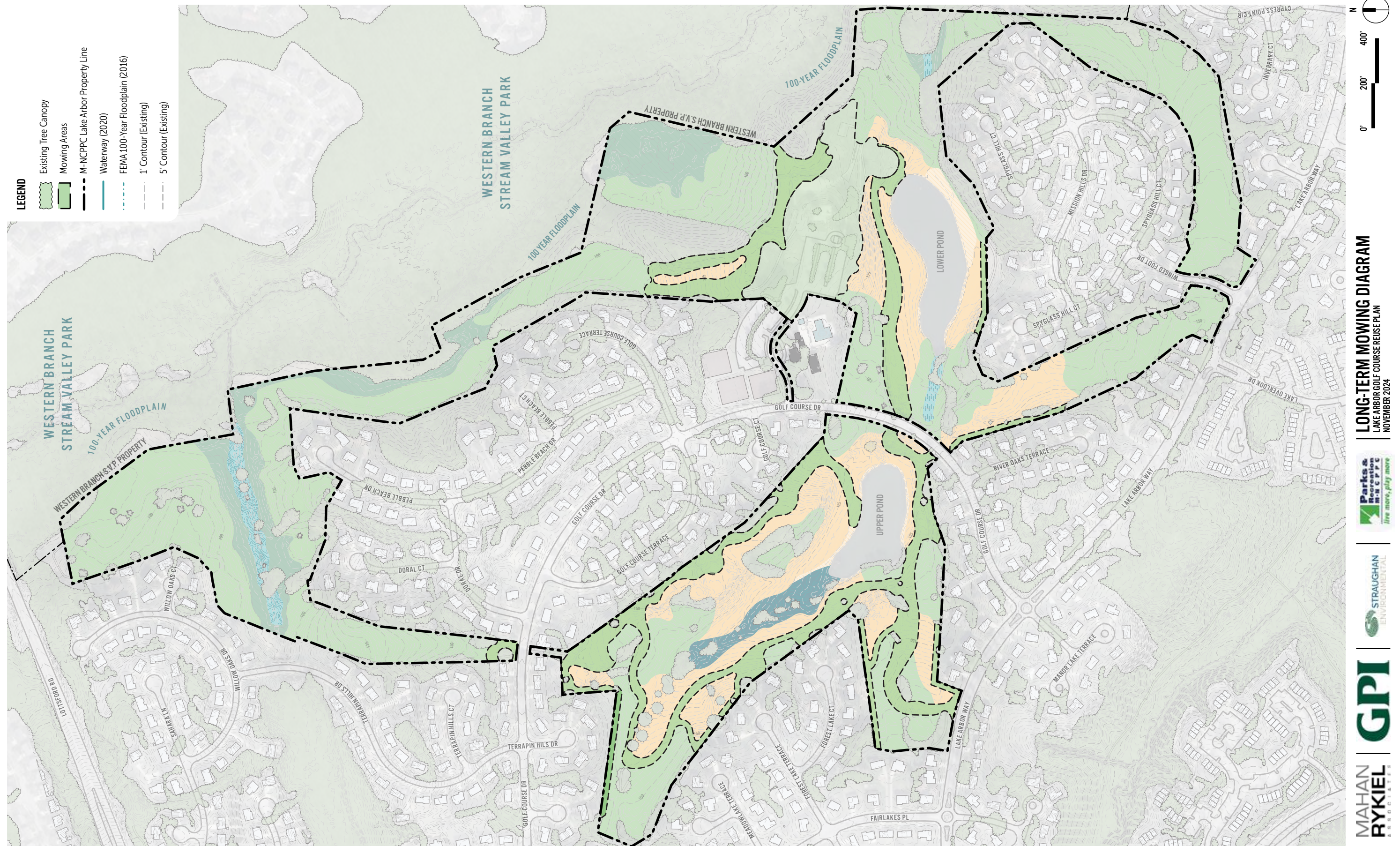


FIGURE 58 Mowing Diagram for the Lake Arbor Site.

MAINTENANCE EXPENSES

CURRENT MAINTENANCE COSTS

Current annual maintenance costs for the new park at Lake Arbor shared by M-NCPPC are covered by an annual mowing contract with a private contractor for **\$96,950.00**.

Additional annual maintenance costs are included in the staff salaries shown above as estimated to be **\$85,882.28**. This results in a total annual current cost of operations for the Lake Arbor property as it exists of **\$182,832.28**

MAINTENANCE FUNCTIONS AND TIME ALLOCATIONS

Future maintenance and associated maintenance staffing based on the proposed increases in reforestation areas, upland and lowland meadow creation, floodplain reforestation, wetlands creation, stream restoration and pond edge plantings will result in a significant reduction in regular mowing and active land management once the plan is fully implemented. Figure 58 depicts all areas of the site that will require typical lawn maintenance and mowing regimes.

The reduction in active management in many areas will result in the general maintenance costs shown in the table in Figure 60. The table includes both future maintenance and staff costs related to the open spaces in the new park. *These are exclusive of the Active-Use Recreation Area costs.*

The management of the open space areas, including trails, is anticipated to require personnel expenses of **\$73,105** and non- personnel costs of **\$25,587**. This results in an annual cost for the maintenance of the non- Active-Use Recreation Area of an estimated **\$98,692**. M-NCPPC has meadow maintenance guidelines in place and these should be adhered to. Please refer to appendix D for M-NCPPC meadow maintenance guidelines. *This does not include capital expenses for implementation.*

Time Allocations

To be clear, personnel costs related to the land and habitat management of the park are estimated to be: **\$73,105**. However, there are additional non- land management maintenance needs associated with the Active-Use Recreation Area. This area and the Disc Golf course will require more frequent monitoring and management for safety, vandalism, litter control, playground maintenance, plowing, etc. Managing this portion of the park represents the additional staffing costs of **\$47,971.64** shown above in the staffing section.

The Land Management time allocations and the Active-Use Recreation Area time allocations represent an expected total personnel cost of **\$121,076.64** as shown in the pro forma below.

REVENUE

Revenue is currently expected to be from the rental of garden plots to the community. At full build out of the park there will be 30 - 20X 20 community garden plots that if fully subscribed at the current rate of \$55 each will generate **\$1,650** annually.

Community garden revenues are the only expected income generation for the park at this time.

PRO FORMA

The Pro Forma in the table in Figure 59 includes current costs associated with the park as it is being managed by M-NCPPC. The estimates for Years 1-5 are based on 2024 salaries and costs shared by M-NCPPC and are built to show estimated future costs when the park is built out according to the master plan. *This pro forma does not include capital costs associated with the implementation of this plan.*

Pro Forma	Current	Year 1	Year 2	Year 3	Year 4	Year 5
Expenses						
Labor	\$85,882.28	\$121,076.64	\$124,708.94	\$128,450.21	\$132,303.71	\$136,272.83
Maintenance & Miscellaneous	\$96,950.00	\$25,587.00	\$26,354.61	\$27,145.25	\$27,959.61	\$28,798.39
Active-Use Recreation Area Repair Allowance		\$6,000.00	\$6,180.00	\$6,365.40	\$6,556.36	\$6,753.05
Sub-Total	\$182,832.28	\$152,663.64	\$157,243.55	\$161,960.86	\$166,819.68	\$171,824.27
Income						
Garden Plot Rentals		\$1,650.00	\$1,699.50	\$1,750.49	\$1,803.00	\$1,857.09

**Based on 2024 Salaries and Costs*

FIGURE 59 Financial Pro Forma

Task	Unit	Frequency	Time of Year	Standard Hours per unit	Mowed Lawn Areas	Meadows	Trails	TOTAL CREW LABOR HOURS
General Park - Turf - Level 1								
TOTAL INVENTORY ACRES					15.50			
Goal: Provide a quality park look that is green, safe and enticing to use								
Mow/Trim 30 per year	per acre	1x/7 days	Growing Season	0.25	116.25			116.25
Aeration	per acre	Annual	Fall	0.17	2.64			2.64
Overseed	per acre	Annual	Fall	0.17	2.64			2.64
Fertilize	per acre	3X/year	Growing Season	0.17	7.91			7.91
Apply weed control	per acre	2x/year	Spring Summer	0.17	5.27			5.27
Pick up trash prior to mowing	per acre	1x/7 days	Growing Season	0.50	232.50			232.50
Manage leaves	per acre	2x/year and as needed	Fall	0.50	15.50			15.50
Line Trim	per linear foot	1x/7 days	Growing Season	0.50	15.27			15.27
Edge	per linear foot	1x/year	Growing Season	1.00	13.86			13.86
TOTAL STAFF-HOURS					411.83			411.83
General Park - Turf - Level 2								
TOTAL INVENTORY ACRES						17.30		
Goal: Provide a quality park look that is green, safe and enticing to use								
Mow/Trim 6 per year	per acre	1x/30 days	Growing Season	0.25		64.88		64.88
Pick up trash prior to mowing	per acre	1x/14 days	Growing Season	0.50		67.00		67.00
Manage leaves	per acre	2x/year and as needed	Fall	0.50		17.30		17.30
TOTAL STAFF-HOURS					0.00	149.18	0.00	149.18
Trail								
TOTAL INVENTORY (in linear feet)							23152	
Trim/Prune	per 1000 feet	2x/year or as needed	Spring, Fall	0.25			11.58	11.58
Mow trail shoulder	per 1000 feet	Bi-weekly	March-October	0.50			173.64	173.64
Surface Repair	per 1000 feet	As needed	Year-round	1.00				0.00
Inspection	per 1000 feet	Bi-weekly	Year-round	0.25			150.49	150.49
Spray weed control	per 1000 feet	2x/year or as needed	Spring/Summer	0.25			11.58	11.58
Clean/Blow Paved Trails	per 1000 feet	Weekly	Year Round	0.25			300.98	300.98
TOTAL STAFF-HOURS					0.00	0.00	648.26	648.26

CORE FUNCTION	Mowed Lawn Areas LABOR HOURS	Meadows LABOR HOURS	Trails LABOR HOURS	TOTAL LABOR HOURS
TURF	411.83	149.18	0.00	411.83
TRAILS	0.00	0.00	648.26	648.26
SUB-TOTAL	411.83	149.18	648.26	1060.08
25% REACTIVE WORK ALLOWANCE	102.96	37.29	324.13	427.08
25% NON-PRODUCTIVE WORK ALLOWANCE	128.70	46.62	243.10	371.79
GRAND TOTAL	643.48	233.09	1215.48	1858.96
FULL-TIME EQUIVALENT	0.36	0.13	0.68	1.04

EXPENDITURE	COST
Personnel	\$73,105
Non-Personnel	\$25,587
TOTAL COSTS	\$98,692

FIGURE 60 Maintenance Functions and Time Allocations.



View looking west of the upper tributary to the Western Branch of the Patuxent with neighboring properties beyond

PHASING AND IMPLEMENTATION CONSIDERATIONS

MASTER PLAN IMPLEMENTATION

The Master Plan for Lake Arbor Golf Course reuse is designed to be a flexible blueprint for ecological uplift and physical improvements for new recreational amenities over time, phasing them in as funding becomes available. It is important to remember that this document creates a coherent framework that guides and facilitates decision-making for operational and physical improvements for years to come.

Prioritizing and phasing the design and construction of the Master Plan elements are the natural next steps for implementation (again, as funding becomes available). As with any physical development, certain elements would need to be constructed in sequence, while others exhibit greater flexibility in terms of their phasing. Likewise, phases can be expanded as the necessary funds become available. Thus, implementation of the Plan is flexible and adaptable by design and its strategies anticipate growth and locate space for future programs and operations. Implementation and prioritization of the various elements in the plan must be driven by M-NCPPC's overall park wide strategic objectives and financial plan.

Phasing recommendations (refer to Figure 61) provide a recommended framework as to how the overall Master Plan can be phased/implemented from a project perspective—areas may be identified as 'one project', however, there could be several smaller projects that comprise an individual phase or project. Over time, M-NCPPC may decide, due to circumstances unanticipated at this time, that implementation and/or priority areas need to be reevaluated—whether expanded or contracted. Many of the recommendations can be phased over-time or initiated as stand-alone projects. The order for which they may be implemented, for the most part, is flexible

and able to respond to opportunities as they evolve over the years (for instance, related to funding, changes to the strategic plan, etc.). In other instances, stages will need to lead up to a particular phase. Thus, while the Plan provides the physical framework and a recommended phasing schedule, M-NCPPC will need to determine the best way to fill in the details of implementation as funding and priorities evolve.

Measures should be taken by M-NCPPC and future design teams prior to implementation and construction of any part of this Master Plan, to inform the neighboring communities of any upcoming activities. This will be especially important in areas directly adjacent to properties.

PHASING STRATEGIES AND PRIORITIES

SAFETY AND INFRASTRUCTURES REPAIRS (IMMEDIATE ACTION)

Immediate safety related items and those amenities that can be accomplished quickly and relatively easily will be part of the first phase. Safety concerns to be addressed include the improvements related to the failing infrastructure related to the two existing ponds and ensuring the existing failing golf cart bridges are removed and the second planned stream crossing for the trail network is installed.

Because of the needed construction around the ponds (refer to the Infrastructure Recommendations section of this report and the synopsis by W.F. Wilson & Sons, Inc. in Appendix D), both the wetland creation/enhancement and planting of the meadows and forest near the ponds will need to wait until after this work has been completed and may be incorporated in the design and construction plans for the pond infrastructure work.

SHORT-TERM MOWING REDUCTION (IMMEDIATE ACTION)

A major priority of the Master Plan is to immediately reduce the amount of mown turf grass on the former golf course - both for ecological and financial reasons. Implementation of meadow and reforested areas may take longer due to funding strategies, however reduction of mowing can begin immediately without requiring any resources. Refer to Figure 62 for a suggested map that identifies those areas to be mown on a regular basis vs. those that are left to go unmown. In general, mown areas are located immediately adjacent to the existing cart pathways or lakes. Areas designated to be unmown regularly should be mown once a year, at a minimum, to prevent invasive species, weeds or woody materials from establishing.

REFORESTATION/MEADOW CREATION

Areas designated for reforestation (**54.8 acres**) and meadow (**17.3 acres**) creation area can be implemented over a period of phases or at one major planting as funding becomes available. However, priority should be given to planting areas located within ecologically sensitive areas, such as adjacent to the Western Branch stream valley, stream corridors or adjacent to the two lakes. In addition to the ecological benefits, the planting areas will reduce the amount of mowing that is necessary.

TRAIL NETWORK

A comprehensive trail network is planned which utilizes portions of the existing golf cart pathways and new ones. The proposed trail development should be implemented early on as this is a highly desired recreational element that is currently enjoyed. As with the reforestation/meadow creation elements, the trail network can either be implemented over a period of phases

or at one major project as funding becomes available. As part of the new trails, most of the existing trails would need to be removed and their resulting voids replenished with topsoil. If the trail network were to be phased in over time due to funding limitations, a more detailed trail redevelopment phasing plan would need to be developed to logically deconstruct and construct the pathway so that some sort of a coherent and contiguous trail network exists throughout the plan's implementation period to the extent possible.

ACTIVE RECREATION AREA

The maintenance facility, spine road and parking needs should be addressed early on and either be developed before elements of the Active-Use Recreation Area are constructed or linked to a smaller phase or segment of the area - such as the adventure playground. The Active-Use Recreation Area may be implemented as funding allows with consideration of what supporting elements and maintenance needs will be required. For example, the community gardens will require a source of water. The phasing and implementation of the various elements of this plan needs to thoughtfully consider how the construction of each may impact the other.

PRIORITY LIST

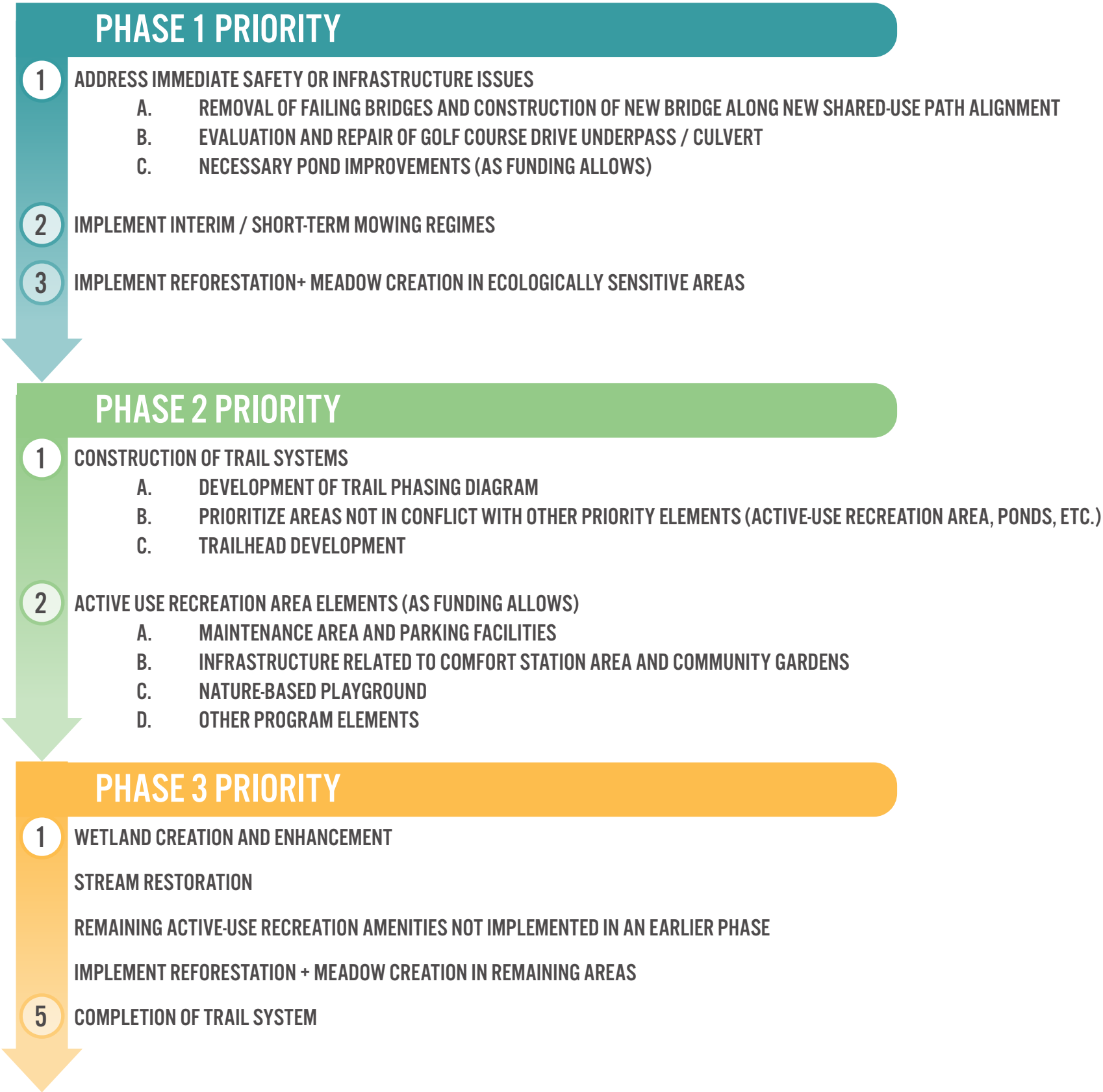


FIGURE 61 Suggested phasing priority chart (subject to changing priorities and funding)

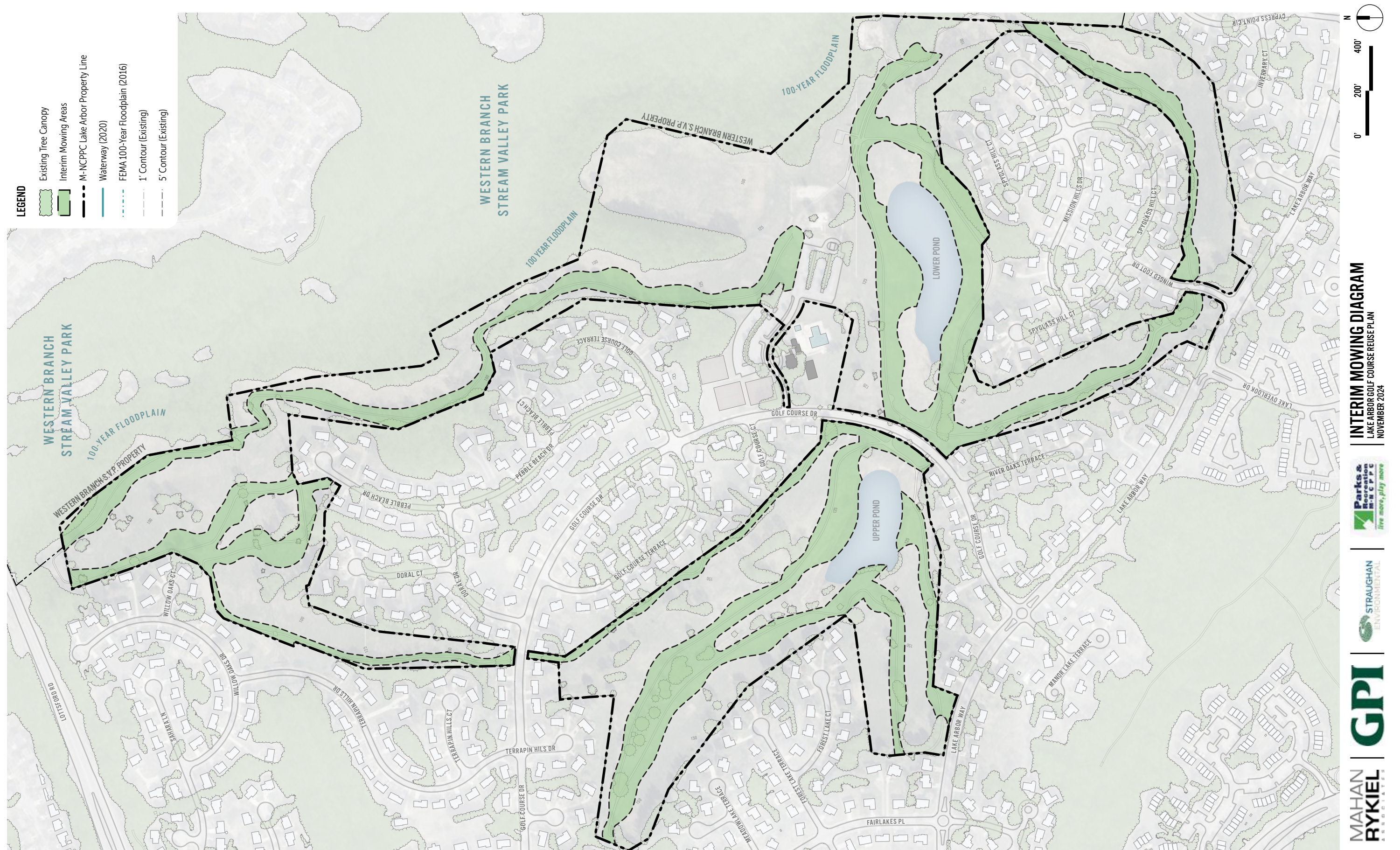


FIGURE 62 Interim Mowing Diagram for the Lake Arbor Site.



View looking south over the lower pond

CONCLUSION

This document, based on a comprehensive community participation process, creates a coherent framework that will guide and facilitate decision making for the physical improvement of the park over time. This master plan report provides a vision and strategy for the future ecological restoration and recreational utilization of the park reflecting a phased approach. A phased approach will break down the magnitude of the costs into smaller, more manageable increments over time.

This document envisions that the park will be realized in such a manner, with park implementation phasing to be coordinated with obtaining grant awards and annual capital budget allotments. Next steps for implementation will therefore include prioritizing and phasing the design and construction of the park. As with all physical development, certain elements will need to be constructed in sequence, while other elements exhibit greater flexibility in terms of their phasing. Likewise, phases could be expanded as the necessary funds become available. To implement the various programs and site-specific improvements, detailed plans (design, engineering, permitting, etc.) will need to be developed under the framework established here. This strategic phasing and planning will enable the M-NCPPC to develop the new park at Lake Arbor over multiple years.

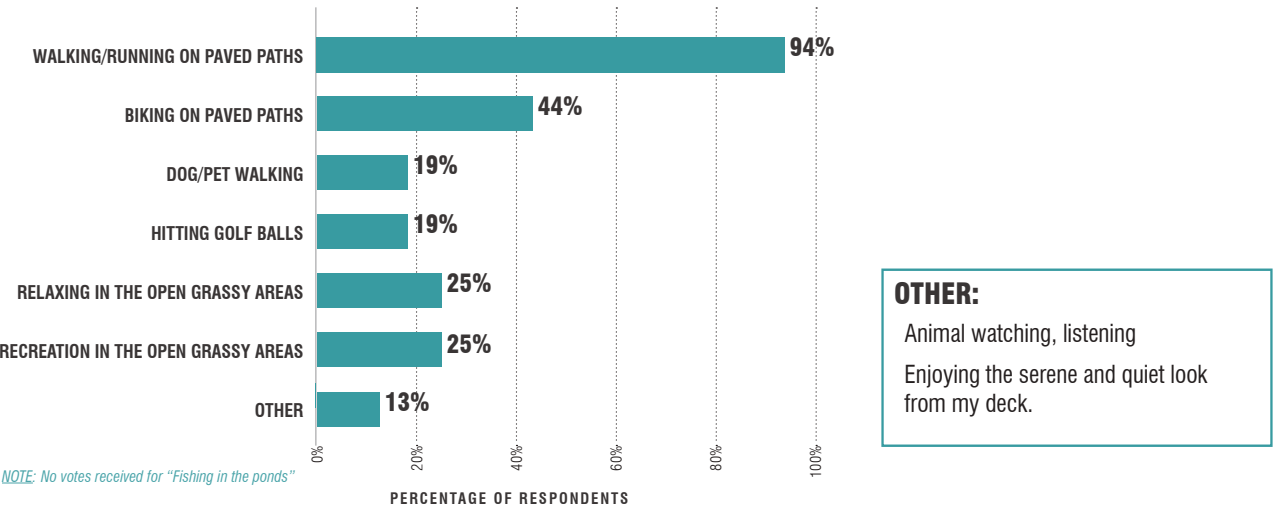
Looking forward based on this pragmatic vision, M-NCPPC clearly recognizes the importance of enhancing and protecting the ecology of the new park at Lake Arbor, enhancing accessibility, creating and maintaining new recreational amenities, and providing a high level of maintenance for the park's users, thus ensuring the park will be both sustainable as well as be effectively utilized as both a passive and active recreational resource for the public.

APPENDIX A:

SURVEY RESULTS + COMMUNITY MEETING FEEDBACK

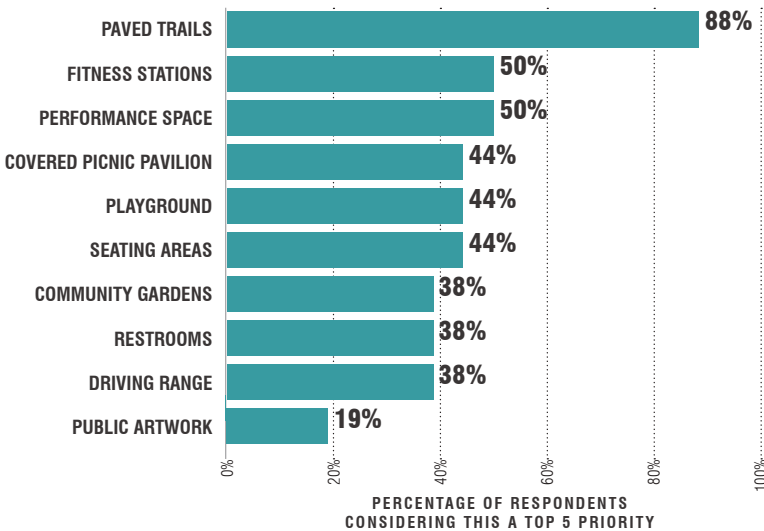
CURRENT USE

How are you currently using the Lake Arbor Park Property?



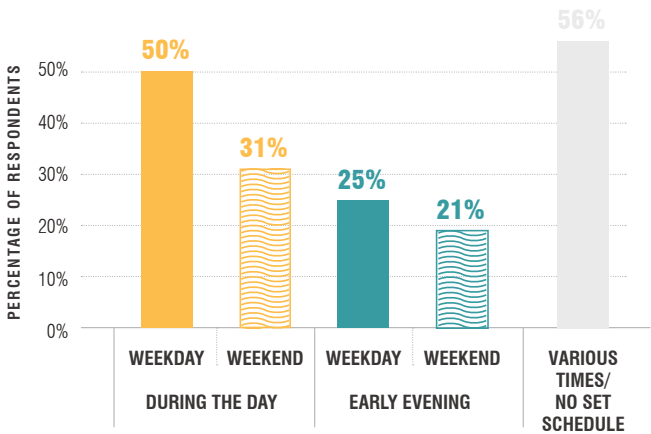
ACTIVITIES/AMENITIES, PREFERENCES

Please rank your preference, with 1 being your top choice, and 5 being you bottom choice, for the following activities and amenities at the new park at Lake Arbor. - TOP 10 RESPONSES GIVEN



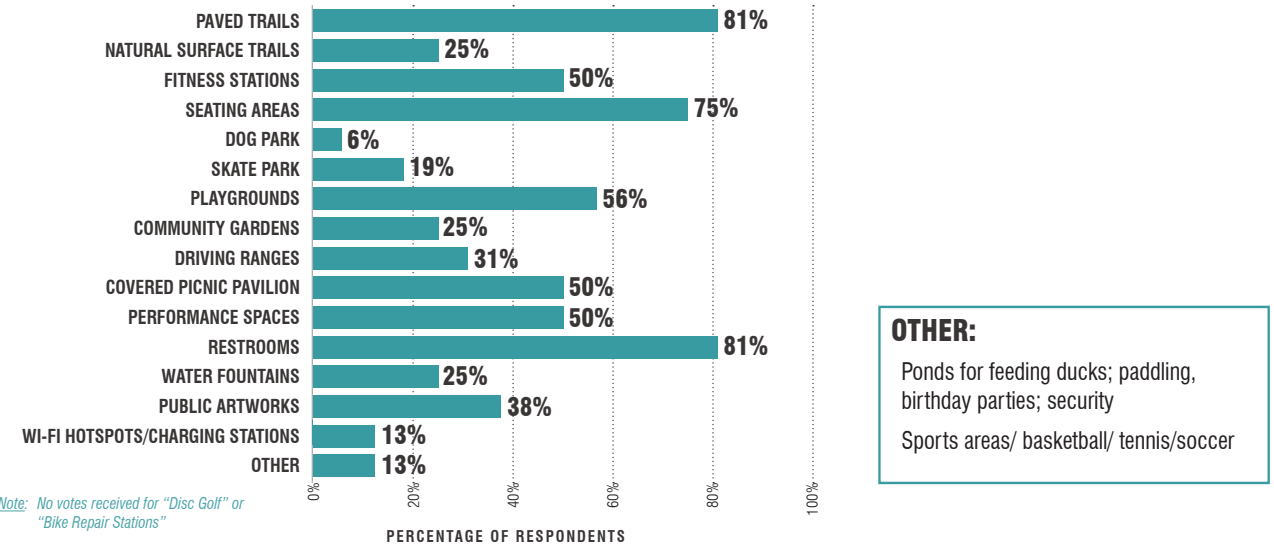
TIMES OF USE

What days of the week / time of day do you anticipate using the new Lake Arbor Park?



ACTIVITIES/AMENITIES

What activities / amenities do you and your family enjoy when you visit other parks?



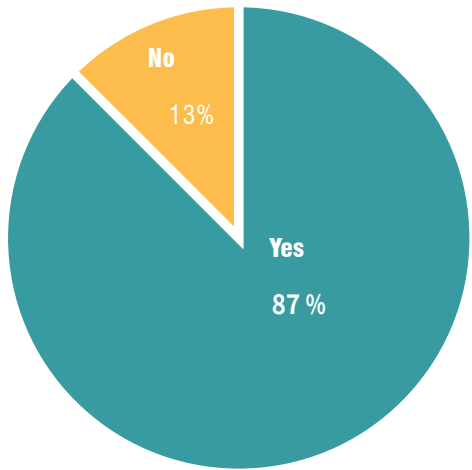
NATURAL AREA USAGE

Within natural areas (e.g., reforested areas, meadows, etc.), please rank your preference (with 1 being your top choice, and 4 being your bottom choice) for the following amenities and activities.

- 1 Walking / Hiking on natural surface trails & people's choice pathways
- 2 Spending time in nature / Immersion in nature
- 3 Bird and wildlife watching
- 4 Fishing

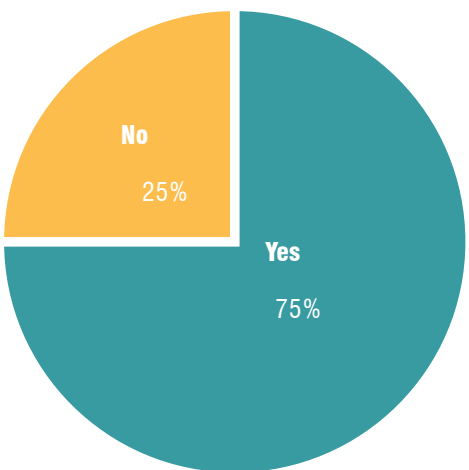
NATURALIZED AREA

Do you support M-NCPPC’s plans to convert former golf course open spaces to naturalized forest and meadow habitats?



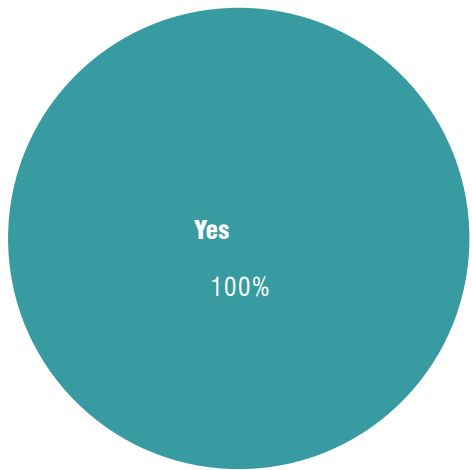
SUPPORT FOR SOLAR

Do you support locating a solar array/farm on an appropriate portion of the property?



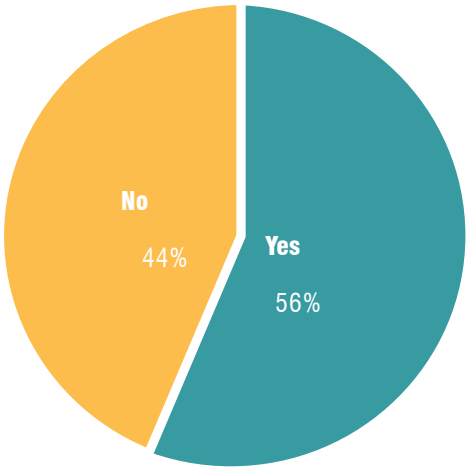
SUPPORT FOR ALL-ABILITIES AMENITIES

In addition to providing ADA compliant facilities, do you see a need for adaptive equipment for individuals with disabilities (e.g., playground equipment and fitness stations)?



CULTURAL PROGRAMMING PARTICIPATION

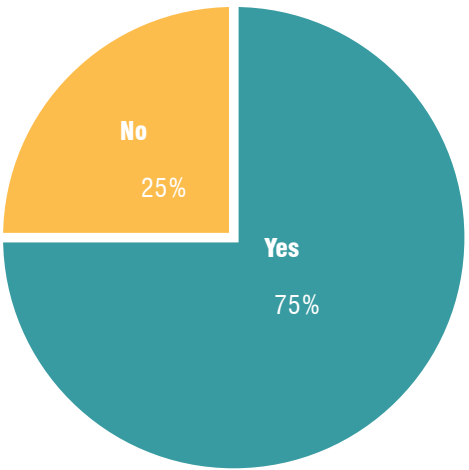
Do you participate in any cultural programs (e.g., performances, social clubs, games, etc.) that could benefit from a dedicated space in the park?



- If yes, please elaborate on the space you’d like to see:
- PERFORMANCES
 - ANYTHING TO PROMOTE SOCIAL INTERACTIONS; I.E. DANCE, YOGA, EXERCISE
 - I WOULD LIKE A ROOM OR CLUB HOUSE FACILITY THAT IS NOT AS EXPENSIVE AS THE LAKE ARBOR ROOM.
 - STAGE AREA
 - AMPHITHEATER WOULD BE NICE
 - PERFORMANCE SPACE
 - PAVILION
 - A COVERED STAGE
 - A COVERED STAGE

NEED FOR CULTURAL PROGRAMMING

Is there anyone in your community that could benefit from having culturally appropriate programs in the park?



COMMUNITY ENGAGEMENT ACTIVITY

This program is brought to you by
Parks & Recreation
M-N C P P C
live more, play more
pgparks.com

DESIGN SLIDERS

WHERE DO YOU LAND?

The image sets below represent different natural elements and a spectrum of alternate design approaches. Place one (1) sticker along each line to indicate your preferences. Dots closest to the top or bottom represent a strong pull toward one type of experience over the other, while a dot somewhere near the middle represents desire for more of a balance.

Paths + Trails

open pathway

rustic trail

(Re)Forested Areas

sporadic trees

lush forest

Meadows/Lawns

open & flexible

naturalistic

Wetlands

cultivated

natural

Pond Access

full access

no access

Place one (1) sticker along each line to indicate your preferences.

COMMUNITY ENGAGEMENT ACTIVITY

This program is brought to you by

Parks & Recreation
M-N C P P C

live more, play more
pgparks.com

ENJOYING THE NEW PARK AT LAKE ARBOR

WHAT SORT OF ACTIVITIES OR AMENITIES WOULD YOU LOVE TO ENJOY AT THE NEW PARK AT LAKE ARBOR?

Place up to 3 sticker dots in the boxes next to the activity or amenity you hope to enjoy at the new park at Lake Arbor.

	picnic pavilions 2 dots		nature-based play 10 dots		dog park 8 dots
	seating areas 12 dots		disc golf 10 dots		trails 15 dots
	community garden 15 dots		pickleball 2 dots		fishing access 8 dots
	public art 6 dots		fitness trails 15 dots		access to natural areas 8 dots

APPENDIX B:

HABITAT RESTORATION STORYBOARDS

FLOODPLAIN REFORESTATION

Forested floodplains provide a multitude of benefits to the landscape, including reduced erosion, resiliency against flooding, and improved water quality. Forested floodplains result in healthier streams.

EXAMPLE PLANTINGS

American sycamore <i>Platanus occidentalis</i>	Large shade tree, often chosen in urban areas for its eye-catching bark and air-purifying abilities.
Willow oak <i>Quercus phellos</i>	Large, fast-growing trees whose acorns provide food for a variety of bird species.
Red Maple <i>Acer rubrum</i>	Hardy tree that is resistant to deer-browsing. Provides nesting habitat for a number of bird species and sports bright red foliage in the fall.
River birch <i>Betula nigra</i>	Fast-growing shade tree, helps lend color to winter landscapes with its unique and attractive bark.
Sweetbay magnolia <i>Magnolia virginiana</i>	Small, evergreen trees that provide food and nesting material for songbirds. Grows fragrant, white flowers that bloom throughout the summer.
Winterberry holly <i>Ilex verticillata</i>	Small tree or shrub with brightly colored berries that last through the winter. Provides food for birds.
Spicebush <i>Lindera benzoin</i>	Medium sized shrub that blooms yellow flowers and red berries. Acts as an early source of nectar for butterflies and hosts the Spicebush Swallowtail butterfly.
Little bluestem <i>Schizachyrium scoparium</i>	Ornamental native grass with blue-green leaf color. Host to several butterfly species.
Sedge <i>Carex spp.</i>	Genus that includes native sedges that help prevent erosion



American sycamore



Willow oak



Red maple



River birch



Sweetbay magnolia



Winterberry holly



Spicebush



Little bluestem



Sedge

UPLAND REFORESTATION

Forests provide many benefits to the communities around them. They clean the air, provide shade, reduce the spread of invasive species, and have been demonstrated to improve physical and mental well-being.

EXAMPLE PLANTINGS

Southern red oak <i>Quercus falcata</i>	Large, fast-growing trees that stabilize the landscape and provide canopy cover. Hardy against drought conditions.
Tulip poplar <i>Liriodendron tulipifera</i>	Large, fast-growing trees that thrive in bright sunlight and provide cover for understory trees. Blooms bright yellow flowers in the spring and hosts the Tiger Swallowtail butterfly.
White oak <i>Quercus alba</i>	The Maryland State Tree. Large shade trees that drop acorns that feed wildlife.
Mockernut hickory <i>Carya tomentosa</i>	Medium sized tree that provides shade and food for birds and squirrels.
Flowering dogwood <i>Cornus florida</i>	Small understory tree with bright red berries in the late summer and early fall and attractive flowers that bloom in the spring.
Arrowwood viburnum <i>Viburnum dentatum</i>	Attractive shrub with white flowers, blue berries, and dense foliage. Commonly chosen for landscaping.
Carolina allspice <i>Calycanthus floridus</i>	Shrub with attractive maroon flowers with a pleasant, spicy, scent.
Lowbush blueberry <i>Vaccinium angustifolium</i>	Low-growing shrub with attractive growing patten and edible berries.
Witch-hazel <i>Hamamelis virginiana</i>	Large shrub or tree with unique, bright yellow flowers that bloom in the autumn.



Southern red oak



Tulip poplar



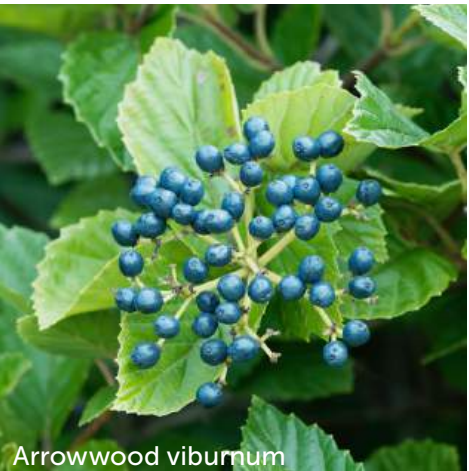
White oak



Pignut hickory



Flowering dogwood



Arrowwood viburnum



Carolina allspice



Lowbush blueberry



Witch-hazel

UPLAND AND LOWLAND MEADOW

Native meadows provide an array of benefits to the local ecosystem, including supporting local songbird populations and hosting many species of butterfly. Meadows also have a robust root system, which improves groundwater filtration and improves soil quality. While meadows are dominated by grasses, they also include wildflowers that improve the aesthetic of the landscape while reducing maintenance costs.

EXAMPLE PLANTINGS

Blackeyed susan <i>Rudbeckia hirta</i>	Official state flower of Maryland. Long-lasting blooms that provide color during late summer.
Cardinal flower <i>Lobelia cardinalis</i>	Bright red blossoms that are visually striking. Provide late summer bloom and height to borders. Attracts hummingbirds and butterflies.
Big bluestem <i>Andropogon gerardii</i>	Tall prairie grass that displays several color shades throughout the season. Provides erosion control and is deer resistant.
Switchgrass <i>Panicum virgatum</i>	Prairie grass that has small, teardrop-shaped flower seeds that appear in summer with purplish-reddish tips. Resistant to disease and ideal for areas prone to erosion.
Broomsedge <i>Andropogon virginicus</i>	Native grass that helps prevent erosion.
Joe-Pye weed <i>Eutrochium fistulosum</i>	Large perennial with strong root system that stabilizes the soil. Provides food for an array of butterflies.
Butterfly milkweed <i>Asclepias tuberosa</i>	Perennial with attractive orange blooms. Provides food for hummingbirds and butterflies, including the Monarch butterfly.
Tall goldenrod <i>Solidago altissima</i>	Large perennial with bright yellow flowering stems.
Indian grass <i>Sorghastrum nutans</i>	Native, drought-tolerant grass often used in landscaping.



Blackeyed susan



Cardinal flower



Big bluestem



Switchgrass



Broomsedge



Joe-Pye weed



Butterfly milkweed



Tall goldenrod



Indian grass

WETLAND CREATION

Wetlands are highly productive ecosystems, which means they provide a host of benefits to the surrounding community:

- **Reduced risk of flooding** – Wetlands naturally collect floodwater and slowly release it, which helps prevent flooding in upland areas.
- **Improved water quality** – Surface water runoff is filtered through wetlands, which uptake pollutants, sediment, and other contaminants. This leads to cleaner groundwater and surface water.
- **Erosion control** – Wetlands mitigate flash flooding and stabilize the soil with healthy root systems. Vegetation cover prevents soil from being washed away.
- **Aesthetics** – Wetlands provide habitat for a variety of unique plant species, many of which bloom throughout the spring and summer.

EXAMPLE PLANTINGS

Soft rush <i>Juncus effusus</i>	Small, clumping rush with deep root system that stabilizes the soil and purifies water.
Northern blue flag <i>Iris versicolor</i>	Native iris with showy purple flowers that bloom throughout the summer.
Smooth alder <i>Alnus serrulata</i>	Small nitrogen-fixing tree that excels at streambank stabilization.
Sweet pepperbush <i>Clethra alnifolia</i>	Flowering shrub that provides nectar to hummingbirds and butterflies.
Silky dogwood <i>Cornus amomum</i>	Large shrub with white flowers and blue berries that hosts the azure butterfly and provides food for a variety of bird species.
Sweetgum <i>Liquidambar styraciflua</i>	Fast growing tree that is tolerant of wet soil conditions. Popular for use in landscaping.
Swamp hibiscus <i>Hibiscus moscheutos</i>	Larger herbaceous plant. Blooms white and pink flowers that attract pollinators including bees, butterflies, and hummingbirds.
Tussock sedge <i>Carex stricta</i>	Water-loving sedge that acts as groundcover in wet areas.



Big Pipe Creek Wetland Restoration Project, 2022



Soft rush



Northern blue flag



Smooth alder



Sweet pepperbush



Silky dogwood



Sweetgum



Swamp hibiscus

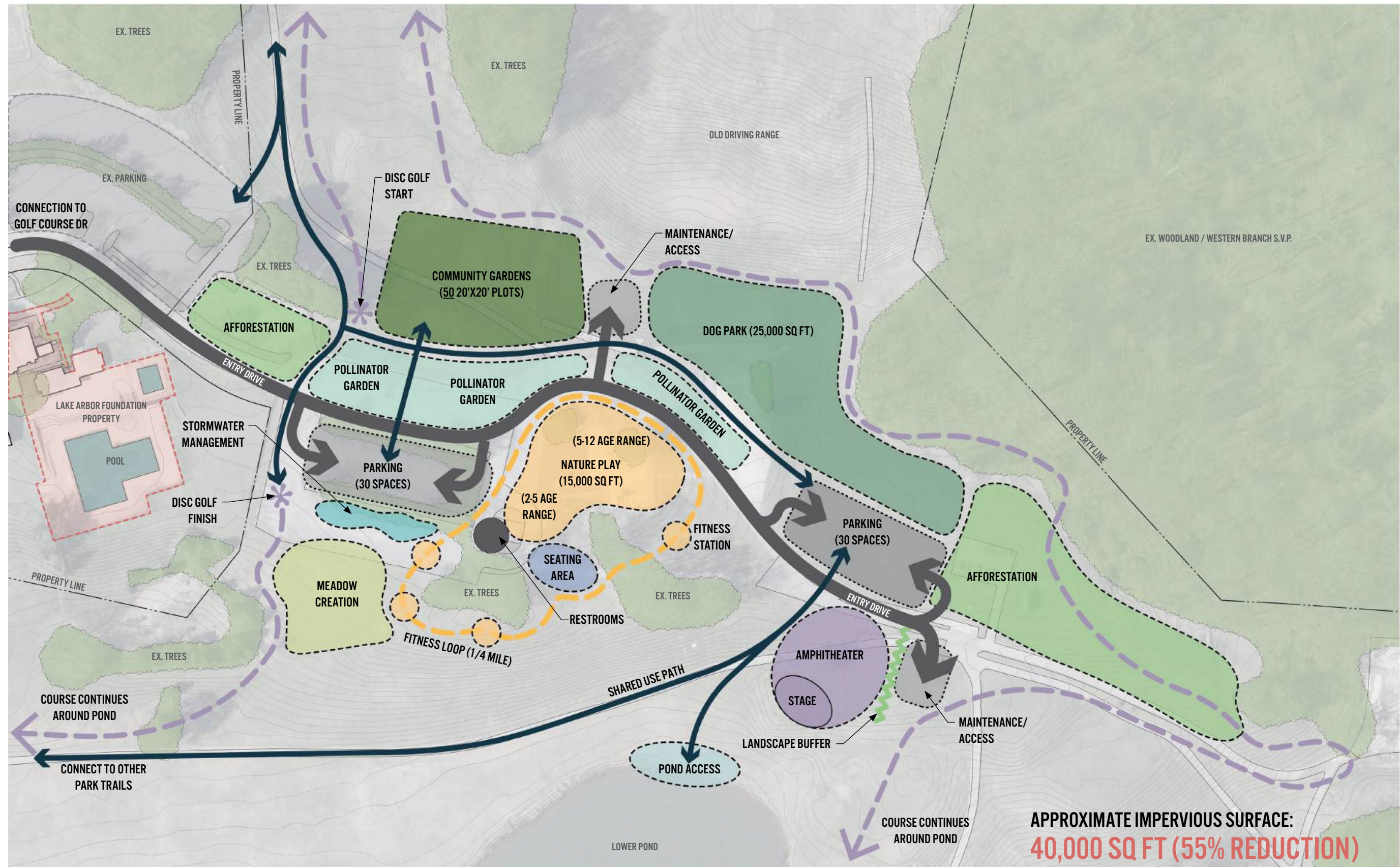


Tussock sedge

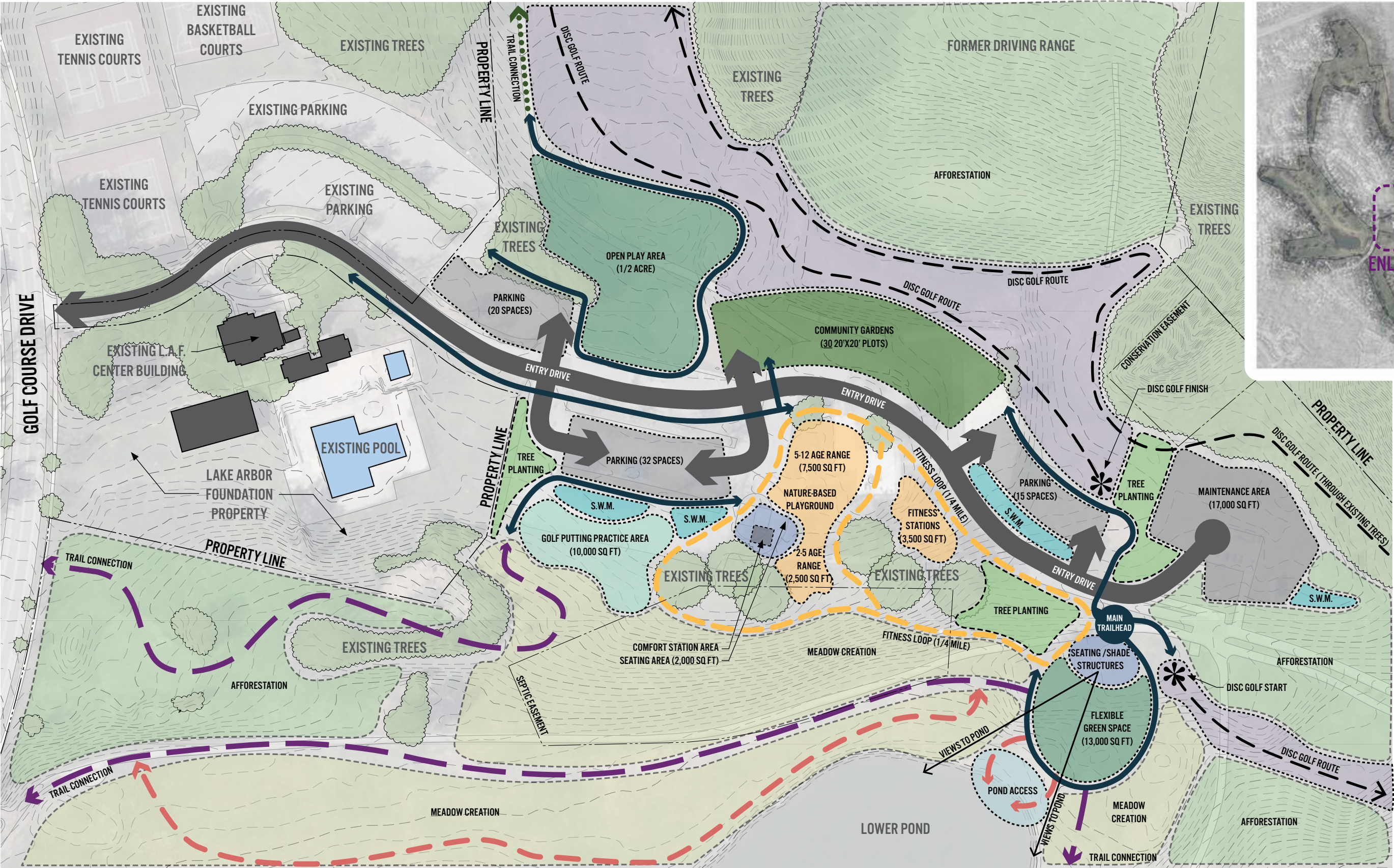
APPENDIX C:

CONCEPT PROCESS BUBBLE DIAGRAMS





PRELIMINARY CONCEPT BUBBLE DIAGRAM



KEY PLAN



LEGEND

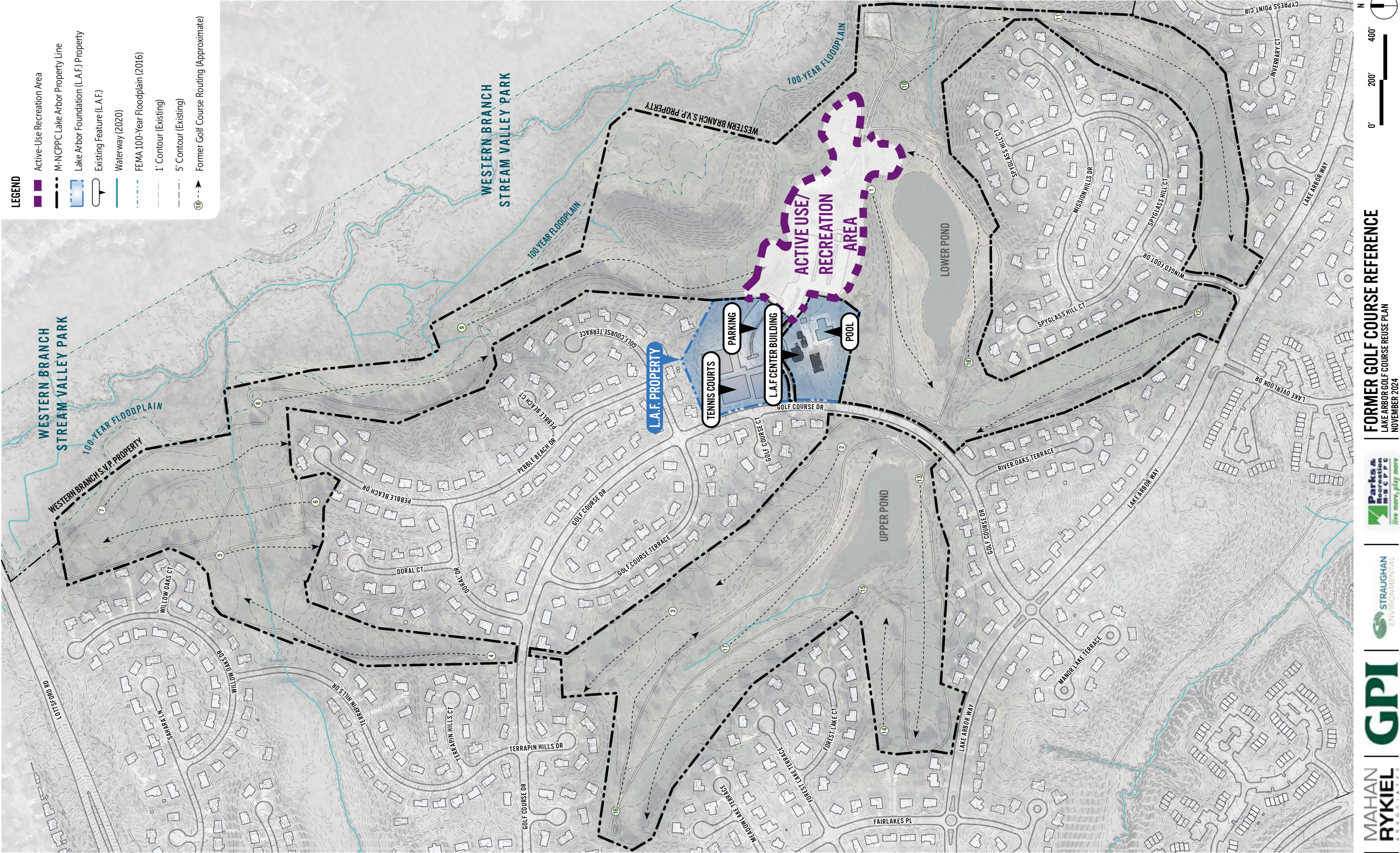
- DISC GOLF ROUTE
- VEHICULAR CIRCULATION
- ACTIVE AREA CIRCULATION
- SHARED-USE PATH
- NATURAL SURFACE TRAIL
- MOWED MEADOW PATH

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APPENDIX D:

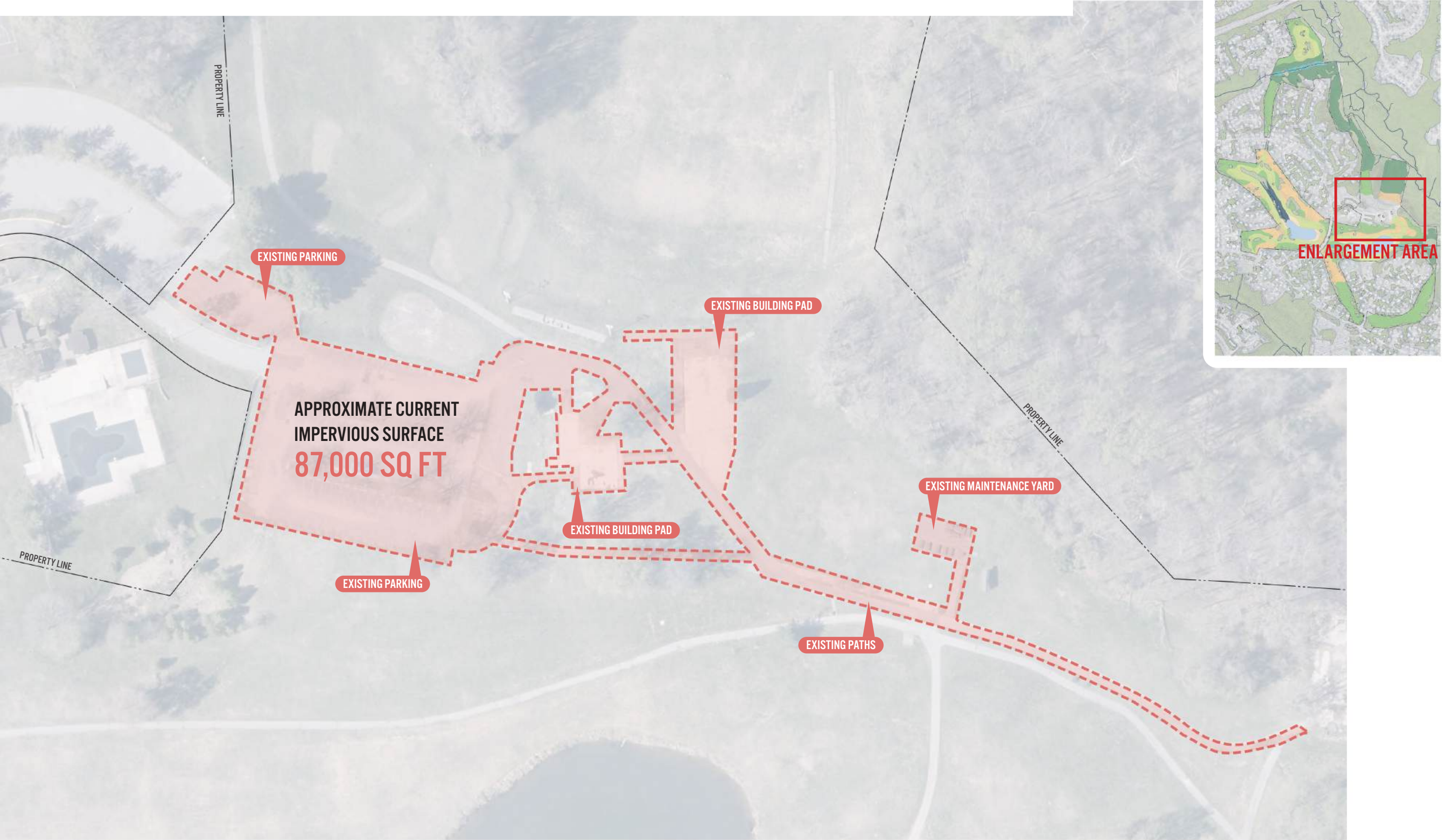
REFERENCE REPORTS + SUPPORTING DOCUMENTATION

APPROXIMATE FORMER GOLF COURSE HOLE LOCATIONS



EXISTING IMPERMEABLE SURFACE AREA DIAGRAM

KEY PLAN



Lake Arbor Park Pond

Storm Water Options

Presented by: W.F. Wilson & Sons, Inc.

Background

Lake Arbor Park Pond consists of 2 ponds connected via piping running underneath Golf Course Drive. Multiple sinkholes near the low side pond have appeared as a result of what is believed to be a failing corrugated metal pipe leading to the pond. The outfall location for this pipe into the low pond is not visible from the bank around the pond. It is believed to be buried under sediment or at a depth well below the surface of the pond. Flooding conditions at the cart tunnel under Golf Course Drive have developed due to the influx of water during heavy rain events as water cannot make it out fast enough. Below are possible options for resolving ongoing issues.

- Replace the failing 30” corrugated metal pipe from the inlet at Golf Course Drive to the pond. Relay at existing elevation or raise elevation.
The material from the sinkholes could potentially be blocking the water from escaping into the low pond resulting in flooding by golf course drive. Any blockage at the pond could be relieved during replacement.
- Clear debris from low pond outfall piping. During Humphrey & Sons investigation they found debris located in the outfall pipe leaving the low pond. This debris could potentially be affecting the outflow of water during heavy rain events.
- Install a new storm drain pipe from the upper pond thru the golf cart tunnel to the low pond. This would be at a higher elevation than current piping and may require substantial grade changes around the tunnel to capture the runoff from rain events. Existing piping that would no longer be used would need to be abandoned in place with flowable fill or removed. Coordination with DPIE and status of the tunnel would need to be addressed.
- Create a “natural” stream or swale connecting the 2 ponds utilizing the existing cart tunnel to carry the flow of water from pond to pond. This would also require substantial grade changes and coordination with DPIE for the cart tunnel.

We recommend not using any corrugated metal pipe for replacement. Concrete pipe or HDPE are the best options for this work.

Any work around these ponds will require a substantial amount of pumping water and or damning of the ponds to control the water.



MEADOW CONSERVATION PROGRAM



Meadows, and the many wildlife species that are dependent on them, are in severe decline throughout Maryland. Managing these critical habitats on parkland provides many benefits including improved ecological services such as carbon sequestration, increased wildlife habitat, beautiful aesthetics, support of local pollinator conservation efforts, reduced maintenance, and lower fuel emissions from mowing.

The Department manages over 28,000 acres of parkland in Prince George’s County. Some of these acres are fallow fields or grassy areas that are unnecessarily mowed on a routine basis. This presents a great opportunity to incorporate a meadow conservation program that will convert these sites into beneficial meadows. By doing so, we are able to increase meadow habitats in Prince George’s County while reducing the mowing frequency at certain park sites to as little as once a year. The meadow conservation program can be easily accomplished while continuing to maintain the highest standards for our parks.

Meadow Site Establishment Timeline

	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Year 1	Site Prep: Mow once → Spray every 6-8 weeks							Plant Seed				
Year 2	Monitor germination							Annual Mow				
Year 3+	Monitor							Annual Mow				

- Annual wildflowers will bloom in their first year of germination. Perennial wildflowers will bloom in their second year of germination
- Meadows should be cut annually at a minimum height of 10”
- Disc tilling may be required to remove tree saplings in Year 1
- A grass strip 6-10’ wide should be routinely maintained along walkways, roads, and buildings to serve as a buffer
- Educational signage should be installed at designated sites explaining our conservation efforts

The meadow conservation program will create a better park system for all to enjoy. It will require the support of park staff and the public to ensure success. If there are any questions or concerns, please contact the Park Ranger Office at 301-627-7755.



Step 2

Recommended Maintenance Guidelines and Service Levels



Depending on easement type, the following would be considered standard level of service for these areas:

- Sidewalk right-of-ways will be mowed every other mowing cycle or approximately once a month.



- Fence lines generally will not be trimmed.



Active Recreation – Service Level

- In season, these areas are mowed on a seven to ten-day work cycle, depending on weather.
- Permitted ballfields may be mowed more frequently depending on scheduled play.
- Golf courses are mowed daily, as needed.
- These areas generally include trim mowing.
 - ✓labor intensive
 - ✓increased pollutants
- Applications of fertilizers and pesticides are applied at selected sites.
- Leaves may be vacuumed or mowed/mulch during spring and fall seasons.
- Scheduled and frequent trash removal.

Easement Properties - Service Level (continued):

- No leaf removal maintenance will be performed in these areas.
- Access properties will be mowed twice a year, early spring and late fall, to a minimum height of 10” to keep wood plants from developing. This type of mowing will allow us to maintain viable access to interior park property and limit the negative impact on nesting wildlife.



Conservation Area – Service Level:

- Limited-mow schedule requiring a spring or fall cut at 10” height to prevent tree growth.
- Trash is picked up on an as-needed basis
- As an option, the Department may return the area to forest, either through tree plantings or natural succession.
- The inclusion of bird boxes and educational signage also may be added at select sites.



Forested, Undeveloped or Natural – Service Level:

- Generally, no mowing will occur within these sites.
- Some trimming of brush along designated walking trails during winter months.
- Trash is picked up on an as-needed basis



