NEIGHBORHOOD PARK ON CARPENTER FIRE STATION ROAD
MASTER PLAN REPORT

TOWN OF CARY

APPROVAL DATE
June 27, 2019
# Table of Contents

Acknowledgements ................................................................. 3  
Executive Summary .................................................................. 5  
Park Concept Plan ..................................................................... 6  
Project Process ......................................................................... 13  
Site Inventory ........................................................................... 14  
Site Analysis ............................................................................. 26  
Initial Park Concepts ............................................................... 28  
Cost Assessment ....................................................................... 33  
Appendix .................................................................................. 34  
    - Site Inventory and Analysis Maps  
    - Meetings & Public Comments
ACKNOWLEDGEMENTS

TOWN COUNCIL MEMBERS
Harold Weinbrecht, Mayor
Lori Bush, Mayor Pro Tem
Don Frantz
Ken George
Jennifer Robinson
Jack Smith
Ed Yerha

TOWN OF CARY CORE STAFF TEAM
Doug McRainey – Director, Parks, Recreation & Cultural Resources
Jerry Jensen, Director, Transportation & Facilities
Paul Kuhn – Facilities Design & Construction Manager
Amy Mackintosh – Landscape Architect- Project Manager
Denise Dickens – Public Art Manager
LeeAnn Plumer – Assistant Director, Parks, Recreation & Cultural Resources

TOWN OF CARY ADVISORY STAFF
Jarrod Buchanan
Dan Clinton
Hoyt Cole
William Davis
Billy Dexter
Neil Ghodke
Will Hartye
Dwayne Jones
Eric Kulz
Chris Little
Alex Lopez
Evan Staley
Sam Trogdon
CITIZEN RESOURCE TEAM

Mia Bashir
Charley Bell
Lakshmin Bulabai
Thomas Crotty
Liz Dolan
Silvano Ghirardi
Aaron Hipp
Rick Liebling
Joe Mancini
Elizabeth McCuistone
Trisha Natarajan
Layla Peykamian
Orly Reznik
Sandy Spier
Becky de Tenley
Jim Wallace

DESIGN CONSULTANT TEAM

Charles Bradley, PLA – Surface 678
Eric Davis, PLA – Surface 678
Kimberly Blacutt – Surface 678
Daniel Yaussy – Surface 678
Erik Beerbower – Public Artist
Mary Carter Taub – Public Artist
Ann Steedly – Planning Communities
Alyssa Randall – Planning Communities
Tyrus Clayton, PE – Draper Aden Associates
Kimberly Williams – CBRE Heery, Inc.
EXECUTIVE SUMMARY

Project Introduction:

This 20.8-acre park is located at the southwest corner of Carpenter Fire Station Road and Highcroft Drive in northwest Cary, adjacent to residential neighborhoods. It is designated as a Neighborhood Park in the Town’s Parks, Recreation and Cultural Resources Facilities Master Plan within the Cary Community Plan, intended to provide passive and active recreation facilities that serve the everyday needs of the surrounding neighborhoods while also contributing to the recreational resources of the town as a whole. Approximately 16.19 acres of the land was obtained by a dedication from the Cameron Pond Subdivision rezoning. The Town of Cary purchased an additional four residential parcels totaling 4.65 acres that front Carpenter Fire Station Road. The last of these parcels was purchased during the course of the master planning process as it became evident that its inclusion would greatly improve the park’s layout and circulation.

Overall park character:

The wooded site is relatively flat with very few buffer restrictions and mostly young woods. The site therefore offers opportunities for providing neighborhood scale athletic fields in addition to the typical neighborhood park facilities. The forest on the slopes at the southern edge of the park is more mature and diverse than elsewhere on the site and offers opportunities for enjoyment of nature as well as protection of water quality in Panther Creek. The adjacent neighborhoods are primarily single family residential, with a new townhouse development currently proposed on the eastern side of the site. Panther Creek crosses the southeast corner of the park and continues south of the park, with its namesake greenway slated to do the same.

Public Involvement:

The Park Master Planning process ran from Fall 2017 to Spring 2019. The planning process was comprehensive and inclusive, integrating wider town goals, including stormwater, technology, sustainability and tree cover, and addressing northwest community concerns such as desire for more recreation facilities in this part of Cary.

The public involvement process included:

- Two Public meetings – January 2018 (attended by over 150 citizens) & November 2018
- On-line questionnaires in January/February 2018 (approximately 269 respondents at public meeting or on-line)
- Three meetings with a Citizens Resource Team made up of 16 area residents
- Focus group meetings with teens from Green Hope High School
- Presentation to Carolina Preserve Homeowners’ Annual meeting – June 2018
- Review and comments from PRCR and Public Art Advisory Boards
Public Input:

Based on feedback provided by the Citizens Resource Team and the public, community members value family oriented and multi-generational facilities, including walking trails, children’s play areas, sports fields, picnic shelters and informal play lawns. There was strong emphasis on the importance of shade, preserving natural features on site, and providing quiet spaces in nature for solitude and reflection. There was also interest in activities for adults of all ages, including walking, dog play, fitness, and beautiful places to sit. Preference was expressed for using a contemporary style and for integrating art into park structures and furnishings, to express the vibrant character of the park and complement the strongly desired green matrix of woodland vegetation and shade.

Cameron Pond residents advocated for buffers between Highcroft Drive and activity centers within the park to shield existing homes facing the park from lights and noise.

The community also expressed a strong desire to complete the Panther Creek Greenway creating continuous link between NC 55 (YMCA) and Mills Park to the west.

Park Program and Unique Features:

The plan for this neighborhood park creates a vibrant and lively space within a wooded setting, offering varying levels of recreation and social interaction ranging from organized sporting events, to informal play, to quiet and reflective spaces. A wide wooded buffer of existing and planted trees along the borders of the park will provide an attractive environment for park visitors and help shield neighbors from lights and noisy activities. The forested slopes at the southern edge of the park offer opportunities for enjoyment of nature as well as protection of water quality in Panther Creek. The program was selected to provide play opportunities for everyone - families, teens, young adults and “the boomer generation”.

- 2 lighted youth ballfields
- Playground
- Reservable shelter, restroom and other shade structures
- Dog park
- Basketball/Futsal Court
- Activity nodes for teens
- Adult fitness hub
- Misting feature/sculpture as gateway to park’s center
- Paved loop trails and link to Panther Creek Greenway.
- Extension of Panther Creek Greenway to link to Cameron Pond subdivision.

(Plans for a townhouse development on the property east of the park are
Currently in review. Submitted site plans include the design for future construction of the greenway east to the YMCA.

- Public art will be integrated into the misting feature and other park elements
- Landscape buffers along Highcroft to shield neighbors from park lighting.
- Access from Carpenter Fire Station Road and Highcroft Drive with approximately 160 parking spaces on site.

**Cost Estimate:** 850,000 (Funded)

- Estimated Cost to Construct - $10.9 Million

Construction is not currently funded.
PARK MASTER PLAN

Master Plan Description

The plan for this neighborhood park creates a vibrant and lively heart within a wooded frame, offering varying levels of recreation and social interaction ranging from organized sporting events, to informal play, to quiet and contemplative spaces in nature. The program was selected to provide play opportunities for everyone - families, teens, young adults and “the boomer generation”. A loop trail system weaves through the park, linking the various park features and connecting to surrounding neighborhoods via a new section of Panther Creek Greenway and street-side trails on Highcroft Drive and Carpenter Fire Station Road.

A wide wooded buffer of existing and planted trees along the borders of the park will provide an attractive environment for park visitors and help shield neighbors from lights and noisy activities. The forested slopes at the southern edge of the park offer opportunities for enjoyment of nature as well as protection of water quality in Panther Creek.

In this park, people of all walks of life can come together to play, socialize, exercise and relax.

Park program elements include:

- Youth Ballfields
- Multi-Sport Court & Skate Element
- Misting Sculpture & Public Art
- Dog Park
- Fitness Area
- Greenway, Loop Trails and Pedestrian Entrance Trail
- Seating Areas & Overlook
- Open Lawn
- Playground Area
- Picnic Shelter and Restroom Building
- Parking and Access
- Preserved Tree Canopy & New Plantings
- Stormwater Control
- WiFi & Charging Station(s)
- Sustainability
Youth Ballfields

Two lighted youth baseball fields are located on the eastern side of the park. These fields provide the community with an active space that encourages fitness, builds community relationships and provides much needed facilities in this part of Cary. The fields are located near the main parking lot and drop off, with access from both Carpenter Fire Station Road and Highcroft Drive, allowing easy access for games.

Multi-Sport Court & Skate Element

The Hard Surface Court will provide an active recreational space for various sports such as basketball, in-line hockey, and futsal. Alongside the multi-sport court is a space for small skateboard features, such as a skate bowl, half-pipe or grind rail, providing a unique feature for teenagers not found nearby. This element will be an informal social hub for kids and teenagers in contrast to the organized sporting events offered at the youth ball field. This element presents an opportunity to integrate art through vibrant pavement colors and patterns or concrete formwork that doubles as a skating obstacle. The proposed location allows for accessible connections to Parking, Restrooms, Loop Trails, and Youth Ball Fields and will have adequate separation from the Playground Area.

Court Recommendations:

- Consider sustainable practices for paving areas such as solar reflectance or porous pavement.
- Provide a section of fence to reduce stray balls, etc. from entering adjacent park areas.
- Consider seating areas for spectators along the long edge of the court.

Misting Sculpture & Public Art

A misting sculpture at the entry from the main parking lot is proposed by the artist to serve as a refreshing entry element to the open lawn as well as a defining feature that helps to establish the unique character of the park, attractive at all seasons, with the added appeal of mist for refreshing play during summer months.

Public art is likely to be interspersed throughout the park, integrated into site features to enliven ordinary site elements that are often overlooked. Potential elements for embedment of art include the skate area, multi-sport court, mist feature, restroom/picnic shelter, baseball backstop, walkway/pavers, bollards, and drainage systems.

Dog Park

A dog park, approximately three-quarter acre in size, is located on the south eastern quadrant of the site and will provide an active space in a natural setting for both community members and their dogs. It is easily accessible from the smaller parking lot.
and from the Panther Creek greenway trail and is somewhat separate from the other park elements, especially the playground. The dog park will be well lit and the existing tree canopy preserved for shade and to retain the wooded character of the site.

**Fitness Area**

An outdoor fitness area is located off the central lawn area close to the smaller parking lot at the Highcroft Drive entrance for convenient access and for potential use of the striped parking lot for running sprints. The fitness area is likely to be comprised of a cluster of stationary fitness elements.

**Greenway, Loop Trails and Pedestrian Entrance Trail**

Paved park trails will provide connections to park features, an approximately half-mile walking loop, and connections to Cary’s greenway system via Panther Creek Greenway and street side trails along Highcroft Road and Carpenter Fire Station Road. The segment of Panther Creek Greenway from the park’s southeastern corner to the existing trail segment west of the park is included in this master plan. The pedestrian park entry at the intersection of Carpenter Fire Station Road and Highcroft Road is intended to be a welcoming entrance for the community and a visual beacon into the park from these two major roads. An inviting walkway from this entry makes its way through the wide wooded / planted buffer to the open lawn, leading visitors into the heart of the park.

A carefully placed nature trail will weave through the existing wooded area to the south to offer the user a more quiet and contemplative setting to interact with nature.

**Seating Areas & Overlook**

Seating areas throughout the site offer spaces for quiet relaxation with a potential to include a Wi-Fi zone for students and professionals to work outdoors. Seating areas near the open lawn and playground area allow for both intermingling and separation of various age groups. Seating areas will also be provided at vantage points along trails within the preserved forest areas.

An overlook is proposed in proximity to the agricultural dam that was previously breached to drain the former farmland irrigation pond. The overlook consists of a paved or boardwalk area with a guardrail oriented to take advantage of views of existing trees to be preserved including the champion tree that is located just south of the proposed overlook. The location of the overlook pays homage to the dam and agricultural presence on site and also maximizes views into the existing stand of oaks to strengthen the connection between the user and the natural environment. Shade sails and rocking chairs are also proposed to invite visitors into the space.

**Open Lawn**
The open lawn is a key element in this concept plan as it functions as the focal gathering point for the park. It is located at the center of various features such as the playground, fitness and seating areas, the picnic shelter and restroom, and creates a terminus to the promenade from the entry plaza. It serves as a community gathering point and may host a wide range of activities from informal lawn games to neighborhood events. The lawn area will be gently sloped and irregularly shaped to discourage use for organized sports so the area is available for informal play.

Open Lawn Recommendations

- An accessible perimeter sidewalk should be provided around the Multipurpose Lawn and accompanied with seat wall and/or bench areas.
- Provide a drought tolerant natural turf surface for sustainability and ease of maintenance.

Playground Area

The playground area will offer a contemporary twist to traditional play equipment that functions as one versatile interconnected structure with inclusive play elements for various age groups. With this play structure, there is an opportunity to integrate art through vibrant colors, patterns and shapes and also help to define the character of the park in conjunction with the misting feature. Canopy trees will be planted to provide a shaded play zone while also adding to the wooded area to the south. The playground area is meant to be a fun and inclusive space that is in a comfortable setting for both adults and children. It is located adjacent to the open lawn, the picnic shelter, the restroom, and near to parking.

Playground Area Recommendations:

- Provide multiple play areas with separate structures for age groups 2-5 and 5-12. Age specific play areas or "pods" can be separated with landscape areas, berms, or decorative fencing.
- Follow the principles of universal design in designing the playground to be fun and inclusive for people of differing abilities.
- Provide shade structures as needed to provide shade in the playground, especially the preschool area, before planted trees mature.
- Consider features such as a basketball goal or pole with multiple goals, or a gaga ball court among the play activities in the playground area.

Picnic Shelter and Restroom

The architectural style of restroom and shelter structures should contribute to the active contemporary character of the park as well as the artistic theme of introducing vivid colors and patterns to ordinary park elements. These structures can help to define the character and identify of the park. The restroom building is located adjacent to the open lawn and at the center of the park to provide easy access from all activity
centers, while the reservable picnic shelter is near the playground and fitness area, and sufficiently separate from the ballfields to allow for separate shelter rentals. Smaller shelters or shade structures may be provided at other activity centers. All structures will be sited and designed to provide clear sightlines and visibility for security, with easily accessible approaches. The restrooms will include unisex/family toilet facilities as one of the options.

Parking and Access

The plan provides spaces for approximately 160 vehicles. The main park entrance will be off Highcroft Drive opposite Parkman Grant Drive. This driveway will wind along the west edge of the park through to a right-in/right-out entrance off Carpenter Fire Station Road midway along the north frontage. A large parking lot with approximately 100 spaces is located near the Carpenter Fire Station Road entrance, convenient to the two youth ballfields, the multi-sport court, the restrooms, playground and central lawn. A smaller parking lot with approximately 50 spaces near the Highcroft Drive entrance serves primarily the dog park, fitness station and reservable picnic shelter. The driveway shoulder will accommodate approximately 15 additional overflow parking spaces for peak periods of park use.

Preserved Tree Canopy & New Plantings

To the extent allowed by grading, the plan will preserve the woods along the southern and eastern edge of the site where the trees are larger, more desirable and mostly hardwoods. Priorities for preservation will be a grove of large trees on the slope near the northwest corner to provide screening of the parking lot and ballfield lights, and the area south of the ballfields and below the old pond dam where there is a large oak tree designated by Cary development standards as a champion tree. Protecting these forested areas will create an attractive setting for the park and help provide immediate buffers around lighted activity centers such as the ballfields, court, dog park and parking.

Areas of the site that must be cleared for construction of park features will be replanted to provide attractive park boundaries, screening of lights, and shade and greenery within and between the park activity areas.

Stormwater Control

Stormwater control measures are located in low areas within the park, mostly adjacent to the main parking lot. Stormwater control measures that follow a low impact development strategy and are small scale and attractive or unobtrusive in appearance are encouraged. Designs should use measures such as rain gardens to minimize ponding depth and duration and provide separation from children’s play areas for safety. They should be designed as a system, if possible, so they can be monitored and maintained as one entity. These measures ensure that storm runoff on site is collected, treated and released with reduced velocity, suspended solids and nutrients.
Opportunities will also be explored to address increased runoff from the widening of Carpenter Fire Station Road that may flow through the park towards Panther Creek.

WiFi and Charging Stations

The plan calls for provision of charging stations as part of the park infrastructure and WiFi if feasible, particularly near activity centers.

Sustainability

Design for the park should incorporate sustainable development and operating practices including related to site and building design and construction, landscape practices, energy use, water and waste management. Attractive and accessible trail connections will encourage visitors to walk or bike to the park. Features to be considered include water conservation fixtures, drought tolerant vegetation, solar powered lighting and/or charging stations, pervious paving, and use of native vegetation. Well-built and durable structures and pavement maximize their lifespan and minimize waste. Good soil preparation and repair of compaction in landscape and lawn areas enables park vegetation to thrive and also increases infiltration of rainfall, thus reducing stormwater runoff, irrigating the plants, and protecting water quality in Panther Creek.
PROJECT PROCESS

Park Master Planning Phase: Site Inventory & Analysis and Data Review

October 2017 – January 2018

Park Master Planning Phase: Conceptual Master Planning

January 2018-June 2019

- **Public Meeting #1** (January 30, 2018) – Introduction of Conceptual Master Plan & intake of feedback from Public
- **Citizen’s Resource Team Meeting #1** (March 20, 2018) – Introduction of revised Conceptual Master Plan & intake of feedback from team members.
- **Citizen’s Resource Team Meeting #2** (May 22, 2018) – Introduction of revised Conceptual Master Plan & intake of feedback from team members.
- **Citizen’s Resource Team Meeting #3** (November 1, 2018) - Introduction of revised Conceptual Master Plan & intake of feedback from team members.
- **Public Meeting #2** (November 7, 2018)
- **Presentations to Parks, Recreation & Cultural Resources Advisory Board** (November 5, 2018 & March 4, 2019)
- **Presentation to Public Art Advisory Board** (December 19, 2018)
- **Approved by Town Council** (June 27, 2019)
SITE INVENTORY

An in-depth study was performed to gather information about the site in order to inform the design decisions made in the master planning phase. Information that was examined includes the following:

- Regional Context
- Edge Conditions and Viewpoints into the Site
- Inventory of Topography and Slope Conditions
- Hydrology
- Existing Vegetation and Agricultural Influences on Site
- Historical Aerial Maps
- Stormwater Management
- Transportation
- Utilities
- Soils
- Threatened and Endangered Species/Biological Resources

Regional Context

The proposed park location is within a 1.5 mile radius of Carpenter Park, Mills Hope Farm, Mills Parks and the proposed McCrimmon Parkway Park. Major civic centers such as Panther Creek High School and Crosspointe Church / YMCA center are located within a .75 mile radius of the site. The Cameron Pond Neighborhood is located directly west while Indian Wells community borders the southern edge of the proposed park. Two proposed greenway trails border the site and are components of the Town of Cary Greenways Master Plan. Both of these greenway trails will in future connect the site to the American Tobacco Trail located 3 miles directly west of the site.
Edge Conditions and Viewpoints

The park site is bordered by two public right-of-ways: Carpenter Fire Station Road to the north and Highcroft Drive to the west. Highcroft Drive includes an existing streetside trail on the park’s western edge. Both currently end near the south end of the park, but in future will extend south to connect to Morrisville Parkway. Plans for widening Carpenter Fire Station Road are underway, which will widen the right-of-way and add a streetside trail along the site’s northern frontage.

Carpenter Fire Station Road is the high edge of the park, with views into the park from the road and future trail. Along Highcroft Drive most of the park site is elevated above the road and the existing tree line is set back from the right of way due to recent grading for road construction. This edge condition offers high visibility into the future park from the back of houses along the far side of Highcroft Drive. There is a low open depression at the corner of Highcroft Drive and Carpenter Fire Station Road.

The southern border of the site is currently a large wooded lot sloping down to Panther Creek with a single residence on the property. Panther Creek extends across the southeast corner of the site and roughly parallels the southern border. Panther Creek Greenway is proposed to follow the north side of the creek. The Indian Wells community is located on the other side of Panther Creek with potential visibility into the site from the back of homes. The eastern border of the site is currently wooded with mixed hardwoods and pines, screening views into the park from the proposed development.
Topography and Slope

There is a total of sixty feet of grade change across the site. The highpoint of the future park is along Carpenter Fire Station Road and the low point is south along Panther Creek. Construction of Highcroft Drive cut steep slopes (average 10-20%) along the western border. Moderately steep slopes also occur in a valley along eastern border of the site. The majority of the site is just under 6% slope. A channelized drainageway exists in the middle of the site formerly impounded by agricultural dam that has since been breached. Steep embankments and gullies with slopes of 20-25% along this drainageway and below the old dam concentrate water run-off towards Panther Creek.

Hydrology

Two main channelized pathways exist on site that carry water runoff from the top of the site to Panther Creek. The first main channel runs through the middle of the site and the second runs along the western border of the parcel and extends off to the west. There are two isolated wetlands that currently exist. One is located in the middle of the site where an agricultural pond once existed and the second is located on the southeast corner of the site within the 100’ buffer line of Panther Creek.
Existing Vegetation and Agricultural Influences

On site vegetation consists of a mixture of pine trees and hardwoods. Much of the site was farmed until recent years and contained a farm pond that was drained so the woods on the site are primarily young pines, especially in the western and central portions. A high density stand of 0-8 year old pine trees exists in the location of the old pond. The woods on the eastern and southern portions of the site are older mixed hardwoods and include a 34" caliper champion oak tree in the area below the old dam.

Historical Aerial Maps

An aerial photograph from 1981 shows that two large fields and an agricultural pond were present while the remainder of the land was dominated by hardwoods. By 1999, the fields on site and within the surrounding area had grown up or been planted with densely spaced pine trees. By 2005, evidently the agricultural pond was drained and filled while the agricultural dam remained through breached to drain the pond. The pond was partially filled and pine seedlings have created a dense young stand on the

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Legend:
- Mixed Pine Trees
- Mostly hardwoods
- Mixed mixed hardwoods
- Low canopy

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former pond bed. Development of Cameron Pond Neighborhood is evident on the 2005 and 2013 aerials as well as completion of the first phase of Cross Pointe Church.

**Stormwater Management**

Watershed Protection: The site is located within the Jordan Lake Watershed, which is a water supply watershed. As a result, designated streams are subject to buffers; a nitrogen and phosphorus control plan is required; and engineered stormwater controls are required to contain the runoff from the first one (1) inch of rainfall for high-density developments. Sites may use a low-density option if impervious surfaces do not exceed twenty-four (24) percent of the project area, or thirty-six (36) percent impervious surface area for projects containing streets.

Buffers, Streams, and Wetlands: The site contains only one stream feature that crosses southeast corner of the site. There are two isolated wetland features on the site. The masterplan figure shows the stream, wetland, and buffer areas on the site. Impacts to these features would potentially be subject to State, Local, and Army Corps of Engineers permitting.

The level of permitting will be dependent on the scale of the impacts. At a minimum, documentation of impacts to the stream and buffers will be required, as will notification to the proper State, Local, and Federal agencies. If significant impacts occur, then additional permitting and mitigation payments could be required.

According to the Town of Cary, it is anticipated that an isolated wetland determination will be made by the USACE, which would essentially eliminate the wetland in the center
of the site. This determination would make impacts to the wetland not subject to permitting requirements. Currently, the master plan for the site includes limited impacts from the inclusion of a walking/pedestrian path within the stream buffers on the southeast corner of the site.

Stormwater Treatment: It is anticipated that the proposed park development will result in impervious area that is less than twenty-four (24) percent of the site area, making it a low-density development. As a result, engineered controls to contain the runoff from the first one (1) inch of rainfall will not be required. However, the site will still need a nitrogen and phosphorus control plan. The park site is located within the Upper New Hope part of the Cape Fear Basin, which means that the site nitrogen loading must be 2.2 lbs/acre/year or less, and the phosphorus loading must be 0.82 lbs/acre/year or less. It is anticipated that the nutrient loading will be below the upper thresholds so that the target loading rates can be met by buying down with nutrient credits, treatment with stormwater control measures, or a combination of both.

Stormwater Peak Runoff Control: There shall be no net increase in peak stormwater runoff leaving the park site from the pre-development conditions for the one (1)-year design storm. If the park has less than a ten (10) percent net increase in peak flow of the one (1)-year design, then there is not a requirement to control peak flow from the site. However, if the net increase in peak flow is greater than ten (10) percent, the entire net increase from pre-development one (1)-year design storm peak flow must be controlled. A downstream Impact Analysis for pre- and post-development peak discharge for two (2), five (5), and ten (10)-year peak discharges at each discharge point is also required. If the net increase in the peaks for the design storms are equal to ten (10) percent increase or less, than no further analysis is needed. It is anticipated that at a minimum some type of stormwater control measure will be required to control the one (1)-year design storm for the site. The downstream impact analysis may result in additional storage requirements.

Stormwater control measures used to control peak runoff should be designed so that credit can be applied towards nitrogen and phosphorus reduction. This will help minimize the amount of nutrient buy down credits required to purchase.

Proposed Stormwater Control Measures: Currently, the master plan includes stormwater control and treatment features situated on the lower side of the main off street parking area off of Carpenter Fire Station Road and also on the lower side of the smaller parking area off of Highcroft Drive. In order to receive credit for both treatment and attenuation, an infiltration type stormwater control measure, such as bio-swales, bio-retention areas, and possibly infiltration basins will be investigated as potential solutions. If soils properties or other factors inhibit the use of infiltration type devices, it may be necessary to utilize wet detention ponds or constructed wetlands as the stormwater control measure.
Transportation

Carpenter Fire Station Road (State Road 1624) is a 2-lane road along the northern boundary of the park site. It is a State road with a speed limit of 45 mph and is classified by the Town as a major thoroughfare. Because it is a State road it would be subject to encroachment permitting by the NC Department of Transportation (NCDOT). Carpenter Fire Station Road is classified in the Town of Cary Community Plan – Planned Transit Routes as a future GoCary transit route (in the long-term plan), and according to the Town of Cary – Planned Roadway Widths mapping it will be upgraded to a 4-lane divided road with a landscaped median in the future. Highcroft Drive is a 2-lane divided road along the western boundary of the park site. It is a Town of Cary road that is classified by the Town as a collector avenue. Streetside trails exist or are proposed along Carpenter Fire Station Road and Highcroft Drive.

Proposed Site Access and Parking: The masterplan includes two vehicular entrances, one each on Carpenter Fire Station Road and on Highcroft Drive. The entrance on Highcroft Drive lines up with Parkman Grant Drive on the opposite side of Highcroft. As part of the park development, no on street parking is planned.

Pedestrian entrances are planned at multiple locations along both Carpenter Fire Station Road and Highcroft Drive. The pedestrian paths will also connect to a regional greenway path on the southeast corner of the site.
Utilities

The following information was taken by reviewing GIS data and survey maps of the site conducted by others and provided by the Town. No field investigation has been performed to verify the location or size of the utilities described.

Sanitary Sewer: There is an existing 8-inch diameter sanitary sewer outfall which is within the southbound lanes of Highcroft Drive from its intersection with Carpenter Fire Station Road down to its intersection with Parkman Grant Drive. Access to this sanitary sewer could be obtained for a good portion of the site. However, connecting to this main would require some open cut of Highcroft Drive.

There also appears to be a wastewater force main along the southern boundary of Carpenter Fire Station Road to the north of the site. This force main could provide service to the site if a pump station were installed on site if allowed by the Town.

The survey also indicates a sanitary sewer outfall in the extreme southeast corner of the site. This outfall could potentially provide sanitary sewer service to the entire parcel. However, if the upper (northernmost) portions of the site are developed first, this would require the extension of a significant length, approximately 1,000 feet, of sanitary sewer early in the process to provide service on the north end of the site.

There appears to be adequate sanitary sewer capacity on this site for the anticipated facilities.

Water: There is an existing 12-inch diameter water line along Highcroft Drive to the west. It appears from field survey mapping provided by the Town this water line is essentially down the middle of Highcroft Drive. This would likely require the open cutting of Highcroft Drive to make a connection to this main.

There is also a 16-inch diameter water main within Carpenter Fire Station Road to the north. However, mapping indicates this water main is along the northern right-of-way of the road which would require a bore or open cut of Carpenter Fire Station Road to make a connection. Depending upon the master plan layout and the initial facilities to be constructed, this may still be the most logical location to obtain water service.

Reclaimed Water: GIS and survey data indicates a 12-inch diameter reclaimed water line along the eastern edge of Highcroft Drive to the west of the site. This reclaimed water line extends from the intersection of Highcroft Drive with Carpenter Fire Station Road, continuing south to the southern property boundary. There also appears to be an 18-inch reclaimed water line stubbed into the property from the intersection of Highcroft Drive and Carpenter Fire Station Road and extending east for a distance of approximately 200 feet. There is no indication of any reclaimed water further along Carpenter Fire Station Road.

If active, this reclaimed water main could provide water for irrigation or other non-potable uses on the site. The location of facilities which could use non-potable water
will be a factor in determining the economic feasibility of such use. It is also assumed
development of this site will require the further extension of the reclaimed water line
along Carpenter Fire Station Road. The total distance from the existing line to the
northeastern corner of the site would be approximately 800 linear feet.

Anticipated Water/Sewer Needs: The proposed master plan includes a restroom facility
adjacent to the baseball fields that will require water and sewer service. In addition,
water fountains located near the baseball fields and dog park and hose bibs around
the site will require water service. Overall the current infrastructure located adjacent
and within the site should be sufficient to serve this project water and sewer needs.

Soils
The soils on this site are predominantly identified as White Store sandy loam with slopes
varying from 2% to as much as 20%. White Store sandy loam is primarily found on the
hillslopes on ridges as the topography on this site would suggest. The soil consists of a
clay to a clay loam down to about 4 feet or more below the ground surface where
weathered bedrock may be encountered. The soil is classified in Hydrologic Soil Group
D which indicates fairly high stormwater runoff and limited ability for water to infiltrate.

Threatened and Endangered Species/Biological Resources
Draper Aden Associates personnel reviewed the North Carolina Natural Heritage
Program (NCNHP) and the U.S. Fish and Wildlife Service (USFWS) websites to determine
those species that are currently listed as federally protected (threatened or endangered)
in Wake County. The results of this search, including identified protected species and
preferred habitat is presented in Table 1 and on USFWS species lists.

Table 1
Federally Protected Species Summary

<table>
<thead>
<tr>
<th>Species</th>
<th>Federal Status</th>
<th>Preferred Habitat Description</th>
<th>Habitat Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bald Eagle</td>
<td>BGPA</td>
<td>Large living trees within close proximity to a large body of water such as a lake, river, or coastline which provide adequate feeding grounds</td>
<td>Project is 4 miles from Jordan Lake and is surrounded by residential and commercial use.</td>
</tr>
<tr>
<td>Red-cockaded Woodpecker</td>
<td>E</td>
<td>Long-leaf pine ecosystems</td>
<td>None - No old growth long leaf pines present.</td>
</tr>
</tbody>
</table>
NCNHP maintains a database of elements of occurrence for protected species in the state of North Carolina. A site-specific review of the project did not reveal any federally protected species (occurrences) within the project area.

A preliminary review of the site through current available aerial photography (5/1/2017) suggests that the project site at this time is a mix of hardwoods and pine. A review of the USFWS Information for Planning and Conservation (IPaC) tool indicated that no critical habitat, wildlife refuges, or fish hatcheries are located within the project area. Due to a lack of habitat in the project area, it is not anticipated that the project would have an effect on protected species. However, it is recommended that the Town undergo a formal consultation with USFWS during the final design phase.
SITE ANALYSIS

After collecting site inventory and compiling the necessary information, the design team began to synthesize the data to produce a masterplan design that fits the constraints and history of the site as well as meets the needs of the Town of Cary and surrounding residents.

A Development Suitability Map was produced to better understand the constraints of the site. These include the required buffers and setbacks from public rights of way and existing streams. In looking at varying degrees of buildable zones, the design team was able to better understand the programmatic limitations related to existing topography and vegetation. For example, the two agricultural fields that previously existed were considered to be very buildable zones in which the land was cleared and flattened for agricultural use. Areas with stands of pines are designated as more buildable zones than the areas with more mature existing hardwoods, which are desirable to preserve.

Information from the development suitability map plus other factors from the inventory was then compiled and analyzed to create an overall Site Opportunities and Constraints Map.

Along with buildable areas, the design team looked at views and access points into the park with respect to future connectivity and varying modes of transportation. The map below indicates suitable access points into the site via car and walking/bicycle.

These access points were determined by multiple factors. The first factor was based on the functional requirements to connect to existing and proposed roads and greenways.
that serve the site. Locations of driveways, for instance, need to meet Town and NCDOT standards for distances from intersections. Other factors include the nature of the edge conditions such as topography and views, and routes park users are likely to want to take.

This map helped the design team to determine suitable programmatic elements and layouts based on the buildable zones, edge conditions and access points. These programmatic elements were later refined in the design process based on feedback from the Town of Cary and members of the surrounding community.

**Site Opportunities and Constraints Map**
INITIAL PARK CONCEPTS

The Concept Diagram that led to the Master Plan was developed over the course of one Public Meeting (PM #1) and two Citizen Resource Team meetings (CRT #1, #2). The development of the Concept diagram began with a review of the existing conditions, site inventory, and site analysis, followed by CRT and public input, and reviews by Cary staff from throughout the organization. The design team initially developed two concept diagram options and presented these at Public Meeting #1. The diagrams are illustrated below.

**Concept 1** provides a centralized parking and open lawn area with two vehicular access points off Highcroft Road. The concept plan also provides for future courts (tennis, basketball, and pickleball) to the south and east of the open lawn and parking area. Sports fields are located in the northwest corner of the site and an area for the expansion of the fields is located north of the open lawn area.

**Concept 2** provides a single parking area in the initial phase on the south end of the site with one vehicular access point off Highcroft Road. Community garden space, playground, and teen play areas are focused on the western edge of the site with sports fields and open lawn areas to the west. A future parking area is identified between the sports fields and play areas.
Following Public Meeting #1, the design team provided an assessment of the community input as well as a revised concept diagram that combined the preferred elements and desired arrangement into a single comprehensive diagram. During CRT #1, the team presented the preferred combined concept diagram as well as a list of preferred program elements. During the meeting, CRT and project team members organized into small groups to further refine each concept diagram. The refined concept plans and comments on the preferred program list were presented by the CRT groups at the end of the meeting. At the time of the two CRT meetings, the last private tract within the park had not been purchased and the concept was designed to work without this property, pending future purchase. The Program Elements List and Combined Concept Plan are illustrated below:
A second CRT meeting was organized to review an updated concept plan based on comments received from CRT #1. Review comments from Cary staff and core team members were also incorporated in the reviewed concept diagram. The updated diagram was presented and the CRT was given the opportunity to comment and provide feedback. The Concept Diagram presented in CRT #2 is illustrated below:

The revised concept diagram provides a single centralized parking area at the south
end of the site with access off Highcroft Road. Open lawn, play areas and shelters are illustrated on the west side of the site, north of the parking area. Sports fields, and dog park areas are located on the east side of the site.

Following CRT #2, Cary’s project team reviewed the concept diagrams with various internal stakeholder groups to develop a list of comments and further refinements for the design team to incorporate into the preliminary park master plan.

PRELIMINARY MASTER PLAN

While there was general consensus about the proposed program and park features, it became clear that the private property within the overall site was limiting opportunities for vehicular access to the fields and general circulation around the park and pushing activity centers closer to neighbors across Highcroft Drive. The Town therefore decided to pursue purchase of the remaining tract, both to allow for an improved park design and also because much of the property’s frontage would be needed for widening Carpenter Fire Station Road. This purchase was completed in February 2019.

A revised Preliminary Master Plan, with access off Carpenter Fire Station Road as well as from Highcroft, and a widened wooded buffer along Highcroft, was reviewed by the Citizens Review Team at CRT #3 on November 1, 2018 and presented at a Public Open House on November 7. It was also presented to the Parks, Recreation & Cultural Resources Advisory Board (PRCRAB) on November 5.

DRAFT MASTER PLAN

The Master Plan at the beginning of this report includes the following changes to the Preliminary Master Plan based on comments made at these three meetings and by Town staff: the basketball court is designated as a multi-sport court, to accommodate other court sports such as futsal in addition to basketball.

The PRCRAB reviewed the Draft Master Plan at their March 4, 2019 meeting and recommended it for Council’s review.
OPINION OF PROBABLE CONSTRUCTION COSTS

Preliminary probable construction costs for building Carpenter Fire Station Road Park as illustrated by the Master Plan are identified by the following estimate. For the purpose of this plan, this opinion of probable construction cost has been created utilizing recent park construction data for this Triangle region. It should be noted that all unit costs shown includes labor, materials, overhead and profit.

<table>
<thead>
<tr>
<th>Buildings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Restroom Building</td>
<td>$300,000</td>
</tr>
<tr>
<td>Shelters &amp; Shade Structures</td>
<td>$150,000</td>
</tr>
<tr>
<td>Earthwork</td>
<td>$1,035,000</td>
</tr>
<tr>
<td>Site Utilities</td>
<td>$358,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Development</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Parking</td>
<td>$463,000</td>
</tr>
<tr>
<td>b. Trails &amp; Pedestrian Zones</td>
<td>$787,000</td>
</tr>
<tr>
<td>c. Playground</td>
<td>$333,000</td>
</tr>
<tr>
<td>d. Misting Feature (structure, plumbing, surfacing)</td>
<td>$100,000</td>
</tr>
<tr>
<td>e. Ballfields (unlit)</td>
<td>$1,255,000</td>
</tr>
<tr>
<td>f. Overlook</td>
<td>$73,500</td>
</tr>
<tr>
<td>g. Multi-Sport Court (unlit)</td>
<td>$135,000</td>
</tr>
<tr>
<td>h. Field &amp; Court Lighting</td>
<td>$500,000</td>
</tr>
<tr>
<td>i. Dog Park &amp; WiFi</td>
<td>$292,000</td>
</tr>
<tr>
<td>j. Fitness Area</td>
<td>$100,000</td>
</tr>
<tr>
<td>k. Irrigation Allowance</td>
<td>$120,000</td>
</tr>
<tr>
<td>l. Public Art</td>
<td>$130,000</td>
</tr>
<tr>
<td>m. Landscape Areas &amp; Turf</td>
<td>$375,000</td>
</tr>
<tr>
<td>n. Site Furnishings &amp; Signage</td>
<td>$125,000</td>
</tr>
</tbody>
</table>

Panther Creek Greenway (off-site) $175,000

Building and Site Subtotal $6,805,500

| 12% General Conditions     | $816,780   |
| Total Construction Estimate (12/2018) | $7,623,280 |
| 18% Inflation (over 3 years) | $1,372,190 |
| Easements, CA & Testing    | $760,000   |
| 15% Contingency            | $1,143,492 |

Project Total $10,898,962
APPENDIX

- Site Inventory and Analysis Maps - Carpenter Fire Station Rd site
- Meetings & Public Comments (McCrimmon & Carpenter Fire Station Rd Parks)