ATTACHMENT 2

HILLANDALE LOCAL PARK

FACILITY PLAN REPORT

June 17, 2015

Presented by:
THE PARK DEVELOPMENT DIVISION OF THE MONTGOMERY COUNTY DEPARTMENT OF PARKS

For:
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

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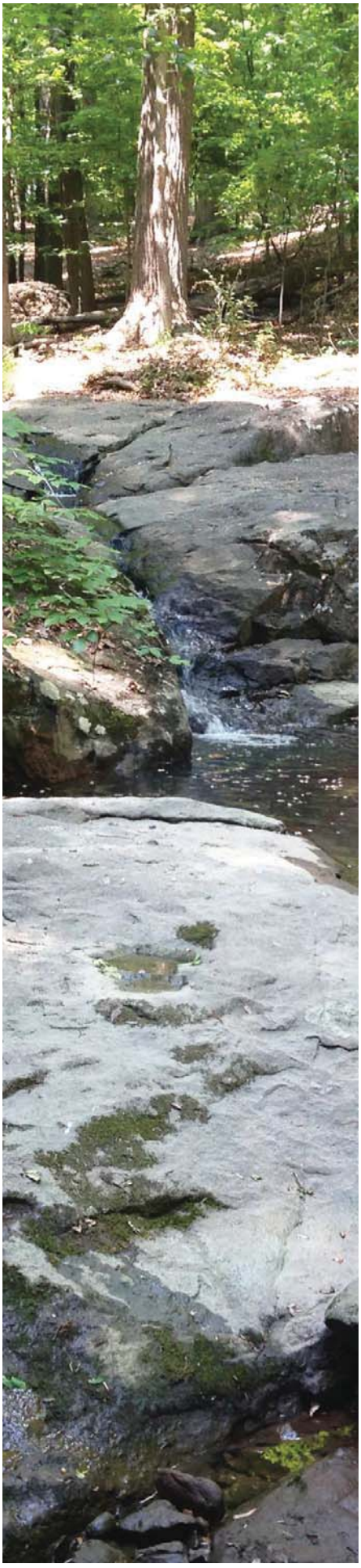

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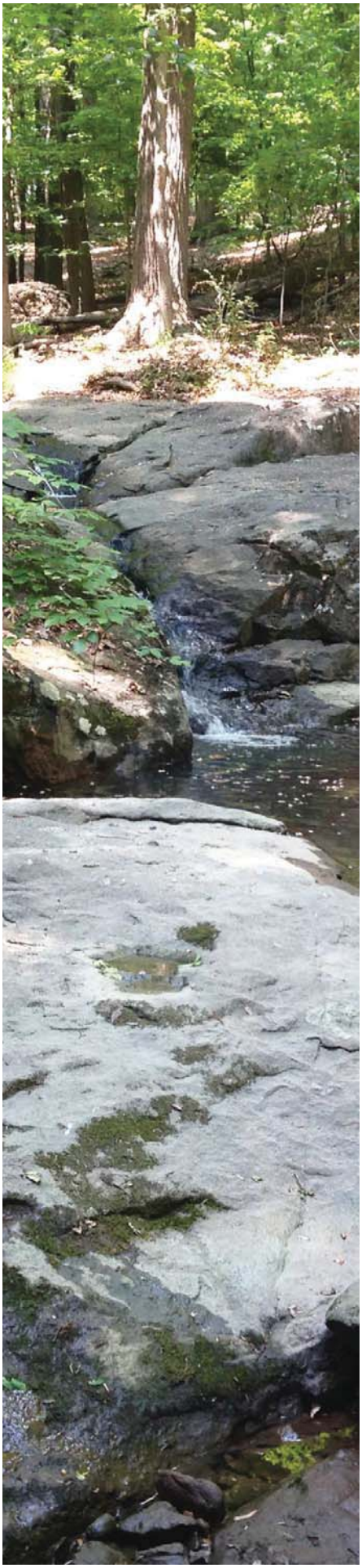

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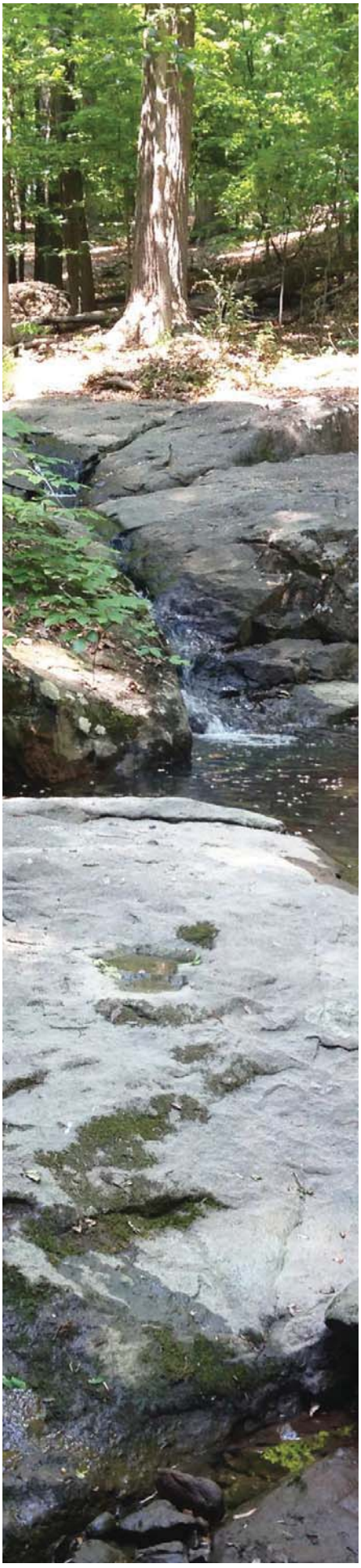

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Project Overview

The purpose of this project is to provide a Facility Plan and detailed cost estimate for the renovation of Hillandale Local Park. The proposed renovation plans are innovative and environmentally sensitive and take full advantage of the unique characteristics of the site. The recreation and open space needs of the overall community are met in the design plan. The design process involved a thorough analysis of the site opportunities and constraints as well as current and projected recreational needs. The resulting plan envisions a park which is safe, inviting, accessible and maintainable.

Introduction

This Facility Plan captures all aspects of the existing built conditions, urban context, natural ecology and proposed park development envisioned for the Hillandale Local Park Facility Plan. The proposed park design is both innovative and environmentally sensitive and takes full advantage of the unique characteristics of the site.

The park program includes a balance of active and passive recreation elements. On the urban edge of New Hampshire Avenue the landform of the park is visible from the roadway. Within this generally open zone a rectangular athletic field is proposed along with basketball and tennis courts. A paved loop trail is incorporated into the park design, and a shared-use path parallels the active stretch of New Hampshire Avenue. Since the green lawns in the park are visible from New Hampshire Avenue they continue and blend with the open character of the Federal Research Center which lies on the adjacent property just to the north.

Passive recreation activities focus on the wooded portion of the Hillandale Local Park site, with nature trails providing access to the flowing stream (unnamed tributary of the Paint Branch). Open lawn areas have been reserved for old-fashioned play and picnicking.

Park visitors of all ages from the Hillandale community as well as the larger Silver Spring Postal Area and beyond regularly frequent Hillandale Local Park. The proposed park, as illustrated in this Facility Plan, will enhance the recreational experience by providing up-to-date integrated facilities. Children will be drawn to the “Native Inhabitants” themed centralized play area.

The design process, as detailed herein, involved an in-depth traditional site analysis process which mapped and interpreted the physical site features as well as the urban context. Opportunities for engaging visitors were explored through the design studies of alternative layouts of the park program elements.

The design team began with nine different approaches to the park design, which ultimately evolved to the design as proposed in this Facility Plan. The constraint that became the driving factor was the lack of buildable space. The park currently is 23.35 acres, with approximately half of the site being wooded and protected within the stream valley buffer. With all parties supportive of protecting the woodlands for jurisdictional, cultural and environmental reasons, and after allowing for the future expansion proposed for New Hampshire Avenue, only 11.26 acres remain as buildable area for the construction of the future Hillandale Local Park.

The resulting Facility Plan and corresponding cost estimate (included herein), envisions a park which is safe, inviting, accessible and maintainable. Further, the park when completed will be visually attractive and will contain passive and active recreation opportunities as vetted by the surrounding community and the Park Development Division of the Montgomery County Department of Parks.

Location and Vicinity

Hillandale Local Park is located within the Hillandale community in Silver Spring, Maryland in the southeastern portion of Montgomery County, see figures 1 and 2. The community includes established single-family residential neighborhoods, a variety of commercial uses, the National Labor College site and the Federal Research Center.

Hillandale Local Park is an existing 23.35 acre park located at 10615 New Hampshire Avenue, just outside and north of the I-495 Capital Beltway. The western property line of the park is shared by the New Hampshire Avenue right-of-way. North of the park is the Montgomery County Hillandale Volunteer Fire Station 12 and the Federal Research Center (FRC). To the east is an unimproved road right-of-way, named Edgewater Parkway which contains an unnamed tributary of the Paint Branch. Abutting land to the south is leased from Montgomery County by the CHI Centers, Inc. (formerly Centers for the Handicapped). The complex consists of a former Montgomery County Public School building, several small ancillary structures and a parking lot.

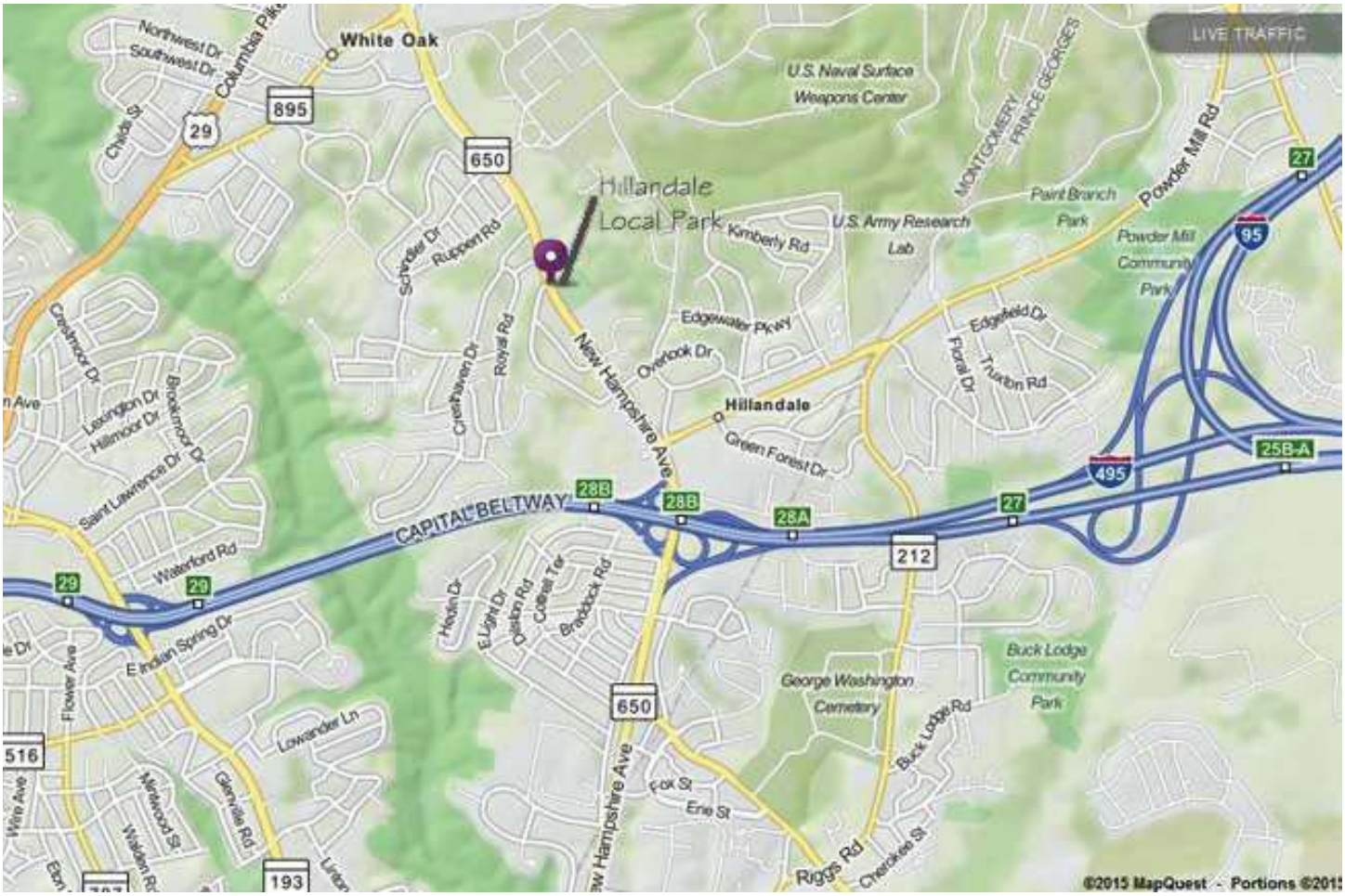


FIGURE 1: VICINITY MAP

FIGURE 2: MONTGOMERY COUNTY MAP

Context

A. DEMOGRAPHICS

Hillandale is an unincorporated area and census-designated place. As of the 2010 census, it had a population of 6,043. Hillandale occupies a total area of 2.0 square miles and is part of the large postal designation, Silver Spring, Maryland.

The *White Oak Science Gateway (WOSG) Master Plan*, adopted and approved in July 2014, includes detailed demographic information regarding area residents and park visitors. The average household size is 2.5 persons, with slightly more children and slightly fewer "baby boomers" than the County as a whole. The average age of household residents is 37.5 years and the average age of the head of household is 51 years.

Nearly two-thirds (64 percent) of housing units are owner-occupied, which is less than the Countywide home ownership rate of 75 percent. Renters account for 36 percent of households in the area. There is a larger share of single-person households (31 percent) and fewer families

FIGURE 3: URBAN CONTEXT

(68 percent) than there are countywide. This household data reflects the relatively large multi-family housing stock in the area: 43 percent of the residential units are multi-family and 57 percent are single-family.

The 2007 median household income was $75,400, about 22 percent below the countywide median ($96,475), but consistent with the larger share of single-person households and fewer dual-income households. Housing costs, particularly home ownership costs, are lower than the County as a whole. However, study area renters are particularly cost-burdened, with 42 percent spending more than 30 percent of their income on housing.

Thirty-nine percent of residents are African American (compared to 16 percent countywide) and 36 percent are white (compared to 54 percent countywide). Compared to the County overall, the study area has fewer Hispanic (14 percent versus 16 percent) and Asian (9 percent versus 13 percent) residents. The percentage of foreign-born residents in the study area is almost identical to the County (30 percent versus 29 percent), although a larger proportion of area residents speak a language other than English at home (42 percent versus 38 percent).

Residents are well educated, with 64 percent of adults ages 25 and up having earned at least a bachelor's degree, compared to 66 percent Countywide and 28 percent nationwide. Compared to the typical employed resident in the County, employed residents are somewhat more likely to work for federal, state, or local government (27 percent versus 25 percent) and somewhat less likely to work in the private sector (38 percent versus 44 percent).

NEW HAMPSHIRE AVENUE

B. NEARBY PARK FACILITIES

LOCAL PARKS:

- Stonehedge Local Park: located just three miles away, includes a half-sized basketball court, two playgrounds, a volleyball court and a rectangular youth field.

STREAM VALLEY PARKS:

- Northwest Branch Stream Valley Park: located just over seven miles away, part of the Northwest Branch watershed, with an area of 33,920 acres. The park includes unpaved trails and two landmark historic buildings, which are owned by M-NCPPC, at the Northwest Branch crossing of US 29.

- The Paint Branch Stream Valley Park: located just two miles away, part of the 20,160-acre park includes an existing paved trail between Jackson Road and Fairland Road, and a paved trail is proposed between Fairland Road and the ICC right-of-way.

RECREATIONAL CENTER:

- White Oak Community Recreation Center, which opened in June 2012 at 1700 April Lane, is just over two miles away and less than ten minutes driving from Hillandale Local Park. The Recreation Center is located in the heart of high-density, multi-family neighborhoods that predominate in this area of Montgomery County north of the Washington Beltway, I-495. This outstanding facility provides recreation options within walking distance of many area residents. The 33,000-square foot facility includes a gymnasium with indoor basketball courts, exercise room, game room, multi-use athletic court, kitchen, community meeting rooms, conference rooms and other amenities. Outdoor recreation includes a skate area with ramps, a basketball court, two playgrounds and a small multi-purpose athletic field.

RECREATIONAL PARK:

- Martin Luther King Jr. Recreational Park: the largest park with active recreation facilities near the White Oak area. The 95-acre park is located just over two miles away on Jackson Road off New Hampshire Avenue adjacent to White Oak Middle School; Jackson Road Elementary School; and the Paint Branch Stream Valley Park to the east. It contains an indoor aquatic center; exercise room; outdoor pools; playgrounds; tennis, volleyball, and basketball courts; baseball, softball, soccer and football fields; picnic shelters; fishing and hiker-biker trails, including connections to Paint Branch Stream Valley Park trails.

C. TRANSPORTATION

The park is located less than a mile outside the Capital Beltway (I-495) on New Hampshire Avenue, which runs along the west side of the property and is a six-lane divided road. Traffic counts were recorded at 55,000 a day per a State Highway Administration traffic count from May 2012.

Forest Glen and Silver Spring Washington Metropolitan Area Transit Authority (WMATA) metro stations on the red line are less than four miles from Hillandale Local Park.

The Montgomery County Transit operates bus route 20 with a connection to the WMATA metro, Monday through Friday, with stops at the park. No weekend service is provided.

New Hampshire Avenue is mapped as a combination of “signed shared roadway” for use as a shared bike lane and shared-use path on the

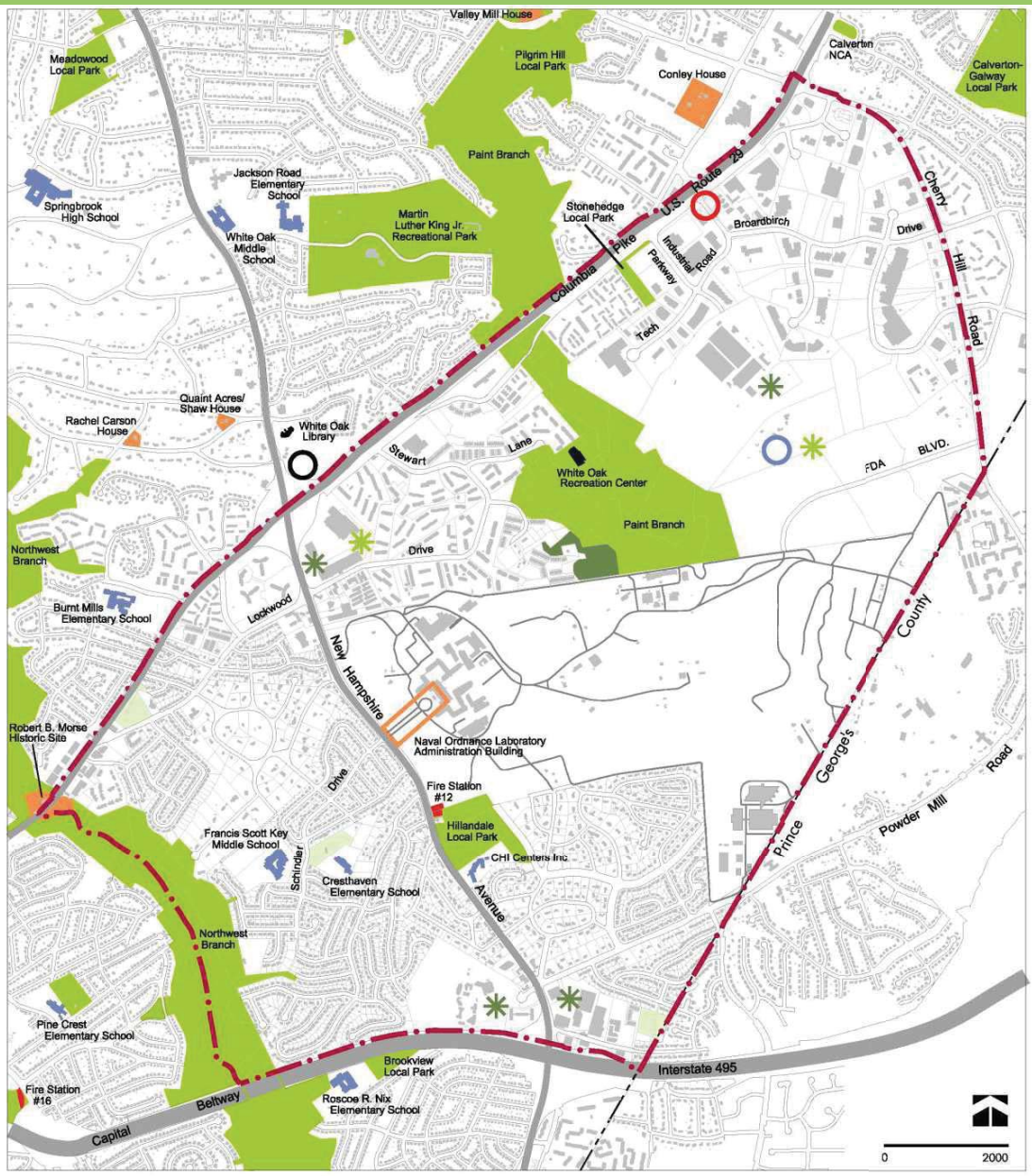


FIGURE 4: NEARBY PARK FACILITIES

BUS STOP

Master Plan of Bikeways interactive bike path map as provided by MontgomeryPlanning.org.

The park is also accessible via a public sidewalk along both sides of New Hampshire Avenue. The north-bound sidewalk, which passes alongside the park, is slowly being converted to a 10-foot wide shared-use path. This path is part of a larger path system that will potentially connect the DC Line to Lockwood Avenue north of Hillandale Local Park. This path system is identified as the New Hampshire Avenue - Hillandale/Takoma Park Bikeway in the *2005 Countywide Bikeways Functional Master Plan*. The sidewalk to the north of Hillandale Local Park that runs along the boundary of the Federal Research Center has already been converted to a 10-foot wide asphalt shared-use path while the sidewalk immediately to the south of the park remains a 5-foot wide standard concrete sidewalk.

The recently approved *White Oak Science Gateway Master Plan* proposes that this portion of New Hampshire Avenue include a future Bus Rapid Transit (BRT) corridor located in the median, per the 2013 Countywide Transit Corridors Master Plan. This road section requires a minimum right-of-way width of 130 feet, which would typically consist of a widened roadway, six-foot wide buffer, 8- to 10-foot wide shared-use path and a two-foot maintenance offset to the right-of-way line. Proposed stations closest to the park would be at the Federal Research Center and the Hillandale Shopping Center.

D. LAND HISTORY

Hillandale Community

The history included herein, taken from the *Approved and Adopted White Oak Science Gateway Master plan, December 2013,* has been redacted to focus on the Hillandale Local Park area.

The area known as Hillandale was referred to as "Hills and Dales" during 1716 when Alexander Beall deeded a 920-acre tract to his heirs. This part of Montgomery County was once rural farmland and country retreats for privileged Washingtonians. H. M. Hutchinson, a former president of the Alaska Fur Trading Company, had a 375-acre property known as "Sitka Farm," which is now Hillandale.

During the Great Depression Merritt Lockwood created the development of Hillandale out of 375 acres of land, just one of many new subdivisions cropping up just north of the District line in Montgomery County. Merritt Lockwood developed Hillandale, a neighborhood of primarily Colonial Revival and Tudor Revival houses, on one-half to one-acre lots, between 1935 and 1952. The Hillandale Citizens Association (HCA) was established in 1937.

By the early 1940s the suburbanization of eastern Montgomery County had altered the local economy from a traditional agrarian base in 1920 to one dependent on the burgeoning federal government and the real estate, insurance and banking industries. The explosive postwar housing boom was accompanied by the development of shopping centers in the 1950s and 1960s; major expansion of public schools and facilities; the

completion of the Capital Beltway (I-495) in 1964 and additional government facilities

The Federal land to the north of Hillandale Local Park was the site of the Naval Service Warfare Center (NSWC). The NSWC acquired this 730-acre parcel of land in 1944. By 1950, the NSWC employed more than 3,000 people. The lab was decommissioned in 1997 and remaining offices were transferred to other locations. Later GSA took over and the Food and Drug Administration consolidated multiple locations onto the White Oak Campus, a facility now known as the Federal Research Center.

In the 1950s a portion of the open space along the NSWC's New Hampshire Avenue frontage was developed by an employees' group as a nine-hole golf course and was operated and maintained by the group for the exclusive use of their members. In January of 1997 the employees' group relinquished their control of the course. The Department of the Navy granted the Commission a temporary license to operate the golf course and it was opened to the public in July of 1997. M-NCPPC did not renew its lease with the Department of Navy and in 2006 the golf course closed.

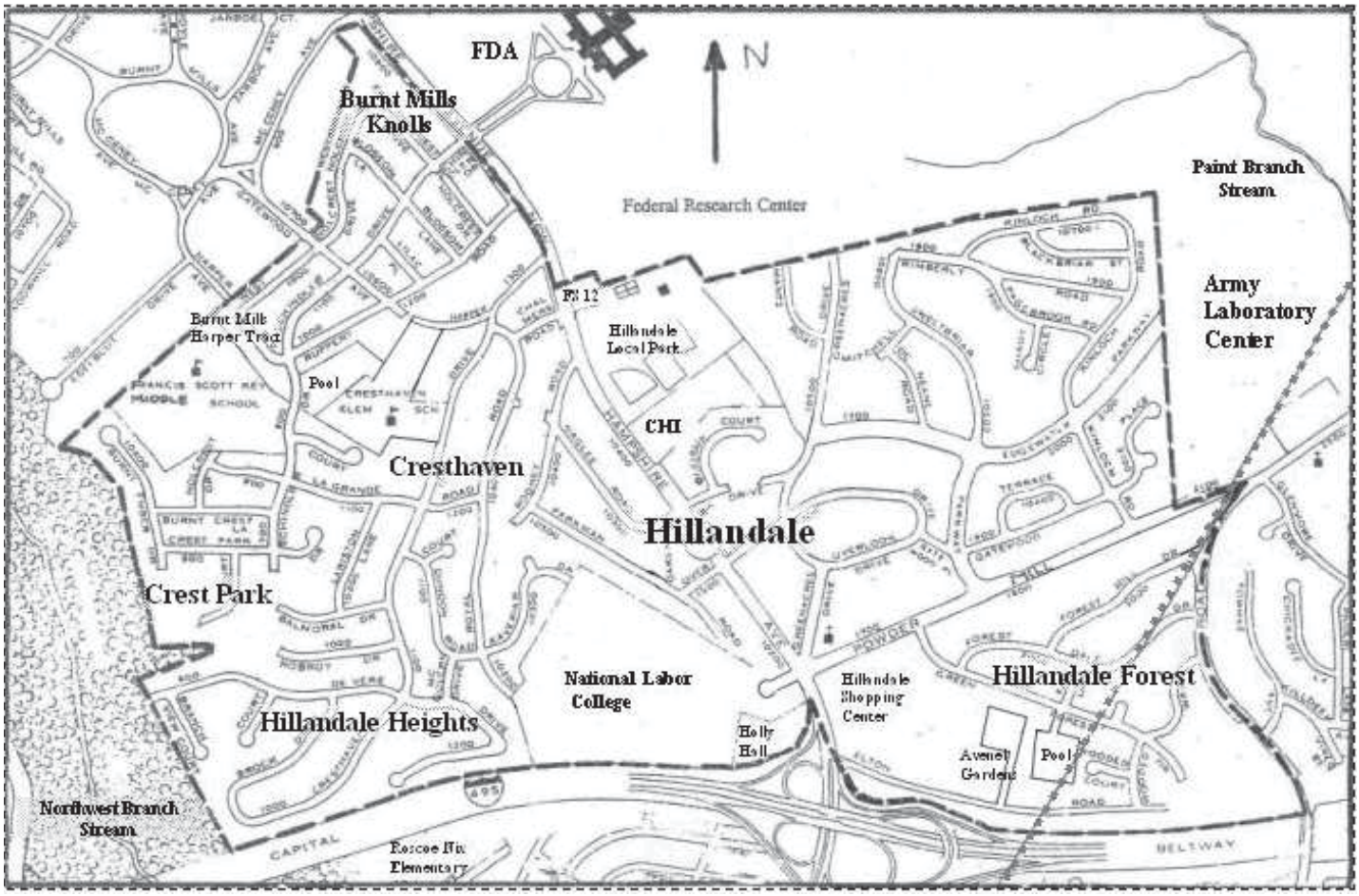


FIGURE 5: HILLANDALE CITIZENS ASSOCIATION MAP

The Naval Ordinance Laboratory Administration Building has been designated a historic structure by the Montgomery County Historical Preservation Commission. A "historical area" defined by the width of Building 1 and from back of Building 1 to New Hampshire Avenue was designated.

Hillandale Local Park

With the noticeable increase in suburban population in southern Montgomery County, E. Brooke Lee, M-NCPPC, and Fred Tuemmler, planner, began to push for more recreational programming by 1943. The Commission sought financial assistance through the Lanham Act to make this objective a reality. As the population in the county had vastly increased due to the proximity to the nation's capital and the creation of defense jobs, the need for recreation facilities was readily apparent. Finding a solution that got men, women and children active became codified through the 1944 Master Plan of Recreation.

The Naval Ordnance Laboratory, also established in White Oak in 1944 (construction was not completed until 1946), encompassed 1000 acres of land with 30 acres set aside for the Hillandale park according to the Hillandale Citizens Association. However, a January 13, 1943 deed between Esther M. Green and M-NCPPC for "6 acres or less" and then again on November 22, 1943 a deed between Merritt and Dorothy Lockwood and M-NCPPC legalized a transfer of 25.217 acres of land.

In total Hillandale Local Park started with a little over 31 acres of land. A November 19, 1944 Plat of Boundary Survey for the Hillandale Recreation Center confirms the two holdings that would potentially make up the Hillandale Park: the Lockwood Tract, including 25.293 acres, of which nine were used by the Montgomery County Board of Education, and the E.M. and J.M. Green Tract, including 5.791 acres that appear to have encompassed the future Recreation Building.

The Hillandale Recreation Center was completed in June 1944 as a "fair-weather building." The fieldstone fireplace was a feature of the original cabin. A July 1950 Preliminary Plan for the Hillandale Recreation Center showed the need for baseball and softball fields; a football field; gender segregated courts for organized games such as basketball, volleyball, and shuffleboard; tennis courts; a tots play area; playground apparatus; picnic grounds and natural park areas. In addition, it was suggested a dance terrace should be placed directly behind the "exist[ing] Community Bldg." The facility was not winterized until October 1953.

By December 1953 plans for the Hillandale Recreation Center, later known as the Hillandale Park Activity Building, show the creation of a parking lot to accommodate up to 21 cars, which would merge into the Firehouse parking lot, and further adjoin two tennis courts. A service drive from the parking lot would flow straight back to the Recreation Building.

In 1956 the Park Activity Building attached via a breezeway to another pre-fabricated structure which was moved from the Naval Ordnance Laboratory and was later known as the Adult Education Center.

Current Park Summary

The Hillandale Local Park site was acquired by the Commission in 1943. The park is 23.35 acres, of which 12.09 acres are within the stream valley buffer located along the eastern side of the park. Approximately 10.66 acres of this land has been developed with park facilities and/or open space. The remainder is predominantly forested and is constrained by the stream valley, steep slopes, floodplains or erodible soils.

The current park was developed with active recreational facilities and a small parking lot in the early 1950s. These facilities which remain intact today consist of the following:

- Two softball fields with a soccer field overlay;
- Two lighted tennis courts;
- Two lighted basketball courts;
- One playground.
- Park Activity Building (1944)
- Adult Education Building (1956)
- Park office building (1975)

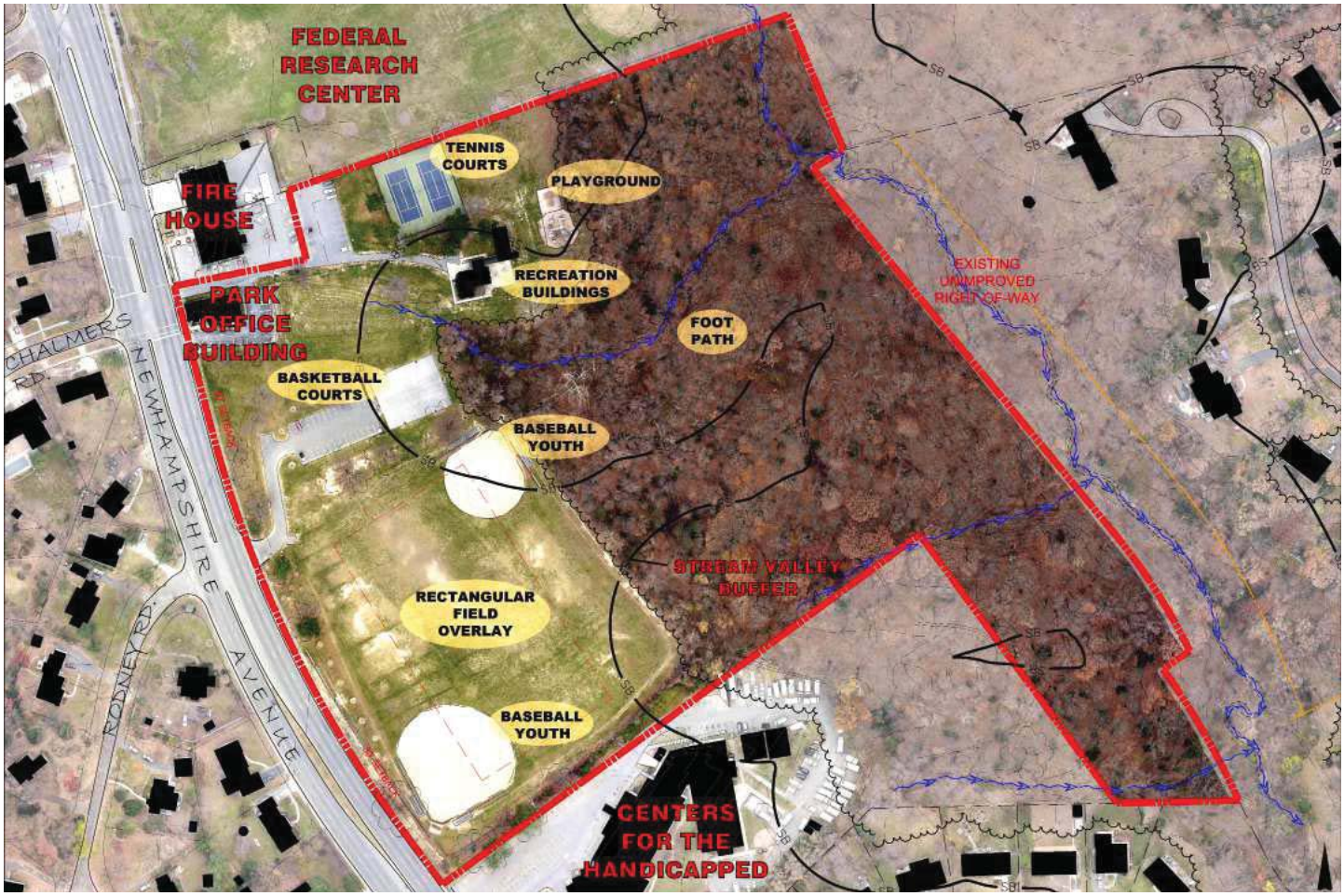


FIGURE 6: EXISTING CONDITIONS

The Park Activity Building was built in 1944 as a prototype for future park recreation structures. The original structure was constructed as a "fair-weather building" and was subsequently winterized in 1953. A prefabricated addition, the Adult Education Building, expanded the footprint of the structure around 1956. Repairs and alterations were made to the structure throughout the 1980s and 1990s. The 1944 structure is known as the Park Activity Building (PAB) and the 1956 structure is the Adult Education Building. A small fire in the 1990s caused structural damage, requiring major modifications that further compromised the historic integrity of the original 1944 structure and later addition in 1956.

In 2008 the Montgomery County Department of Health Well and Septic Division placed limits on the use of the recreation structure to no more than three times per week with a 50-person maximum group capacity because the buildings were not connected to the public sewer system. The permit was valid through the end of 2013, at which time M-NCPPC was required to either demolish the facility or connect to the Washington Sanitary Sewer Commission (WSSC) sewer located on the west side of New Hampshire Avenue. The Park Planning and Stewardship Division recommended demolition of the facility following expiration of the permit in 2013. In October 2012 M-NCPPC recommended the phased closure and ultimate demolition of Hillandale Park Activity Building (PAB) and the former Adult Education Building by February 1, 2014. The closure date coincides with septic tank agreement expiration on February 1, 2014.

In addition to the recreation structures and facilities above, a two-story brick office building exists in the northwest corner of the park adjacent to the fire station. The circa-1975 building was acquired by the Commission in 2007 and is approximately 5,500 square feet in size. It was formerly known as the Barnett Dental Building. The space has been used by various park services over the years and currently houses staff offices for the Commission's Enterprise Division and SmartParks Unit.

During the course of this Facility Plan process, the office building was studied and thought not to be needed in the future. New park office space will be expanding elsewhere and absorb this office space, allowing for the removal of this building and absorption of this space into the park site.

E. ADJACENT PROPERTIES

Federal Research Center:

The largest land holding to the north, the Federal Research Center (FRC), owned by the General Services Administration (GSA), currently employees 9,000 employees and is secured by a perimeter fence.

Part of the adjacent open space was once used by the Commission and housed a public golf course. Due to the location and land-form, there is the potential for creating a shared-use diamond field on the property, approximately in alignment with the existing tennis courts. This location is set well back from the road and at a lower elevation in keeping with the 250-foot historic open space zone along New Hampshire Avenue as required by FRC.

There is potential for a land swap with a piece of park-owned property north of FRC for a piece of land adjacent to the park. This land swap concept has not been pursued by M-NCPPC or FRC to date.

Hillandale Volunteer Fire Station:

To the north the Hillandale Volunteer Fire Station, also owned by Montgomery County, was constructed in 1946, added onto in 1955 and remains in operation today. The Fire Station shares the north boundary of Hillandale Local Park with the Federal Research Center. The Fire Station has expressed a desire to either relocate or renovate

FEDERAL RESEARCH CENTER PROPERTY

HILLANDALE VOLUNTEER FIRE DEPARTMENT

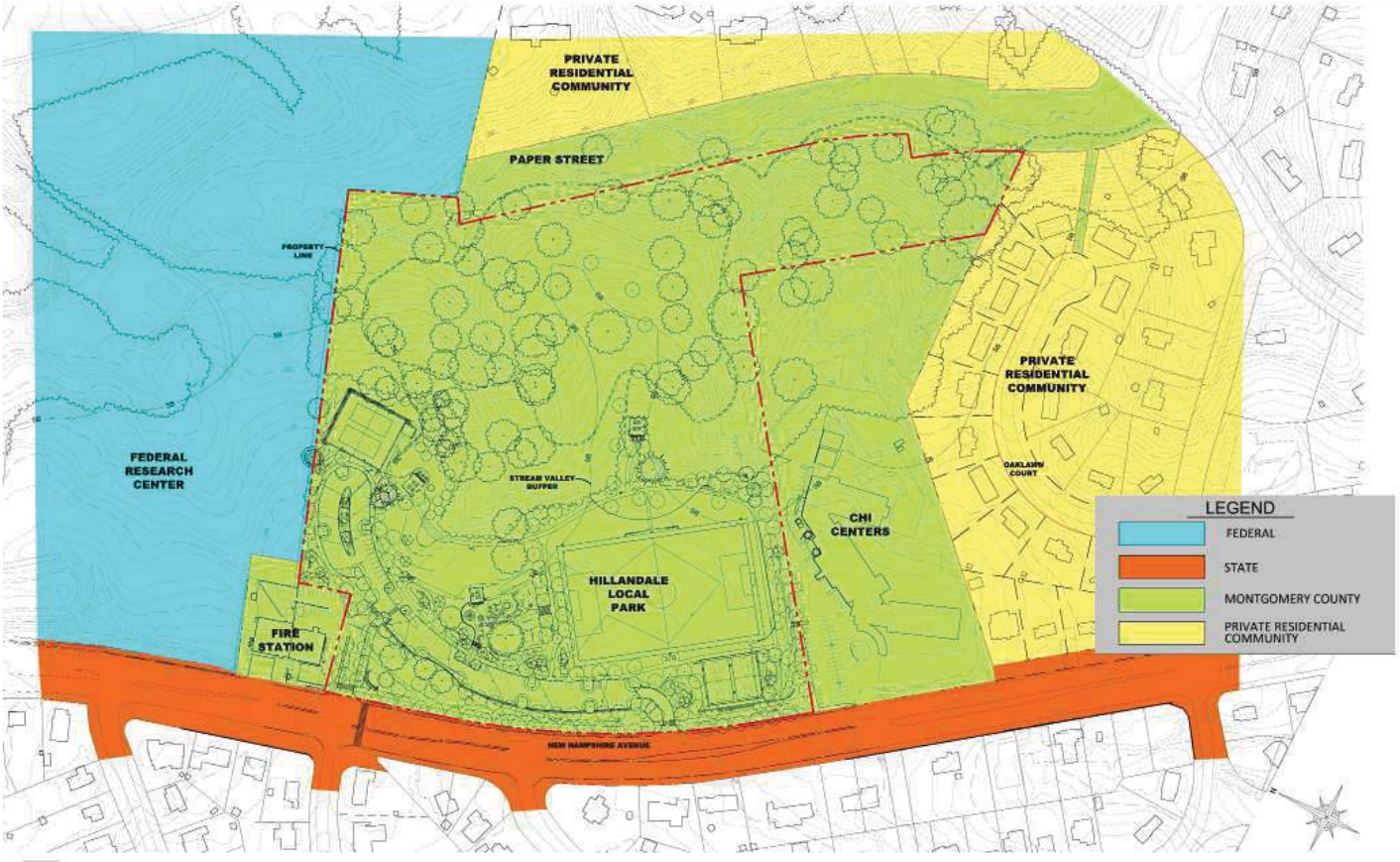


FIGURE 7: PROPERTY OWNERSHIP

at some point in the future. Currently the primary entrance road to the park is shared with the Fire Station, creating an unclear and visually confusing traffic flow. Furthermore, the *White Oak Science Gateway Master Plan* recommends relocation of the Fire Station.

The Hillandale Volunteer Fire Station does not provide pleasing views from the park. Because of the building's proximity to the park entrance there are conflicting uses during times of peak need. The fire engines have a wide turning radius and require a significant amount of turning space to maneuver in and out of the rear of the building. The Fire Station parking lot appears adequate for the volunteers, however, it has been noted that vehicles park outside the designated spaces and engines sometimes use park area for wash downs. Space does not allow for a separate entrance for the Fire Station, however, some delineation of drive aisle and parking area should be defined.

CHI Centers:

To the south the CHI Centers leases the property from Montgomery County and has been operating for over 60 years. CHI Centers, a private non-profit organization, provides support services to adults with developmental disabilities in Montgomery, Prince George's and Howard counties. CHI's stated goals are as follows: "CHI Centers helps to create the conditions that allow persons with disabilities to have opportunities to participate in community life and be afforded respect and dignity."

For many years CHI has provided meeting rooms for the community, in particular, the Hillandale Citizens Association. The 61,793-square foot building was constructed in 1952 as the Hillandale Elementary School and is on a 6.8-acre site that it is owned by Montgomery County. It is expected that CHI Centers will continue to provide invaluable services to the community at this location. There is a current agreement between CHI and M-NCPPC for a shared-use of the parking lot.

Although in a great location adjacent to the park, the CHI Centers property is not ADA accessible to the park. Consideration should be given to providing accessibility to the park from the CHI Centers. The parking lot at CHI Centers is available via MOU to be used by the park visitors, however, lack of signage and differing grades fail to take advantage of this.

CHI CENTERS

Montgomery County:

The east side of the property is bounded by an undeveloped 120-foot wide paper street named Edgewater Parkway. Within this area is the unnamed perennial tributary to the Paint Branch.

New Hampshire Avenue, Maryland State Highway Administration (SHA) Right-of-Way:

The west side of the property is bounded by the approximately 100-foot wide New Hampshire Avenue right-of-way (some slight variation in width).

Facility Plan Process

The Facility Plan for Hillandale Local Park was funded with $400,000 in the FY 13-18 Capital Improvements Program in the Facility Planning Local PDF. The facility planning phase began in winter of 2013 and was completed in the summer of 2015.

M-NCPPC established a Planning, Design, Construction and Operation (PDCO) team to assist in developing the Facility Plan for renovation of the park. This internal team includes staff with expertise in environmental planning, transportation planning, facilities management, park and trail planning, natural resources stewardship, forest ecology, architecture, civil engineering and landscape architecture. In addition, the PDCO team includes staff from Park Police and Northern Region Park Management.

The prime consultant was procured via RFP P33-109. The contract was awarded to Charles P. Johnson and Associates (CPJ) with Annapolis Landscape Architects (ALA) as the lead landscape architect on January 25, 2013. The scope of work includes design, civil engineering, topographic surveying, a natural resources inventory, preliminary forest conservation plan, geotechnical work, stormwater management design and cost estimating services.

The facility planning key meeting dates are as follows:

COMMUNITY MEETING

DATE	MEETING PURPOSE
February 25, 2013	Kick-off meeting attended by the PDCO team; reviewed and discussed project background, program and vision
May 14, 2013	Meeting reviewing base survey, proposed soil boring locations, draft NRI/FSD, site analysis and SITES
June 19, 2013	Meeting to review nine proposed concepts
July 22, 2013	Meeting to review slide presentation for Community Meeting
July 24, 2013	**Community Meeting** at the White Oak Community Recreation Center
August 29, 2013	Meeting to discuss use of office building, restrooms and removal of existing park structure
October 28, 2013	Meeting to review NRI/FSD update, SITES checklist, Program of Elements voting outcome from meeting and favored concepts
December 3, 2013	Meeting with State Highway Administration regarding shifting second entrance
March 19, 2014	**Community Meeting** with the Eastern County Recreation Advisory Committee at the White Oak Community Recreation Center
March 26, 2014	**Community Meeting** Hillandale Civic Association Meeting at the CHI Centers
July 1, 2014	Hillandale Civic Association Meeting at the CHI Centers
September 5, 2014	Meeting to discuss playground concept
January 26, 2015	PDCO Meeting to review slide presentation, cost estimate and Final Facility Plan
July 9, 2015	Public presentation to the Montgomery County Planning Commission

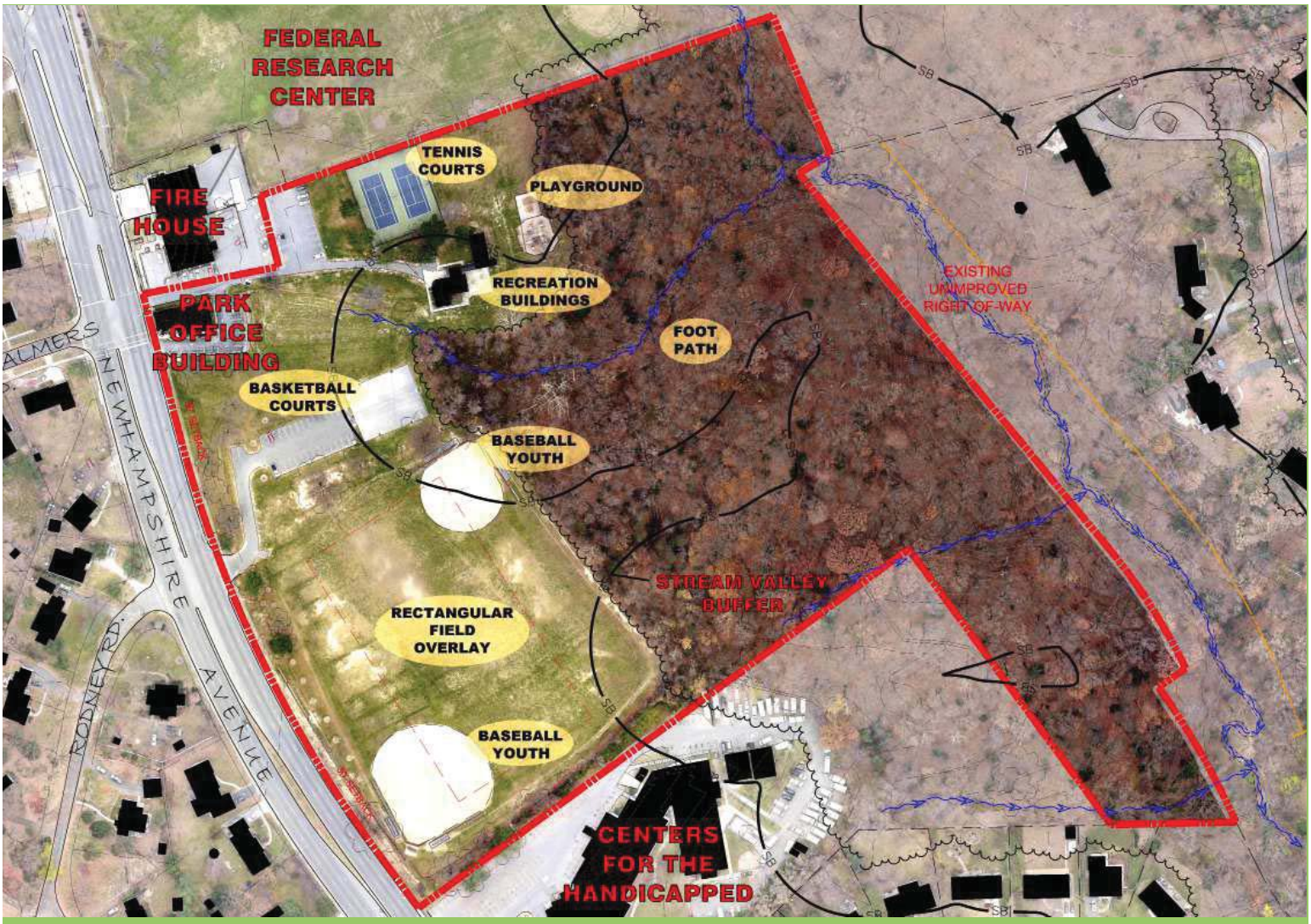
A topographic survey, Natural Resource Inventory/Forest Stand Delineation (NRI/FSD) and site analysis maps of the site were prepared to determine the development opportunities and constraints of the site. Several different concepts were then developed for the park based on the site analysis and preliminary Program of Requirements (POR).

The first public meeting was held on July 24, 2013 to present the analysis drawings and nine preliminary concepts. The preliminary POR was revised based on community input from the July 24, 2013 meeting and M-NCPPC staff input.

Two refined concepts were presented at follow-up public meetings held on March 19, 2014 and March 26, 2014. Based upon community and staff input one concept was selected and further refined.

Throughout the process M-NCPPC coordinated with the Hillandale Fire Station, the Federal Research Center and the CHI Centers to gain insight into adjacent needs, uses and/or conflicts.

Ongoing during this time were the Geotechnical Report, Preliminary Forest Conservation Plan and Stormwater Management Concept.



Site Analysis

Landform and Geology

A. TOPOGRAPHY

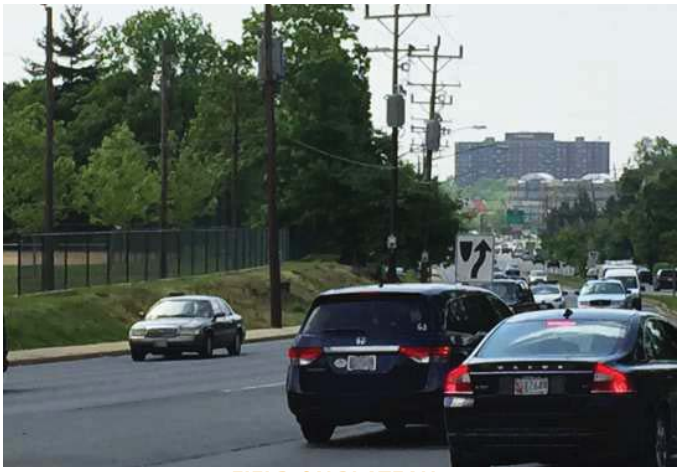
Across the topography of the site a 112-foot grade differential occurs within the park boundaries. The highest point is located near the northwest corner of the property near the Hillandale Office Building at elevation 366. The lowest point in the park is located within the stream valley buffer at the point where the stream crosses the site boundary at elevation 254 in the southeast corner of the property.

The developed portions of the site, as well as the adjacent Fire Station property, appear to have been built on fill on plateau-like landforms that sit above adjacent properties and New Hampshire Avenue. It is apparent that the naturally rolling topography has been manipulated through the evolution of the site. An 18-foot elevation change occurs across the developed portion of the park falling from north to south.

Within the forested stream valley buffer area, three distinct drainage channels direct runoff to the tributary located along the eastern property line. Most slopes range between 15 to 30% with a small percentage of the buffer exhibiting slopes in excess of 30%. Evidence of erosion within the swales is visible. See Figure 8: Steep Slope Map and Figure 9: Topography Map for greater detail.

A retaining wall separates the volunteer Fire Station property from the adjacent FRC property. The CHI Centers property and parking lot are located approximately six feet below the elevation of the park and are connected via two staircases. There is currently no ADA accessible route between the CHI Centers and the park.

FIGURE 8: STEEP SLOPE MAP



FIELD ON PLATEAU

INTERMITTENT STREAM

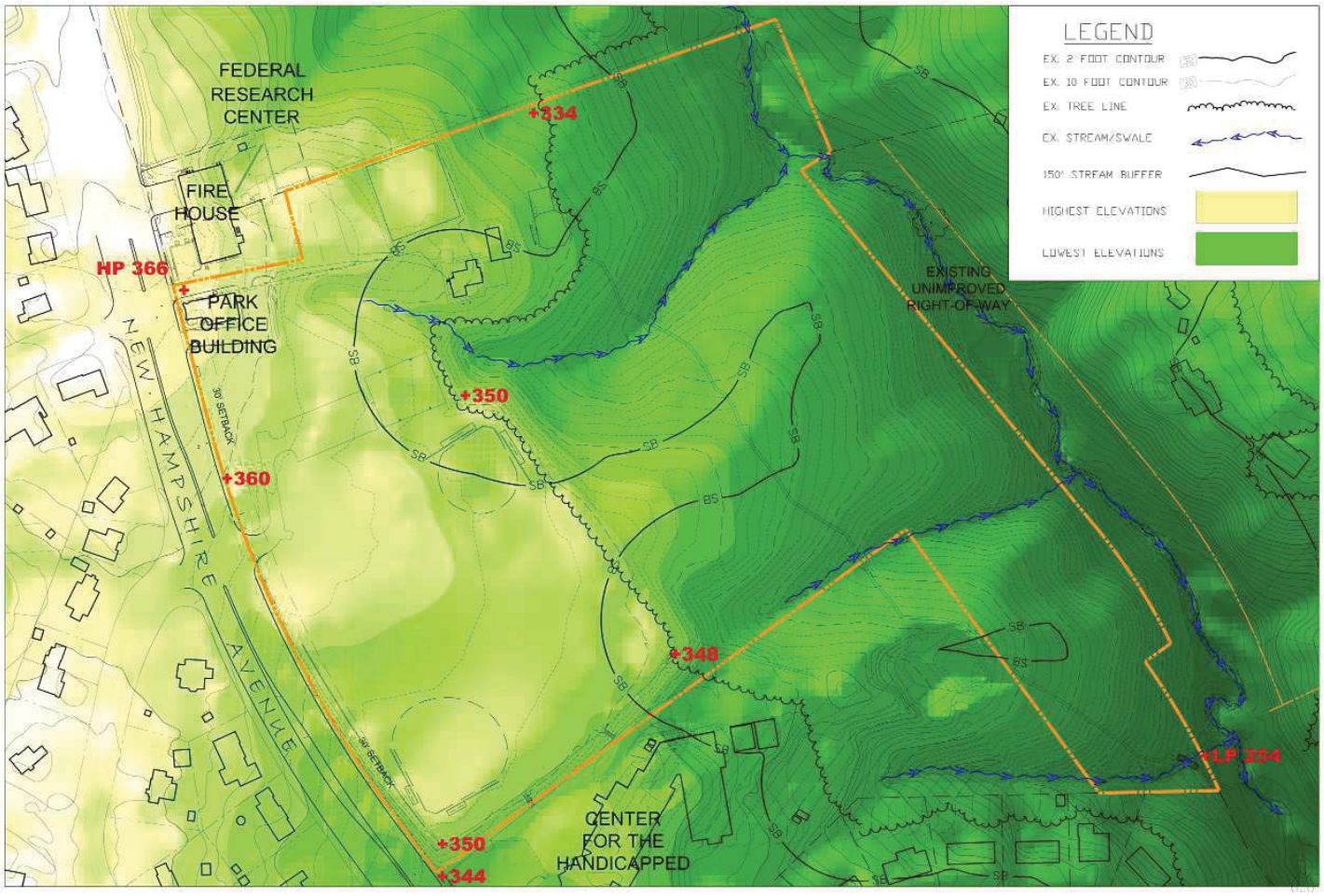


FIGURE 9: TOPOGRAPHY MAP

B. SUN / SHADE

The Aspect Map, Figure 10, demonstrates the sun orientation for each of the slopes to potentially guide trail alignment and bench locations within the woodland to the sunnier slopes.

NATIVE NEW YORK FERN

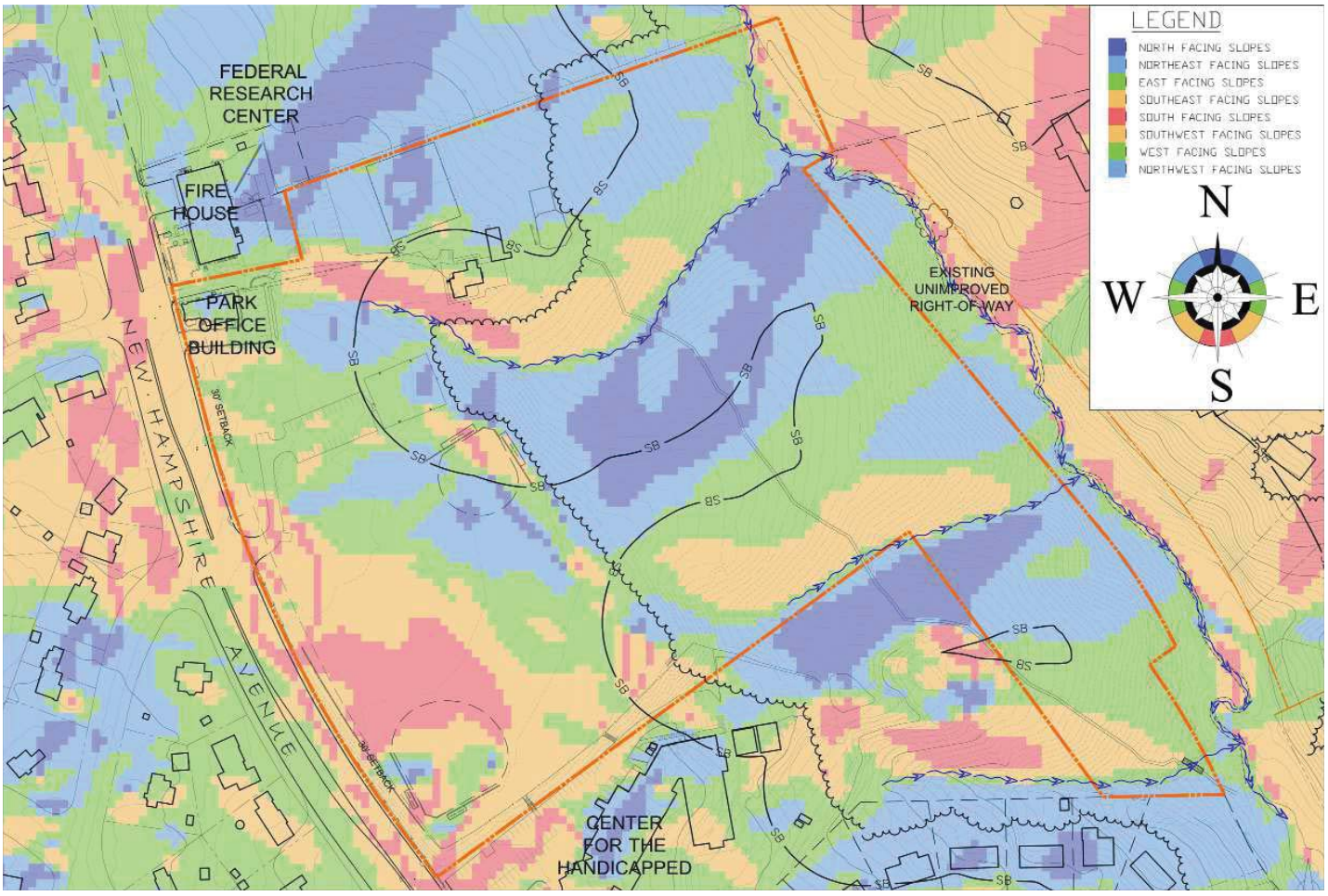


FIGURE 10: ASPECT MAP

C. SOILS

Soils within the forested portion of the site are largely moderately erodible Brinklow-Blocktown channery soils, a silt loam. In the developed portion of the site there are four other types of loamy soils with low levels of erodibility, Gaila silt loam, Glenelg silt loam, Croom gravelly loam and Wheaton silt loam. None of these soil types significantly impact the redevelopment of the site.

SITE VISITS

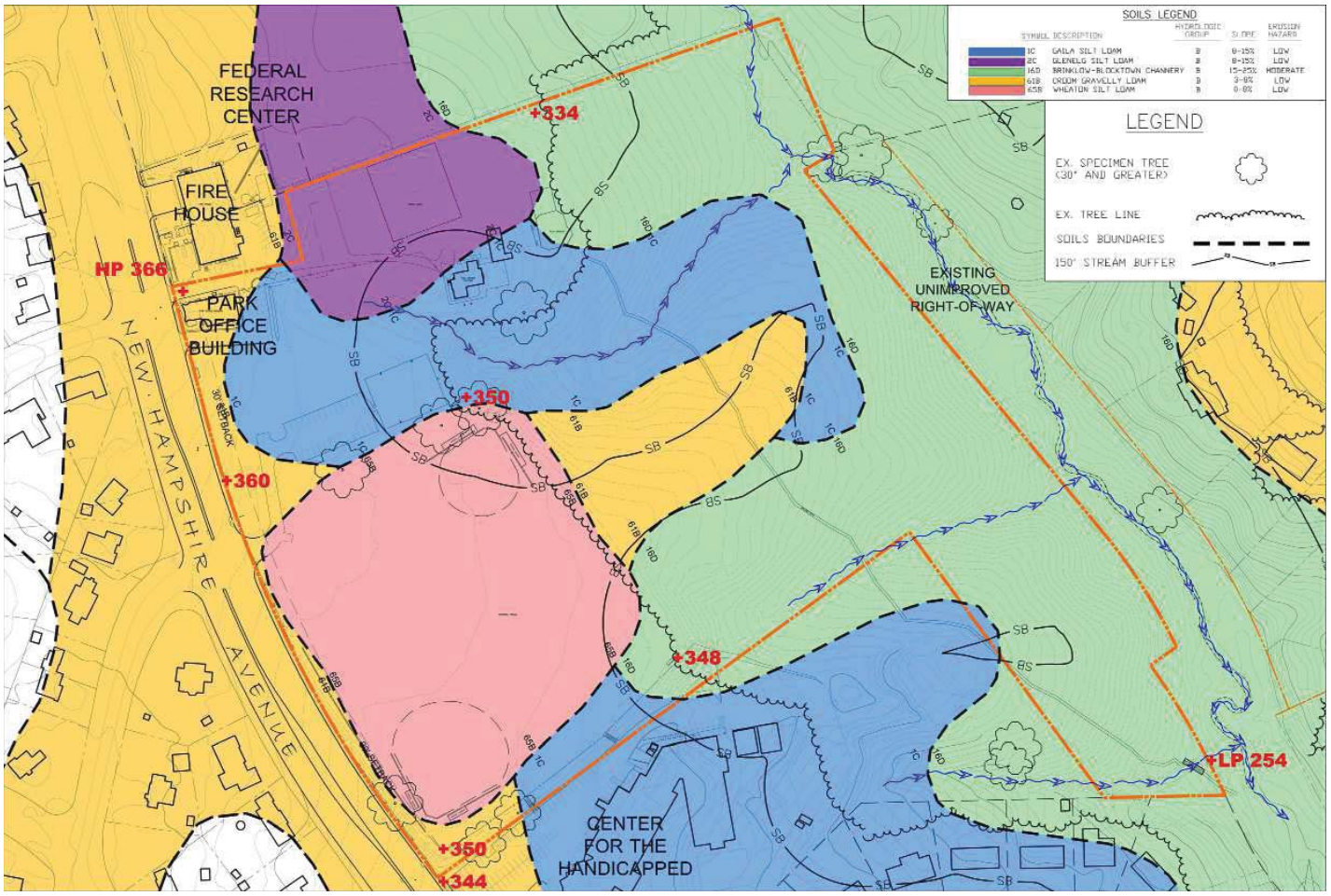


FIGURE 11: SOILS MAP

Natural Resources Inventory and Forest Stand Delineation

A Natural Resource Inventory and Forest Stand Delineation (NRI/FSD) was completed for the Hillandale Local Park project in 2013 by Charles P. Johnson and Associates. The NRI/FSD is attached in Appendix A.2. Hillandale Local Park is comprised of three parcels totaling 23.35 acres. The individual parcels P340, P233 and P258 have tract areas of 17.83, 5.21 and 0.31 acres respectively.

The site is divided into two zones. The western half of the site is open in character and consists of the existing park active recreation amenities and office building. The eastern half of the site consists of forest. The forest area totals 12.69 acres. The eastern edge of the property adjoins an unimproved public right-of-way which contains a perennial stream which is an unnamed tributary to the Paint Branch. Additionally, three intermittent streams flow in an easterly direction across the property to the perennial stream.

As a result more than half of the site, 12.09 acres, is within a stream valley buffer and 10.19 acres of the stream valley buffer is forested. There are 83 specimen trees on-site within the forested area and three specimen trees in the open area. The forest connects to a contiguous forest area totaling 38 acres with an average width of 1,010 feet.

The site does not contain a 100-year floodplain per FEMA Map #24031C0390D and there are no wetlands within the property area. Additionally, there are no rare, threatened or endangered species on-site and there are no historical structures present.

The forest is mid- to late-successional, as typically found in the Mid-Atlantic region, dominated by Tulip Poplar and Oaks, primarily Pin Oak, Red Oak and White Oak, with some Scarlett Oak. Additional species include American Beech, Sycamore and Red Maple trees. The understory consists primarily of American Holly, Oak and American Beech trees and shrubs of Greenbriar, Barberry, Wineberry, Mountain Laurel and Spicebush.

The interior of the forest is relatively free of non-native invasive species and contains some large areas of naturalized New York and Christmas Fern, however, there are some localized areas of vinca minor and bamboo (invasive) present. The forest edge along the upland open area of the park is impacted by Poison Ivy (native and sometimes invasive), Multiflora Rose and the invasives, Japanese Honeysuckle and English Ivy.

An unnamed perennial tributary to the Paint Branch lies directly downhill from the forested area, mostly within an undeveloped road right-of-way. The stream is currently stable, with several large areas of exposed bedrock. Fish are present in the stream despite the fact that the stream enters a pipe just downstream of the southern end of the park property. The stream flows through the pipe for more than one-half mile before leaving the pipe and flowing into the main stem of the Paint Branch.

NATIVE NEW YORK FERN

ENVIRONMENTAL SUMMARY

	FORESTED	UNFORESTED	TOTAL PERCENTAGE
Within Environmental Buffer	10.19 Ac.	1.90 Ac.	12.09 Ac. (52%)
Outside Environmental Buffer	2.50 Ac.	8.76 Ac.	11.26 Ac. (48%)
TOTAL	**12.69 Ac.**	**10.66 Ac.**	**23.35 Ac.**

FIGURE 12: ENVIRONMENTAL SUMMARY

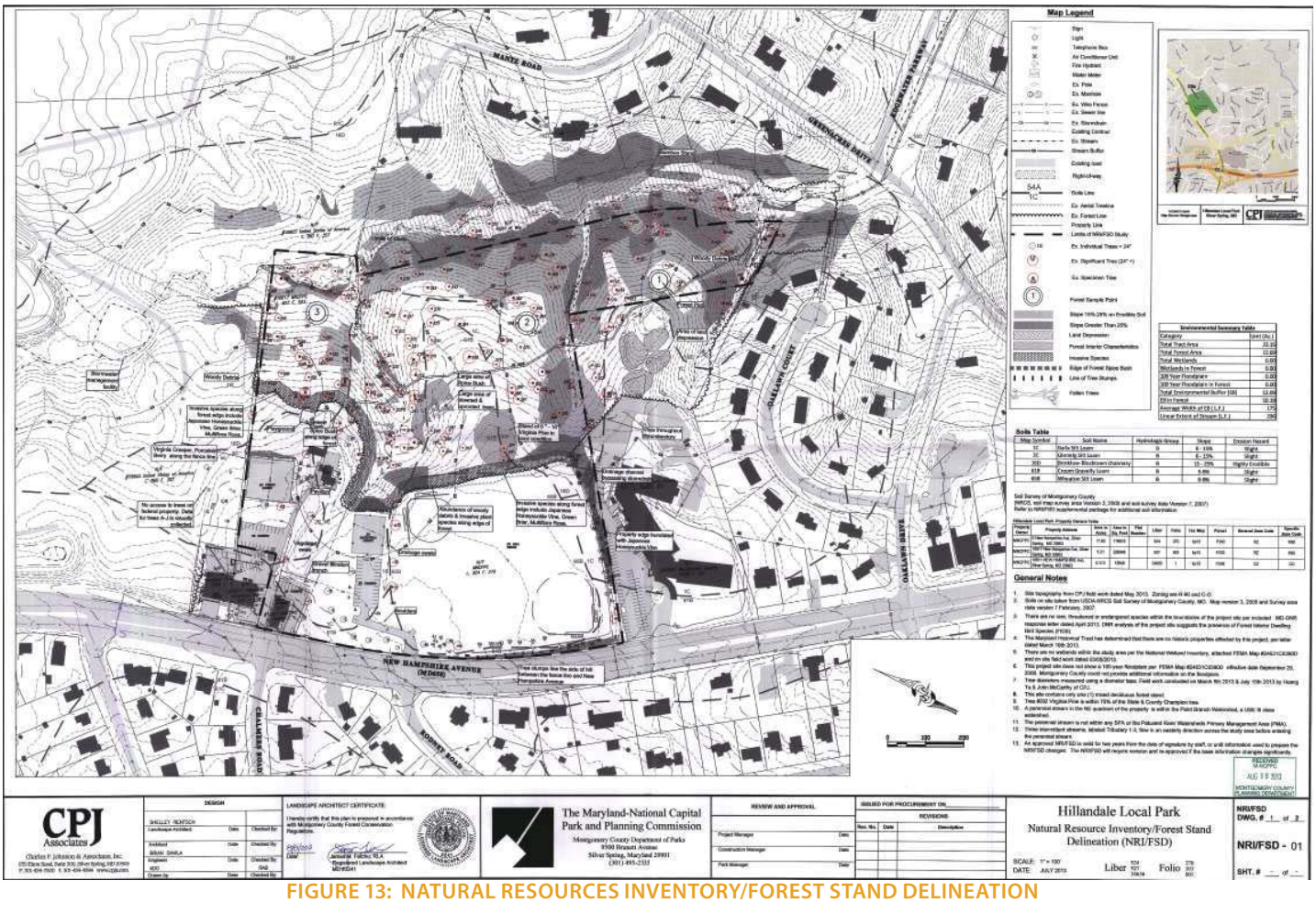


FIGURE 13: NATURAL RESOURCES INVENTORY/FOREST STAND DELINEATION

Geotechnical Report

A Geotechnical Engineering Report was completed in January 2015. The report is attached in Appendix A.4. Seventeen soil borings, nine infiltration tests and fourteen topsoil samplings were performed. The soil borings were spread across the site at or near proposed site amenities such as picnic pavilions, walls, restroom buildings, ball field lighting, stormwater management facilities, etc. The infiltration tests were spaced along the parking lot and the proposed rectangular ball field. The soil borings were performed to a depth of 20 feet.

The soil borings indicate a top layer thickness of three to four inches of topsoil on average. The material encountered underlying the topsoil to the bottom of the soil borings (Stratum A) consisted of light brown, brown, red, yellow and orange, damp, very loose to very dense silty sand with varying amounts of clay and gravel.

Groundwater was encountered only in Boring SB-14 at a depth of 18 feet below grade. However, fluctuations in groundwater levels and perched water may be expected with variations in precipitation, evaporation and related factors.

The site development will require fill placement. Before placing new fills all topsoil, organic matter and other deleterious materials shall be removed from the ground surface. The exposed subgrade shall then be proof rolled and any unstable areas shall be removed and be replaced with compacted granular fill. Compacted fill and backfill should be placed in loose lifts not exceeding eight inches. All fills shall be compacted to not less than 95% of the maximum dry density and to within 3% of the optimum moisture content in accordance with ASTM Method D-698.

The natural soil of stratum A is generally considered suitable for use as compacted fill. However, all materials for fill should be approved by the geotechnical engineer prior to use. The naturally occurring soils at the site are susceptible to disturbance when exposed to water or to construction activities. Care should be exercised after preparing fill subgrade that it does not remain exposed for long periods or be subjected to unnecessary construction traffic prior to placement of compacted fill.

Infiltration testing determined that infiltration is feasible. The infiltration rate at Borings INF-5, INF-8 and INF-9 did not fall within the acceptable range for infiltration rates of 0.52 inches/hour and six inches/hour.

Utilities

Sewer:

A four-inch sewer line currently connects the park office building to the ten-inch sewer main on the west side of New Hampshire Avenue. The existing sewer connection does not extend to the park recreation structure, which, combined with the failing septic system, resulted in a demolition order from the Montgomery County Department of Health.

Water:

A fire hydrant is located at the northwest corner of the park office building which is connected to the 16-inch water main, located in the middle of New Hampshire Avenue. A 1-1/2-inch water line connection from the fire hydrant lead currently services the park office building and recreation structures.

Gas:

A 3/4-inch gas line connection from the eight-inch gas main, located on the east side of New Hampshire Avenue, currently services the park office building and recreation structures.

Storm Drain:

Storm drain inlets along New Hampshire Avenue collect runoff from the state right-of-way and carry storm flows past the park.

The on-site storm drain system consists of an inlet located at the northeast corner of the ball fields, which discharges into an intermittent stream, which drains to the perennial stream on the eastern edge of the property.

Electric:

Six electric utility poles run along New Hampshire Avenue behind the sidewalk, two of which also provide cobra head street lights. Electricity also extends into the site to the office building, two park facility structures, the tennis courts, ballfields and the basketball courts.

OVERHEAD UTILITIES

Opportunities and Constraints

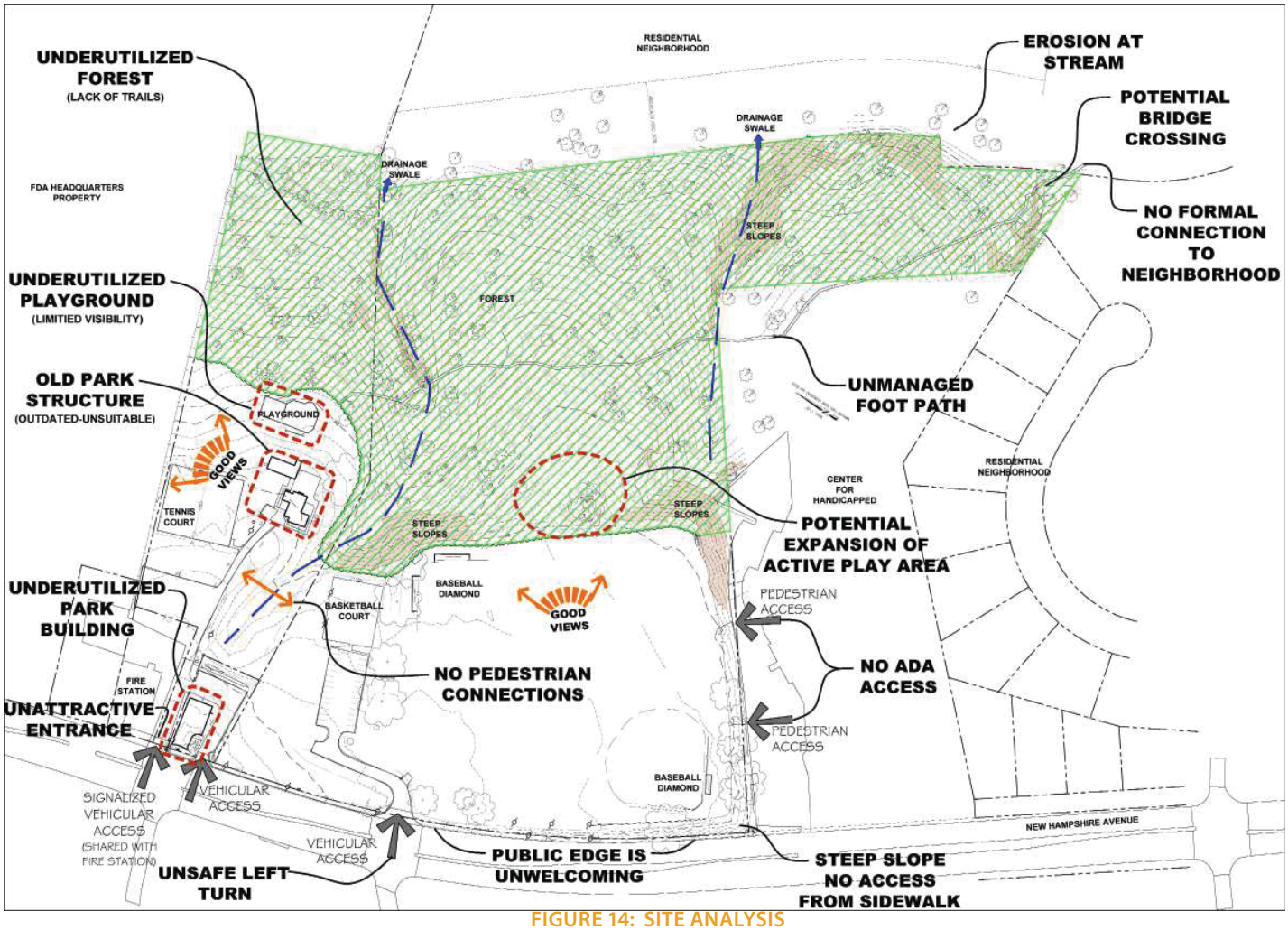


FIGURE 14: SITE ANALYSIS

The integration of the existing woodlands with the more urban side of the park that flanks New Hampshire Avenue is a compelling opportunity on the Hillandale Local Park site from an urban design standpoint.

In the same theme, the abatement of traffic noise from New Hampshire Avenue is arguably a primary constraint on park design.

Many site-specific conditions such as existing vegetation, as well as land form and hydrology directly influence the park design. Each of these aspects and more were critically analyzed during the concept design stage.

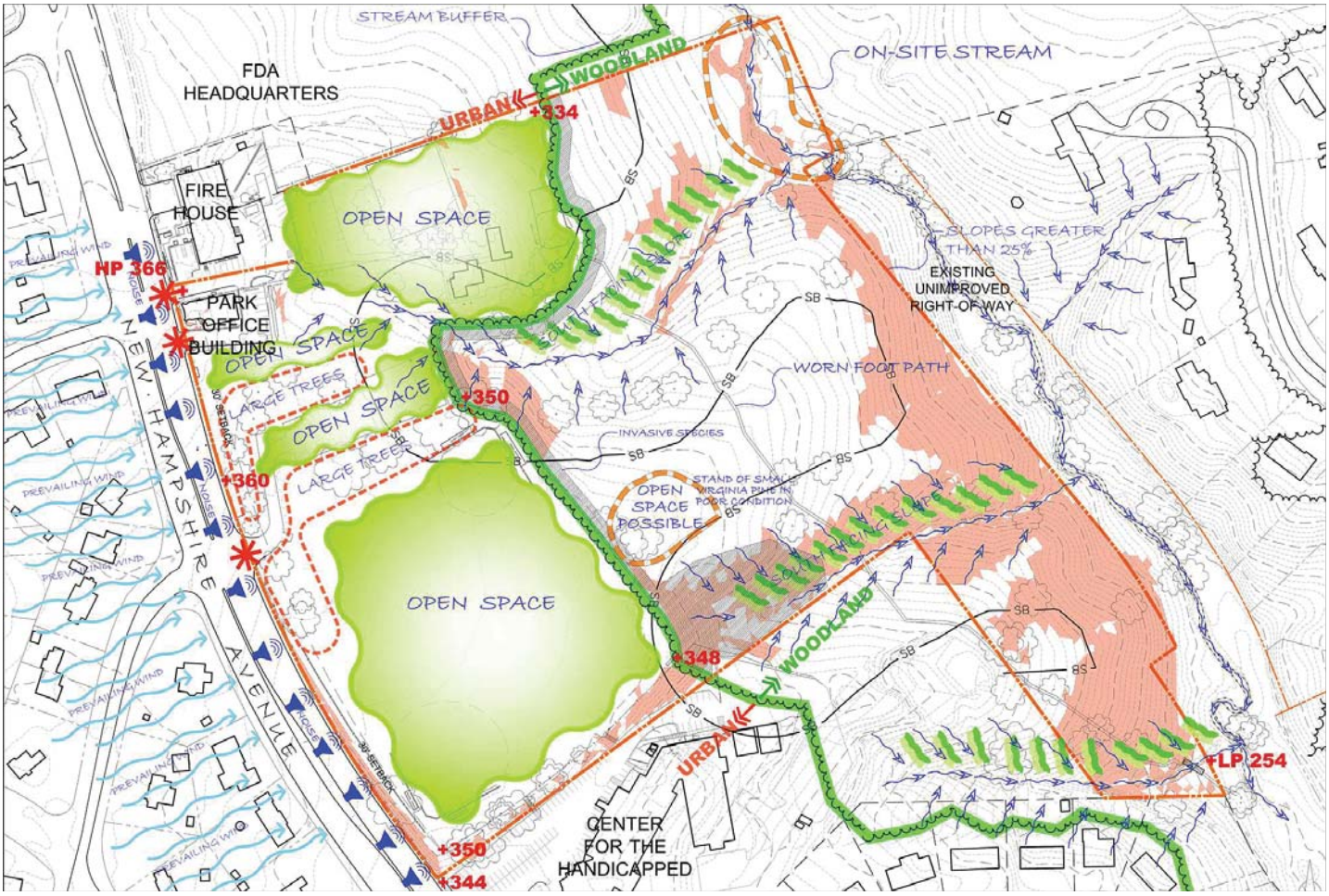


FIGURE 15: OPPORTUNITIES AND CONSTRAINTS

BUILDABLE SITE AREA

The majority of the 23.35-acre site, 12.09 acres, is within the environmentally sensitive stream valley buffer. The buffer is an expanded buffer based on steep slopes and intermittent streams. Currently there are some park structures and site elements located within the stream valley buffer including the Park Activity Building, a concrete patio, a diamond ballfield and a basketball court. As much hardscape as possible should be removed from the stream valley buffer and replaced with plant material.

The remainder of the site, 11.26 acres, is located outside the stream valley buffer. All of this area cannot be considered buildable because:

- 2.50 acres are forested
- 0.61 acres will be reserved along New Hampshire Avenue for a future 30-foot road right-of-way expansion where the right-of-way is proposed to accommodate a future Bus Rapid Transit system.

With 52% of the site within a protected environmental stream valley buffer; an additional 2.50 acres outside the buffer currently forested and 0.61 acres for the future dedication of expanded right-of-way along New Hampshire Avenue, the true buildable site area is only 8.15 acres, or 35% of the site.

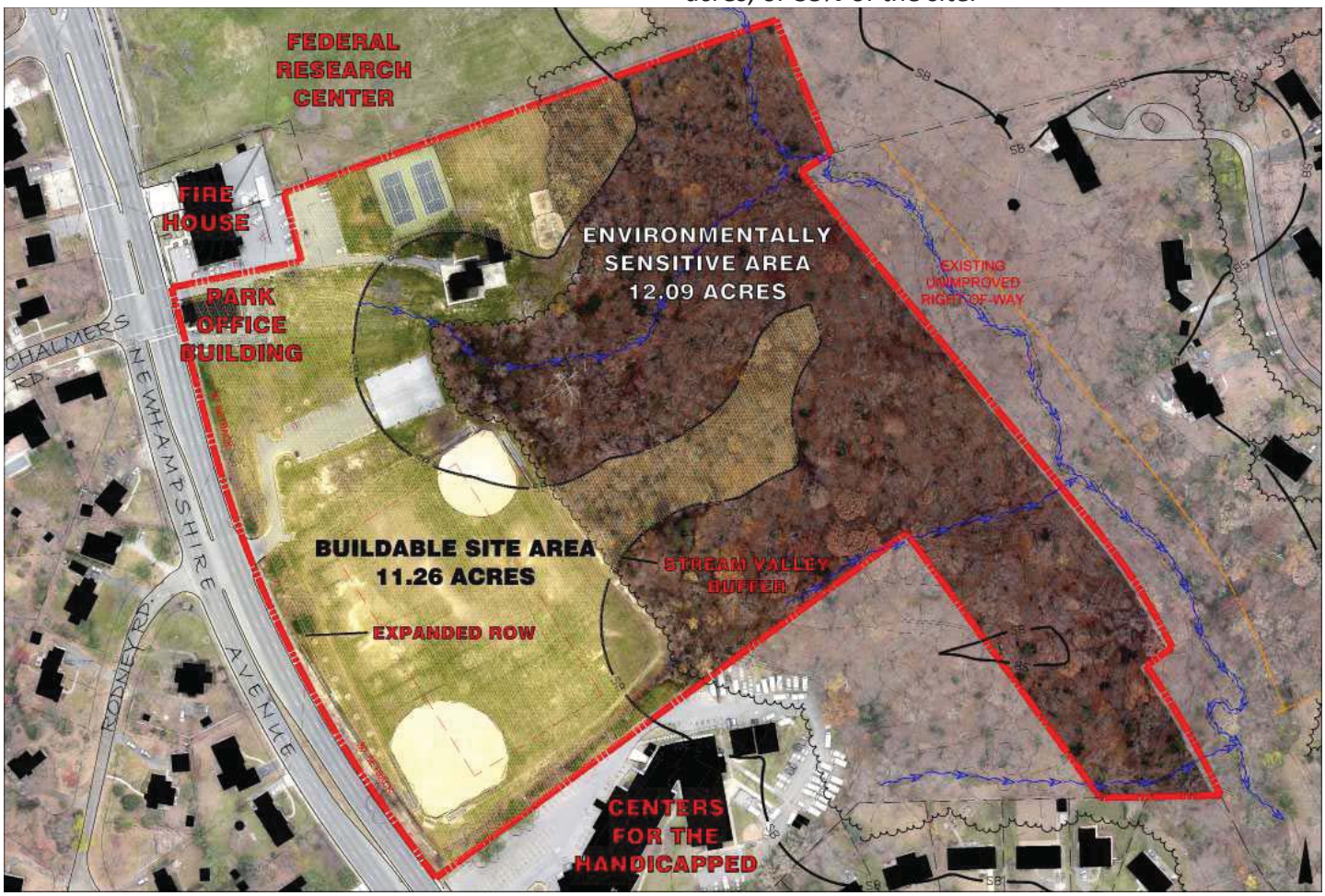


FIGURE 16 BUILDABLE SITE AREA

VEHICULAR ACCESS AND CIRCULATION

Vehicular access to the park is currently provided via three separate entrances off of New Hampshire Avenue (MD-650). The posted speed limit of New Hampshire Avenue is 40 mph in the park's vicinity. The northernmost entrance is located at the signalized intersection of Chalmers Road, between a M-NCPPC office building which is setback 13 feet from the curb and the Hillandale Volunteer Fire Station. The shared entrance provides access to parking located behind the fire house. This entrance is signalized, but out of alignment with the centerline of opposing Chalmers Road, creating an awkward condition and visually confusing primary park entrance.

APPROACH TO ENTRANCE

PROXIMITY OF BUILDING TO ROAD

There is a limited view of the entrance when traveling northbound and no possibility for appropriately sized signage.

The initial view when entering the park is of the side yard of the Hillandale Volunteer Fire Station consisting of perpendicular parking spaces with no separation from the drive aisle and storage bins. The lack of space leaves the entrance feeling like a service road with no room for adequate signage,

ENTRY SIGNAGE

landscaping or separation of uses between the two buildings. Additionally, this access point is not directly aligned with Chalmers Road, potentially creating conflicts with traffic flow. This primary park entrance, shared with the active fire truck ingress and egress activity is by all accounts less than ideal!

VIEW FROM MAIN ENTRANCE

A second vehicular entrance is located immediately to the south of the existing M-NCPPC office building. This access point primarily provides access to the parking lot associated with the office building and wraps around to connect to the main entrance.

The southern entrance is located across from the intersection of Rodney Road and currently allows for full vehicular turning movements through an opening in the median of MD 650. It is noted that under current conditions it can be challenging to make a left turn out of the park from this location because of limited sight distance due to a curve in the road alignment, and the volume and speed of northbound traffic. This entrance provides access to a small parking lot consisting of 28 spaces and is directly across from Rodney Road.

There is currently no internal vehicular connection between the park entrances, making it difficult for visitors to access the dispersed parking areas. The main entrance provides access to the park office building, Hillandale Volunteer Fire Station, recreation structures, tennis courts and playground while the secondary entrance provides access to the basketball courts and rectangular and diamond playing fields.

It is noted that the majority of park usage occurs during off-peak hours. Therefore, it is anticipated that park usage will generate less than 50 trips during peak hours.

ENTRANCE ACROSS FROM RODNEY ROAD

LACK OF CONNECTIVITY

PEDESTRIAN ACCESS AND CIRCULATION

Pedestrian access to the park is provided via existing public sidewalks along New Hampshire Avenue. There is currently no official access to the park across the forested stream valley from the residential neighborhoods east of the park. It should be noted that there are informal trails in place indicating that the community to the east of the park does enter the park from that approach on a regular basis. At the time of this writing, in response to a request from the community, Parks staff are in the process of building a natural surface trail and bridged stream crossing to facilitate safe access by residents to the east of the park.

No sidewalks or trails exist within the park to link park uses or parking areas. There is a significant grade differential between the park and New Hampshire Avenue, which limits access from CHI Centers to two sets of non-ADA accessible stairs.

The stream is a natural destination point for hikers. Seating areas along the stream could become memorable destination points for park visitors.

ACCESS TO CHI CENTERS

PARKING

Currently there are a total of 60 parking spaces split into three different parking lots, one at the recreation structures/tennis courts, one at the park office building and one at the basketball courts. This has proven to be an inadequate number of spaces. Neighbors across New Hampshire Avenue frequently complain about park visitors parking in the neighborhood during periods of high use. An agreement with CHI Centers exists that allows for parking in their lot, however, the change in elevation between the two properties discourages this and the shared-use is not currently promoted with signage.

DISCONNECTED PARKING LOTS

RESTROOMS

The park is serviced by two portable restrooms located at the existing basketball courts. However, during periods of high park use, there have been observations of park visitors frequenting the woods or even where they parked in the surrounding neighborhood. Residents have requested a plumbed bathroom with sinks to better service the park.

VIEW FROM MAIN ENTRANCE

PLAYGROUND

The 3,400 square foot playground is currently hidden behind the park recreation structures nine feet below the approach elevation. The location of the playground inhibits safety and thus the facility is not being used to its full potential. Playground equipment for ages 2 to 12 is in good condition but is outdated in terms of design and could be more interesting and engaging for its users.

PLAYGROUND

PLAYGROUND HIDDEN FROM VIEW

NOISE AND CONFLICTING USES

Along the western edge of the park is New Hampshire Avenue, a busy six-lane divided road with 55,000 daily trips creating a tremendous amount of background traffic noise. Passive recreation uses would not be ideal along this edge as New Hampshire Avenue overwhelms the senses. Some of the louder ball sports would be better suited although protective fencing would be required. This edge should be buffered without limiting views into the park.

PARK EDGE ALONG NEW HAMPSHIRE AVENUE

FIELD CONDITIONS

The two existing diamond fields with the rectangular field overlay are natural grass. The rectangular field is mostly used as a football field by _____ and has permanent football goalposts. It is also used for soccer by _____The diamond fields are mostly used by _____ and are equipped with backstop fencing and player benches. Due to the excessive use these fields receive, the condition is poor. Continued need and therefore overuse has left the soil compacted and biannual maintenance of reseeding does not succeed in fully restoring the condition of the grass. Due to the high usage needs, an artificial turf field may be a more sustainable option in the future.

OVERUSED FIELD

SOFTBALL FIELD PLAYER BENCHES

NATURAL FEATURES

The majority of the park is forested and protected within the stream valley buffer. The forest is healthy with only a few areas of invasive plant material evident. Along the park open space the forest edge is colonized, invasive, non-indigenous plant species that should be removed. Just behind the edge there is a larger area of invasives that will require an intensive removal program.

The stream valley buffer undulates through the forest and leaves a somewhat level area that,

INVASIVE VINCA AND AGGRESSIVE BAMBOO

INTERMITTENT STREAM EROSION

INVASIVE PLANT MATERIAL

although forested, is a logical place to build within the forest.

The forest on site is classified as mid- to late-successional and is predominately comprised of Tulip Poplar and various Oak species. The interior of the forest is relatively free of non-native invasive species and contains some large areas of naturalized New York and Christmas Fern. Within the forest near the stream there is an area of vinca minor that is attractive while not native. On the opposite side of the stream within the paper street, there is a large stand of bamboo which should be removed.

An unnamed perennial tributary to the Paint Branch flows through the lowlands of the forested area, mostly within an undeveloped road right-of-way. The stream is in good condition, however, the three intermittent streams draining to the stream are suffering varying degrees of erosion. Most likely this is due to the lack of stormwater treatment facilities within the park and due to the inadequate maintenance funds over time.

For further detail refer to the Natural Resources Inventory and Forest Stand Delineation section of this report.

VIEWS

Currently views along the street are first focused on the overhead electric lines and utility poles. Consideration should be given to undergrounding these utilities when the New Hampshire Avenue right-of-way is expanded.

NEW HAMPSHIRE AVENUE

Views from New Hampshire Avenue to the east side of the park terminate along the forest edge. This is a pleasing view and much more welcoming than views back toward the New Hampshire Avenue side of the park. Park uses and design should engage this edge, pulling the attention away from the traffic on New Hampshire Avenue.

FOREST EDGE

The borrowed view towards the Federal Research Center property to the north is bucolic from the park, however, it's enclosed within a fence and therefore untouchable.

FRC PROPERTY

Within the forest the views of the stream provide a tranquil, peaceful respite from the active edge of the park.

UNNAMED TRIBUTARY

UTILITIES

Locations of the utility poles and lines along New Hampshire Avenue dominate views into the park. Undergrounding would be ideal but not considered as part of this Facility Plan due to the cost burden.

One of the utility poles and the fire hydrant located at the northwest corner of the park office building would have to be relocated in order to provide an improved entrance into the park that is aligned with Chalmers Road.

If plumbed restrooms are to be provided, the existing sewer connection to the park office building would need to be utilized. Otherwise a new sewer connection would need to be constructed across New Hampshire Avenue.

ABOVE GROUND UTILITIES

STORMWATER MANAGEMENT

Currently the site only has one installed stormwater management treatment facility for the office building parking lot. There is one inlet to the southeast corner of the ball fields that outfalls into an intermittent stream which drains to the perennial stream on the eastern edge of the property. The rest of the park site drains overland to two intermittent streams before reaching the perennial stream. The lack of stormwater controls onsite is a factor in the stream degradation and head cutting that is observed along the intermittent streams. Performing any stream restoration along the intermittent streams will be constrained by the number of significant and specimen trees.

CURRENT STORM DRAIN SYSTEM

ERODED INTERMITTENT STREAMS

EXISTING BUILDINGS AND STRUCTURES

The two recreation structures on site are slated for removal in 2015 due to outdated infrastructure. For more detail on this see the section located in the Introduction, Land History, Hillandale Local Park. Keeping the stone fireplace as a focal point was considered, however, the integrity of the fireplace could not be guaranteed. Instead, the stones will be salvaged, retained off site at Burnt Mills storage facility and reused for the construction of the entry sign proposed in the Facility Plan.

EXISTING RECREATION STRUCTURES

STONE CHIMNEY

BUILDING CONNECTION

In the short term the two recreation structures will be removed (during the course of the facility plan process, demolition of the buildings has taken place) and replaced with an open pavilion, picnic tables, patio area, grilling area and ADA accessible parking. The location of this new pavilion was carefully considered and is incorporated into this Facility Plan.

DEMOLITION OF RECREATION STRUCTURES

DEMOLITION OF RECREATION STRUCTURES

The park office building is a 1975 structure and has functioned as floating park office space since it was purchased in 2007. New park office space is planned for M-NCPPC Headquarters, as well as other county offices, at the Wheaton Redevelopment Project which will begin construction in the fall of 2016 and will be completed within the next eight years, making M-NCPPC's need for this office space and building obsolete.

Spatially the building's proximity to New Hampshire Avenue and the main signalized entrance precludes an ideal park design with a prominent entrance. Since open land within the park is at a premium, removal of the office building is recommended.

PARK OFFICE BUILDING

Program of Requirements

Planning Documents

2012 Park, Recreation and Open Space (PROS) Plan:

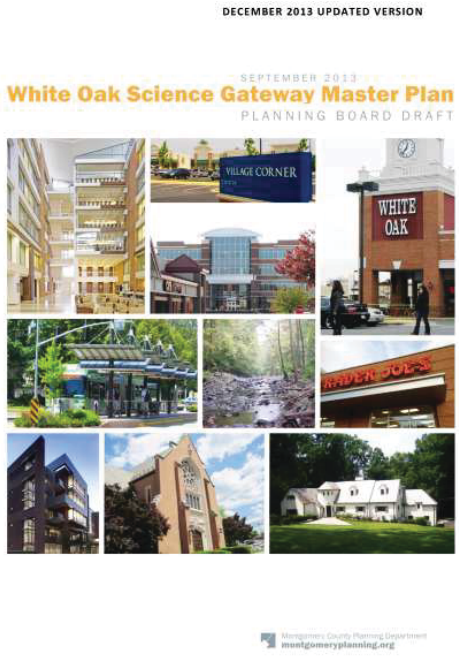
"Parkland Acquisition Opportunities

This Plan recommends that opportunities for acquisition of additional parkland to meet identified goals (such as stewardship, trail connectivity, or recreational needs) should be pursued by the Department of Parks. Specific opportunities and recommendations for new parkland are discussed below for each center. In addition, private swim club properties or other larger assemblages of properties that become available should be considered for public acquisition." (M-NCPPC, *Park, Recreation and Open Space (PROS) Plan*, December 2013 Updated Version, Approval of December 2013 Updated Version with Revisions by County Council Resolution 17-1204, Adopted July 29,2014)

White Oak Science Gateway Master Plan:

The *White Oak Science Gateway Master Plan*, dated December 2013 Updated Version, recommended the following improvements:

- Connect to surrounding community with a bike path along New Hampshire Avenue;
- Remove the Park Activity Building in Hillandale Local Park and re-purpose park land with facilities that are in demand, such as community open space and reconfigured play areas. The final program and park design will be determined through the currently funded Facility Plan process;
- The paper street, Edgewater Parkway, adjacent to Hillandale Local Park should become part of the park via abandonment, easement, or other agreement between M-NCPPC and the County;
- Pursue acquisition of the Hillandale Volunteer Fire Station site for purposes of expanding the area of Hillandale Local Park if the Fire Station relocates to a larger site;
- Consider acquiring land or an easement from the FRC property adjacent to Hillandale Local Park to allow for needed facilities such as an rectangular sports field;
- Improve access between CHI Centers and Hillandale Local Park;
- Retain office building;
- Improve the play area, which is hidden from view;
- Improve parking and vehicular circulation, which are disjointed;
- Explore reconfiguration of the park with the removal of the underused Park Activity Building;
- Explore opportunities with the FRC and the adjacent Hillandale Volunteer Fire Station for possible expansion of Hillandale Local Park's land area to allow for additional facilities to meet community needs.



Specific Concerns

The Hillandale Local Park is a substantial park resource. The park amenities are either outdated or inadequate. Spatially the park could better serve the community if redesigned and updated.

- **Physical construct and spatial layout:** The environmentally sensitive interior woodland is out of balance with the visual character of the upland urban edge. The site is bifurcated; New Hampshire Avenue predominates in the urban plateau while the natural woodland is highlighted by the stream valley (perennial tributary).

- **New Hampshire Avenue:** The six lanes of New Hampshire Avenue traffic that flow by the Hillandale Local Park site are an assault to the senses. New Hampshire Avenue brings with it all the negative features of a major arterial roadway; traffic noise, exhaust, and the visual distraction of vehicles continuously passing. With this said, the park design must address this concern by separating the park user from the edge of New Hampshire Avenue as much as possible.

NEW HAMPSHIRE AVENUE

- **The existing office building:** The existing office building location precludes an aligned park entrance road with opposing road across New Hampshire Avenue, and is not designed with an architectural character indicative of a park-like setting.

PARK OFFICE BUILDING

- **Internal vehicular circulation:** The vehicular circulation in the existing park is problematic. Two of the three entrances are out of alignment with their respective intersections. The interior roadways in the park are not connected. There is currently no clear entry point to the park and no clear internal vehicular circulation.

- **Woodland, stream buffer and natural drainage systems:** The site has an outstanding woodland and stream valley with three natural drainage ways/ intermittent streams flowing towards the lowland. The natural area is both an opportunity and a constraint for the proposed design plan. While an asset, the focus of the park is on the more active open recreation space which is in short supply for the desired program elements. Regardless, the beauty of this natural woodland resource ultimately will become one of the most coveted components of this park since the area surrounding the park land is so highly urbanized.

Program of Requirements

M-NCPPC staff developed a Program of Requirements (POR) for consideration in the development of the Facility Plan for Hillandale Local Park. The POR was developed following an analysis of use of existing facilities in the park, the proximity to nearby recreation facilities, discussions with the community and site character. The POR was refined during the Facility Planning process based on input received from the public, staff, regulatory agencies and public agencies located on adjacent properties. Program elements and design parameters included, but were not limited to the following:

- Athletic fields - one full size rectangular field and two diamond fields (if adequate parking can be provided for peak use time) with adjacent player and spectator space;
- Unique and innovative playground area(s) - designed around a theme for children ages 2 to 12. The playground(s) should be centrally located in a highly visible location (preferably near a picnic shelter) and include shade and seating;
- Two lighted basketball courts - with a shooting pad/practice court, if possible;
- Two lighted tennis courts - with a practice wall, if possible;
- Picnic shelter - (with or without restroom facilities, to be determined during Facility Planning). The custom designed shelter should be located in a convenient visible area, preferably near the playground, and may become a focal point of the park;
- Parking - adequate, convenient, and efficient parking to serve park visitors;
- Paved loop exercise trail - a system of pedestrian circulation and a loop path that are safe, inviting, accessible (hard surface), and may include heart-smart distance markers and an “adult playground” with exercise stations. The paved circumferential trail located outside of the environmental buffer should be linked to the bikeway along New Hampshire Avenue;
- Natural surface trails - could be provided in environmentally sensitive areas and access provided to the neighborhoods to the east, if feasible. The trail system should be designed considering views into and out of the park and incorporate overlook opportunities where possible;
- Natural areas - Preserve, enhance (remove invasives), and increase access to undeveloped wooded areas with natural surface trails;
- Open area for gatherings and informal play-level, grassy, unprogrammed open space suitable for small gatherings and play, near playground and picnic shelter, between 1/4-1/2 acre in size if possible;
- Volleyball - one to two sand volleyball courts if space allows;
- Community garden - an area with space for 25-50 garden plots per M-NCPPC Department standards if there is space and demand from community;
- Visitor amenities - high-quality benches, trash receptacles, kiosks, portable restrooms and enclosures, water fountains, bike racks, interpretation and wayfinding signage, etc;
- New Hampshire Avenue frontage and ingress/egress - improve safety and function of New Hampshire Avenue entrances for pedestrians and vehicles which could include: acceleration and deceleration lanes, pedestrian crosswalks and traffic calming measures. Provide a welcoming arrival setting that is attractive, visible and well defined. Improve the prominent park frontage along New Hampshire Avenue;
- Site grading - re-grade site to maximize usable area especially in the area of the central swale. The grading plan should balance the earthwork on-site;

- Stormwater management - improve storm-water management incorporating LID/ESD principles such as bio-filtration/retention, rain gardens, infiltration and pervious pavements. Incorporate interpretive signage as appropriate;
- ADA - The Americans with Disabilities Act (ADA) shall be fully complied with for existing and new facilities;
- Crime Prevention Through Environmental Design (CPTED) - park design in accordance with CPTED principles;
- Park expansion - work with Federal Research Center (FRC) on the feasibility of expanding active recreation to the FRC site for relocation of existing facilities, additional open space, rectangular fields or community garden;
- SITES - The Sustainable Sites Initiative (SITES™) was created to promote sustainable land development and management practices. The most current version of guidelines and performance benchmarks for SITES should be used as a reference in the facility planning of Hillandale Local Park. Details and materials of park features that are compatible with surroundings and also incorporate sustainable development and management practices should be utilized and documented for possible future SITES certification.

Community Outreach

Community Meeting – July 24, 2013:

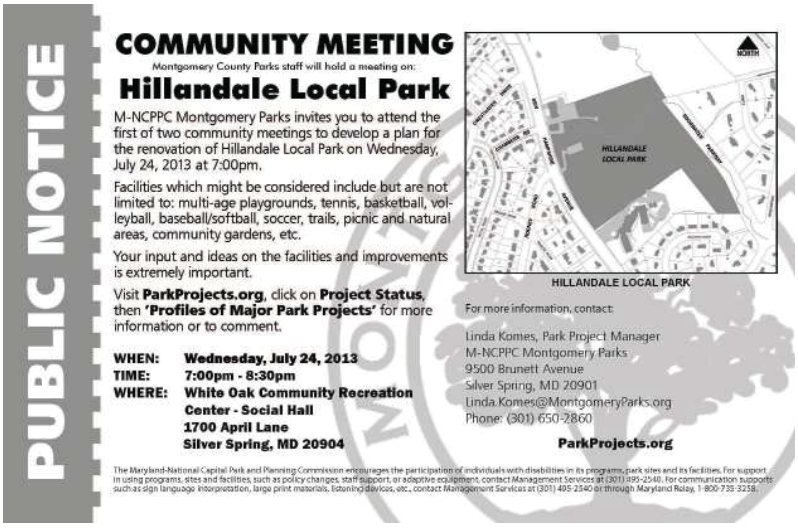
The first public meeting was advertised on June 27, 2013 via postcard mailing to 2,155 local residents within a one-mile radius of the park and 19 HOAs/ Civic Associations. The meeting was held at 7:00 PM in the White Oak Community Recreation Center Social Hall. Twenty one members of the community attended in addition to park staff and consultants. Meeting minutes are provided in Appendix B.

In preparation for the meeting the design team prepared site analysis drawings representing the existing conditions, slope, topography, sun aspect and soils which were organized in an Opportunities and Constraints map. Based upon the collected information and the Preliminary Program of Requirements (POR) the design team also presented nine concept alternatives of site layout varying the entry sequence, types and sizes of fields and other amenities. Two displays of images of the activities and amenities suggested in the Preliminary POR were also presented.

FIGURE 17: NINE CONCEPT DIAGRAMS

After the initial introductions, project background and site analysis were presented and comments and concerns were taken from the participants. Afterwards participants were given colored stickers to continue the conversation individually with staff by reviewing the plans posted around the room and identifying on the plans which elements they liked (green dot sticker), which elements they did not like (red dot sticker) and the element or concept plan they liked the best (gold sticker).

PUBLIC MEETING



POSTCARD MEETING ANNOUNCEMENTS

Summary of Meeting:

- One of the amenities previously identified in the POR but no longer supported by the representatives of the community which attended the first meeting were sand volleyball courts;

- A significant amount of discussion centered on community complaints during high peak field usage related to parking and toileting. Both are a problem in the surrounding neighborhoods due to inadequate parking on-site;

- The basketball and tennis courts are well used;

- There was a continued desire for both diamond and rectangular fields. The nine concepts clearly showed the difficulty in accommodating both without overlaying the diamond field onto the rectangular field. Park staff strongly opposes overlay fields because of the difficulty in maintaining. Much of the field usage is unpermitted. It was noted that

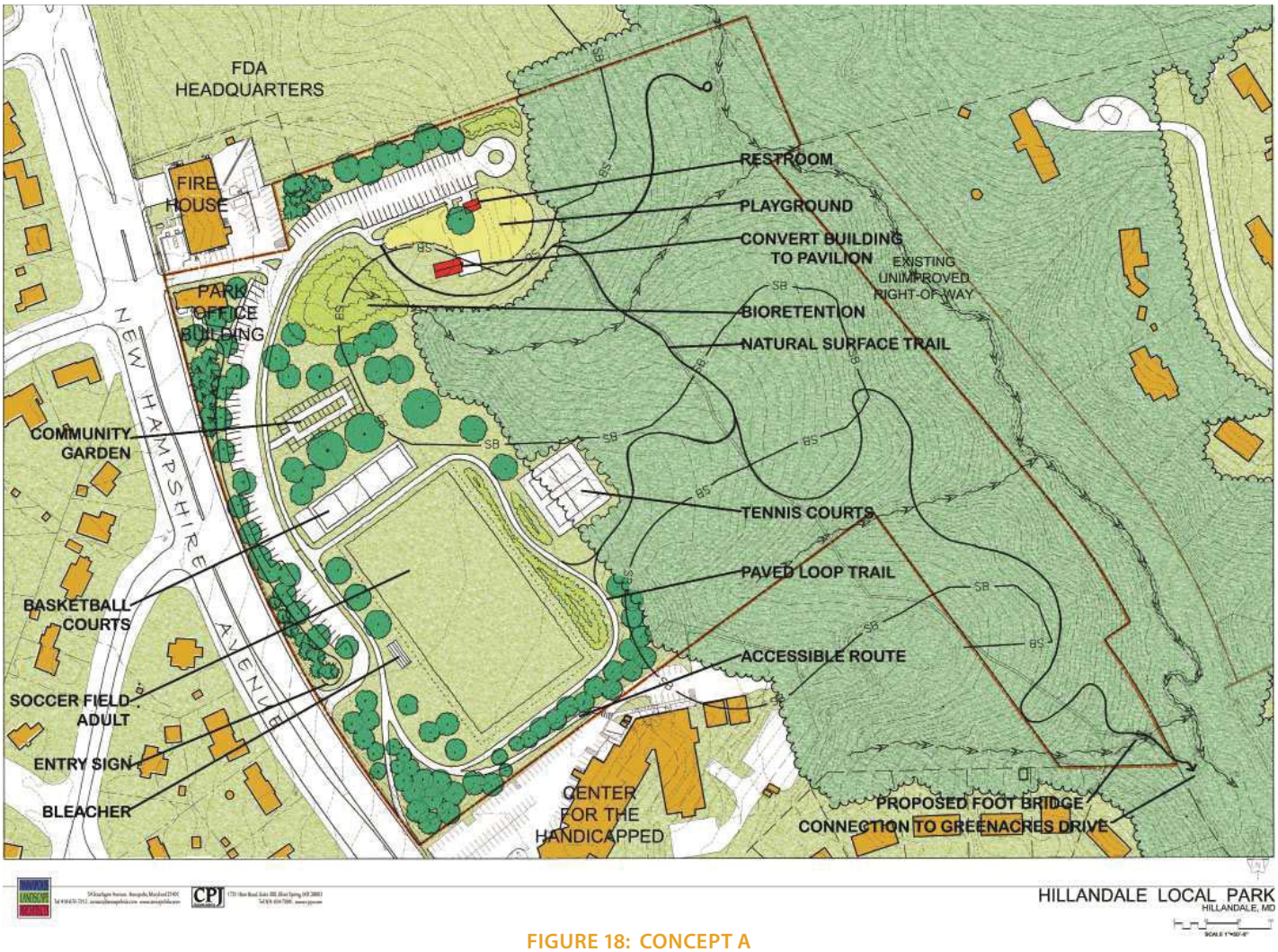


FIGURE 18: CONCEPT A

despite this being a "local" park, visitors come from a larger area, perhaps because of the close proximity to the Capital Beltway;

- Park amenities such as plumbed bathrooms or at least running water, were also a concern.

- Overall most participants liked the amenities offered at the park but were ready for an improved layout and updated infrastructure.

In summary, no single concept captured the wishes of all, however, per the gold sticker exercise the preferred concepts were best illustrated by concepts "A" (Figure 18) and "F" (Figure 19). One of the main distinctions between the two concepts is in the vehicular circulation. Concept "A" holds the road and parking closest to New Hampshire Avenue where it can serve as a buffer to the six-lane roadway, while Concept "F" pulls the road into the park along the forest edge making the park more prominent along New Hampshire Avenue. In both of these concepts an unappealing feature was that the playground was not more prominently located in the center of the park.

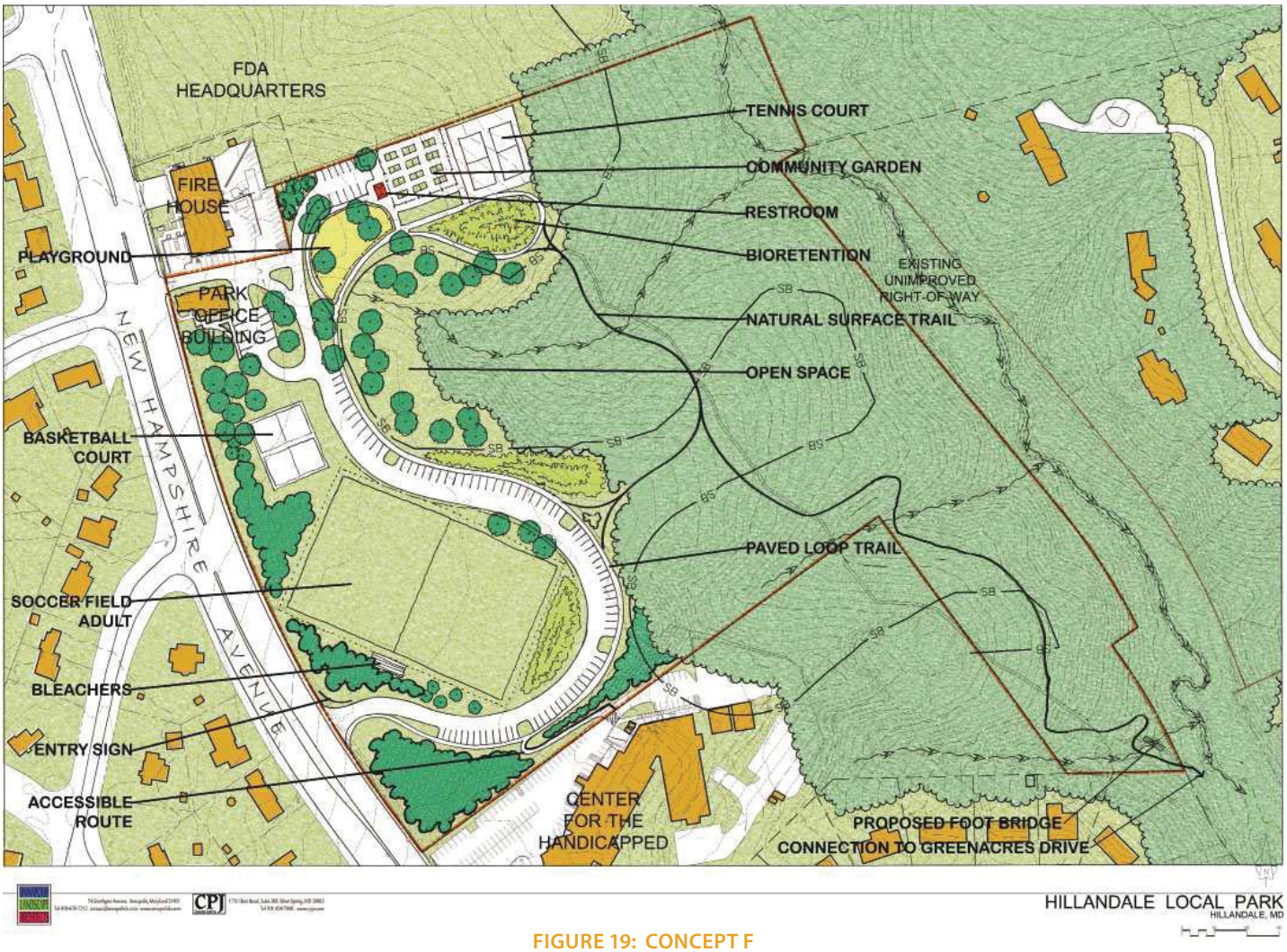


FIGURE 19: CONCEPT F

GREEN DOT / RED DOT EXERCISE

VOTE FOR "GREEN DOT" COMMUNITY PREFERRED PROGRAM ELEMENTS	VOTE AGAINST "RED DOT" COMMUNITY DISCOURAGED PROGRAM ELEMENTS
Soccer	Volleyball
Baseball	Dog park
Basketball	Ping pong
Tennis	Chess/Checkers
Plumbed restrooms with sinks	Community garden
Water fountain	Exercise stations
Pet waste receptacles	Skateboard park
Loop Trail	Amphitheater
Woodland trail connection	Council ring
Buffer along New Hampshire	
Offset entry at Rodney Road	
Pavilion	

Not in any particular order.

FIGURE 20: GREEN DOT / RED DOT EXERCISE

Community Meeting With Eastern County Recreation Advisory Board – March 19, 2014:

The second public meeting was incorporated as an agenda item on the regularly scheduled Eastern County Recreation Advisory Board Meeting to bring the members and residents up-to-date on the progress of the Hillandale Local Park Facility Planning. It was held at 7:00 PM in the White Oak Community Recreation Center. A postcard mailing was sent out on March 7, 2014 to 2,155 local residents within a one-mile radius of the park and 19 HOAs/Civic Associations. Approximately twenty members of the community attended in addition to park staff and consultants. Meeting minutes are provided in Appendix B.

Introductions, project background and site analysis were presented, as well as two schemes that had been further developed based upon the collected information from the first meeting and staff input.

Hillandale Civic Association Meeting – March 26, 2014:

The third public meeting was at the request of the Hillandale Civic Association during their regularly scheduled meeting. It was held at 7:00 PM in the CHI Centers meeting room/cafeteria. Thirty-five members of the community attended in addition to park staff and consultants. Meeting minutes are provided in Appendix B.

Introductions, project background and site analysis were presented, as well as two schemes that had been further developed based upon the collected information from the first two public meetings and staff input. The schemes were well received.

There was a great deal of discussion on the paper street containing the unnamed tributary to the east of the park and whether M-NCPPC might obtain ownership. This community request was researched and in order to transfer ownership the property would need to be equally split between the land owners on both sides. Rather than abandon public ownership of a piece of property that contains the most significant natural feature (the stream) and functions as an extension of the woodland park land, it was agreed that the paper street area could be used by the park but will continue to be officially owned and maintained by Montgomery County. With this said, the park would maintain the natural trail system that provides access to and across this stream.

The condition of the fields were discussed as it relates to short-term and long-term use. In the short term the fields are in poor condition. They suffer from extreme soil compaction despite the fact that they are aerated once per year, the maximum allowed, by the Park's Maintenance Division who also reseed the Hillandale fields every fall.

The fields continue to be overused from both permitted uses and from general public use. Even when fields are closed to permitted games due to wet soils it is difficult to police the general public from not using the open fields which further compacts the soils.

Conversion to an artificial turf field was discussed as it could handle extended use. Also, removing the field overlay condition would help to sustain the condition of the fields.

With the projected improvements years away, the community members brought up the possibility of interim upgrades including the construction of a park pavilion, additional plumbed restrooms and construction of nature trails.

PUBLIC MEETING

Discussion points for Scheme 1 included:

- Providing more basketball courts if possible since the existing courts do not meet the need;
- Locating basketball courts along New Hampshire Avenue was undesirable due to the perception of potential light glare – important to use cut-off lights;
- Concern was expressed regarding the view into the park being interrupted by the drive aisle and parking lot;
- Approval of the basketball being visible from the street since it's often a night sport.

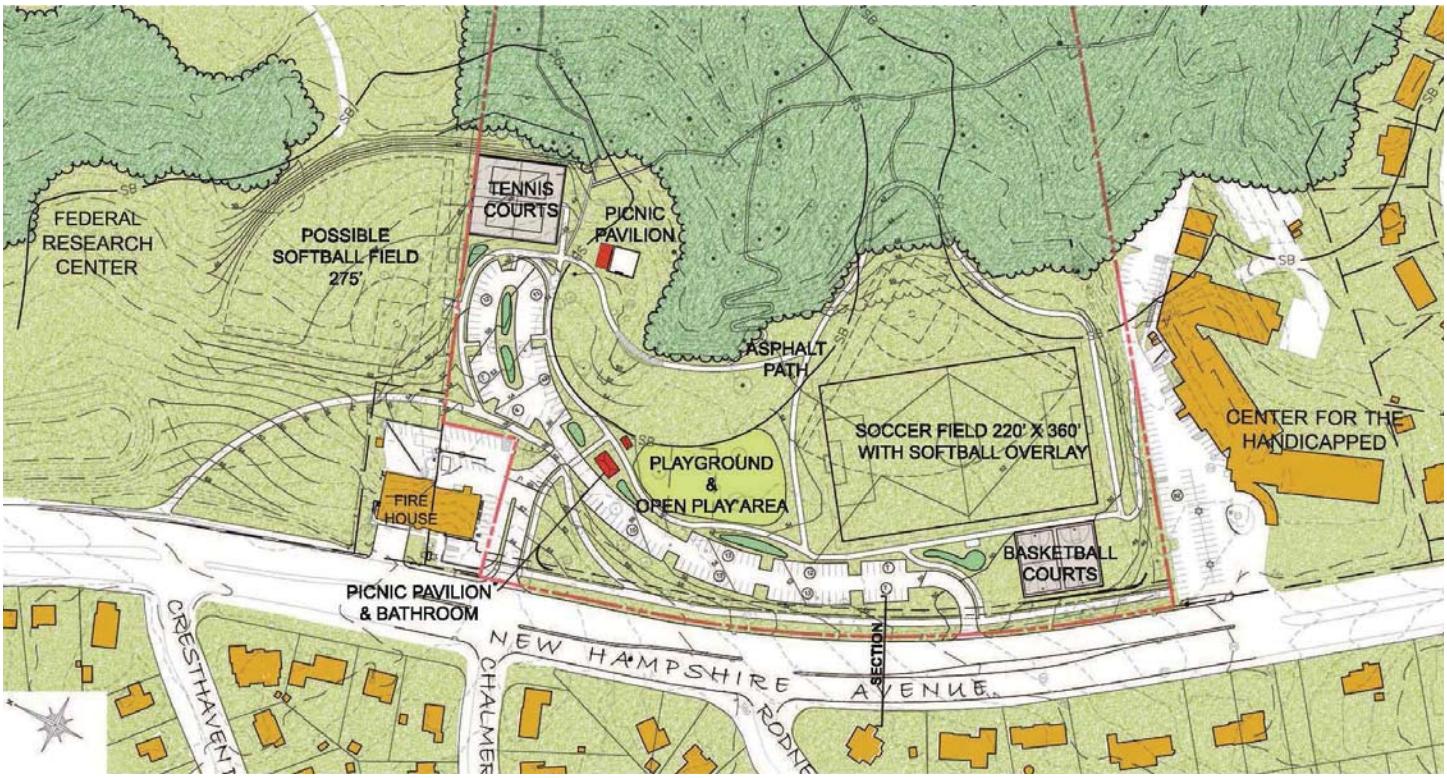


FIGURE 21: SCHEME 1

Discussion points for Scheme 2 included:

- Area next to CHI Centers was considered to be too tight, an expanded buffer was suggested;
- Less light glare along New Hampshire Avenue was favorably received;
- Positive community response to the larger playground;
- The green edge along New Hampshire Avenue was considered to be a very positive element of this plan;
- The community disliked the drive aisle and parking separating the park from forest;
- The community liked the basketball courts closer to the Fire Station for continued monitoring and use from Fire Station staff.

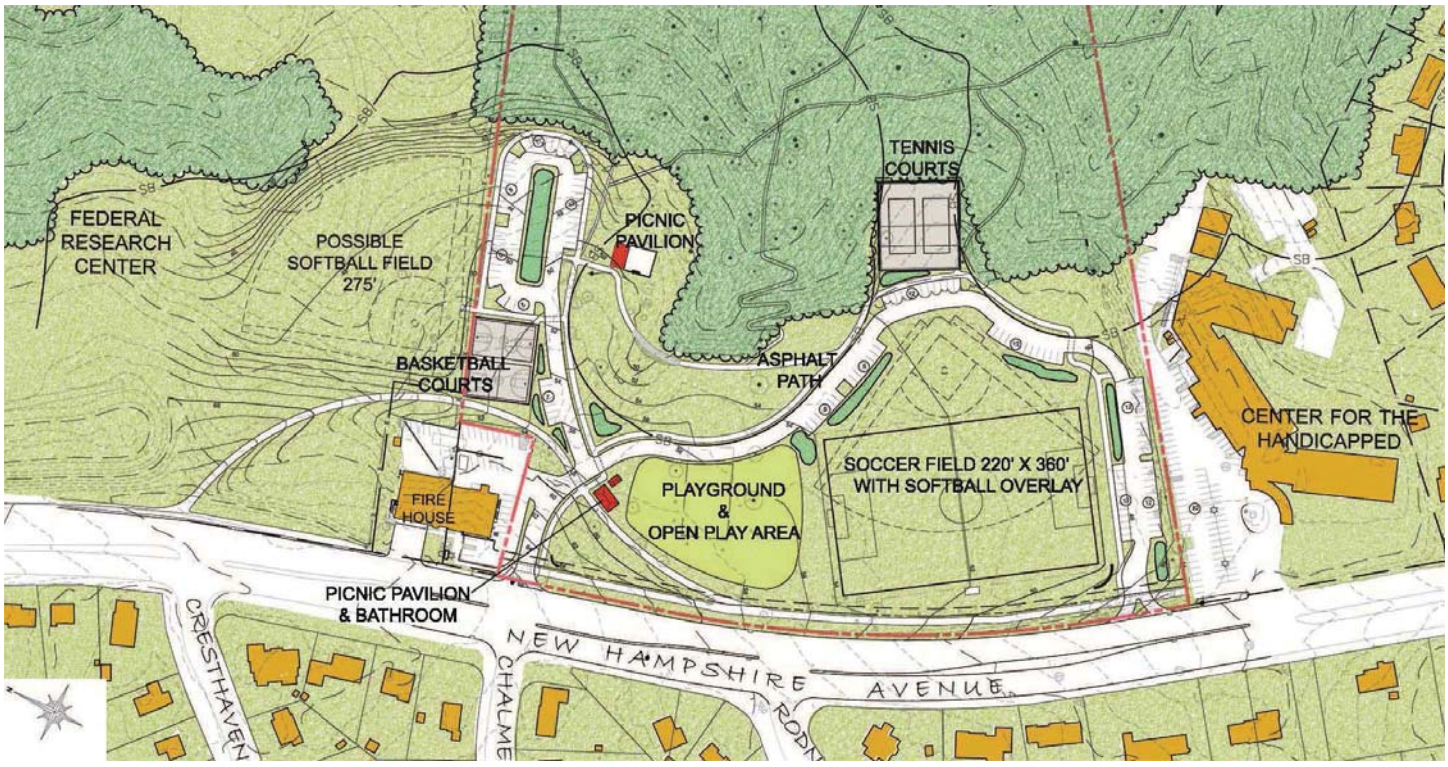


FIGURE 22: SCHEME 2

Interest Groups and Agency Coordination

Federal Research Center (FRC):

The FRC has been shown the potential for a shared baseball/softball diamond field on their property adjacent to the tennis courts, but have not made any firm commitment. The addition of a shared diamond field would benefit the FRC employees and park visitors alike. The concept of shared active recreation use should continue to be studied.

Hillandale Civic Association:

The civic association is a strong advocate for the improved park amenities and has been involved with the discussions on the program of requirements and the park design.

CHI Centers, Inc.:

Coordination and meetings with CHI Centers began on August 8, 2013 and have been ongoing throughout the design process. They are in support of the project and look forward to obtaining ADA access to the park and the use of improved amenities that are tailored to the needs of the CHI community.

Hillandale Volunteer Fire Station:

Park staff met with the Fire Station chief on December 19, 2013 to share the park plans. The Fire Station has outgrown its location and the facilities are in need of upgrading. No firm plans have been made, however, they are looking for alternate locations in the future that will ideally locate them further from the Prince Georges/ Montgomery County lines to better serve the population. The status of the Fire Station property should continue to be monitored.

Eastern County Recreation Advisory Board (ECRAB):

A presentation to ECRAB was made on March 19, 2014 to provide an update on the progress of the Facility Plan. Meeting minutes are in Appendix B. No additional feedback has been received.

State Highway Administration (SHA):

Charles P. Johnson and Associates met with the State Highway Administration (SHA) on December 3, 2014 and submitted a concept plan for review of the proposed entry and exit locations. SHA responded with a letter stating SHA does not take issue with the concept being proposed but review of the design plans will be required.

Department of Transportation:

The undeveloped paper street will remain county-owned, however, the county has provided formal approval for park use allowing a natural surface trail, stream crossing and invasive plant removal.

Amended Program of Requirements

During the community meetings, public input period and design efforts many ideas and design variations have been studied and deliberated. Through the course of a thorough site analysis; study of opportunities and constraints; and three community meetings an Amended Program of Requirements was finalized. These elements were vetted based on community desire, community and regional needs and the spatial constraints of the site. Included elements are:

- Rectangular field – one lighted, regulation-size artificial turf field with spectator area;
- Basketball courts – two lighted courts;
- Tennis courts – two lighted courts;
- Picnic shelter – three;
- Innovative playground – ages 2 to 12;
- Looped walking trail – asphalt paved and ADA compliant;
- Natural surface walking trail and connection to neighborhoods to the east, through forest;
- Parking – adequate to serve all uses;
- Open grass area – for informal play;
- Visitor amenities – high-quality benches, trash receptacles, recycling receptacles, pet waste receptacles, water fountain, and wayfinding signage;
- Restrooms – full service with running water;
- New Hampshire Avenue frontage and ingress/egress improvements;
- Stormwater management facilities – up-to-date facilities complying with current regulation requirements;
- CPTED compatible – designed with Crime Prevention Through Environmental Design (CPTED) principles;
- SITES compatible – designed with Sustainable Sites Initiative (SITES™) principles;

Elements removed from the Program of Requirements:

- Diamond field: Physical constraints, specifically lack of buildable space, prohibited incorporating both a diamond and rectangular field into the site while maintaining basketball and tennis courts and providing adequate parking. A diamond field overlay with the rectangular field was studied and was deemed undesirable because of maintenance difficulties related to conflicting markings and field overuse. Also, diamond fields in nearby facilities, such as the Martin Luther King, Jr. Recreational Park has two diamond fields and are under utilized. Current diamond field usage at the park is _____ permitted games per week for a total of _____ games per year, typically in the SPRING OR FALL??? season. There is adequate space on the Final Facility Plan to accommodate a diamond overlay, however, this is not being proposed due to maintenance concerns. An ancillary study looked at placing a diamond field in the open area on the Federal Research Center property as a shared-use. Although not being actively pursued by the Federal Research Center at this time, this could function well and should be studied further in the future;
- Skate park: Skate parks consume a large amount of land. There was not enough interest in a skate park at Hillandale to justify displacing other recreation uses in higher demand. Also, a new skate park was recently built at the White Oak Recreation Center;

- Community Gardens: There was some early interest in community gardens, however, space was an issue. Montgomery County guidelines have a minimum plot size and minimum number of plots which could not be accommodated in the park. Also, the county encourages community gardens in more dense areas of apartment buildings where private properties would not allow for gardens. Hillandale is mostly made up single family homes with private property which allows for private vegetable gardens.

Final Facility Plan

Design Approach and Features

A traditional process was followed in the design of the proposed Facility Plan. The program requirements were refined through the community meeting consensus building process. These program elements integrated with the opportunities and constraints of the Hillandale Local Park site in an aesthetic and functional way.

This Facility Plan and proposed park design integrate the woodland area of the park with the recreational program components located on the upper relatively level plateau area that is concurrent with New Hampshire Avenue. The abrupt division of park space and use between the upper wide open fields and lower dense woodland has been replaced by a proposed design which integrates these different areas of the park. The woodland character has been drawn up towards New Hampshire Avenue through a generous complement of proposed tree planting. The active program of the park has been brought into the woodland through proposed trail alignments and the location of a pavilion inside the forest edge. This pavilion location is coincidentally both outside the stream buffer and in an area that has a high concentration of invasive species which should be removed.

Vistas and views into the Park will be enhanced. The entire woodland existing on the site will be preserved with the exception of half an acre along the forest edge to allow for the implementation of the active recreation program (specifically the tennis courts). In the upland area along New Hampshire Avenue all existing trees in generally open areas have been assessed regarding their health and character and preserved where they contributed to a more successful proposed park design. Views into the park have been considered so the New Hampshire Avenue driver will have a clear and verdant vista into the park.

Planting proposed for the Park will include a palette of native trees, shrubs and groundcovers. Micro-bioretention areas will be simply planted with a combination of native grasses, shrubs and, where appropriate, Bald Cypress. In order to keep vistas clear, eye-level shrubs have been proposed sparingly. Herbaceous planting has been kept to a minimum since the maintenance requirements for this intensive planting are beyond the customary scope of the park facility management team.

Hardscape details will include the use of stone walls, incorporating salvaged stone from the 1944 chimney on site. Pathways will be either asphalt, concrete and/or decorative concrete throughout the park. Natural surface trails will be cleared of forest floor debris.

Accessibility will be provided to all park elements with the exception of the natural surface trails due to the existing grade restrictions and the character of the natural woodlands. In order to achieve maximum accessibility throughout the park careful consideration has been given to the proposed grading and landform allowing for all paved paths to meet the accessibility standards of the Americans with Disabilities Act (ADA).

FIGURE 24: FINAL FACILITY PLAN

Influence on the Surrounding Area

The Final Facility Plan has been designed to maximize active and passive recreation opportunities for the Hillandale community, as well as highlight the beauty of the natural environment. The layout of the proposed facilities is intentionally informal in character. An attractive streetscape frontage allowing for the future expansion of the New Hampshire Avenue right-of-way, while planning for the 10-foot shared-use path extension that will span the park's 970 feet of property frontage along New Hampshire Avenue.

An upgraded park will be an asset to the community on many levels:

- It will be primarily a green space and will provide visual relief for the urbanizing area.
- Park visitors will be better able to park and access all areas of the park;
- The park will offer residents a greater sense of community by creating gathering spaces and a higher quality of living by offering upgraded and additional park amenities;
- Park access to and from the park will also be safer through the realignment and consolidation of the entrances.

New Hampshire Avenue Influence on Hillandale Local Park

In light of the long term preliminary planning for a 30-foot expansion to the current variable (100-foot average) New Hampshire Avenue right-of-way adjacent to the park, all new facilities have been located outside of the potentially widened right-of-way. The Rapid Bus Transit system, part of the long term transportation plan, requires the New Hampshire Avenue right-of-way to expand to a 130 foot width as it passes by the park site. A 10-foot shared-use path paralleling New Hampshire Avenue is included in the proposed Facility Plan, and is located to accommodate anticipated future changes to the road geometry of New Hampshire Avenue post expansion, and would transition to existing sidewalks on the adjacent properties to the north and south of the park site. It is envisioned that the existing sidewalk along the park frontage would remain until the future road widening occurs.

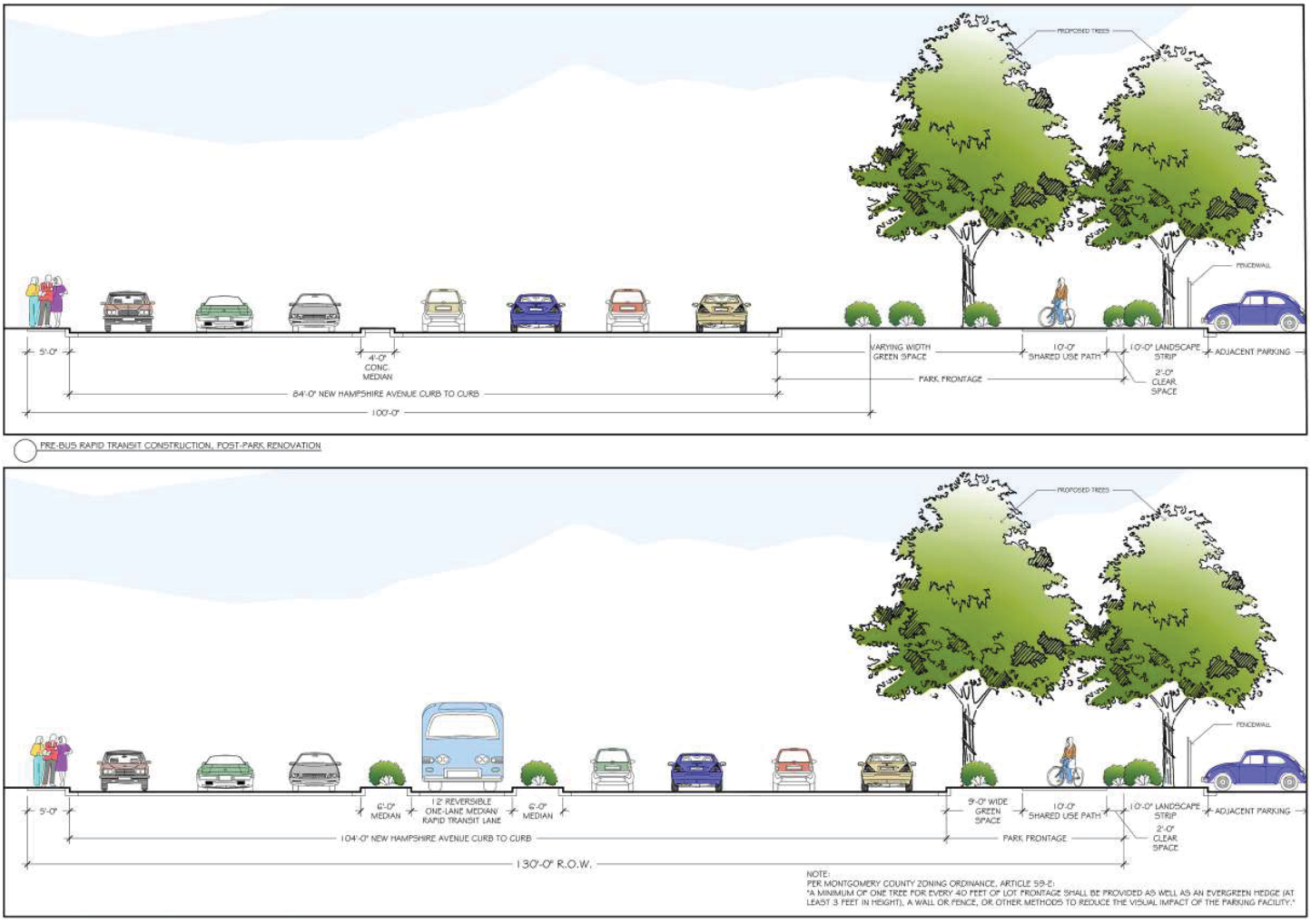


FIGURE 23: NEW HAMPSHIRE AVENUE RIGHT-OF-WAY SECTIONS

A discussion of each park element follows:

ENTRANCES

The proposed Facility Plan includes reducing the number of park entrances on New Hampshire Avenue from three to two, improving vehicular circulation within the park, and increasing the amount of parking provided.

The main entrance adjacent to Hillandale Fire Station has been aligned with the existing signal at Chalmers Road.

The southern entrance will be shifted farther south, which will improve sight lines past the curve in the New Hampshire Avenue road alignment. It was requested that this new entrance include full vehicular movements which would require a new opening in the median. This proposed break in the median was not approved by the State Highway Administration. Instead this southern-most entrance from New Hampshire Avenue will serve as the right-in / right-out entrance. This entrance has been shifted to allow the north-bound New Hampshire Avenue traffic to enter the park just after passing the CHI Centers.

SIGNAGE

Prominent signage will be placed at the signalized entrance to capture the New Hampshire Avenue southbound traffic and on the face of the retaining wall below the basketball court to capture the New Hampshire Avenue northbound traffic.

PARKING

Adequate parking is a priority. The concepts intersperse parking throughout the park close to each site amenity rather than creating one large parking area. The proposed plan incorporates 125 parking spaces, five of which are designated as ADA accessible spaces, to support the rectangular field (50 spaces), basketball courts (25 spaces), tennis courts (25 spaces), and other uses such as hiking, picnicking and playground (25 spaces). The entire parking area is interconnected, thereby improving circulation. On weekends and off hours a significant number of additional parking spaces are available at the CHI Centers, which is south of the proposed soccer field. There is a formal understanding in place between CHI Centers and Montgomery County allowing for park visitors to use the CHI Centers parking lots during off hours.

VEHICULAR CIRCULATION

Vehicular circulation has been clarified in this proposed Facility Plan with two proposed entrances connected by a single internal roadway.

ACCESSIBLE PEDESTRIAN CIRCULATION LOOP TRAIL AND SIDEWALKS

Within the developed part of the park, pedestrian connections have been designed for improved circulation and exercise opportunities. A loop path was incorporated with Smart Heart markers and four pieces of park exercise equipment located along the path. The loop path is 2,500 linear feet. Where paths are within the critical root zones of trees to be preserved, above grade paving will be used. It should be noted that no equestrian trails are proposed for the park. A 10-foot shared-use path has been provided paralleling New Hampshire Avenue and replacing the concrete sidewalk. Additional sidewalks are proposed to maximize connectivity.

PEDESTRIAN NATURAL SURFACE TRAIL SYSTEM

Connections from the park to the neighborhoods to the east of the park are much needed, as well as a defined internal walking trail for park visitors. During the course of the Facility Plan process coordination with park staff began and as a result a natural surface trail system will be installed during 2015. This includes the installation of a stream crossing which is a necessary feature to make a formal connection to the neighborhood.

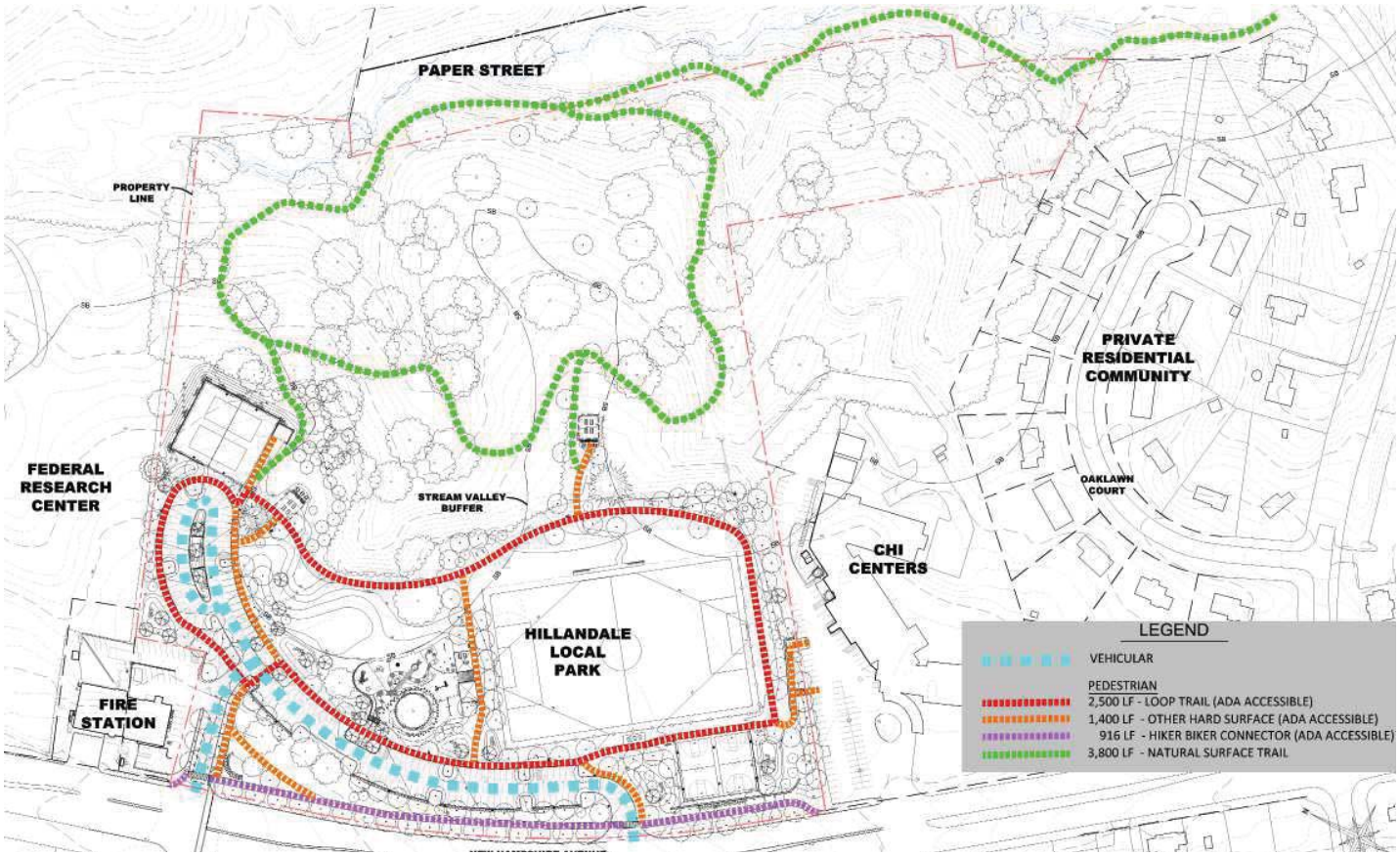


FIGURE 25: CIRCULATION PLAN

OFFICE BUILDING

The park office building is not at full capacity and the future Wheaton Headquarters will absorb the need for this office space. Because of a reduced need and the conflict with the alignment of the main entrance this building is recommended for removal. Further, the architectural character of this building which was erected in 1975 is not suitable as the primary entry element to the park.

PARK STRUCTURES

The park recreation structures located in the interior of the park have been planned for removal due to their deteriorated condition and lack of adequate sewer service. For additional detail refer to the Site Analysis section of this report.

PAVILIONS

The existing outdated recreation structures were removed in the spring of 2015, opening up an ideal location for a pavilion which is to be built in the summer of 2015.

A second pavilion is planned for the opposite end of the park, nestled in the woodland edge behind the soccer field, and a third pavilion will be integrated with the restroom facility and easily accessible from the playground. It is recommend that the architectural character of the pavilion scheduled for construction in 2015 be replicated or, at minimum, inspire for subsequent architectural structures in the park.

PLAYGROUND

Multiple playground locations were studied that were highly visible and easy to access. Programmatically, the proposed "Native Inhabitants" themed playground, a site central to the park, was designed as a destination-quality design element in the park. The perimeter of the playground is fenced and an internal fence and gate separates the tot lot. The playground area is approximately 16,000 square feet.

The "Native Inhabitants" playground theme was chosen to link the playground to the natural history of the region and to provide a sense of discovery. Various animal tracks and human footprints draw the visitor in through the entry arbor from the main walkway. Just for fun, and to engage the intellectual inner spirit of children, the tracks begin with tiny mouse prints and then graduate up through mammals native to the region, (squirrel, possum, raccoon, fox, wolf) and end with footprints as they may have been left by the native inhabitants of the Mid-Atlantic Region, the Native Americans.

The footprints end at a Native American Indian village with a teepee and drum circle. This area is edged with a decorative concrete wall with Native American art symbols. The animal wolf tracks circle the 32" Pin Oak (to be saved with a sixty foot diameter protected root zone) and end with three wolf sculptures for climbing (riding).

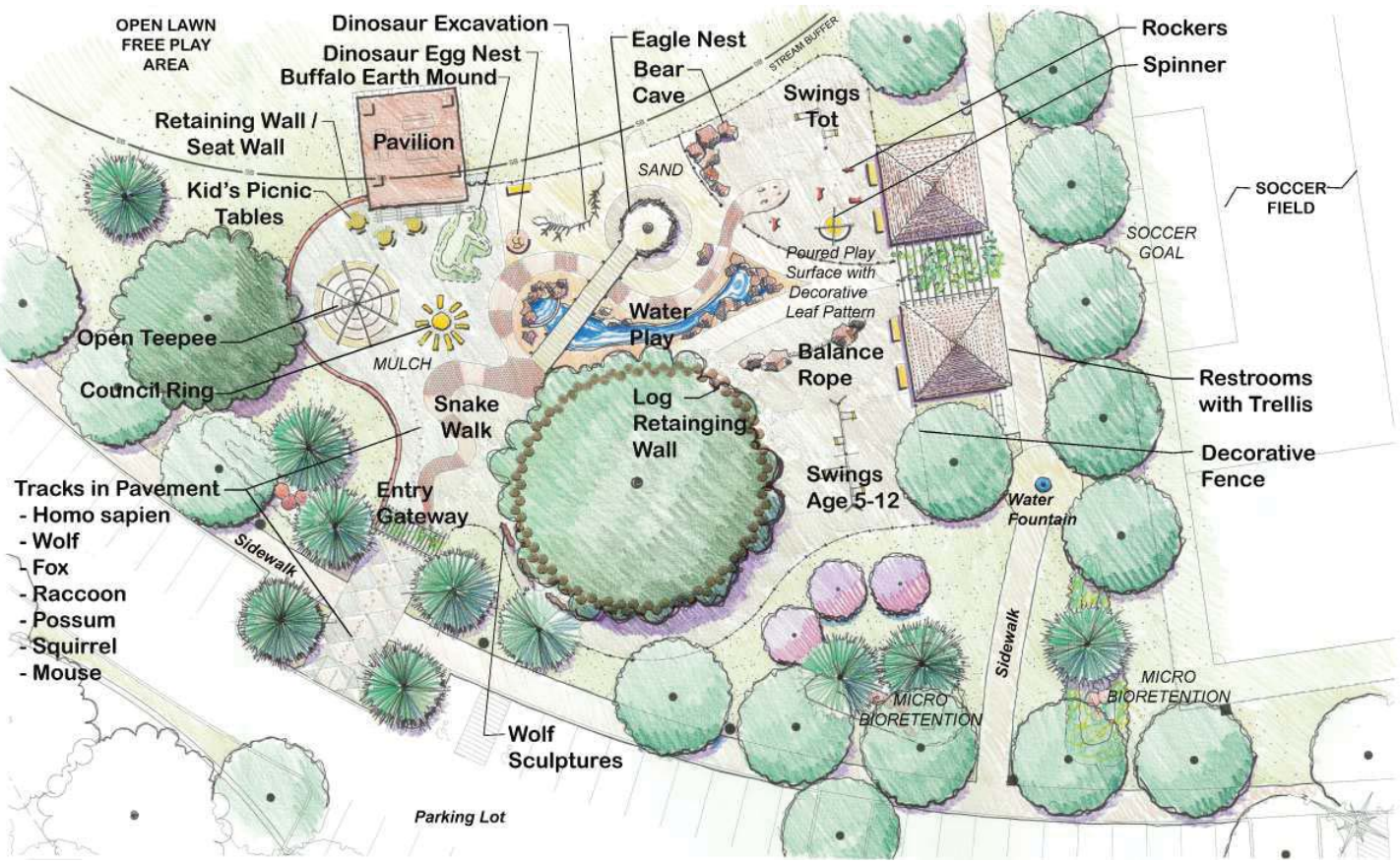


FIGURE 25: PLAYGROUND ENLARGEMENT

A sinuous snake paving pattern path winds its way from the entrance back to the tot lot, ending in a three dimensional snake head for climbing. Perhaps the fangs could spray water and eyes could be LED red lights (to be developed in the Design Phase of work)?

Along the way the children will pass the dinosaur dig area in sand where they will discover a large dinosaur nest with eggs, a rustic climbing activity with swinging bridge and a kid-sized bird nest at the top of a tree trunk.

Swings for the tot lot are provided along with spring riders and a spinner for the younger tots. For ages 5 to 12 there are also swings and two boulders with a large balancing rope strung in between.

Connecting the bird nest climbing structure to the swing area is a rockery area, fun for exploring and getting wet if actively circulating water is incorporated in the design phase.

A shade pavilion with picnic tables will be ideal for birthday parties. Restroom facilities are centrally located for easy access from the tot lot.

Final grading plans should review current drainage patterns surrounding the 32" Pin Oak and ensure post-construction drainage is carefully considered to maximize the survival of this key specimen tree during the construction phase.

TENNIS COURTS

Park users that participated in the design process were happy with the current location of the tennis courts, nestled against the woodland edge in a quiet zone of the park. Studies looked at various other locations, however, its current location proved to be the best. The addition of the ball practice area and proper rotation to a north-south alignment complete the significant changes in this area.

RECTANGULAR FIELD

A full-sized 220-foot x 360-foot rectangular natural turf field with permanent goals is provided. Artificial turf was discussed in lieu of grass to handle increased intensity of more permitted uses, however, due to increasing concern within M-NCPPC about the fill material for artificial turf fields, natural grass was chosen instead. During the design phase, advanced technology for artificial turf infill material should be explored.

RESTROOMS

To date Hillandale Local Park has only been serviced by portable restroom facilities, which have been standard for local parks in the M-NCPPC system. However, the community strongly supported a plumbed restroom facility because of the number of visitors the Hillandale Local Park receives. The restrooms are proposed in a centrally located area between the soccer field and the playground and are easily accessible for all park visitors. Three fixtures in each bathroom should be included in the design phase.

BASKETBALL COURTS

It was generally agreed that the basketball courts should be easily visible since they are most frequently used in the evening. Single-rim baskets were requested versus the standard double-rim.

GRADING

After the development of the preferred park layout, a preliminary grading and stormwater management study was performed. Earthwork calculations were completed and found over 20,000 cubic yards (cy) of earth material would need to be cut and disposed of offsite which would be cost prohibitive. Several iterations of grading adjustments were performed to balance the site earthwork. The final site grading for the Facility Plan as shown below plus factoring in stormwater filter beds, pavement sections, etc. results in approximately 21,579 cy of cut and 21,363 cy of fill for a net cut of approximately 216 cy. Further refinement of the grading during detailed design may reduce the site's net cut even more.

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	−8.483	−6.000	
2	−6.000	−4.000	
3	−4.000	−2.000	
4	−2.000	0.000	
5	0.000	2.000	
6	2.000	4.000	
7	4.000	6.000	
8	6.000	8.000	
9	8.000	10.000	
10	10.000	13.219	

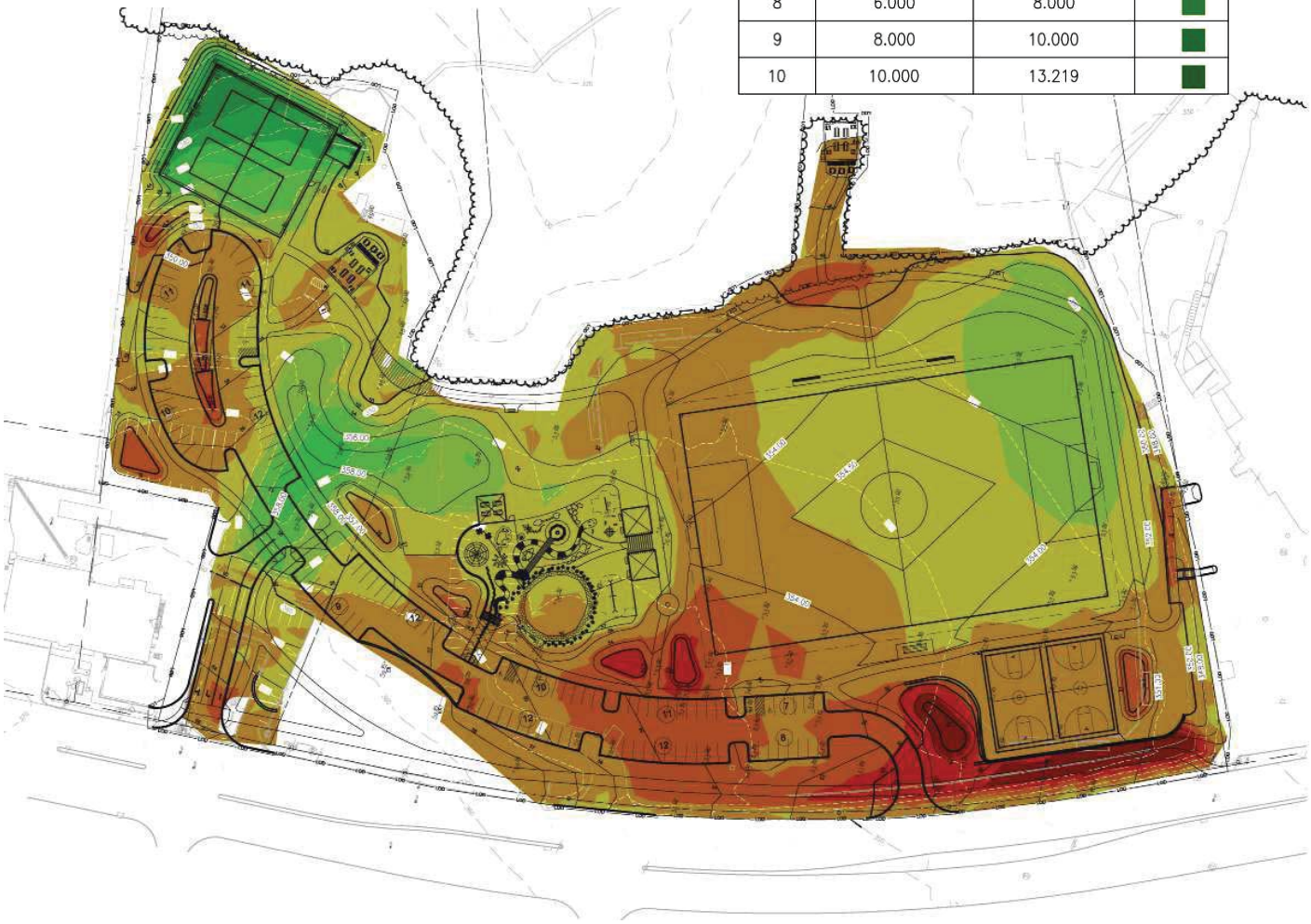


FIGURE 27: CUT AND FILL DIAGRAM

Hillandale Local Park - Earthwork Calculation
Date: 3/4/2015

	Cut (CY)	Fill (CY)	Notes & Assumptions
Overall Grading	12328	19172	Comparison of contours: Ex. to Prop.
Existing Pavement	-	1404	
Existing Building	-	787	~2500sf * 8.5' (7' ceiling + 1' footer thick)
Prop. Vehicle Pavement	1972	-	~50200sf * 9.5" (Parking : 5.5" Asphalt & 4" Stone) + ~8100sf * 20" (SHA entrance & Firehouse connection: 8" Asphalt & 12" Stone)
Prop. Pedestrian Pavement	1123	-	[1155' * 10' + 3445' * 8' + 220' * 6'] * 9" (3" Asphalt & 6" Stone)
Prop. Stone Under Field	2815	-	240' * 380' * 10" Stone
Prop. Basketball Court	239	-	92' * 112' * 7.5" (4.5" Asphalt & 3" Stone)
Prop. Tennis Court	365	-	112' * 124' * 8.5" (4.5" Asphalt & 4" Stone)
Prop. Playground	494	-	13350sf * 12"
Prop. Pavilions & Bathrooms	104	-	Pavilions (2 * 1320sf * 8") + Bathrooms (2*625sf*10")
M6-1	72	-	481sf * 4'
M6-2	187	-	310sf * 5.5' + 349sf * 5.5' + 286sf * 5.0'
M6-3	131	-	786sf * 4.5'
M6-4	155	-	761sf * 5.5'
M6-5	82	-	463sf * 4.75'
M6-6	124	-	704sf * 4.75'
M6-7	120	-	646sf * 5'
M6-8	116	-	780sf * 4'
M6-9	176	-	793sf * 6'
M8-3	26	-	5' * 30' * 4.75'
Imported Topsoil	950	-	Need 6" thick (4260cy) - exist 3" thick (3319cy)
TOTALS	21579	21363	
NET TOTAL CUT (CY)	**216**		
NET TOTAL CUT (CF)	**5831**		

CALCULATIONS

UTILITIES

One utility pole and fire hydrant along New Hampshire Avenue will be relocated to allow for the realignment of the main north entrance at Chalmers Road. The existing water and sewer line to the office building will be reused to service the restrooms and water fountain. Storm drains throughout connect inlets and micro-bioretention areas into one outfall location which will be discharged to the stream. Directional boring will be used where storm drains are within the critical root zones of trees to be preserved.

Several storm drain alignments were studied to determine the alignment with the least impact on the site's natural resources. All of the storm drain alignments that discharged to the intermittent streams resulted in large impacts within the stream valley buffer and to many significant and specimen trees. Since degradation and head cutting is already occurring along the intermittent streams, proposing a storm drain outfall to these streams would require significant stream restoration and many additional tree impacts to provide a stable outfall and to prevent future stream degradation. An alternate alignment was deliberately and carefully chosen for the Facility Plan which minimized the impacts to the natural resources.

A single stable storm drain outfall is proposed at the perennial stream. The storm drain system to this outfall location was carefully laid out to minimize the impacts within the stream valley buffer and to minimize impacts to significant and specimen trees. However, all of the specimen trees could not be avoided. While the proposed storm drain alignment does remove three specimen trees that are in fair or poor condition, it minimizes or eliminates critical root zone impacts to surrounding significant and specimen trees in good condition. An added benefit to this storm drain alignment is that it reduces the stress on the intermittent streams by routing the erosive storm flows past the areas of stream degradation.

Storm drains throughout the site connect inlets and micro-bioretention areas into the single storm drain system. Since a single storm drain system is proposed, the system does become deep at points in order to connect to all of the inlets across the site. At one location adjacent to the playground, the storm drain is deep and excavation for the storm drain would result in a large impact to the critical root zones of trees to be preserved. In order to protect these trees, directional boring of the storm drain will be used.

STORMWATER MANAGEMENT

Stormwater management requirements for the renovated park were determined based on the technical requirements for Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) criteria found in the Chapter 5 revision to the *2000 Maryland Department of the Environment (MDE) Stormwater Management Design Manual* and *Montgomery County Department of Permitting Service's Water Resource Technical Policy WRTP-5*. The types of stormwater management facilities proposed were selected and located to meet the stormwater management requirements, minimize impacts to natural resources, minimize impacts to the preferred park layout, minimize future maintenance costs and blend into the landform.

Park Improvements Currently Underway

In the interim some park improvements are already underway.

NATURAL SURFACE TRAILS AND STREAM CROSSINGS IN THE FOREST

M-NCPPC staff from the Natural Surface Trail Building and Maintenance office is currently laying out and constructing natural surface trails and foot bridges to provide a connection for the residents behind the park and to provide enjoyment for park visitors.

NEW FOOTBRIDGE

NEW NATURAL SURFACE TRAIL

PARK ACTIVITY BUILDING AND ADULT EDUCATION BUILDING DEMOLITION

Both the Park Activity Building and Adult Education Building have been demolished in preparation for a new pavilion that will be ADA accessible via new parking spaces adjacent to the pavilion.

DEMOLITION OF PARK STRUCTURES

NEW PAVILION

Construction of the new pavilion will be occurring the summer of 2015 and will be furnished with five picnic tables.

NEW PAVILION

Future Design Considerations

DRAINAGE

A great deal of care has been taken to determine a storm drain alignment that minimizes impacts to the stream valley buffer and significant or specimen trees in good condition while reducing the pressure on the intermittent streams. During the design phase the storm drain alignment may need to be adjusted based on the reassessed tree conditions. However, the technical storm drain plans should follow through with the approach of minimizing the impacts to the site's natural resources. Additionally, the storm drain outfall at the perennial stream will need to be designed to provide a stable outfall and prevent stream degradation.

STORMWATER MANAGEMENT

The proposed stormwater management facilities meet the requirements of the current stormwater management treatment criteria. During the design phase the stormwater management concept will need to be reevaluated to ensure it meets regulations in effect at that time. However, the technical stormwater management plans should follow through with the approach of minimizing impacts to natural resources, minimizing impacts to the preferred park layout, minimizing future maintenance costs and blending into the landform.

TREE PRESERVATION

Tree preservation has been given a great deal of study in the development of this Facility Plan. Where the overall design benefited, existing trees have been retained and their preservation has been considered in the proposed planning documents. During the design phase the existing trees should be reassessed to ascertain their condition and suitability for retention.

GRADING

Highly detailed calculations have confirmed a reasonable balance between the cut and fill on the proposed park design. Many factors influenced the grading such as the desire to protect existing trees and the requirements of installing the full size rectangular sports field. The technical grading plans should follow through with tree preservation efforts and maintain the approach of creating a built landform that transitions smoothly into the natural terrain.

SOLAR POWERED RESTROOM

In the design phase of work it is recommended that the use of solar power for the restroom facilities be explored.

NOISE ABATEMENT

Noise reaching into the park is a negative factor with the adjacent intense vehicular use of New Hampshire Avenue, comprising six lanes of traffic flowing past the park. There is no noise abatement proposed herein since there physically is not adequate space to construct any sort of meaningful noise barrier or berm system without visually obstructing views into the park. During the design phase noise abatement should be discussed on the outside chance that new technologies and/or materials are available to suppress excess traffic noise.

CONTINGENCY

It is unknown whether there might be foundations and/or possibly a cistern existing on site. Therefore, it is recommended that a contingency be carried on the cost estimate to accommodate for such below grade remnants of earlier construction activity on the site.

Preliminary Forest Conservation Plan

A Forest Conservation Exemption (42014193E) was approved for the demolition of the existing park recreation building and construction of the replacement picnic pavilion, scheduled for 2015.

A Preliminary Forest Conservation Plan for the entire park site has been submitted and is pending approval. The environmental and site improvements provided by the Facility Plan include:

- The existing stream valley buffer impacts (current park facilities within the buffer) of 24,498 sf will be reduced 68.5% to 7,728 sf.
- More than 50% of the site (12.16 acres) will be retained as forest, which greatly exceeds requirements.
- Only 0.53 acres of forest will be removed.
- Additional trees to be planted in open stream valley buffer areas.
- New storm drain outfall carefully sited to outfall at the perennial stream and minimize impacts to the existing forest.
- Removal of non-native invasives along forest edge and stream.
- Utilization of above grade hard surface trail detail within the critical root zones of mature and specimen trees.

Included as part of the Preliminary Forest Conservation Plan submittal was a variance request letter. The variance request letter listed four trees requiring a variance for removal and ten trees requiring a variance for critical root zone impacts. Two of the trees requiring a variance for removal are listed in poor condition and are being removed as part of the storm drain outfall installation in order to minimize or eliminate impacts to trees in good condition. The other two trees requiring a variance for removal are listed in good condition and are located within the limits of disturbance. However, every effort is being made to preserve these trees, including above grade paths and directional boring of deep storm drain pipes.

FOREST

NATIVE JACK IN THE PULPIT

NATIVE TULIP POPLAR

OPEN UNDERSTORY

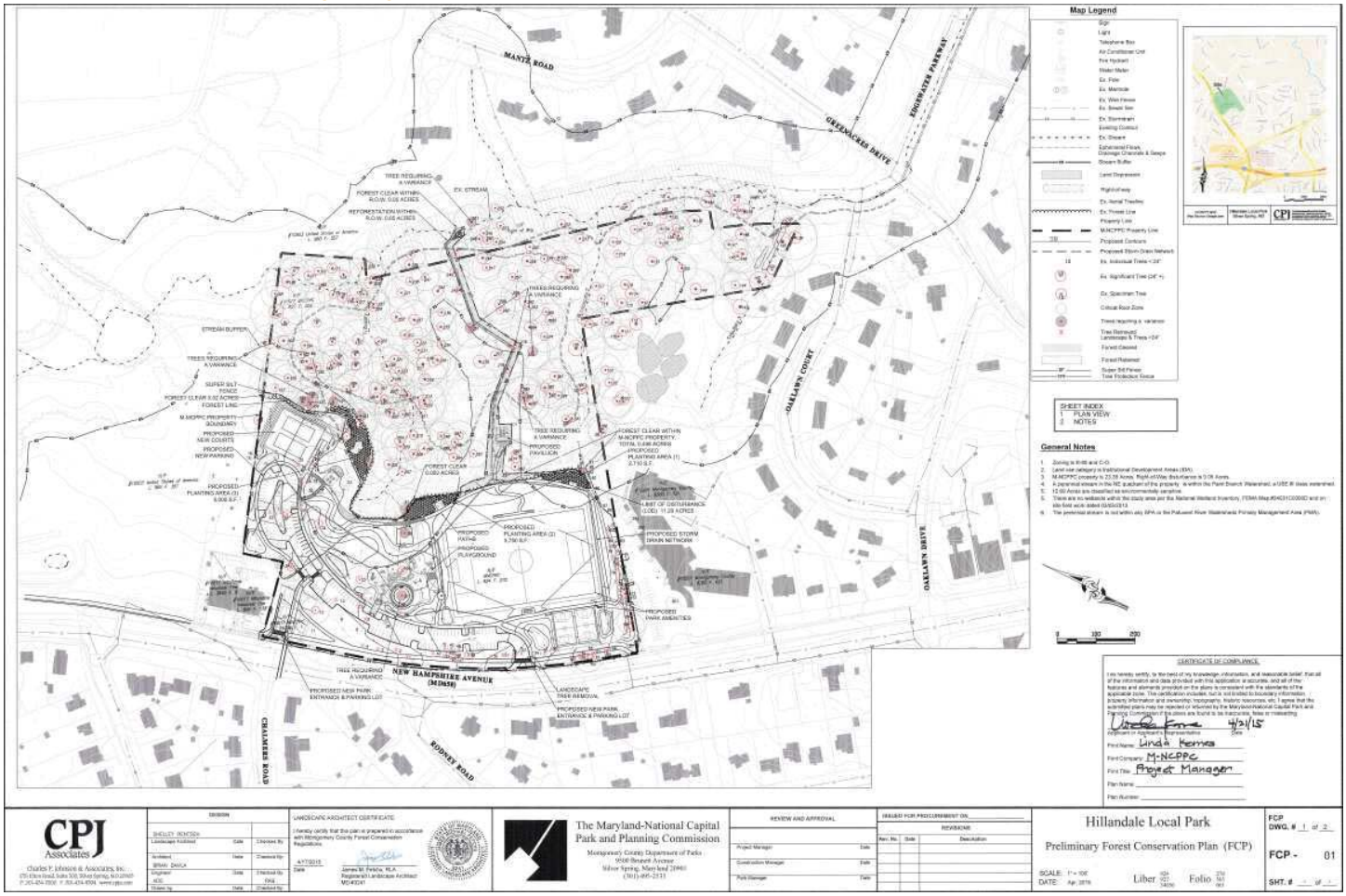


FIGURE 28: PRELIMINARY FOREST CONSERVATION PLAN

Stormwater Management Concept

Stormwater management requirements for the renovated park were determined based on the technical requirements for Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) criteria found in the Chapter 5 revision to the *2000 Maryland Department of the Environment (MDE) Stormwater Management Design Manual* and *Montgomery County Department of Permitting Service's Water Resource Technical Policy WRTP-5*. The required ESD volume for the renovated park is 13,160 cf. The stormwater management for the renovated park is provided through nine micro-bioretention facilities, one bio-swale facility and non-rooftop disconnection. The proposed facilities provide a treatment volume of 14,490 cf which is 110.1% of the required volume. The Stormwater Management Concept plan was approved by Montgomery County Department of Permitting Services on May 1, 2015 (SWM File # 270935).

FIGURE 29: STORMWATER MANAGEMENT CONCEPT PLAN

Agency Approval Status

INTERIM IMPROVEMENTS

SUBMISSION ITEM	STATUS	APPROVAL DATE
Stormwater Management Concept For Picnic Pavilion (SWM File #265095)	Approved	July 16, 2014
Small Land Disturbance Sediment Control Permit For Hillandale Park Activity Building Demolition and Picnic Pavilion Construction (# 299595)	Approved	August 18, 2014
Demolition Permit For Hillandale Park Activity Building And Adult Education Building (#682799)	Approved	April 6, 2015
Building Permit For Intermediate Pavilion (#699570)	Approved	March 30, 2015
Forest Conservation Exemption For Intermediate Pavilion (#42014193e)	Approved	July 17, 2014

FACILITY PLAN

Natural Resources Inventory / Forest Stand Delineation (Plan # 420140270)	Approved	November 20, 2013
Preliminary Forest Conservation Plan	Pending	
Stormwater Management Concept (SM# 270935)	Approved	May 1, 2015

Cost Summary

A summary of construction costs is outlined in the table below. A detailed cost estimate is included in the Appendix of the Facility Plan report.

ITEM		SUBTOTAL
Site Preparation and Demolition		$596,150
Sediment and Erosion Control		$298,500
Earthwork		$382,225
Stormwater Management		$582,750
Utilities (water, electric service)		$167,150
Vehicular Pavement		$500,625
Pedestrian Hardscape (paving, walls, boardwalk, bridge, railings, etc.)		$457,050
Recreation Facilities (rectangular field, playground, court, fitness equipment)		$1,226,123
Structures (restrooms, trellis, arbor and picnic shelter/pavilions)		$784,000
Site Amenities (signage, lighting, furnishings, public art)		$350,500
Landscaping (includes 2 years maintenance for plant establishment)		$372,200
Miscellaneous (As-Built Drawings, electronic submissions)		$30,000
Tributary Restoration (Allowance)		$150,000
Construction Subtotal	**$5,647,273**	
Construction Contingency (15% of Construction Subtotal)		$884,591
Construction Total (Subtotal plus Contingency)	**$6,781,864**	
Design Contract with Contingency (8% of Construction Total)		$542,549
Staff Chargebacks for Design (15% of Design Contract)		$81,382
Construction Management & Inspections (2% of Construction Total)		$135,637
TOTAL PROJECT COST		**$7,541,433**

Conclusion

This Facility Plan for Hillandale Local Park is based on a year of study and has been vetted in the following ways:

- Complete and thorough site analysis focusing on opportunities and constraints;
- The submission and approval of the Preliminary Forest Conservation Plan;
- The submission and approval of the Stormwater Management Concept Plan;
- A series of public meetings focused on understanding and responding to the community needs;
- Coordination with public agencies regarding facilities on adjacent properties;
- A rigorous design process built on the foundation of information gathered.

A detailed park construction budget has been evaluated to confirm that the expenditures proposed are reasonable within the historic context of local M-NCPPC park development in Montgomery County.

The buildable area of Hillandale Local Park is constricted between the extensive stream buffer and the outer edge of the proposed expansion of the New Hampshire Avenue right-of-way. Thus, the programmable area of the park is limited to just over eleven acres. The proposed development of this active zone has been maximized to ensure that the highest potential use is being achieved in this limited site area.

The proposed park design is the heart of this Facility Plan and has been guided by the M-NCPPC/ Montgomery County Parks Department Park Development staff. The plan balances the needs of the community for physical components such as basketball, tennis, recreational fields and parking with the aesthetics of successful well organized park design.

When implemented this reconstruction of the Hillandale Local Park will serve the needs of the community for the foreseeable future. The park entrances have been clarified, the vehicular traffic flow is now connected between entrances, and adequate parking has been provided. Public recreational facilities have been integrated into the plan including a natural grass soccer field, two tennis courts and two basketball courts. A destination thematic playground is predominantly situated as a central focus to the park design. All of these active recreation uses are balanced with the native woodland and natural trails. The park user will be invited into the park and a large variety of recreational choices will be available to the community.

This long sought park renovation will address the needs of the community as expressed by the community who has been active at the grass roots level. A special thanks is hereby offered to Eileen Finnegan for personally championing this effort for nearly a decade.

Acknowledgments

M-NCPPC PDCO (Planning, Design, Construction and Operations) Team:

Landscape Architect/Project Manager: Linda Komes

Civil Engineer/Project Manager: Brian Lewandowski

Planning: Brooke Farquhar

Park Development: Mitra Pedoeem, Patricia McManus, Colter Burkes

Southern Parks Maintenance Division Chief: Bill Tyler

Park Manager: Thomas Nelson

Trail Design: Bob Turnbull

Park Police: Sabrina Pirtle, Bill Kellogg

Resource Analysis: Jai Cole

Consultant Team:

Site Civil Engineer: Charles P. Johnson and Associates, Inc.

Brian Davila, P.E.

Robyn Barnhart

Landscape Architect: Annapolis Landscape Architecture

Shelley Rentsch, RLA

Debby Smith, RLA

References

Countywide Bikeways Functional Master Plan, March 2005, Maryland-National Capital Park and Planning Commission, Montgomery County Department of Park and Planning

Hillandale History, http://www.hillandale-md.org/history.html

2012 Park, Recreation and Open Space (PROS) Plan, July 2012, Maryland-National Capital Park and Planning Commission, Department of Parks, Montgomery County, Montgomery County Recreation Department

White Oak Science Gateway Master Plan, Montgomery County Planning Department. (December 2013 Updated Version, Approval of December 2013 Updated Version with Revisions by County Council Resolution 17-1204, Adopted July 29,2014).

Appendices

Appendix A: Technical Plans and Information

1. Facility Plan

2. Natural Resources Inventory / Forest Stand Delineation

3. Preliminary Forest Conservation Cover Letter / Variance Letter / Plan

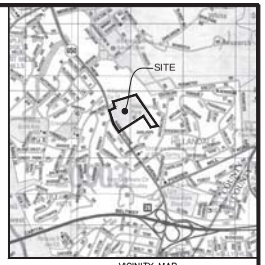
4. Stormwater Management Concept Plan and Report
   (includes Geotechnical Report)

5. State Highway Administration Review Request, Plans and Comments

6. Permission to Use Dedicated but Unbuilt Portion of Edgewater Parkway

7. Detailed Cost Estimate

A.1. Facility Plan



VICINITY MAP
SCALE: 1"=2000'
MAP 5287, GRID C6
Map Copyright © Kappa LLC
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FACILITY PLAN DATA

TOTAL SITE AREA	23.35 ACRES
TOTAL IMPERMIOUS AREA	3.40 ACRES
FOREST AREA TO BE RETAINED	12.16 ACRES
TOTAL # OF PARKING SPACES	125
TOTAL # OF ACCESSIBLE PARKING SPACES	5
LENGTH OF RECREATIONAL LOOP TRAIL	2,500 LF

MASTER LEGEND

FIELD VERIFIED TOPOGRAPHY
CONTOURS 452
INDEX CONTOURS 450
GIS TOPOGRAPHY
CONTOURS
INDEX CONTOURS 450
PROPOSED CONTOURS 452
PROPOSED INDEX CONTOURS 450
PARK PERIMETER PROPERTY LINE
PARK INTERIOR PROPERTY LINE
ADJACENT PROPERTY LINE
ADJACENT GIS PROPERTY LINE
EX. GAS LINE G G
EX. SEWER LINE S S
EX. WATER LINE W W
EX. OVERHEAD WIRE OHW
EXISTING STORM DRAIN PIPE EX. 36" C.M.P.
EX. FENCE
EX. SEWER MANHOLE
EX. STORMDRAIN MANHOLE D
EX. LIGHT POLE
EX. SIGN
EX. FIRE HYDRANT
EX. TREE
EX. TREE TO BE REMOVED
PROP. TREES
PROP. LIGHTS
EX. WOODS LINE
PROP. WOODS LINE
STREAM VALLEY BUFFER SVB SVB
LIMIT OF DISTURBANCE LOD LOD
NATURAL SURFACE TRAIL
PROP. FENCE X X

GENERAL NOTES:

1. ALL UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING UTILITY PLANS AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR MUST LOCATE ALL EXISTING UTILITIES.
2. APPROXIMATE LOCATION OF NATURAL SURFACE TRAIL ALIGNMENT TO BE FIELD LOCATED BY M-NCPPC.

GRAPHIC SCALE
100 0 50 100 200
SCALE: 1" = 100'

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation. The excavator is responsible for compliance with requirements of Chapter 36A of the Montgomery County Code.

CONSULTANTS:
CIVIL ENGINEERING
CPJ Associates
LANDSCAPE ARCHITECTURE
ANNAPOLIS LANDSCAPE ARCHITECTS
54 Southgate Avenue
Annapolis, Maryland
Phone: 410-670-7212

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN
SHELLEY RENTSCH
Landscape Architect — Date — Checked By:
Architect — Date — Checked By:
BRIAN DAVILA
Engineer — Date — Checked By:
ADG — RAR
Drawn by — Date — Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/17

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL
Project Manager — Date
Construction Manager — Date
Park Manager — Date

ISSUED FOR PROCUREMENT ON _____

REVISIONS

Rev. No.	Date	Description

Hillandale Local Park

FACILITY PLAN
OVERALL PLAN VIEW

SCALE: 1" = 100'
DATE: JAN., 2015

Liber 924 927 34656 Folio 270 503 001

DPS DWG. # ____ of ____

C-01

SHT. # 1 of 6

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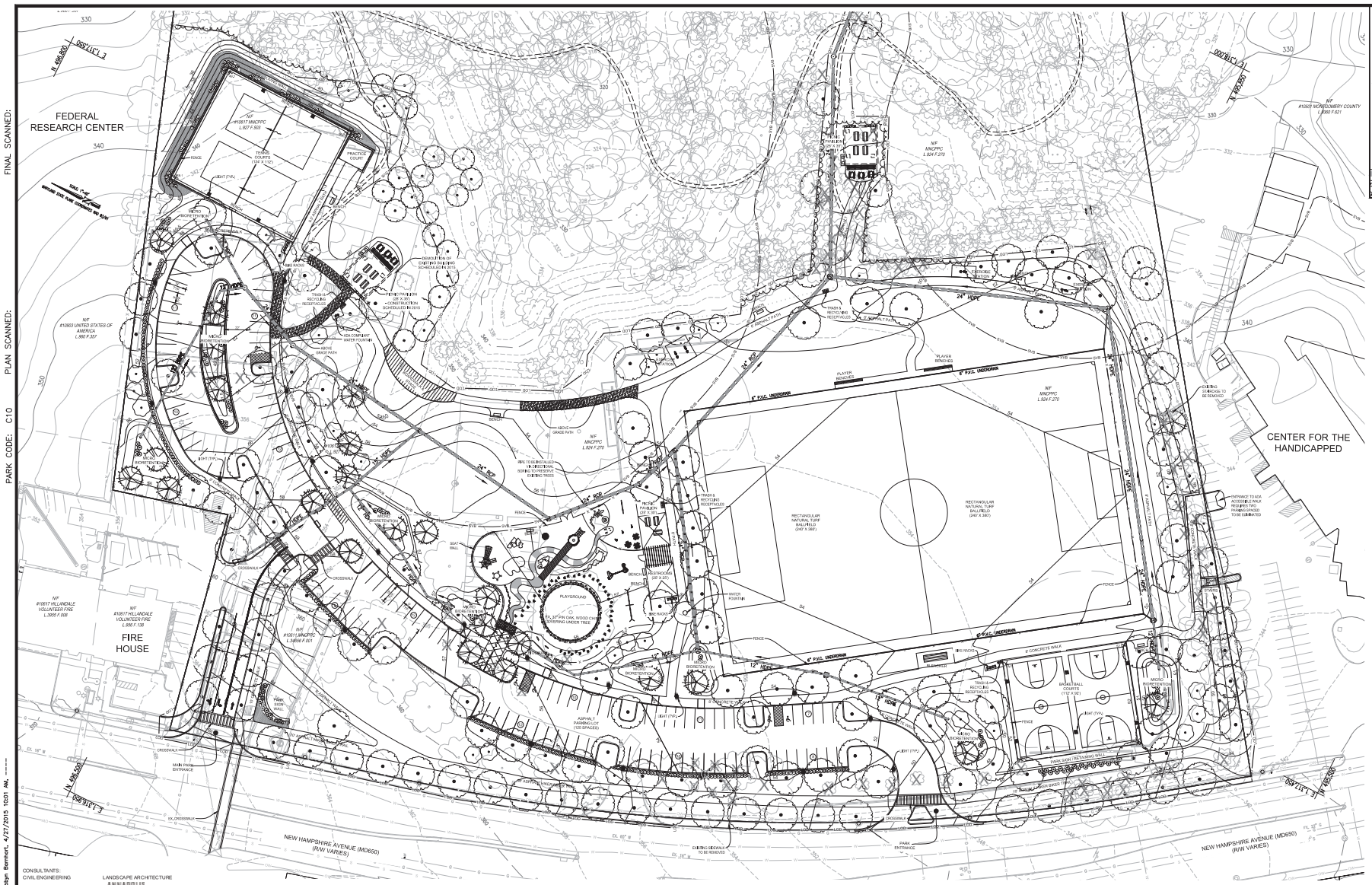

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CPJ Associates

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ANNAPOLIS LANDSCAPE ARCHITECTS
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Annapolis, Maryland
Phone: 410-670-7212

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Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
BRIAN DAVILA		
Engineer	Date	Checked By:
ADG		RAR
Drawn by	Date	Checked By:

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Project Manager	Date
Construction Manager	Date
Park Manager	Date

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Rev. No.	Date	Description

Hillandale Local Park

FACILITY PLAN
PARK PLAN VIEW

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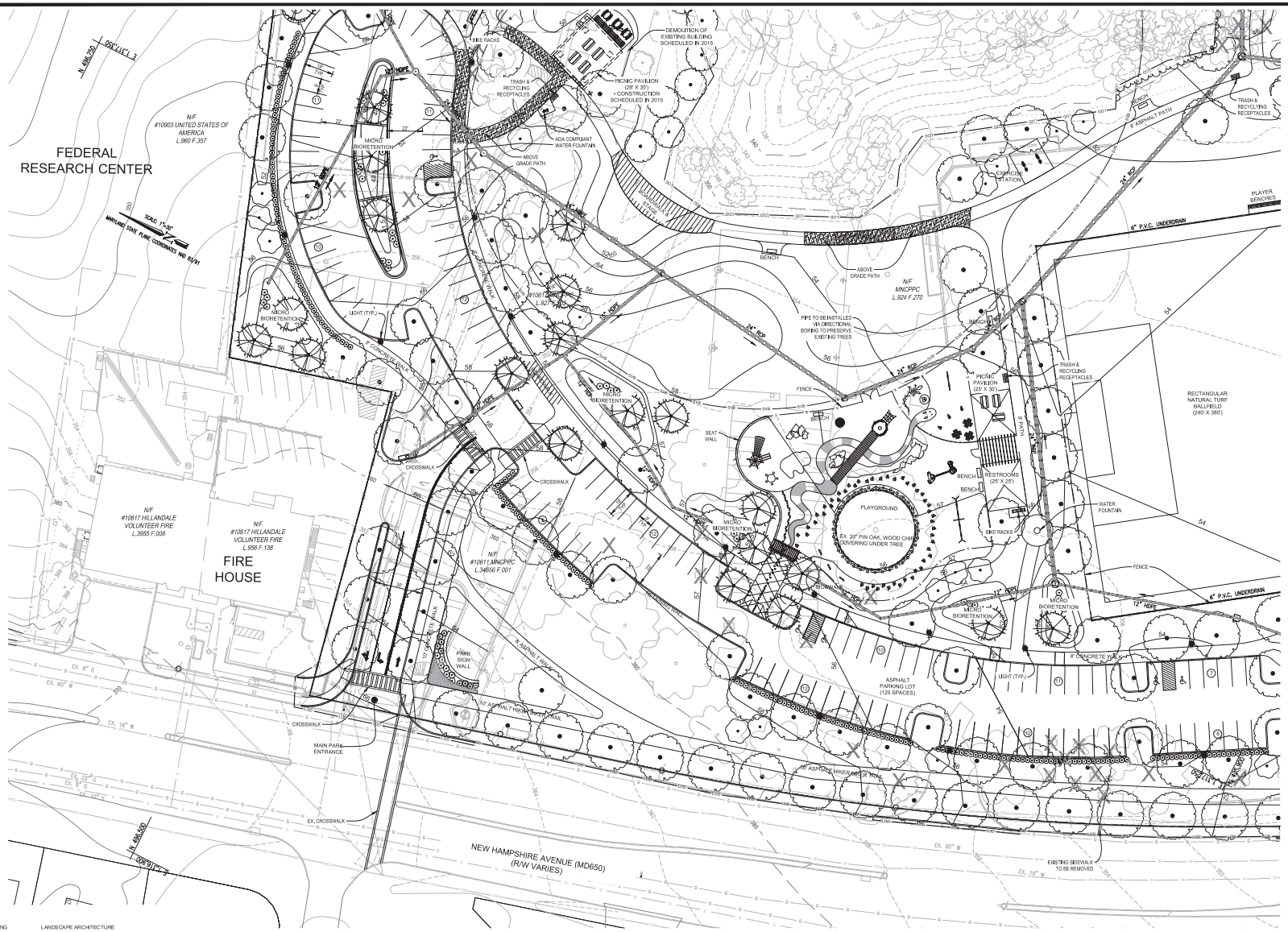

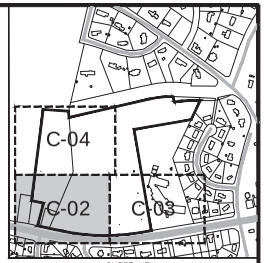

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Architect BRIAN DAVILA	Date	Checked By:
Engineer ADG	Date	Checked By: RAB
Drawn by	Date	Checked By

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Project Manager	Date
Construction Manager	Date
Park Manager	Date

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REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

FACILITY PLAN
PLAN VIEW

SCALE: 1" = 30'
DATE: JAN., 2014

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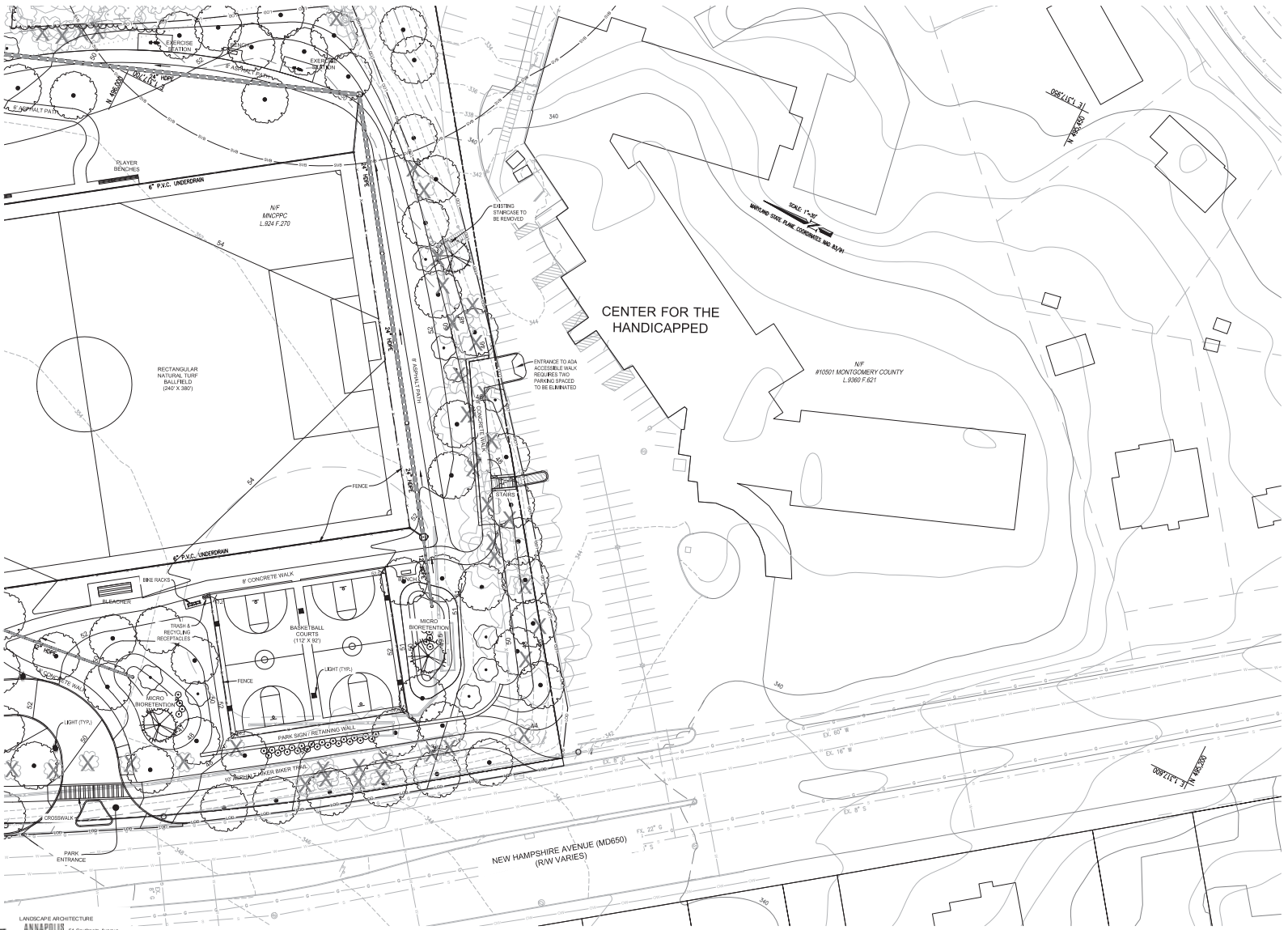

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Park Manager	Date

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FACILITY PLAN
PLAN VIEW

SCALE: 1" = 30'
DATE: JAN., 2015

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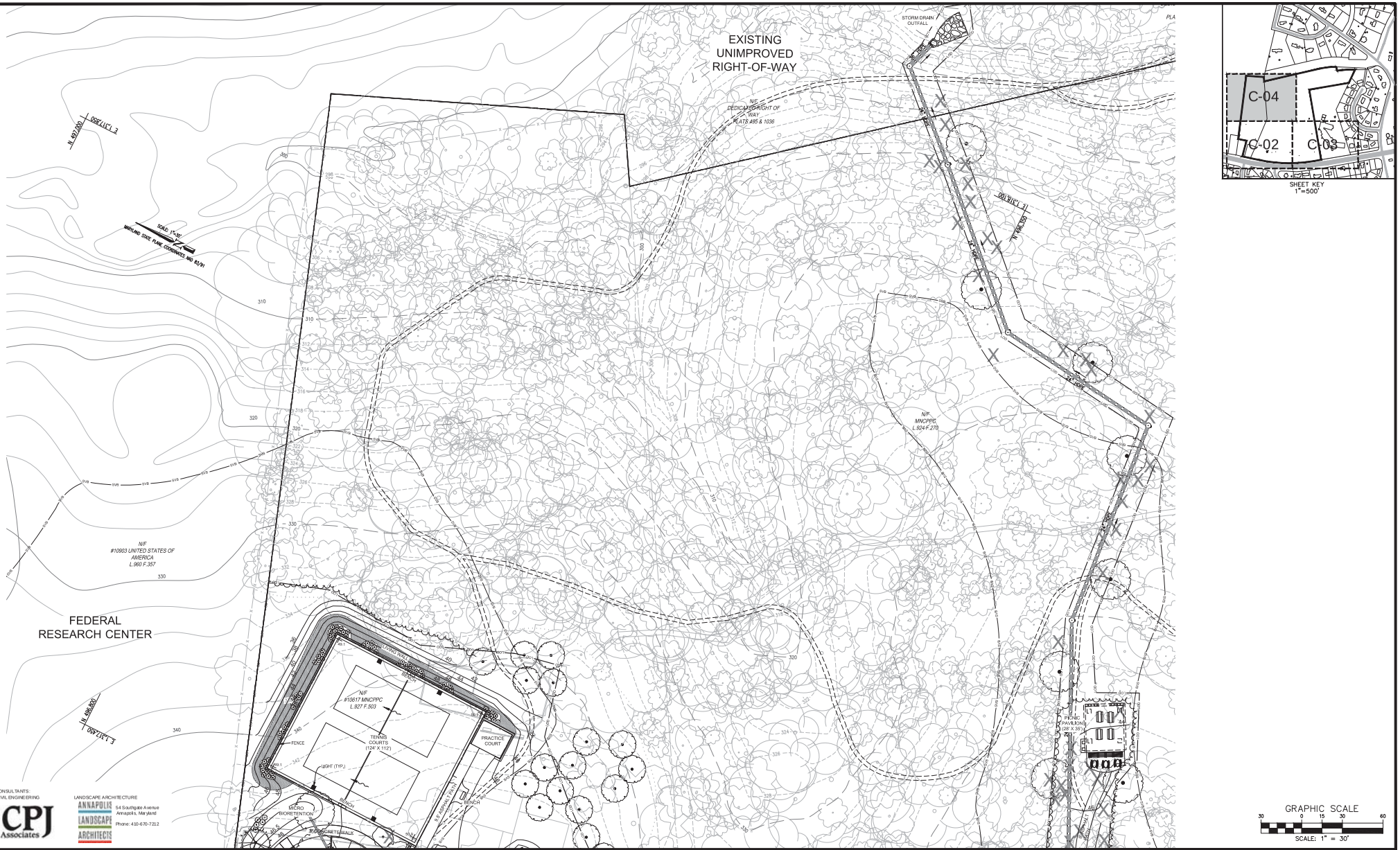

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Project Manager	Date
Construction Manager	Date
Park Manager	Date

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Hillandale Local Park

FACILITY PLAN
PLAN VIEW

SCALE: 1" = 30'
DATE: JAN., 2015

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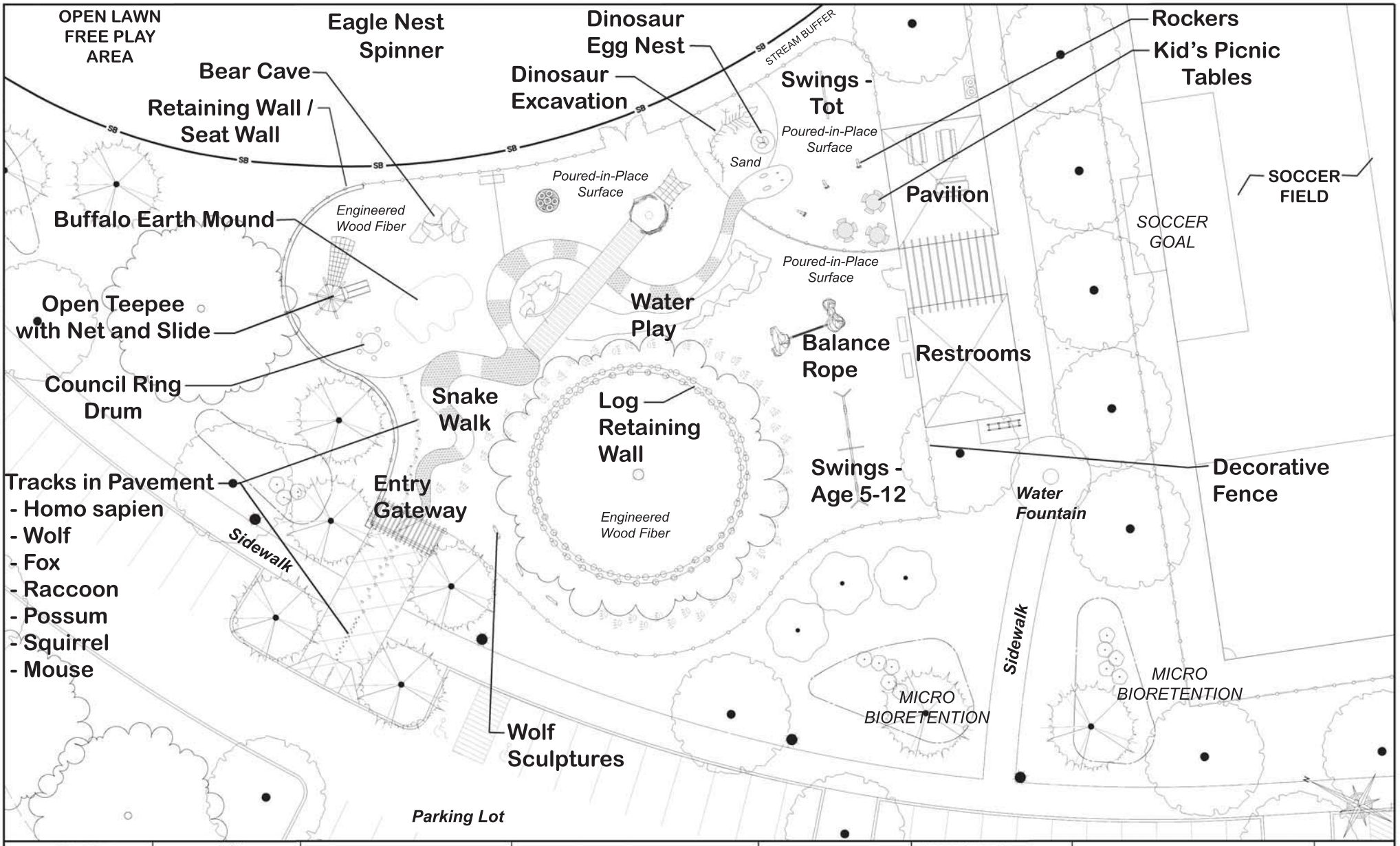

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BRIAN DAVILA — Architect — Date — Checked By:
ADG — Engineer — Date — Checked By:
Drawn By — Date — Checked By:

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REVIEW AND APPROVAL
Project Manager — Date
Construction Manager — Date
Park Manager — Date

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REVISIONS
Rev. No. | Date | Descriptio n

Hillandale Local Park
PLAY GROUND ENLARGEMENT
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DATE: APR 2015
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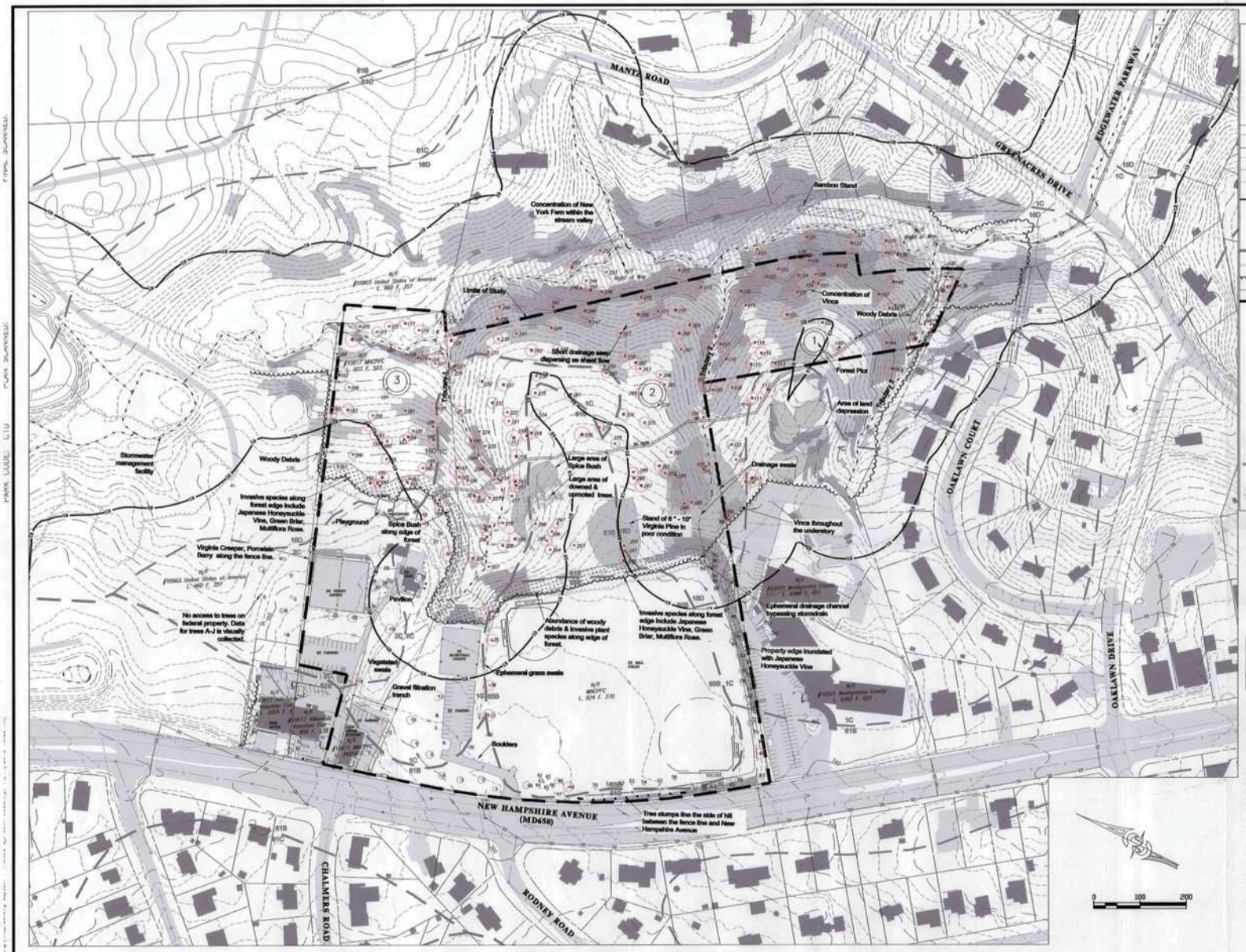
A.2. Natural Resources Inventory / Forest Stand Delineation



Map Legend

- Sign
- Light
- Telephone Box
- Air Conditioner Unit
- Fire Hydrant
- Water Meter
- Ex. Pole
- Ex. Manhole
- Ex. Wire Fence
- Ex. Sewer line
- Ex. Stormdrain
- Existing Contour
- Ex. Stream
- Ephemeral Flows, Drainage Channels & Seeps
- Stream Buffer
- Existing road
- Right-of-way
- Soils Line
- Ex. Aerial Treeline
- Ex. Forest Line
- Property Line
- Limits of NRI/FSD Study
- Ex. Individual Trees < 24"
- Ex. Significant Tree (24" +)
- Ex. Specimen Tree
- Forest Sample Point
- Slope 15%-25% on Erodible Soil
- Slope Greater Than 25%
- Land Depression
- Forest Interior Characteristics
- Invasive Species
- Edge of Forest Spice Bush
- Line of Tree Stumps
- Fallen Trees

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

NRI/FSD PLAN

Approved

NRI/FSD NO. A04-1270

Date Approved: 1/20/2015

Expiration Date: 1/20/2015

Signature Date

Environmental Summary Table

Category	Unit (Ac.)
Total Tract Area	23.35
Total Forest Area	12.69
Total Wetlands	0.00
Wetlands in Forest	0.00
100 Year Floodplain	0.00
100 Year Floodplain in Forest	0.00
Total Environmental Buffer (EB)	12.69
EB in Forest	10.19
Average Width of EB (L.F.)	175
Linear Extent of Stream (L.F.)	296

Soils Table

Map Symbol	Soil Name	Prime Farmland	Hydric	Erosion Potential
1C	Gaila Silt Loam	No	Predom. Non Hydric	Slight
2C	Glenelg Silt Loam	No	Predom. Non Hydric	Slight
18D	Brinklow Blocktown channery	No	Predom. Non Hydric	Highly Erodible
61B	Croom Gravelly Loam	No	Non Hydric	Slight
65B	Wheaton Silt Loam	No	Non Hydric	Slight

Soil Survey of Montgomery County
(NRCS, soil map survey area Version 3, 2005 and soil survey data Version 7, 2007)

Hillandale Local Park -Property Owners Table

Property Owner	Property Address	Area in Acres	Area in Sq. Feet	Plat Number	Liber	Folio	Tax Map	Parcel	General Zone Code	Specific Zone Code
MNCPPC	10 New Hampshire Ave, Silver Spring, MD 20903	17.83	776675		924	270	kp13	P345	RE	R90
MNCPPC	10917 New Hampshire Ave, Silver Spring, MD 20903	5.21	226948		927	503	kp13	P353	RE	R90
MNCPPC	10911 NEW HAMPSHIRE Ave, Silver Spring, MD 20903	0.313	13648		34656	1	kp13	P258	CZ	CO

General Notes

1. Site topography from CPJ field work dated May 2013. Zoning are R-90 and C-O.
2. Soils on site taken from USDA-NRCS Soil Survey of Montgomery County, MD. Map version 3, 2005 and Survey area data version 7 February, 2007.
3. There are no rare, threatened or endangered species within the boundaries of the project site per Included MD-DNR response letter dated April 2013. DNR analysis of the project site suggests the presence of Forest Interior Dwelling Bird Species (FIDS).
4. The Maryland Historical Trust has determined that there are no historic properties affected by this project, per letter dated March 19th 2013.
5. There are no wetlands within the study area per the National Wetland Inventory, attached FEMA Map #24031C0390D and on site field work dated 03/05/2013.
6. This project site does not show a 100-year floodplain per FEMA Map #24031C0390D effective date September 29, 2006. Montgomery County could not provide additional information on the floodplain.
7. Tree diameters measured using a diameter tape. Field work conducted on March 5th 2013 & July 15th 2013 by Hoang Ta & John McCarthy of CPJ.
8. This site contains only one (1) mixed deciduous forest stand.
9. Tree #292 Virginia Pine is within 75% of the State & County Champion tree.
10. A perennial stream in the NE quadrant of the property is within the Paint Branch Watershed, a USE III class watershed.
11. The perennial stream is not within any SPA or the Patuxent River Watersheds Primary Management Area (PMA).
12. Three intermittent streams, labeled Tributary 1-3, flow in an easterly direction across the study area before entering the perennial stream.
13. An approved NRI/FSD is valid for two years from the date of signature by staff, or until information used to prepare the NRI/FSD changes. The NRI/FSD will require revision and re-approved if the base information changes significantly.

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
BRIAN DAVILA		
Engineer	Date	Checked By:
ADC		RAB
Drawn by	Date	Checked By:

LANDSCAPE ARCHITECT CERTIFICATE:

I hereby certify that this plan is prepared in accordance with Montgomery County Forest Conservation Regulations.

10/07/2013
Date

James M. Fetchu, RLA
Registered Landscape Architect
MD #3241

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON

REVISIONS

Rev. No.	Date	Description

Hillandale Local Park

Natural Resource Inventory/Forest Stand Delineation (NRI/FSD)

SCALE: 1" = 100'
DATE: NOVEMBER 2013

Liber 924 927 34656
Folio 270 503 001

NRI/FSD - 01

DWG. # 1 of 2

SHT. # - of -

Individual Landscape Trees Table

Hillandale Tree Data Sheets	All landscape Trees outside the Forest		>24" Trees within the Forest		
Tree #	**Common Name**	**Botanical Name**	**DBH (in.)**	**Condition**	**Notes**
1	Virginia Pine	*Pinus virginiana*	14	Good	
2	Green Ash	*Fraxinus pennsylvanica*	21	Fair	Exposed roots damaged
3	Green Ash	*Fraxinus pennsylvanica*	19	Fair	Exposed roots damaged, suckers
4	Green Ash	*Fraxinus pennsylvanica*	20	Fair	Exposed roots damaged
5	Green Ash	*Fraxinus pennsylvanica*	22	Poor	Trunk damage
6	Slippery Elm	*Ulmus fulva*	4	Fair	Newly planted tree. Trunk Damage
7	Slippery Elm	*Ulmus fulva*	5	Good	Newly planted tree
8	Slippery Elm	*Ulmus fulva*	5	Good	Newly planted tree
9	Green Ash	*Fraxinus pennsylvanica*	23	Fair	Exposed roots damaged
10	Green Ash	*Fraxinus pennsylvanica*	19	Fair	Trunk damage, suckers
11	Black Walnut	*Betula nigra*	17	Good	
12	Black Walnut	*Betula nigra*	24	Fair	Broken leader, basla damage
13	Green Ash	*Fraxinus pennsylvanica*	18	Fair	Exposed damaged roots
14	Scarlet Oak	*Quercus coccinea*	24	Fair	Crooked, overhead wires, dead limbs
15	Willow Oak	*Quercus phellos*	19	Fair	Fence
16	Black Cherry	*Prunus serotina*	24	Dead	
17	Red Maple	*Acer rubrum*	27	Poor	Hole in trunk, leaning, broken branch
18	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
19	Tulip Poplar	*Liriodendron tulipifera*	24	Good	Broken branches
20	Tulip Poplar	*Liriodendron tulipifera*	19	Fair	Broken leader, trimmed
21	Black Walnut	*Betula nigra*	17	Poor	Broken branches, basal damage
22	**American Sycamore**	***Platanus occidentalis***	**40**	**Good**	**Split @4.5', Root damage**
23	Saucer Magnolia	*Magnolia x soulangeana*	9	Fair	Multistem
24	White Pine	*Pinus strobus*	26	Fair	Broken branches
25	Red Maple	*Acer rubrum*	21	Poor	Dead Branches
26	Red Maple	*Acer rubrum*	STUMP		
27	White Pine	*Pinus strobus*	25	Good	
28	Little Leaf Linden	*Tilia cordata*	20	Fair	Leaning
29	White Pine	*Pinus strobus*	19	Good	
30	White Pine	*Pinus strobus*	21	Good	
31	White Pine	*Pinus strobus*	23	Good	
32	White Pine	*Pinus strobus*	24	Fair	Trunk Damage
33	White Pine	*Pinus strobus*	23	Good	
34	Red Maple	*Acer rubrum*	26	Poor	1/2 Dead
35	**Pin Oak**	***Quercus palustris***	**33**	**Good**	
36	Pin Oak	*Quercus palustris*	27	Fair	Broken branches
37	**Pin Oak**	***Quercus palustris***	**32**	**Good**	
38	Slippery Elm	*Ulmus fulva*	5	Good	Newly planted tree
39	Slippery Elm	*Ulmus fulva*	5	Good	Newly planted tree
40	White Pine	*Pinus strobus*	21	Good	
41	Eastern Red Bud	*Cercis canadensis*	3	Good	
42	Eastern Red Bud	*Cercis canadensis*	3	Good	
43	Eastern Red Bud	*Cercis canadensis*	3	Good	
44	Eastern Red Bud	*Cercis canadensis*	3	Good	
45	Eastern Red Bud	*Cercis canadensis*	3	Good	
46	Eastern Red Bud	*Cercis canadensis*	3	Good	
47	Eastern Red Bud	*Cercis canadensis*	3	Good	
48	Green Ash	*Fraxinus pennsylvanica*	15	Fair	Root damage, broken branches
49	White Pine	*Pinus strobus*	27	Good	Exposed Roots
50	American Sycamore	*Platanus occidentalis*	4	Good	
51	American Sycamore	*Platanus occidentalis*	4	Good	
52	American Sycamore	*Platanus occidentalis*	4	Good	
53	American Sycamore	*Platanus occidentalis*	4	Good	
54	American Sycamore	*Platanus occidentalis*	4	Good	
55	American Sycamore	*Platanus occidentalis*	4	Good	
56	American Sycamore	*Platanus occidentalis*	4	Good	
57	Pin Oak	*Quercus palustris*	5	Poor	Overhead Wires, broken leader
58	Red Oak	*Quercus rubra*	5	Good	
59	Red Oak	*Quercus rubra*	9	Poor	Broken leader, suckers
60	Red Oak	*Quercus rubra*	6	Poor	Broken leader
61	Black Cherry	*Prunus serotina*	8	Poor	Crooked, Overhead wires
62	Red Oak	*Quercus rubra*	8	Fair	Dead Branches, Uneven Crown
63	Red Oak	*Quercus rubra*	20	Fair	Basal Damage
64	Blue Spruce	*Picea pungens*	10	Fair	Vines
65	Green Ash	*Fraxinus pennsylvanica*	6	Good	Suckers
66	Green Ash	*Fraxinus pennsylvanica*	11	Fair	Twin, Poison Ivy
67	Flowering Cherry	*Prunus Sp.*	9	Fair	Root Damage
68	Green Ash	*Fraxinus pennsylvanica*	28	Good	Broken branches
69	White Pine	*Pinus strobus*	27	Good	Leaning slightly
70	Cornelian Dogwood	*Cornus mas*	3	Good	
71	Black Cherry	*Prunus serotina*	15	Poor	Broken branches, fence
72	Pin Oak	*Quercus palustris*	10	Fair	Fence
73	White Pine	*Pinus strobus*	27	Good	
74	Red Oak	*Quercus rubra*	9	Good	Fence
75	Black Cherry	*Prunus serotina*	8	Poor	Vines
76	Black Cherry	*Prunus serotina*	7	Poor	Vines
77	Bradford Pear	*Pyrus calleryana*	6	Good	
78	Pin Oak	*Quercus palustris*	21	Good	Fence
79	Bradford Pear	*Pyrus calleryana*	6	Fair	Leaning, Trunk Damage
80	Black Cherry	*Prunus serotina*	10	Poor	Fence, Vines
81	White Pine	*Pinus strobus*	10	Good	
82	Black Cherry	*Prunus serotina*	12	Poor	Vines, Broken branches
83	Bradford Pear	*Pyrus calleryana*	8	Good	
84	Black Cherry	*Prunus serotina*	10	Poor	Vines, broken branches
85	Mulberry	*Morus Sp.*	11	Poor	Fence, vines, broken branches
86	Black Walnut	*Juglans nigra*	3	Poor	Heavy vines
87	Persimmon	*Diospyros virginiana*	8	Poor	Vines
88	Mulberry	*Morus sp.*	12	Poor	Vines, dead branches
89	Black Cherry	*Prunus serotina*	13	Poor	Heavy Vines
90	Black Cherry	*Prunus serotina*	4	Poor	Heavy Vines
91	**Pin Oak**	***Quercus palustris***	**36**	**Fair**	**Vines, Dead branches**
92	Black Cherry	*Prunus serotina*	18	Fair	Undercut
93	Black Walnut	*Betula nigra*	10	Fair	Roots impacted by storm drain
94	Black Walnut	*Betula nigra*	5	Poor	Roots impacted by storm drain, leaning
95	Box Elder	*Acer negundo*	11	Poor	Vines
96	Box Elder	*Acer negundo*	8	Poor	Vines
97	Silk Tree	*Albizia julibrissin*	10	Poor	Vines

Individual Landscape Trees on Federal Property Table

Note: Field crew did not have access to federal property. Tree locations and DBH were visually assigned.

Tree #	Common Name	Botanical Name	DBH (in.)	Condition	Notes
A	Sugar Maple	*Acer saccharum*	8	Good	
B	Weeping Willow	*Salix babylonica*	11	Poor	Dead Branches - competing
B	Red Maple	*Acer rubrum*	14	Poor	Dead Branches - competing
C	Paw-Paw	*Asimina triloba*	10	Good	
D	Crab Apple	*Malus sp.*	6	Fair	Dead Branches
E	Virginia Pine	*Pinus virginiana*	14	Fair	Dead Branches
F	Chinese Elm	*Ulmus parvifolia*	6	Poor	Broken Baranches, Heavy Vines
G	Red Maple	*Acer rubrum*	8	Good	
H	Sweet Gum	*Liquidambar styraciflua*	9	Good	
I	Virginia Pine	*Pinus virginiana*	8	Good	
J	Virginia Pine	*Pinus virginiana*	8	Good	

Speciment trees & Forest Trees ≥ 24" DBH Table

Tree #	Common Name	Botanical Name	DBH (in.)	Condition	Notes
98	American Sycamore	*Platanus occidentalis*	24	Good	Leaning
99	American Sycamore	*Platanus occidentalis*	26	Good	Vines
100	White Oak	*Quercus alba*	28	Good	Vines
101	**Red Oak**	***Quercus rubra***	**46**	**Good**	
102	White Oak	*Quercus alba*	27	Good	English Ivy
103	Tulip Poplar	*Liriodendron tulipifera*	28	Good	English Ivy
104	Tulip Poplar	*Liriodendron tulipifera*	28	Poor	Hole in trunk,twin
105	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
106	**White Oak**	***Quercus alba***	**50**	**Good**	
107	**White Oak**	***Quercus alba***	**35**	**Good**	**Basal damage**
108	White Oak	*Quercus alba*	25	Good	
109	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
110	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
111	**Tulip Poplar**	***Liriodendron tulipifera***	**33**	**Good**	
112	**White Oak**	***Quercus alba***	**40**	**Fair**	**Dead limbs**
113	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
114	**Tulip Poplar**	***Liriodendron tulipifera***	**33**	**Good**	
115	**Tulip Poplar**	***Liriodendron tulipifera***	**31**	**Good**	
116	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
117	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
118	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
119	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
120	White Oak	*Quercus alba*	29	Good	
121	Tulip Poplar	*Liriodendron tulipifera*	28	Good	
122	Tulip Poplar	*Liriodendron tulipifera*	27	Good	Undercut
123	**Pignut Hickory**	***Carya alba***	**27**	**Good**	
124	**Tulip Poplar**	***Liriodendron tulipifera***	**32**	**Poor**	**Hole in trunk**
125	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
126	Tulip Poplar	*Liriodendron tulipifera*	28	Good	
127	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
128	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
129	Tulip Poplar	*Liriodendron tulipifera*	29	Good	
130	Tulip Poplar	*Liriodendron tulipifera*	25	Good	Crooked
131	Tulip Poplar	*Liriodendron tulipifera*	29	Good	
132	**White Oak**	***Quercus alba***	**40**	**Good**	
133	Red Oak	*Quercus rubra*	24	Good	
134	Tulip Poplar	*Liriodendron tulipifera*	25	Poor	Very undercut
135	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	**Vines**
136	**Tulip Poplar**	***Liriodendron tulipifera***	**51**	**Fair**	**Leaning, English Ivy**
137	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
138	Red Maple	*Acer rubrum*	25	Fair	Vines
139	**Tulip Poplar**	***Liriodendron tulipifera***	**39**	**Poor**	**Vines, Hollow**
140	**Tulip Poplar**	***Liriodendron tulipifera***	**60**	**Good**	**Vines, slight undercut**
141	Green Ash	*Fraxinus pennsylvanica*	29	Good	
142	**Tulip Poplar**	***Liriodendron tulipifera***	**62**	**Fair**	**Vines**
143	**Red Oak**	***Quercus rubra***	**48**	**Good**	
144	Tulip Poplar	*Liriodendron tulipifera*	26	Good	Vines
145	Tulip Poplar	*Liriodendron tulipifera*	29	Good	Vines
146	**Tulip Poplar**	***Liriodendron tulipifera***	**33**	**Good**	**Vines**
147	**Tulip Poplar**	***Liriodendron tulipifera***	**31**	**Good**	
148	**Tulip Poplar**	***Liriodendron tulipifera***	**36**	**Good**	**Vines**
149	**Black Oak**	***Quercus velutina***	**36**	**Good**	
150	**Pignut Hickory**	***Carya alba***	**26**	**Good**	
151	**Tulip Poplar**	***Liriodendron tulipifera***	**34**	**Good**	**Leaning Slightly**
152	**Tulip Poplar**	***Liriodendron tulipifera***	**37**	**Poor**	**Hollow, vines**
153	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
154	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
155	**Tulip Poplar**	***Liriodendron tulipifera***	**36**	**Fair**	**Twin, 1 Dead Leader, Broken Branches**
156	Red Oak	*Quercus rubra*	21	Good	Vines
157	Tulip Poplar	*Liriodendron tulipifera*	24	Fair	Vines
158	Tulip Poplar	*Liriodendron tulipifera*	28	Good	
159	**Tulip Poplar**	***Liriodendron tulipifera***	**37**	**Good**	**Broken Branches**
160	Tulip Poplar	*Liriodendron tulipifera*	29	Good	
161	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
162	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
163	**White Oak**	***Quercus alba***	**34**	**Good**	
164	Tulip Poplar	*Liriodendron tulipifera*	27	Poor	Broken leader
165	**Red Maple**	***Acer rubrum***	**33**	**Poor**	**Trunk decay, broken branches**
166	Tulip Poplar	*Liriodendron tulipifera*	25	Good	Twin
167	**Tulip Poplar**	***Liriodendron tulipifera***	**45**	**Poor**	**Hollow**
168	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
169	**Tulip Poplar**	***Liriodendron tulipifera***	**39**	**Good**	
170	Tulip Poplar	*Liriodendron tulipifera*	25	Fair	Undercut
171	Tulip Poplar	*Liriodendron tulipifera*	28	Fair	Undercut
172	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
173	**White Oak**	***Quercus alba***	**42**	**Good**	
174	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
175	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
176	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
177	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
178	**Tulip Poplar**	***Liriodendron tulipifera***	**32**	**Good**	
179	Tulip Poplar	*Liriodendron tulipifera*	25	Fair	Undercut
180	Tulip Poplar	*Liriodendron tulipifera*	26	Fair	Undercut, leaning
181	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
182	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
183	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
184	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
185	Tulip Poplar	*Liriodendron tulipifera*	29	Good	Twin
186	Red Oak	*Quercus rubra*	28	Good	
187	**Tulip Poplar**	***Liriodendron tulipifera***	**35**	**Fair**	**Basal Damage**
188	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
189	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
190	Tulip Poplar	*Liriodendron tulipifera*	25	Fair	Vines
191	Tulip Poplar	*Liriodendron tulipifera*	25	Poor	Hole in Trunk
192	**Black Cherry**	***Prunus serotina***	**30**	**Poor**	**Vines, basal damage**
193	**Tulip Poplar**	***Liriodendron tulipifera***	**33**	**Fair**	**Heavy vines**
194	American Sycamore	*Platanus occidentalis*	27	Good	
195	Tulip Poplar	*Liriodendron tulipifera*	29	Good	Heavy vines
196	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
197	**Tulip Poplar**	***Liriodendron tulipifera***	**45**	**Good**	**Twin**
198	**Tulip Poplar**	***Liriodendron tulipifera***	**34**	**Fair**	**Twin, undercut**
199	White Oak	*Quercus alba*	26	Good	
200	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Poor**	**Hollow, Vines**
201	Tulip Poplar	*Liriodendron tulipifera*	27	Fair	Vines
202	Tulip Poplar	*Liriodendron tulipifera*	28	Poor	Basal dammage, hollow
203	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
204	**Tulip Poplar**	***Liriodendron tulipifera***	**32**	**Fair**	**Vines**
205	Tulip Poplar	*Liriodendron tulipifera*	27	Fair	Basal damage
206	**Tulip Poplar**	***Liriodendron tulipifera***	**31**	**Fair**	**Hollow**

Note:
Bold text indicates specimen trees.

Tree #	Common Name	Botanical Name	DBH (in.)	Condition	Notes
207	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
208	**American Sycamore**	***Platanus occidentalis***	**30**	**Good**	**Triple, vines**
209	**Tulip Poplar**	***Liriodendron tulipifera***	**37**	**Fair**	**Vines**
210	Tulip Poplar	*Liriodendron tulipifera*	29	Fair	Twin, basal damage
211	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
212	**Tulip Poplar**	***Liriodendron tulipifera***	**36**	**Good**	
213	**Tulip Poplar**	***Liriodendron tulipifera***	**38**	**Good**	
214	Tulip Poplar	*Liriodendron tulipifera*	24	Fair	Slightly undercut
215	Tulip Poplar	*Liriodendron tulipifera*	27	Poor	Undercut, leaning
216	**Tulip Poplar**	***Liriodendron tulipifera***	**39**	**Good**	
217	**Tulip Poplar**	***Liriodendron tulipifera***	**43**	**Fair**	**Twin, leader broken**
218	Tulip Poplar	*Liriodendron tulipifera*	29	Good	
219	**Tulip Poplar**	***Liriodendron tulipifera***	**33**	**Good**	**Vines**
220	White Oak	*Quercus alba*	29	Good	Vines, large fallen tree leaning on it
221	White Oak	*Quercus alba*	26	Fair	Crooked
222	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
223	Tulip Poplar	*Liriodendron tulipifera*	28	Good	undercut
224	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
225	Tulip Poplar	*Liriodendron tulipifera*	27	Good	Twin, undercut
226	**Red Oak**	***Quercus rubra***	**30**	**Good**	**Undercut**
227	Tulip Poplar	*Liriodendron tulipifera*	28	Good	Undercut
228	**Tulip Poplar**	***Liriodendron tulipifera***	**39**	**Fair**	**Basal damage**
229	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
230	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Fair**	**Undercut, leaning**
231	Red Oak	*Quercus rubra*	28	Good	
232	**White Oak**	***Quercus alba***	**34**	**Good**	
233	**Red Oak**	***Quercus rubra***	**30**	**Good**	
234	Red Oak	*Quercus rubra*	29	Good	
235	**Pignut Hickory**	***Carya alba***	**27**	**Good**	
236	White Oak	*Quercus alba*	25	Good	
237	**Red Oak**	***Quercus rubra***	**34**	**Good**	
238	Red Oak	*Quercus rubra*	26	Good	
239	**Red Oak**	***Quercus rubra***	**31**	**Fair**	**Twin, split**
240	White Oak	*Quercus alba*	25	Good	Crooked
241	Red Oak	*Quercus rubra*	24	Good	
242	**Red Oak**	***Quercus rubra***	**33**	**Fair**	**Dead branches**
243	**Pignut Hickory**	***Carya alba***	**26**	**Good**	
244	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
245	**Pignut Hickory**	***Carya alba***	**25**	**Good**	
246	**Red Oak**	***Quercus rubra***	**36**	**Good**	
247	Red Oak	*Quercus rubra*	25	Fair	Dead trees leaning on it
248	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
249	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
250	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
251	**Tulip Poplar**	***Liriodendron tulipifera***	**31**	**Good**	**Slightly undercut**
252	Tulip Poplar	*Liriodendron tulipifera*	26	Good	Vines
253	Red Oak	*Quercus rubra*	24	Good	
254	Tulip Poplar	*Liriodendron tulipifera*	25	Good	
255	Tulip Poplar	*Liriodendron tulipifera*	27	Good	
256	**White Oak**	***Quercus alba***	**37**	**Good**	**Few broken/dead branches**
257	Red Oak	*Quercus rubra*	24	Good	
258	Red Oak	*Quercus rubra*	26	Good	
259	Tulip Poplar	*Liriodendron tulipifera*	28	Good	Double leader
260	Tulip Poplar	*Liriodendron tulipifera*	25	Good	Double leader
261	**White Oak**	***Quercus alba***	**34**	**Poor**	**Broken leader, suckers**
262	**Red Oak**	***Quercus rubra***	**36**	**Good**	
263	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
264	**Red Oak**	***Quercus rubra***	**33**	**Good**	
265	Red Maple	*Acer rubrum*	29	Good	
266	Tulip Poplar	*Liriodendron tulipifera*	24	Good	Triple
267	Red Oak	*Quercus rubra*	25	Good	Broken branches
268	**Tulip Poplar**	***Liriodendron tulipifera***	**36**	**Good**	**Broken branches**
269	**Red Oak**	***Quercus rubra***	**30**	**Good**	**Broken branches**
270	**White Oak**	***Quercus alba***	**41**	**Good**	**Broken branches, leaning**
271	Tulip Poplar	*Liriodendron tulipifera*	24	Good	
272	**White Oak**	***Quercus alba***	**30**	**Good**	
273	Tulip Poplar	*Liriodendron tulipifera*	23	Good	Very crooked
274	White Oak	*Quercus alba*	27	Good	
275	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
276	**Red Oak**	***Quercus rubra***	**32**	**Poor**	**Basal damage, trunk decay**
277	Red Oak	*Quercus rubra*	26	Good	
278	**Red Oak**	***Quercus rubra***	**42**	**Good**	**Double leader**
279	White Oak	*Quercus alba*	25	Good	Leaning
280	Red Oak	*Quercus rubra*	23	Good	Twin
281	**Red Oak**	***Quercus rubra***	**30**	**Good**	
282	**Tulip Poplar**	***Liriodendron tulipifera***	**31**	**Good**	**Double leader**
283	Red Oak	*Quercus rubra*	25	Fair	Suckers, barb wire in trunk
284	White Oak	*Quercus alba*	25	Fair	Suckers, leaning
285	Tulip Poplar	*Liriodendron tulipifera*	28	Good	
286	American Sycamore	*Platanus occidentalis*	24	Good	
287	**White Oak**	***Quercus alba***	**34**	**Fair**	**Leaning, Broken & Dead Branches**
288	**Tulip Poplar**	***Liriodendron tulipifera***	**38**	**Fair**	**Hollow area in base**
289	Red Oak	*Quercus rubra*	28	Poor	Dead branches
290	Pin Oak	*Quercus palustris*	26	Good	
291	Tulip Poplar	*Liriodendron tulipifera*	28	Good	
***292**	**Virginia Pine**	***Pinus virginiana***	**17**	**Poor**	**Double. Trunk 17" DBH Poor. Trunk 7" DBH Dead**
293	Tulip Poplar	*Liriodendron tulipifera*	24	Fair	Triple, 1 leader dead, 1 fair, 1 good
294	Tulip Poplar	*Liriodendron tulipifera*	29	Good	Vines
295	**Tulip Poplar**	***Liriodendron tulipifera***	**30**	**Good**	
296	Tulip Poplar	*Liriodendron tulipifera*	24	Good	Triple
297	Tulip Poplar	*Liriodendron tulipifera*	26	Good	
298	Tulip Poplar	*Liriodendron tulipifera*	25	Good	Crooked
299	American Holly	*Ilex opaca*	10	Good	
300	American Holly	*Ilex opaca*	10	Good	
301	Norway Spruce	*Picea abies*	12	Good	

Note:
Bold text indicates specimen trees.
Tree #292 Virginia Pine (17") is within 75% of the County Champion tree (19").

Forest Stand Summary

Forest Stand Summary

Forest Stand (FS)	Description	% of Canopy Closure	Dominant & Co-Dominant Species	Invasive % T = Tree S = Shrub H = Herbaceous	Average Within LOD	Invasive Species
FS1	Located East of the ball fields at Hillandale Local park is a large section of contiguous forest that extends beyond the park property. The dominant species of trees within park property (23.35 Acres) comprise of Tulip Poplars & Oaks. Other species include American Holly, Beech, Sycamore & Red Maples. The trees in Forest Stand 1 are in relatively good condition. The forest is considered to be in mid to late succession with a large amount of trees measuring greater than 24" DBH.	100	Tulip Poplar Oaks	T = 7% S = 2% H = 2%	12.75	Invasive species were observed within forest clearings and along the forest edge where competition from other species is low and light conditions are favorable. Notable invasive species include Wineberry, Multiflora Rose, Bush Honeysuckle, Japanese Honeysuckle, Japanese Barberry, Stilt Grass, Garlic Mustard, Oriental Bittersweet, English Ivy and pockets of Running Bamboo within the ROW lines of park property.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
NRI/FSD PLAN
Approved
NRI/FSD NO. 420140270
Date Approved 1/30/2015
Expiration Date 1/30/2015
Signature [signature]

Size Criteria for Champion & Specimen Trees

On-Site Tree Species with Size Criteria for Champion & Specimen Trees

Tree #	Common Name	Botanical Name	Largest DBH of On-Site Species	Specimen Tree DBH	State Champion	County Champion
299,300	American Holly	*Ilex opaca*	10	30	46	33
22	American Sycamore	*Platanus occidentalis*	40	30	97	81
149	Black Oak	*Quercus velutina*	36	30	77	77
12	Black Walnut	*Betula nigra*	24	30	49	57
64	Blue Spruce	*Picea pungens*	10		36	33
95	Box Elder	*Acer negundo*	11	30	74	45
83	Bradford Pear	*Pyrus calleryana*	8	14	43	35
70	Cornelian Dogwood	*Cornus mas*	3			
41-47	Eastern Red Bud	*Cercis canadensis*	3		35	35
67	Flowering Cherry	*Prunus Sp.*	9			50
141	Green Ash	*Fraxinus pennsylvanica*	29	30	67	41
28	Little Leaf Linden	*Tilia cordata*	20	30		59
88	Mulberry	*Morus sp.*	12	30	75	
301	Norway Spruce	*Picea abies*	12	30	43	47
87	Persimmon	*Diospyros virginiana*	8	16	38	17
123,235	Pignut Hickory	*Carya alba*	27	21	54	36
91	Pin Oak	*Quercus palustris*	36	30	71	53
165	Red Maple	*Acer rubrum*	33	30	70	70
143	Red Oak	*Quercus rubra*	48	30	94	66
23	Saucer Magnolia	*Magnolia x soulangeana*	9			36
14	Scarlet Oak	*Quercus coccinea*	24	30	61	82
97	Silk Tree	*Albizia julibrissin*	10	20	46	13
7,8,38,39	Slippery Elm	*Ulmus fulva*	5		11	
142	Tulip Poplar	*Liriodendron tulipifera*	62	30	93	93
292	Virginia Pine	*Pinus virginiana*	25	23	30	19
106	White Oak	*Quercus alba*	50	30	84	76
49,69,73	White Pine	*Pinus strobus*	27	26	49	49
15	Willow Oak	*Quercus phellos*	19	30	80	69
192	Black Cherry	*Prunus serotina*	30	30	86	46

References
Specimen Tree - MNCPPC Montgomery County MD - Trees Technical Manual
State Champion - Maryland DNR - State of Maryland Champion Tree List
County Champion - MOCO Forest Conservancy District Board - Register of Champion Trees 2011

Forest Field Sampling Data Sheets

Field Sampling Data Sheet

Property	Property Name: Hillandale Local Park					
	Prepared by: Hoang Tu, John McCarthy					
	Stand # (from Forest Stand Map): 1					
	Plot #: 1					
	Date of Survey: 03/05/2013					
Tree Species		Number of Trees Per Size Class				
	Species	2-5.9" dbh	6-11.9" dbh	12-17" dbh	18-29.9" dbh	>30" dbh
	Tulip Poplar	0	2	4	3	1
	Oak	5	2	0	0	0
	American Beech	1	0	0	0	0
	Black Cherry	4	0	0	0	0
	Total Number of Trees per class	10	4	4	3	1
Understory species	(3-5 most commonly occurring)					
	Green Briar					
	Barberry					
	Wineberry					
Other	Basal Area:	110				
	Number of Dead Trees per Plot: 2 standing					
	Comments: Minimal herbivation					
Forest Structure Analysis		Plot sample				
	% Canopy Coverage					85%
	% Herbaceous Ground Cover					5%
	% Downed Woody Debris					10%
	% Invasive Plant Cover					2%
	Number of Shrub Species (1/100 ac. Plot)					1
	Forest Structure Value (Good, Fair, Poor)					Good
	Comments: Mid succession forest. Fair amount of woody debris and deep layer of decomposing leaf litter. American holly saplings evident in clusters.					

Field Sampling Data Sheet

Property	Property Name: Hillandale Local Park					
	Prepared by: Hoang Tu, John McCarthy					
	Stand # (from Forest Stand Map): 1					
	Plot #: 2					
	Date of Survey: 03/05/2013					
Tree Species		Number of Trees Per Size Class				
	Species	2-5.9" dbh	6-11.9" dbh	12-17" dbh	18-29.9" dbh	>30" dbh
	Tulip Poplar	0	1	2	3	0
	Oaks	4	1	1	2	1
	American Holly	6	0	0	0	0
	American Beech	4	0	1	0	0
	Total Number of Trees per class	14	2	4	5	1
Understory species	(3-5 most commonly occurring)					
	American Holly					
	American Beech					
	Mountain Laurel					
	Oaks					
Other	Basal Area:	90				
	Number of Dead Trees per Plot: 3					
	Comments: Abundance of downed trees and woody debris.					
Forest Structure Analysis		Plot sample				
	% Canopy Coverage					90%
	% Herbaceous Ground Cover					2%
	% Downed Woody Debris					15%
	% Invasive Plant Cover					0%
	Number of Shrub Species (1/100 ac. Plot)					1
	Forest Structure Value (Good, Fair, Poor)					Fair/Good
	Comments: Mid succession forest. Fair amount of woody debris and deep layer of decomposing leaf litter.					

Field Sampling Data Sheet

Property	Property Name: Hillandale Local Park					
	Prepared by: Hoang Tu, John McCarthy					
	Stand # (from Forest Stand Map): 1					
	Plot #: 3					
	Date of Survey: 03/05/2013					
Tree Species		Number of Trees Per Size Class				
	Species	2-5.9" dbh	6-11.9" dbh	12-17" dbh	18-29.9" dbh	>30" dbh
	Tulip Poplar	0	0	6	3	1
	Oak	2	0	0	1	0
	American Beech	5	0	0	0	0
	Total Number of Trees per class	7	0	6	4	1
Understory species	(3-5 most commonly occurring)					
	Green Briar					
	Spice Bush					
	Oak Saplings					
Other	Basal Area:	100				
	Number of Dead Trees per Plot: 1 Standing					
	Comments:					
Forest Structure Analysis		Plot sample				
	% Canopy Coverage					90%
	% Herbaceous Ground Cover					5%
	% Downed Woody Debris					10%
	% Invasive Plant Cover					3%
	Number of Shrub Species (1/100 ac. Plot)					1
	Forest Structure Value (Good, Fair, Poor)					Fair to Good
	Comments: Mid to late succession forest. Fair amount of woody debris and deep layer of decomposing leaf litter. American holly sprouts evident in clusters.					

RECEIVED M-NCPPC FEB - 9 2015 MONTGOMERY COUNTY PLANNING DEPARTMENT

RECEIVED M-NCPPC FEB - 9 2015 MONTGOMERY COUNTY PLANNING DEPARTMENT

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN		
SHELLEY RENTSCH Landscape Architect	Date	Checked By:
BRIAN DAVILA Architect	Date	Checked By:
ADG Engineer	Date	Checked By: RAB
Drawn by	Date	Checked By:

LANDSCAPE ARCHITECT CERTIFICATE:
I hereby certify that this plan is prepared in accordance with Montgomery County Forest Conservation Regulations.
1/16/2015 Date — James M. Fetchu, RLA, Registered Landscape Architect, MD #3241

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON ______

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park
Natural Resource Inventory/Forest Stand Delineation (NRI/FSD)

SCALE:
DATE: NOVEMBER 2013
Liber 934 927 34656 Folio 270 503 001

NRI/FSD DWG. # 2 of 2
NRI/FSD - 02
SHT. # - of -

A.3. Preliminary Forest Conservation Letter / Variance Letter / Plan

MONTGOMERY COUNTY DEPARTMENT OF PARKS
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

April 13, 2015

Ms. Amy Lindsey
Environmental Planning, Community-Based Planning
Maryland – National Capital Park and Planning Commission
8787 Georgia Ave.
Silver Spring, MD 20910

RE: Hillandale Local Park
Preliminary Forest Conservation Plan

Dear Ms. Lindsey:

Enclosed please find a Preliminary Forest Conservation Plan (PFCP) for the proposed facility plan for Hillandale Local Park, which is located in Silver Spring, Maryland. A study recently completed by the Park Planning and Stewardship Division recommended a total renovation of the existing park to meet the current and future needs of the community. The following program of requirements was developed based on input received from M-NCPPC staff and the community during public outreach efforts:

- One full size rectangular field
- A unique and innovative playground designed around a theme
- Two lighted basketball courts
- Two lighted tennis courts
- Full restroom facilities
- Picnic shelters
- A looped park trail system with fitness stations and seating
- Adequate parking for all of the park amenities
- Accessible parking spaces and pedestrian circulation in compliance with the Americans with Disabilities Act, including direct trail access to CHI.
- Improved park entrances with clear, understandable and safe circulation throughout the parking areas for pedestrians and vehicles
- Low impact development techniques and stormwater best management practices in accordance with environmental site design criteria
- Compliance with Crime Prevention Through Environmental Design (CPTED) principles

In order to accomplish these goals, nine park layout configurations were developed as part of the schematic design phase and two were further developed for consideration by staff and the community. The preferred alternative was selected as providing the best layout while preserving more than 50% of the existing forest area. The environmental and site improvements provided by this facility plan are as follows:

- Over 16,000 sf of existing impervious area in the Stream Valley Buffer (SVB) will be removed
- More than 50% of the site (12.16 acres of 23.40 ac.) will be retained as forest, greatly exceeding requirements
- Only 0.53 acres of forest on the entire site will be cleared.

- Additional trees to be planted in unwooded SVB areas.
- Stream restoration of highly eroded channels in the SVB. New storm drain outfall carefully sited to outfall at stream and minimizes impacts to existing forest.
- Removal of Non-Native Invasives (NNI) along forest edge and stream.
- Stormwater management design significantly exceeds County requirements.
- Above grade hard surface trail detail utilized in Critical Root Zone (CRZ) of mature and specimen trees (approx. 1615 sf).
- Natural surface trail added (mainly along existing people's choice alignment) in response to community request for pedestrian connection to park.
- Asphalt path in the SVB only proposed in unwooded areas and length restricted to that needed to complete alignment of ADA accessible HeartSmart trail loop.
- Parking increased (and limited to amount required to support active recreation) eliminating safety concerns and errant parking within park and adjacent neighborhoods.
- New state of the art, fully accessible recreation facilities provided for community use.
- Improved vehicular entrances from New Hampshire Ave. increase safety by eliminating un-signaled left turns from the park onto New Hampshire Ave.

The preferred facility plan significantly reduces SVB impacts as indicated below:

Current/existing SVB Impacts: 24,498 sf Total

- 5,751 sf – Recreation Buildings (includes sidewalk and patio)
- 8,334 sf – Basketball Courts
- 1,484 sf – Asphalt road/parking
- 8,722 sf – Baseball diamond
- 207 sf – Playground

Proposed SVB Impacts: 7,728 sf Total

- 6,240 sf – Asphalt ADA loop trail (1,615 sf of this will be treated with above grade paving or boardwalk to minimize impacts to CRZ).
- 1,488 sf – Picnic Shelter and ADA parking to be built on the footprint of the existing recreation buildings, patio and parking area which will be demolished this year. The ADA parking will be removed with renovation plans per approved Facility Plan. The new shelter has a Forest Conservation Exemption (42014193E) and will be built under a SLDA this year.

If you have any other questions or need additional information, please contact me at 301-650-2860 or via email at: Linda.Komes@montgomeryparks.org. Please also copy James Fetchu with Charles P. Johnson and Associates, Inc. at: JFetchu@cpja.com.

Sincerely,

Linda Komes, RLA
Project Manager, Park Development Division

CC: James Fetchu, CPJ - File

MONTGOMERY COUNTY DEPARTMENT OF PARKS
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

April 13, 2015

Mr. Mark Pfefferle
Acting Chief
Environmental Planning, Community-Based Planning
Maryland – National Capital Park and Planning Commission
8787 Georgia Ave.
Silver Spring, MD 20910

RE: Hillandale Local Park
Forest Conservation Plan
30" Tree Variance

Dear Mr. Pfefferle:

The Park Development Division of the Maryland-National Capital Park and Planning Commission respectfully requests a variance from Section 22A-21 of the Montgomery County Code for the removal of four (4) trees having a diameter at breast height (DBH) of greater than 30" at (4.5' from ground). In addition, ten (10) trees greater than 30" DBH are shown to have impacts within their calculated CRZ's. Park's intends to try and save several of the trees indicated for removal by employing techniques such as above grade trail construction, directional boring, identifying the exact location of roots with an air spade, etc. These impacted trees will be protected using specific measures shown in the table below. This request is being made in concert with design plans being prepared for Hillandale Local Park.

A paper copy of the Preliminary Forest Conservation Plan set and a CD containing a digital copy of this Variance Request letter and Preliminary Forest Conservation Plan are attached for your review and comment. The tables below identify the specimen trees that are part of this Variance Request.

Trees Requiring a Variance for Removal

ID	Common Name	*Botanical Name*	DBH (in.)	Condition	CRZ Impact S.F.	CRZ Impact %	Remove Tree	Remarks
35	Pin Oak	*Quercus palustris*	33	Good	6,801	75%	Yes	Removal of existing basketball court and ballfield appurtenances. Install above grade pedestrian path. Storm drain pipe to be installed via directional boring.
37	Pin Oak	*Quercus palustris*	32	Good	7,474	83%	Yes	Removal of existing parking lot. Grading for children's playground. Storm drain pipe

								installation.
261	White Oak	*Quercus alba*	36	Poor	1,995	32%	Yes	This tree's roots will be critically impacted by the installation of a proposed storm drain. The storm drain will run from the programmed park areas at the top of the hill down to the stream.
276	Red Oak	*Quercus rubra*	32	Poor	1,930	100%	Yes	This tree will be impacted directly by the installation of a proposed storm drain. The storm drain will run from the programmed park areas at the top of the hill down to the stream.

Trees Requiring a Variance for CRZ Impacts

ID	Common Name	*Botanical Name*	DBH (in.)	Condition	CRZ Impact S.F.	CRZ Impact %	Reason for Impact	RP	PL
22	American Sycamore	*Platanus occidentalis*	40	Good	1,497	13%	1497 S.F. of CRZ within LOD. No CRZ impacts anticipated.	No	No
91	Pin Oak	*Quercus palustris*	36	Fair	4,491	49%	Removal of existing ball field appurtenances. Grading fill. Install on grade pedestrian path.	No	Yes
152	Tulip Poplar	*Liriodendron tulipifera*	37	Poor	3,607	37%	Grading fill for tennis court.	No	No
154	Tulip Poplar	*Liriodendron tulipifera*	30	Good	2,006	31%	Grading fill for tennis court.	No	No
155	Tulip Poplar	*Liriodendron tulipifera*	36	Fair	1,357	14%	Grading fill for tennis court.	No	No
192	Black Cherry	*Prunus serotina*	30	Poor	620	10%	Removal of existing playground.	No	No
193	Tulip Poplar	*Liriodendron tulipifera*	33	Fair	238	3%	Removal of existing playground.	No	No
251	Tulip Poplar	*Liriodendron tulipifera*	31	Good	403	6%	Excavation for storm drain pipe	No	No

275	Tulip Poplar	*Liriodendron tulipifera*	30	Good	6,293	5%	Excavation for storm drain pipe	Yes	No
288	Tulip Poplar	*Liriodendron tulipifera*	38	Fair	37	0.40%	Excavation for storm drain pipe	Yes	No

(RP) Root pruning is to be performed inside the tree protection fence. It is to be accomplished by a vibratory plow with a serrated cutting edge or a root cutter with a 36" wheel to a depth of 24". Chain driven trenchers are not acceptable.
(PL) Tree planking to protect trunk.

It is our understanding that applicants for a variance must demonstrate the following criteria. Our responses follow each point:

1) *Describe the special conditions peculiar to the property which would cause unwarranted hardship.*

The existing Hillandale Local Park was originally developed in the early 1950's. The park is being renovated to meet the current and future needs of the community. The following program of requirements was developed based on input received from the M-NCPPC staff and the community during public outreach efforts:

- One full size rectangular field
- A unique and innovative playground designed around a theme
- Two lighted basketball courts
- Two lighted tennis courts
- Full restroom facilities
- Picnic shelters
- A looped park trail system with fitness stations and seating
- Adequate parking for all of the park amenities
- Accessible parking spaces and pedestrian circulation in compliance with the Americans with Disabilities Act, including direct trail access to CHI
- Improved park entrances with clear, understandable and safe circulation throughout the parking areas for pedestrians and vehicles
- Low impact development techniques and stormwater best management practices in accordance with environmental site design criteria
- Compliance with Crime Prevention Through Environmental Design (CPTED) principles

In order to accomplish these goals, nine park layout configurations were developed as part of the schematic design phase and two were further developed for further consideration by staff and the community. The preferred alternative was selected as providing the best layout while preserving the existing forest area. Three trees described above will be removed as part of the storm drain installation. The proposed storm drain system collects storm runoff from the programmed park areas and discharges at the existing stream. The runoff from the programmed park areas will receive stormwater management treatment that meets the State's and County's stormwater management requirements, prior to entering the storm drain system, and will not violate any state water quality standards.

Existing Tributaries 1 and 2, as labeled on the Preliminary Forest Conservation Plan, convey runoff from the programmed park area to the stream and both existing tributaries include areas where head cutting is occurring. During design of the park improvements, a goal was set to not cause additional degradation to the tributaries through the conveyance of stormwater to the

stream channel. It was recognized that if the storm drain system discharged at the upstream end or at a point along the tributaries, then additional degradation and head-cutting would almost certainly occur. It was determined that the storm runoff should be conveyed to the stream channel via a storm drain system with a non-erosive outfall. In doing so, the drainage area to the tributaries will be reduced to consist of open space and forest area which aid in slowing and/or stopping the degradation along the tributaries.

A careful evaluation of possible storm drain alignments was performed to determine the alignment with the least environmental impacts. As part of this evaluation, several different storm drain alignments along the tributaries were considered. The proposed storm drain alignment minimizes impacts to the significant and specimen trees within the stream valley buffer. However, all of the specimen trees could not be avoided. The proposed storm drain alignment was deliberately and very carefully chosen because, while it does remove three specimen trees that are in fair or poor condition, it minimizes or eliminates critical root zone impacts to the surrounding significant and specimen trees in good condition.

2) *Describe how enforcement of these rules will deprive the landowner of rights commonly enjoyed by others in similar areas.*

Enforcement of these rules would deprive the owner of their right to improve user safety and upgrade a public amenity to meet current and anticipated needs. In addition, enforcement of these rules would not allow the owner to fully implement the tenets of Environmental Site Design to meet sustainability and stormwater management guidelines while preventing additional degradation along the tributaries to the stream channel. The proposed design was configured to avoid impacts to as many existing trees as possible.

3) *Verify that State water quality standards will not be avoided or that a measurable degradation in water quality will occur as a result of granting the variance.*

Under Section 22A-16(d) of the County Code "The Board or Director may treat any forest clearing in a stream buffer, wetland or special protection area as creating a rebuttable presumption that the clearing had an adverse impact on water quality." In this case, the proposed storm drain alignment will actually prevent additional degradation from occurring along the existing tributaries, while minimizing critical root zone disturbance and tree clearing within the stream buffer. It is also important to point out that the design of the park fully incorporates current Environmental Site Design criteria and includes multiple bioretention areas to treat stormwater on site. Currently these best management practices are not being used within the existing park.

4) *Provide any other information appropriate to the request.*

Please note that the trees proposed to be removed requiring a variance are currently identified as being in poor or good condition. The trees in poor condition are being removed in order to minimize or eliminate critical root zone impacts to nearby specimen and significant trees in good condition. The trees in good condition are shown as being removed however every effort is being made to preserve these trees including above grade path and direction boring of the deep storm drain pipe.

5) *Applicants must apply for and include mitigation in their requests for variances for all trees, and other vegetation, regulated under section 5-1607 that are removed or disturbed by the applicant's activity.*

The applicant proposes to mitigate for the removal of the two (2) specimen trees, # 35 and 37, outside of forest area at a rate that approximates the form and function of the trees removed. Mitigation is calculated at a rate of 1" DBH for every 4" DBH removed, using trees that are a minimum of 3" DBH. This means that for the 65 caliper inches of trees removed, they will be mitigated with six (6) 3" caliper trees on the site (65"/4" = 16.25/3" = 5.41 trees).

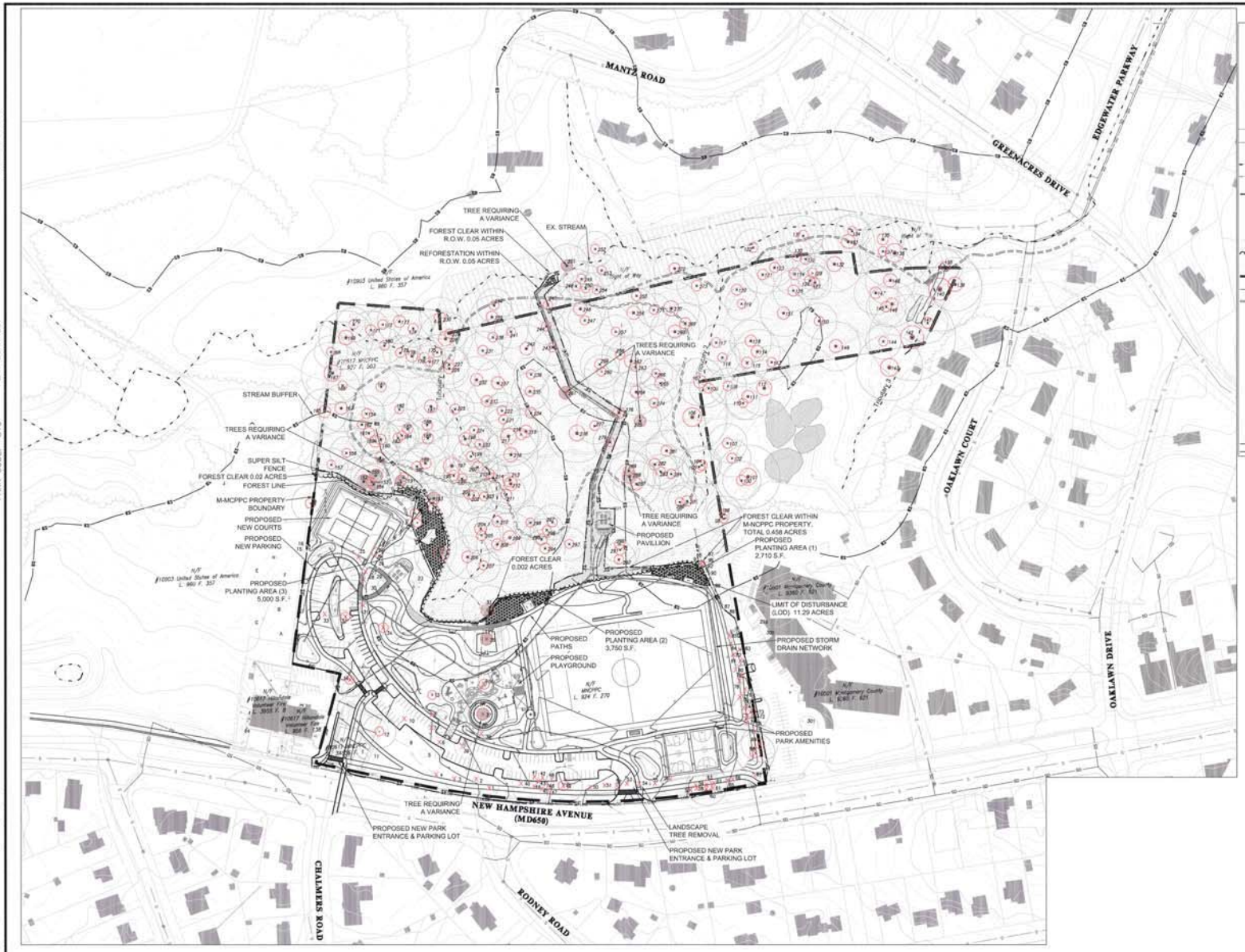
Additionally, please note that the 30% Facility plan for this project includes one hundred twenty-five (125) shade trees, thirty-one (31) evergreen trees, thirty-one (31) ornamental trees, and one hundred five (105) shrubs. The trees proposed as part of mitigation are included in these quantities.

If you have any other questions or need additional information, please contact me at 301-650-2860 or via email at: Linda.Komes@montgomeryparks.org. Please also copy James Fetchu with Charles P. Johnson and Associates, Inc. at: JFetchu@cpja.com.

Sincerely,

Linda Komes, RLA
Project Manager, Park Development Division

CC: James Fetchu, CPJ
File



Map Legend

- Sign
- Light
- Telephone Box
- Air Conditioner Unit
- Fire Hydrant
- Water Meter
- Ex. Pole
- Ex. Manhole
- Ex. Wire Fence
- Ex. Sewer line
- Ex. Stormdrain
- Existing Contour
- Ex. Stream
- Ephemeral Flows, Drainage Channels & Seeps
- Stream Buffer
- Land Depression
- Right-of-way
- Ex. Aerial Treeline
- Ex. Forest Line
- Property Line
- M-NCPPC Property Line
- 58 Proposed Contours
- Proposed Storm Drain Network
- 12 Ex. Individual Trees < 24"
- 12 Ex. Significant Tree (24" +)
- Ex. Specimen Tree
- Critical Root Zone
- Trees requiring a variance
- Tree Removed: Landscape & Trees >24"
- Forest Cleared
- Forest Retained
- SF Super Silt Fence
- TPF Tree Protection Fence

SHEET INDEX
1 PLAN VIEW
2 NOTES

General Notes

1. Zoning is R-90 and C-O.
2. Land use category is Institutional Development Areas (IDA).
3. M-NCPPC property is 23.35 Acres. Right-of-Way disturbance is 0.05 Acres.
4. A perennial stream in the NE quadrant of the property is within the Paint Branch Watershed, a USE III class watershed.
5. 12.69 Acres are classified as environmentally sensitive.
5. There are no wetlands within the study area per the National Wetland Inventory. FEMA Map #24031C0390D and on site field work dated 03/05/2013.
6. The perennial stream is not within any SPA or the Patuxent River Watersheds Primary Management Area (PMA).

0 100 200

CERTIFICATE OF COMPLIANCE

I do hereby certify, to the best of my knowledge, information, and reasonable belief, that all of the information and data provided with this application is accurate, and all of the features and elements provided on the plans is consistent with the standards of the applicable zone. The certification includes, but is not limited to boundary information, property information and ownership, topography, historic resources, etc. I agree that the submitted plans may be rejected or returned by the Maryland-National Capital Park and Planning Commission if the plans are found to be inaccurate, false or misleading.

Linda Kemes 4/21/15
Applicant or Applicant's Representative Date

Print Name: Linda Kemes
Print Company: M-NCPPC
Print Title: Project Manager
Plan Name:
Plan Number:

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN
SHELLEY RENTSCH — Landscape Architect — Date — Checked By:
Architect — Date — Checked By:
BRIAN DAVILA — Engineer — Date — Checked By:
ADC — Drawn by: — Date — Checked By: RAB

LANDSCAPE ARCHITECT CERTIFICATE
I hereby certify that this plan is prepared in accordance with Montgomery County Forest Conservation Regulations.
4/17/2015 Date
James M. Fetchu, RLA
Registered Landscape Architect
MD #3241

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301)-495-2535

REVIEW AND APPROVAL
Project Manager — Date
Construction Manager — Date
Park Manager — Date

ISSUED FOR PROCUREMENT ON
REVISIONS

Rev. No.	Date	Description

Hillandale Local Park

Preliminary Forest Conservation Plan (FCP)

SCALE: 1" = 100'
DATE: Apr. 2015
Liber 924 927 34656
Folio 270 503 001

FCP DWG. # 1 of 2
FCP - 01
SHT. # - of -

FINAL SCANNED: PLAN SCANNED: PARK CODE: C10
F:\LAD-032 - Hillandale Park\DWG\Working\FCP.dwg Plotted By: Hoang Tu, 4/17/2015 9:33 AM

Tree List

Tree #	Common Name	Botanical Name	DBH (in.)	Condition	Disposition	Notes
A	Sugar Maple	Acer saccharum	8	Good		
B	Weeping Willow	Salix babylonica	11	Poor		Dead Branches - competing
B	Red Maple	Acer rubrum	14	Poor		Dead Branches - competing
C	Paw-Paw	Asimina triloba	10	Good		
D	Crab Apple	Malus sp.	6	Fair		Dead Branches
E	Virginia Pine	Pinus virginiana	14	Fair		Dead Branches
F	Chinese Elm	Ulmus parvifolia	6	Poor		Broken Baranches, Heavy Vines
G	Red Maple	Acer rubrum	8	Good		
H	Sweet Gum	Liquidambar styraciflua	9	Good		
I	Virginia Pine	Pinus virginiana	8	Good		
J	Virginia Pine	Pinus virginiana	8	Good		
1	Virginia Pine	Pinus virginiana	14	Good	Remove	
2	Green Ash	Fraxinus pennsylvanica	21	Fair	Remove	Exposed roots damaged
3	Green Ash	Fraxinus pennsylvanica	18	Fair	Remove	Exposed roots damaged, suckers
4	Green Ash	Fraxinus pennsylvanica	20	Fair	Remove	Exposed roots damaged
5	Green Ash	Fraxinus pennsylvanica	22	Poor		Trunk damage
6	Slippery Elm	Ulmus fulva	4	Fair	Remove	Newly planted tree. Trunk Damage
7	Slippery Elm	Ulmus fulva	1	Good	Remove	Newly planted tree
8	Slippery Elm	Ulmus fulva	1	Good	Remove	Newly planted tree
9	Green Ash	Fraxinus pennsylvanica	23	Fair		Exposed roots damaged
10	Green Ash	Fraxinus pennsylvanica	23	Fair	Remove	Trunk damage, suckers
11	Black Walnut	Betula nigra	17	Good		
12	Black Walnut	Betula nigra	28	Fair		Broken leader, basal damage
13	Green Ash	Fraxinus pennsylvanica	24	Fair		Exposed damaged roots
14	Scarlet Oak	Quercus coccinea	28	Fair	Remove	Crooked, overhead wires, dead limbs
15	Willow Oak	Quercus phellos	18	Fair		Fence
16	Black Cherry	Prunus serotina	14	Dead		
17	Red Maple	Acer rubrum	27	Poor		Hole in trunk, leaning, broken branch
18	Tulip Poplar	Liriodendron tulipifera	36	Good		
19	Tulip Poplar	Liriodendron tulipifera	24	Good		Broken branches
20	Tulip Poplar	Liriodendron tulipifera	28	Fair		Broken leader, trimmed
21	Black Walnut	Betula nigra	17	Poor		Broken branches, basal damage
22	**American Sycamore**	**Platanus occidentalis**	**40**	**Good**		**Split @4.5', Root damage**
23	Saucer Magnolia	Magnolia x soulangeana	9	Fair		Multistem
24	White Pine	Pinus strobus	26	Fair		Broken branches

Bold trees indicate Significant or Specimen trees.
Tree # *292 is within 75% of the 19"DBH county champion tree.

Tree Variance Request for Removal

ID	Common Name	Botanical Name	DBH (in.)	Condition	CRZ Impact S.F.	CRZ Impact %	Remove Tree	Remarks
35	Pin Oak	*Quercus palustris*	33	Good	7,740	75%	Yes	Removal of existing basketball court and ball field appurtenances. Grading fill. Install on grade pedestrian path. Install bio-swale.
37	Pin Oak	*Quercus palustris*	32	Good	7,208	83%	Yes	Grading for children's playground. Excavation for storm drain pipe.
261	White Oak	*Quercus alba*	36	Poor	1,995	32%	Yes	This trees roots will be critically impacted by the installation of a proposed storm drain. The storm drain will run from the programmed park areas at the top of the hill down to the stream.
276	Red Oak	*Quercus rubra*	32	Poor	1,930	100%	Yes	This tree will be impacted directly by the installation of a proposed storm drain. The storm drain will run from the programmed park areas at the top of the hill down to the stream.

Mitigation: Six (6) 3" caliper trees shall be planted on-site to mitigate for variance tree # 35 and 37 removal outside of forest area.

Tree Variance Request for CRZ Impacts

22	American Sycamore	*Platanus occidentalis*	40	Good	1,497	13%	1497 S.F. of CRZ within LOD. No CRZ impacts anticipated.	No	No
91	Pin Oak	*Quercus palustris*	36	Fair	4,491	49%	Removal of existing ball field appurtenances. Grading fill. Install on grade pedestrian path.	No	Yes
152	Tulip Poplar	*Liriodendron tulipifera*	37	Poor	3,607	37%	Grading fill for tennis court.	No	No
154	Tulip Poplar	*Liriodendron tulipifera*	30	Good	2,006	31%	Grading fill for tennis court.	No	No
155	Tulip Poplar	*Liriodendron tulipifera*	36	Fair	1,357	14%	Grading fill for tennis court.	No	No
192	Black Cherry	*Prunus serotina*	30	Poor	620	10%	Removal of existing playground.	No	No
193	Tulip Poplar	*Liriodendron tulipifera*	33	Fair	238	3%	Removal of existing playground.	No	No
251	Tulip Poplar	*Liriodendron tulipifera*	31	Good	403	6%	Excavation for storm drain pipe	No	No
275	Tulip Poplar	*Liriodendron tulipifera*	30	Good	6,293	5%	Excavation for storm drain pipe	Yes	No
288	Tulip Poplar	*Liriodendron tulipifera*	38	Fair	37	0.40%	Excavation for storm drain pipe	Yes	No

(RP) Root pruning is to be performed inside the tree protection fence. It is to be accomplished by a vibratory plow with a serrated cutting edge or a root cutter with a 36" wheel to a depth of 24". Chain driven trenchers are not acceptable.

(PL) Tree planking to protect trunk.

Note: No mitigation is needed if trees removal or CRZ impact within the forest cleared area.

FOREST CONSERVATION WORKSHEET
Hillandale Local Park

NET TRACT AREA:

A. Total tract area	23.40
B. Land dedication acres (parks, county facility, etc.)	0.00
C. Land dedication for roads or utilities (not being constructed by this plan)	0.00
D. Area to remain in commercial agricultural production/use	0.00
E. Other deductions (specify)	0.00
F. Net Tract Area =	23.40

LAND USE CATEGORY: (from Trees Technical Manual)
Input the number "1" under the appropriate land use, limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	1	0	0	0

G. Afforestation Threshold	15%	x F =	3.51
H. Conservation Threshold	20%	x F =	4.68

EXISTING FOREST COVER:

I. Existing forest cover =	12.69
J. Area of forest above afforestation threshold =	9.18
K. Area of forest above conservation threshold =	8.01

BREAK EVEN POINT:

L. Forest retention above threshold with no mitigation =	6.28
M. Clearing permitted without mitigation =	6.41

PROPOSED FOREST CLEARING:

N. Total area of forest to be cleared =	0.53
O. Total area of forest to be retained =	12.16

PLANTING REQUIREMENTS:

P. Reforestation for clearing above conservation threshold =	0.13
Q. Reforestation for clearing below conservation threshold =	0.00
R. Credit for retention above conservation threshold =	7.48
S. Total reforestation required =	0.00
T. Total afforestation required =	0.00
U. Credit for landscaping (may not exceed 20% of "S") =	0.00
V. Total reforestation and afforestation required =	0.00

Forest Conservation Data Table

	Number of Acres
Tract	23.40
Remaining in Agricultural Use	-
Road & Utility ROWs[1]	-
Total Existing Forest	12.69
Forest Retention	12.16
Forest Cleared	0.53

Land Use & Thresholds[2]

Land Use Category	IDA	ARA, MDR, IDA, HDR, MPD, or CIA
Conservation Threshold	15%	percent
Afforestation Threshold	20%	percent

	Total Channel Length (ft.)	Average Buffer Width (ft.)[3]
Stream(s)	296	175

Acres of Forest in	Retained	Cleared	Planted
Wetlands	-	-	-
100-Year Floodplain	-	-	-
Stream Buffers	10.47	0.21	-
Priority Areas	10.47	0.21	-

[1] Only Road or Utility ROWs not to be improved as part of development application.
[2] Information from FC Land Use Categories & Thresholds document.
[3] Measured from stream edge to buffer edge.

CERTIFICATE OF COMPLIANCE

I do hereby certify, to the best of my knowledge, information, and reasonable belief, that all of the information and data provided with this application is accurate, and all of the features and elements provided on the plans is consistent with the standards of the applicable zone. The certification includes, but is not limited to boundary information, property information and ownership, topography, historic resources, etc. I agree that the submitted plans may be rejected or returned by the Maryland-National Capital Park and Planning Commission if the plans are found to be inaccurate, false or misleading.

[signature] 4/21/15
Applicant or Applicant's Representative — Date

Print Name: Linda Komes
Print Company: M-NCPPC
Print Title: Project Manager
Plan Name:
Plan Number:

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN		
SHELLEY RENTSCH, Landscape Architect	Date	Checked By
Architect: BRIAN DAVILA	Date	Checked By
Engineer: ADG	Date	Checked By: RAB
Drawn by	Date	Checked By

LANDSCAPE ARCHITECT CERTIFICATE

I hereby certify that this plan is prepared in accordance with Montgomery County Forest Conservation Regulations.

4/16/2015 — Date
[signature]
James M. Fetchu, RLA
Registered Landscape Architect
MD #3241

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON ____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park
Preliminary Forest Conservation Plan (FCP)

SCALE: 1" = 100'
DATE: Apr. 2015
Liber 924 927 34656 Folio 270 503 001

FCP DWG. # 2 of 2
FCP - 02
SHT. # - of -

A.4. Stormwater Management Concept Plan and Report (includes Geotechnical Report)

DEPARTMENT OF PERMITTING SERVICES

Isiah Leggett
County Executive

Diane R. Schwartz Jones
Director

May 1, 2015

Ms. Robyn Barnhart
Charles P. Johnson & Associates
1751 Elton Road
Silver Spring, MD 20903

Re: Stormwater Management ***CONCEPT*** Request
for Hillandale Local Park
Preliminary Plan #: NA
SM File #: 270935
Tract Size/Zone: 23.4 acres/ R90
Total Concept Area: 23.72 acres
Lots/Block: NA
Parcel(s): P340
Watershed: Paint Branch

Dear Ms. Barnhart:

Based on a review by the Department of Permitting Services Review Staff, the stormwater management concept for the above mentioned site is **acceptable**. The stormwater management concept proposes to meet required stormwater management goals via microbiofilters, bioswales and non-rooftop disconnect.

The following **item** will need to be addressed **during** the detailed sediment control/stormwater management plan stage:

1. A detailed review of the stormwater management computations will occur at the time of detailed plan review.

2. An engineered sediment control plan must be submitted for this development.

3. All filtration media for manufactured best management practices, whether for new development or redevelopment, must consist of MDE approved material.

This list may not be all-inclusive and may change based on available information at the time.

Payment of a stormwater management contribution in accordance with Section 2 of the Stormwater Management Regulation 4-90 **is not required**.

This letter must appear on the sediment control/stormwater management plan at its initial submittal. The concept approval is based on all stormwater management structures being located outside of the Public Utility Easement, the Public Improvement Easement, and the Public Right of Way unless specifically approved on the concept plan. Any divergence from the information provided to this office; or additional information received during the development process; or a change in an applicable Executive Regulation may constitute grounds to rescind or amend any approval actions taken, and to

reevaluate the site for additional or amended stormwater management requirements. If there are subsequent additions or modifications to the development, a separate concept request shall be required.

If you have any questions regarding these actions, please feel free to contact William Campbell at 240-777-6345.

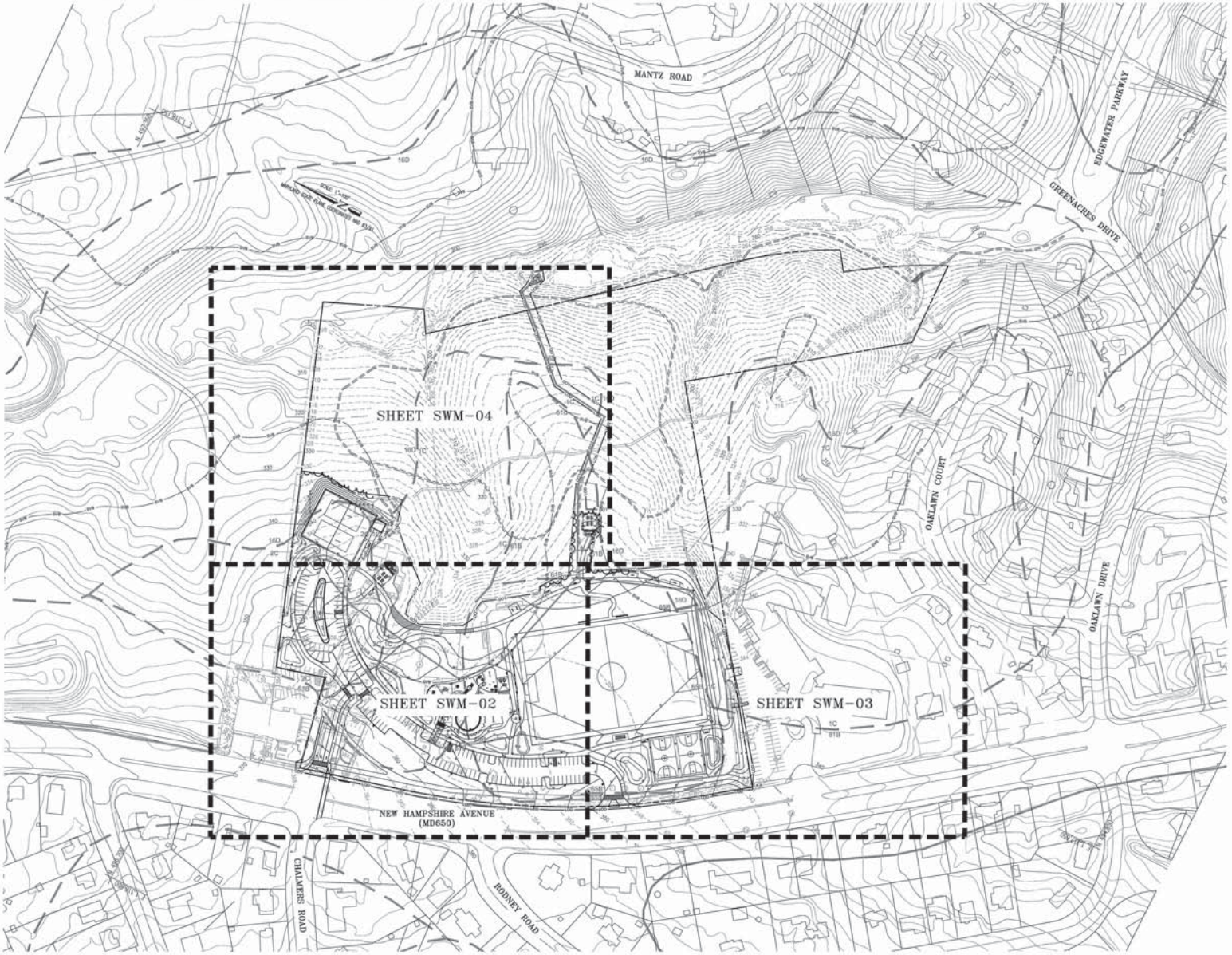
Sincerely,

Mark C. Etheridge, Manager
Water Resources Section
Division of Land Development Services

MCE: wrc

cc: C. Conlon
SM File # 270935

ESD Acres:	23.72
STRUCTURAL Acres:	0
WAIVED Acres:	0



VICINITY MAP
SCALE: 1"=2000'
MAP 5287, GRID C6
Map Copyright © Kappa LLC
(800) 829-6277 Used with Permission

MASTER LEGEND

FIELD VERIFIED TOPOGRAPHY
CONTOURS 452
INDEX CONTOURS 450
GIS TOPOGRAPHY
CONTOURS
INDEX CONTOURS 450
PROPOSED CONTOURS 452
PROPOSED INDEX CONTOURS 450
PARK PERIMETER PROPERTY LINE
PARK INTERIOR PROPERTY LINE
ADJACENT PROPERTY LINE
ADJACENT GIS PROPERTY LINE
EXISTING SOIL DIVIDE
SOIL TYPE DEMARCATION 2B
EX. GAS LINE
EX. SEWER LINE
EX. WATER LINE
EX. OVERHEAD WIRE
EXISTING STORM DRAIN PIPE EX. 36" C.M.P.
EX. FENCE
EX. SEWER MANHOLE
EX. STORMDRAIN MANHOLE
EX. LIGHT POLE
EX. SIGN
EX. FIRE HYDRANT
EX. TREE
EX. TREE TO BE REMOVED
EX. WOODS LINE
PROP. WOODS LINE
STREAM VALLEY BUFFER
LIMIT OF DISTURBANCE
DRAINAGE DIVIDE
FILTER BED
NON-ROOFTOP DISCONNECTION
RIPRAP
BOARDWALK
INFILTRATION TEST INF-3
SOIL BORING SB-5

GENERAL NOTES:
1. ALL UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING UTILITY PLANS AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR MUST LOCATE ALL EXISTING UTILITIES.

GRAPHIC SCALE
100 0 50 100 200
SCALE: 1" = 100'

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation. The excavator is responsible for compliance with requirements of Chapter 36A of the Montgomery County Code.

FINAL SCANNED:
PLAN SCANNED:
PARK CODE: C10
Plotted By: Robyn Bamhart, 4/13/2018 12:48 PM
N:\43525\DWG\SR-02_OVERALL.dwg C-01

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P: 301-434-7000 F: 301-434-9394 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
RAB		
Architect	Date	Checked By:
RAB		
Engineer	Date	Checked By:
ADG		RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/17

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON _____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT OVERALL PLAN VIEW

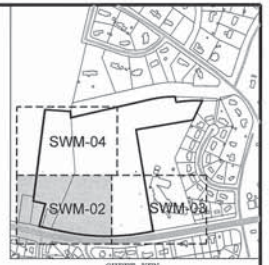
SCALE: 1" = 100'
DATE: DEC., 2014

Liber 924 927 34656 Folio 270 503 001

DPS DWG. # ___ of ___

SWM-01

SHT. # 1 of 7



SHEET KEY
1"=500'

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SCALE: 1" = 30'

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PLAN SCANNED:
PARK CODE: C10
Plotted By: Robyn Bannister, 4/13/2015 12:48 PM
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CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-0394 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
RAB		
Engineer	Date	Checked By:
ADG		RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

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Expiration Date 1/6/17

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Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON_____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT PLAN VIEW

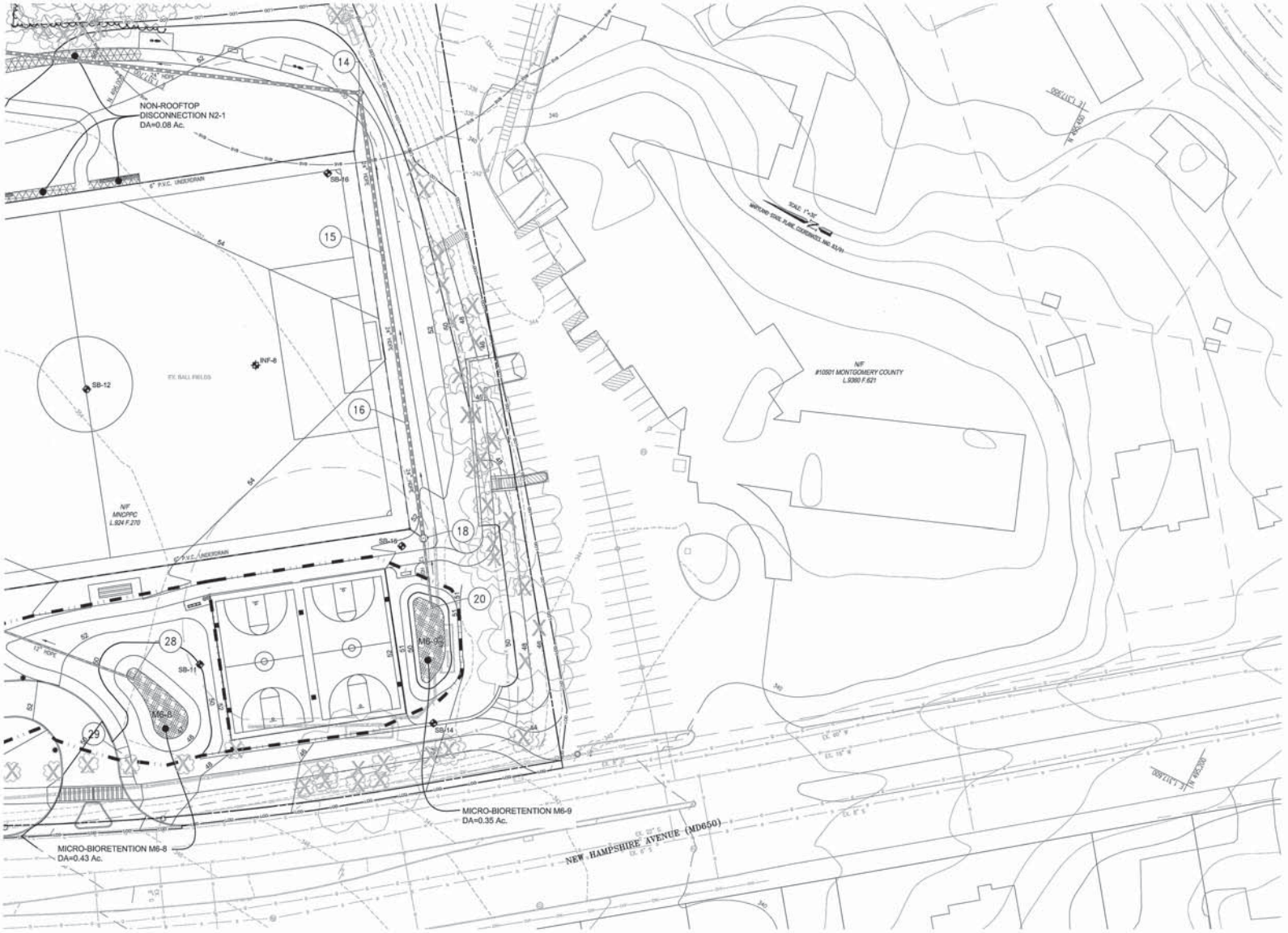
SCALE: 1" = 30'
DATE: DEC., 2014

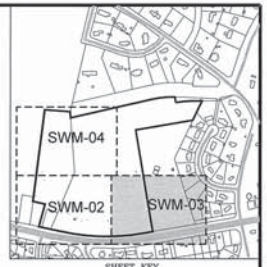
Liber 924 927 34656 Folio 270 503 001

DPS DWG. # - of -

SWM-02

SHT. # 2 of 7





GRAPHIC SCALE
30 0 15 30 60
SCALE: 1" = 30'

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PLAN SCANNED:
PARK CODE: C10
Plotted By: Robyn Bonnart, 4/13/2015 12:48 PM, ~~~~
N:\43323\DWG\SHEET_SWM-02_OVERALL.dwg, C-03

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-0394 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
EAB		
Engineer	Date	Checked By:
ADG		EAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/17

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON _____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT PLAN VIEW

SCALE: 1" = 30'
DATE: DEC., 2014

Liber 924 927 34656 Folio 270 503 001

DPS
DWG. # __ of __

SWM-03

SHT. # 3 of 7

FINAL SCANNED:

PLAN SCANNED:

PARK CODE: C10

N:\43325\DWG\SR-02_OVERALL.dwg C-04 Plotted By: Robyn Bamhart, 4/13/2015 12:50 PM

CPJ Associates

Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9594 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect RAB	Date	Checked By:
Engineer ADG	Date	Checked By: RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/8/17

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON _____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT
PLAN VIEW

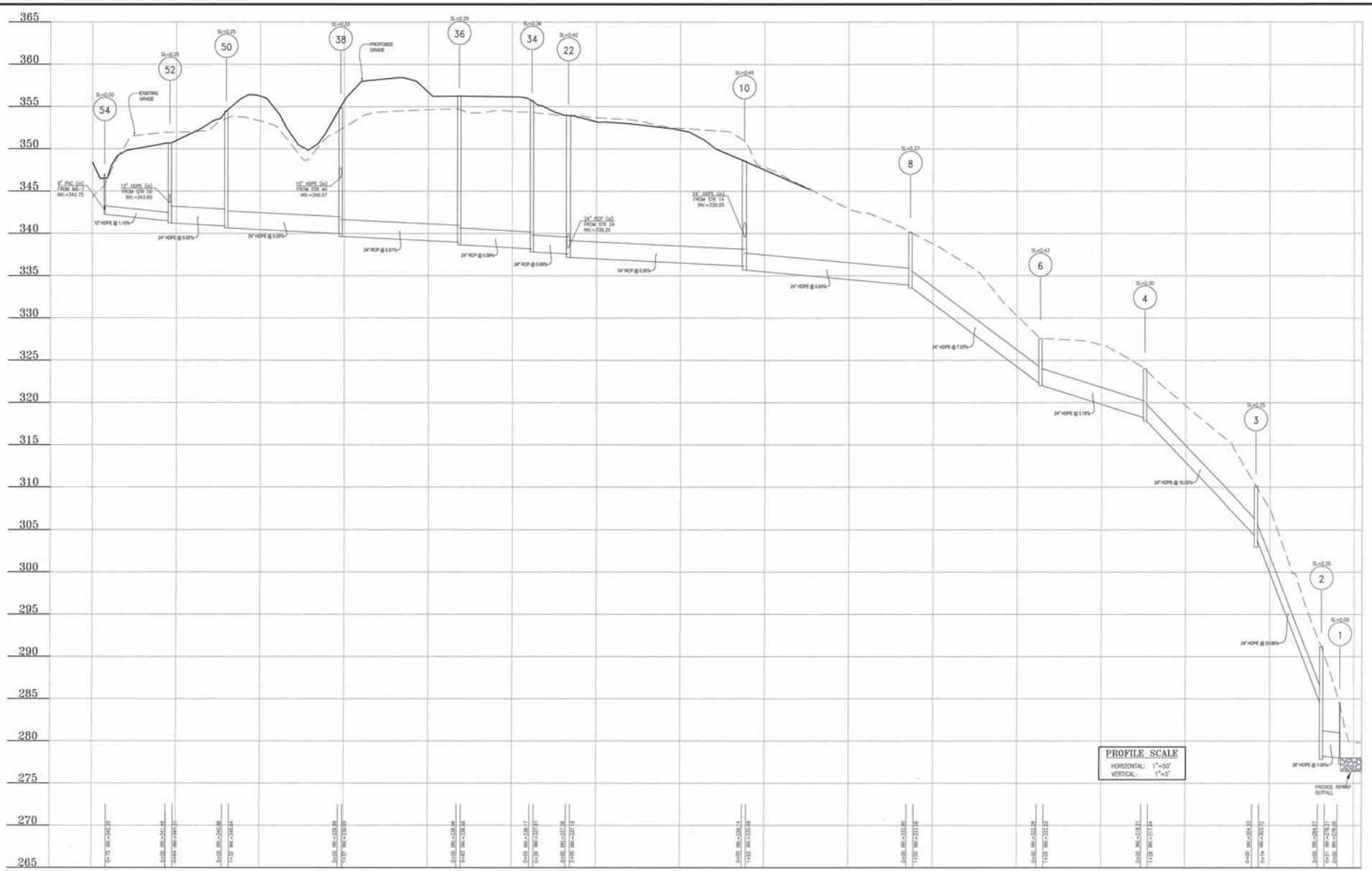
SCALE: 1"=30'
DATE: DEC., 2014

Liber 924 927 34656 Folio 270 503 001

DPS
DWG. # __ of __

SWM-04

SHT. # 4 of 7



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P. 301-434-7000 F. 301-434-0594 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
RAB		
Architect	Date	Checked By:
Engineer	Date	Checked By:
ADG		RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/17

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON _____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT PROFILES

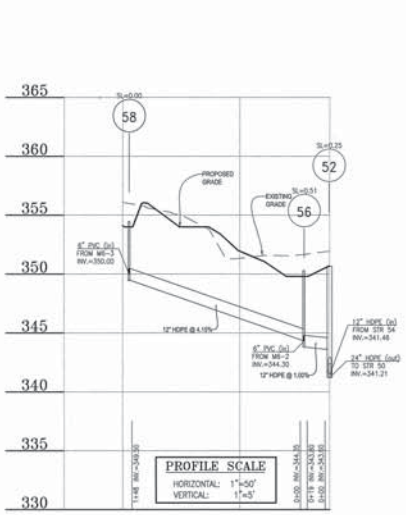
SCALE: AS SHOWN
DATE: DEC., 2014

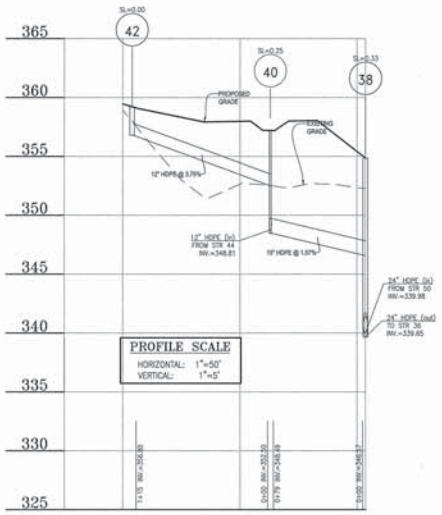
Liber 924 927 34656 Folio 270 503 001

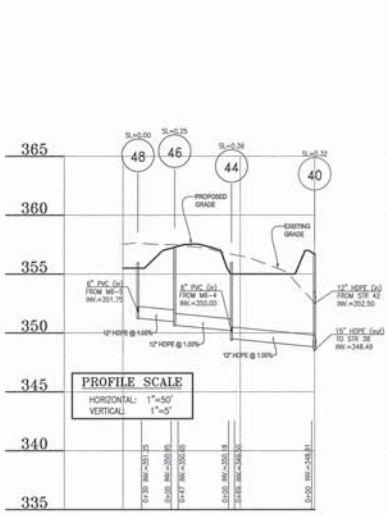
DPS DWG. # - of -

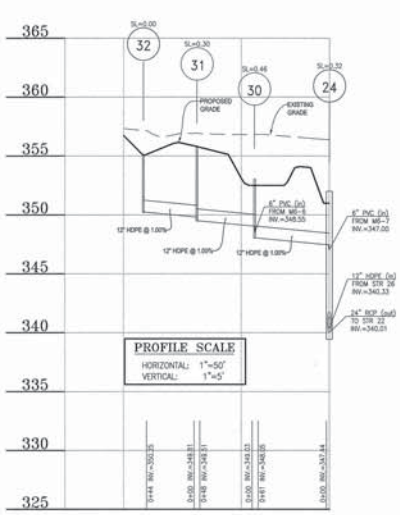
SWM-05

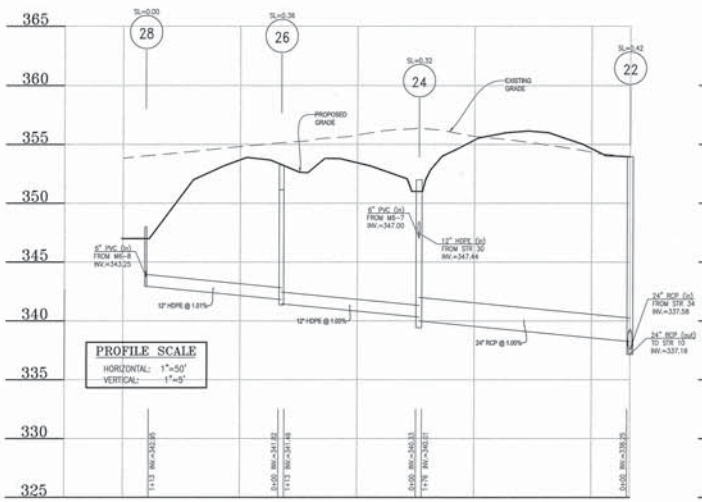
SHT. # 5 of 7

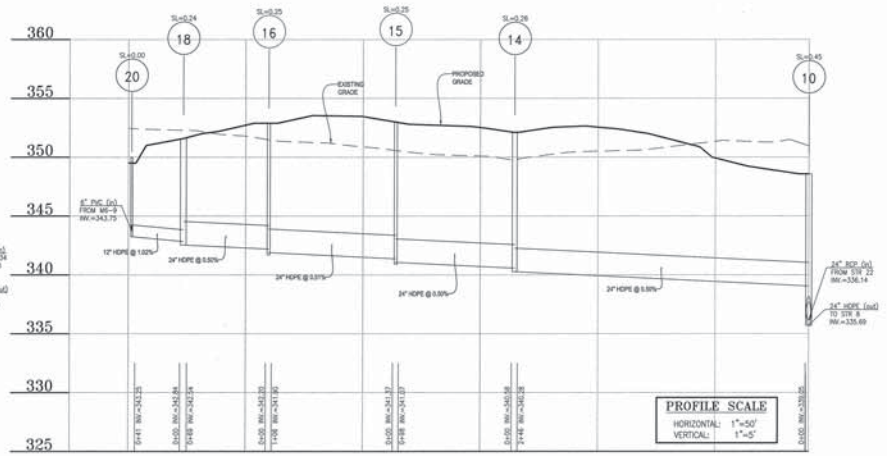












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DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect RAB	Date	Checked By:
Engineer ADG	Date	Checked By: RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/17

BRIAN KEITH DAVIS
19908

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON__________

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT
PROFILES

SCALE: AS SHOWN
DATE: DEC. 2014

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Folio 270 503 001

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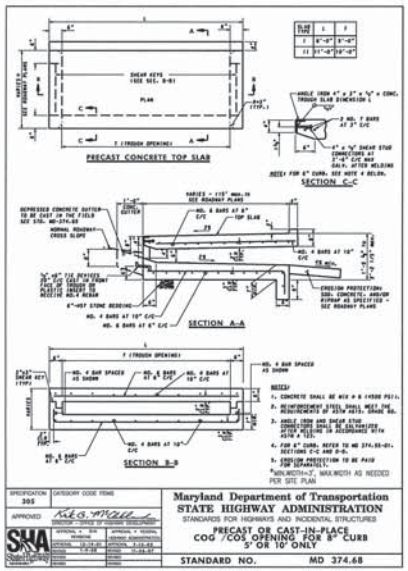
DWG. # - of -

SWM-06

SHT. # 6 of 7



SPECIFICATION	CATEGORY CODE ITEMS
305	

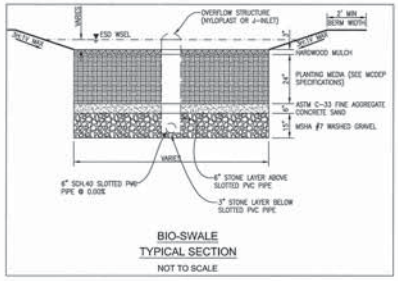
APPROVED: Kirk S. Mills — CHIEF, OFFICE OF HIGHWAY DEVELOPMENT

APPROVAL + DATE (ORIGINAL)	APPROVAL + REVISIONS
APPROVED: 12-10-97	APPROVED: 9-23-03
REVISED: 1-7-02	REVISED: 11-03-03
REVISED:	REVISED:
REVISED:	REVISED:

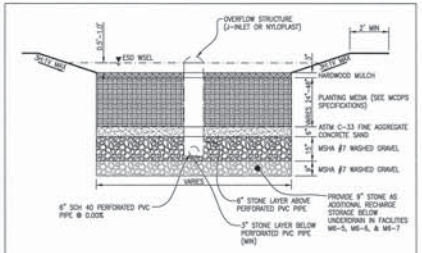
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

PRECAST OR CAST-IN-PLACE
COG /COS OPENING FOR 8" CURB
5' OR 10' ONLY

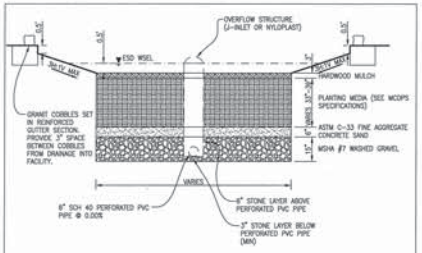
STANDARD NO. MD 374.68



BIO-SWALE
TYPICAL SECTION
NOT TO SCALE



MICRO-BIORETENTION
TYPICAL SECTION
(NOT TO SCALE)



MICRO-BIORETENTION M6-2
TYPICAL SECTION
(NOT TO SCALE)

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DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
RAB		
Architect	Date	Checked By:
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Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON_____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

STORMWATER MANAGEMENT CONCEPT DETAILS

SCALE: AS SHOWN
DATE: DEC., 2014

Liber 924 927 34656 Folio 270 503 001

DPS DWG. # ___ of ___

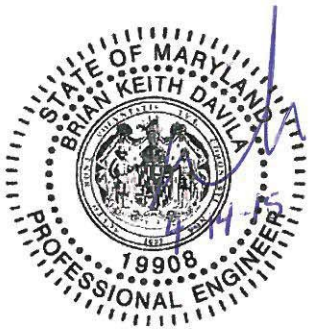
SWM-07

SHT. # 7 of 7

Hillandale Local Park

Stormwater Management
Concept Plan

Prepared for:
Maryland-National Capital Park and Planning Commission
9500 Brunett Avenue
Silver Spring, MD 20901
301-495-3597



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or approved by me, and that I am a duly licensed
professional engineer under the laws of the state of Maryland.
License # 19908 Expiration Date: 1/6/17

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www.cpja.com Gaithersburg, MD • Frederick, MD • Stevensville, MD • Fairfax, VA

Project #	43-032
Designer:	RAB
County:	Montgomery
Submitted:	March 2015
Approved:	
Revised:	

TABLE OF CONTENTS

Introduction

The Hillandale Local Park is located on New Hampshire Avenue in Silver Spring, Maryland. The existing site consists of an office building, ball fields, recreational building, tennis courts, basketball courts and parking. The purpose of this project is to redesign the existing park and provide on-site stormwater management through low impact development (LID) retrofit options to treat stormwater runoff meeting 2000 Maryland Department of the Environmental (MDE), Chapter 5 Environmental Site Design (ESD) criteria goals.

Hydrologic Analysis

Charles P. Johnson & Associates, Inc. (CPJ) completed a hydrologic analysis using table top and visual methods. The site impervious area and drainage area to each facility was delineated using a field run survey performed by CPJ in September 2013. The facility is located in the Paint Branch (Use III). The total project site area is 23.72 acres, the property drains from New Hampshire Avenue north towards the forested stream valley on the northern portion of the site. The proposed limit of disturbance encompasses 11.28 acres. The proposed site is 14.3% impervious (3.40 acres) and is entirely the responsibility of Maryland National Capital Park and Planning Commission (MNCPPC) with regard to stormwater management treatment. The project site consists of predominantly ‘B’ soils with some ‘C’ soils. The entire site is comprised of is low density residential land use and is Montgomery County zone R90. The actual use of the site is a recreational park.

Existing Site Description

The site, Hillandale Local Park is located on Parcels P340 (L. 924 F. 270), P258 (L. 34656, F. 0001), and P233 (L. 927, F. 503), the properties are owned by MNCPPC. The existing park consists of several recreational facilities and there is currently no stormwater management provided to treat the park. There is a forested stream valley located at the north end of the site that drains to the Paint Branch watershed. Site constraints include stream valley buffer, forest, and existing grades along New Hampshire Ave. The existing recreational building is currently permitted to be demolished under Sediment Control Permit #266595. Under that permit the existing recreation building, which has a failed septic system, will be removed and a pavilion and small parking area will be installed.

Proposed Retrofit/Restoration Opportunities

The proposed design for the park includes basketball courts, tennis courts, natrual turf soccer field, two additional pavilions, playground, sidewalks and parking. Using the drainage parameters computed and described above and the technical requirements for ESD to the MEP criteria found in the Chapter 5 revision to the 2000 MDE SWM Manual and Montgomery County Department of Permitting Service’s Water Resources Technical Policy WRTP-5, CPJ computed the Water Quality (WQ) Volume and ESD Volume treatment requirements for the site. Detailed calculations can be found in the appendix.

Table 4. Hydrologic Analysis Summary

Parameter	Unit	Requirement
LOD Area (DA)	Acre	11.28
Target PE Value	Inches	1.0
LOD Impervious Area (IA)	Acre	3.40
Target Water Quality Volume (WQv)	CF	13,160
Target Environmental Site Design Volume (ESDv)	CF	13,160

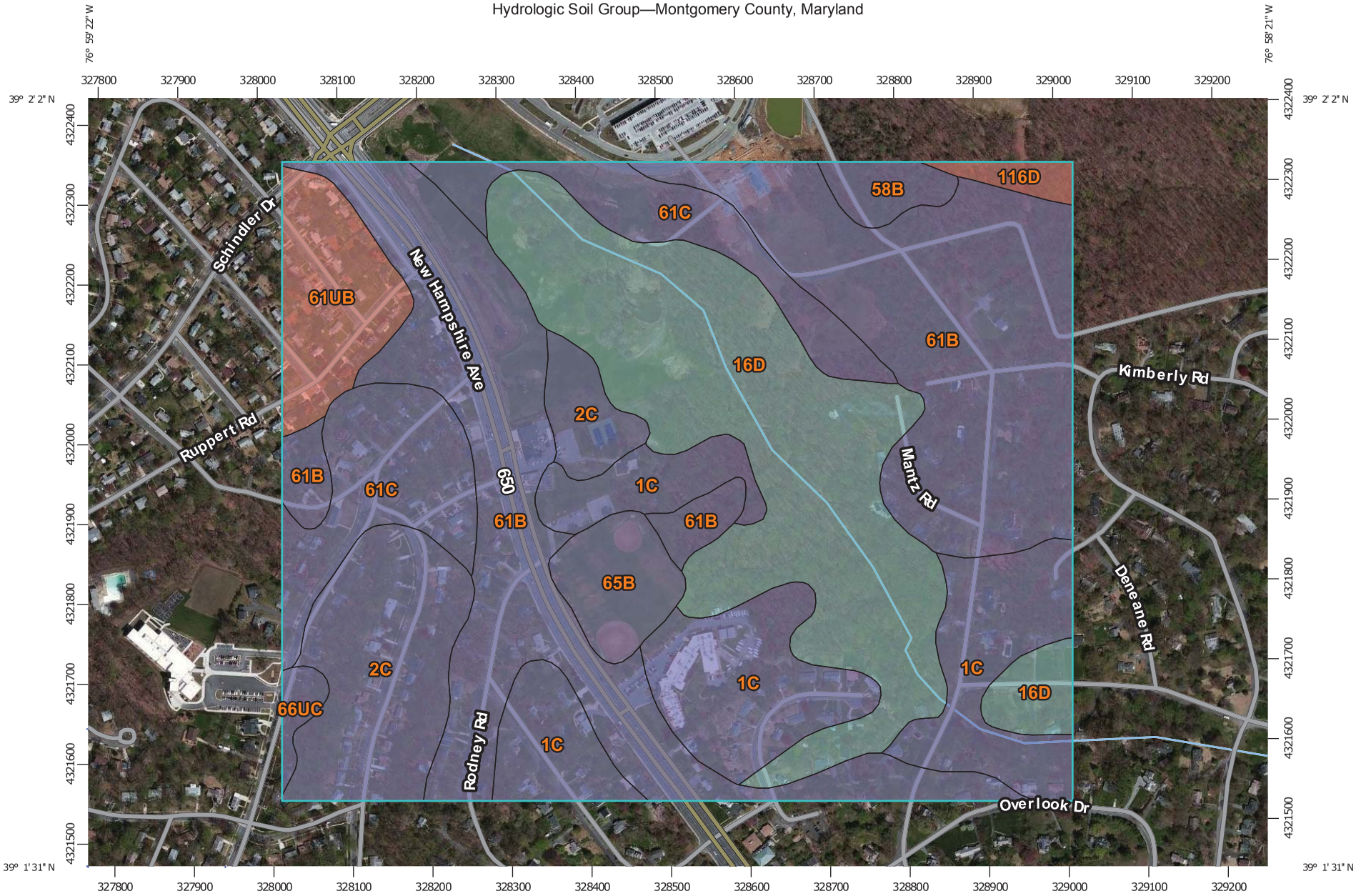
Stormwater management will be provided through nine micro bioretention, one bio-swale, and non-rooftop disconnection. Detailed computations for each facility can be found in the appendix. The proposed design treats 14,490 CF, which is 110.1% of the required ESD volume.

Parameter	Required	Proposed	% Required
WQv	13,160 cf	14,490 cf	110.1%
ESDv	13,160 cf	14,490 cf	110.1%

Conclusion

The proposed concept will provide an updated park while providing full ESD treatment on-site. The proposed design provides a treatment volume of 14,490 cf, which is 110.1% of the required ESD volume.

Supporting Documentation



Map Scale: 1:6,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Montgomery County, Maryland
Survey Area Data: Version 9, Sep 30, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 26, 2011—Mar 2, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Montgomery County, Maryland (MD031)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
1C	Gaila silt loam, 8 to 15 percent slopes	B	30.8	15.6%
2C	Glenelg silt loam, 8 to 15 percent slopes	B	17.9	9.1%
16D	Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	C	43.3	21.9%
58B	Sassafras loam, 3 to 8 percent slopes	B	2.5	1.3%
61B	Croom gravelly loam, 3 to 8 percent slopes	B	67.4	34.2%
61C	Croom gravelly loam, 8 to 15 percent slopes	B	18.8	9.5%
61UB	Croom-Urban land complex, 0 to 8 percent slopes	D	8.8	4.5%
65B	Wheaton silt loam, 0 to 8 percent slopes	B	5.2	2.6%
66UC	Wheaton-Urban land complex, 8 to 15 percent slopes	B	1.2	0.6%
116D	Blocktown channery silt loam, 15 to 25 percent slopes, very rocky	D	1.4	0.7%
Totals for Area of Interest			**197.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Vicinity Map
Scale: 1"=2000'
Map 5287 Grid C6

Environmental Site Design
and
Stormwater Management
Computations

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www.cpja.com Gaithersburg, MD • Frederick, MD • Stevensville, MD • Fairfax, VA

STORMWATER MANAGEMENT REQUIREMENTS

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Study Area: A

Site Data:
County: Montgomery
Project Type: SWM Concept Plan
Location: New Hampshire Ave., Hllandale, Maryland

	Parcel Area to Study	LOD Area to Study Point
Total Area:	**23.72 AC**	**11.28 AC**
Impervious Area:	**3.40 AC**	**3.40 AC**
Percent Impervious:	**14.3%**	**30.1%**

Soils:

HSG	RCN[1]	Parcel Area (Ac.)	Percent
A [2]	38	0.00	0%
B	55	14.90	63%
C	70	8.82	37%
D	77	0.00	0%

[1] RCN for "woods in good condition" (Table 2-2, TR-55)

[2] Actual RCN for Hydrologic Soil Group 'A' is less than 30, use RCN=38

Determine Water Quality (WQv) Requirements

A. Determine target WQ Volume for Disturbed Area

$$WQv = \frac{P_E * Rv * A}{12}$$

Where: P_E = 1.00 inches
Rv = 0.05 + (0.009*I) = 0.32
I = 30.1%
A= 11.28 AC

WQv Required = 13,155.12 CF , USE: **13,160 CF**

Determine ESD Requirements

Methodology per Montgomery County DPS Water Resources Technical Policy WRTP-5

A. Determine RCN for "woods in good condition" for Site Area

$$RCN_{woods} = \frac{\text{('A' RCN * 'A' Area) + ('B' RCN * 'B' Area) + ('C' RCN * 'C' Area) + ('D' RCN * 'D' Area)}}{\text{Total Area}}$$

RCN_{woods} = **60.58** Use **61**

B. Determine Target P_E based on Parcel Area Characteristics

% I = 14.3%

Use % I = 15.0 % to determine Target P_E.

Determine P_E for each soil group present in the drainage area using % I value and Table 5.3.

HSG	P_E
A	0.00
B	1.00
C	1.00
D	0.00

$$\text{Composite } P_E = \frac{\text{('A' } P_E \text{ * 'A' Area) + ('B' } P_E \text{ * 'B' Area) + ('C' } P_E \text{ * 'C' Area) + ('D' } P_E \text{ * 'D' Area)}}{\text{Total Area}}$$

Composite P_E = **1.00 Inches**

C. Determine target ESD Volume for Disturbed Area

$$ESDv = \frac{P_E * Rv * A}{12}$$

Where: P_E = 1.00 inches
Rv = 0.05 + (0.009*I) = 0.32
I = 30.1%
A= 11.28 AC

ESDv Required = 13,155.12 CF , USE: **13,160 CF**

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STORMWATER MANAGEMENT CONCEPT PLAN SUMMARY

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Impervious Area Analysis

Total Disturbed Area	11.28 AC
Total Impervious Area within LOD	3.40 AC

Total Site Percent Impervious (I) = Impervious Area to be Treated/Total Area
I = 30.1%

Target Rainfall Depth (PE) =	1.00"	*Composite PE value previously calculation*
Target RCN (Woods Good Condition) =	61	*Composite RCN value previously calculated*
10 Yr. Safety Storm Intensity (i) =	7.00 in./hr.	*from MSHA Highway Drainage Maunual Table 61.1-403.1*

LOD Area Rv =	0.32	*Rv value perviously calculated*
Required WQv =	13,160 CF	*Required WQv value previously calculated*
Required ESDv =	13,160 CF	*Required ESDv value previously calculated*

Study Area A Summary Table

Study Area	BMP #	Facility Type	Existing Hydrology			Stormwater Management					
			Drainage Area (ac)	Total Impervious Area (ac)	Percent Impervious	Target Volumes (cf) WQv	ESDv	1 Yr. Volume (Max)	Volume Provided (cf)	Percent WQv Treated	Percent ESDv Treated
A	M6-1	Micro-Bioretention	0.33	0.2	59%	703	703	1829	810	115.2%	115.2%
A	M6-2	Micro-Bioretention	0.42	0.31	73%	1078	1078	2804	2103	195.0%	195.0%
A	M6-3	Micro-Bioretention	0.35	0.21	61%	764	764	1986	1729	226.4%	226.4%
A	M6-4	Micro-Bioretention	0.46	0.25	55%	905	905	2354	1745	192.7%	192.7%
A	M6-5	Micro-Bioretention	0.44	0.19	44%	703	703	1827	926	131.8%	131.8%
A	M6-6	Micro-Bioretention	0.46	0.23	49%	821	821	2135	1408	171.5%	171.5%
A	M6-7	Micro-Bioretention	0.39	0.23	58%	815	815	2120	1602	196.5%	196.5%
A	M6-8	Micro-Bioretention	0.43	0.21	49%	760	760	1975	1638	215.6%	215.6%
A	M6-9	Micro-Bioretention	0.35	0.26	74%	914	914	2378	1903	208.1%	208.1%
A	N2-1	Non-Rooftop Disconnection	0.04	0.04	100%	146	146	379	146	100.0%	100.0%
A	N2-2	Non-Rooftop Disconnection	0.08	0.08	100%	271	271	704	271	100.0%	100.0%
A	M8-1	Bioswale	0.35	0.13	37%	485	485	1261	210	43.3%	43.3%
		Total Area to SWM facilities (ac)	4.10	2.34							
		Study Area A Total (ac)	23.72	3.4							
Total Treatment Volume Provided and Percent of Required Treatment Volume (Study Area A)									**14490**	**110.1%**	**110.1%**

PE Treated = (12*ESDv treated)/(Rv*A) = 1.10"

ESD reequirements have been satisfied. Additional stormwater management through structural practices is not necessary.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-1** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: North Side of Site between Tennis Courts and Parking Lot

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	8567	0.2	59%
Open Space/Woods	6025	0.14	41%
Total Drainage Area	**14592**	**0.33**	100%

Impervious Area Breakdown	
On-Site Impervious Area	8567 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-1**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 14,592 SF
Total Impervious Area = 8,567 SF
I = 59%
Rv = 0.58
C = 0.63

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**703 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**703 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**1,829 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	346.5	
Overflow Crest Elevation	347.0	
Top of Embankment Elevation	348.0	*0.75' of Freeboard is provided*
Bottom Surface Area (Af)	506 SF	
Ponding Depth	0.50 FT	
Ponding Storage Provided *	253 CF	
Bed Depth *(Mulch, Media & Sand)*	2.75 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.33 AC**	
Q_{10} =	**1.50 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**347.25**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 810 CF

Treatment Volume Provided = **810 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **1.2 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-2** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: Center Island of North Parking Area

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	13356.51	0.31	73%
Open Space/Woods	5035.49	0.12	27%
Total Drainage Area	**18392**	**0.42**	100%

Impervious Area Breakdown	
On-Site Impervious Area	13357 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-2**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 18,392 SF
Total Impervious Area = 13,357 SF
I = 73%
Rv = 0.70
C = 0.72

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**1,078 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Are*
Target ESDv =	**1,078 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**2,804 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Bed #1 Dimensions

Filter Bed Elevation	351.5	
Overflow Crest Elevation	352.0	
Top of Embankment Elevation	353.0	*0.95' of Freeboard is provided*
Bottom Surface Area (Af)	314 SF	
Filter Surface Area (SF)	314 SF	
Ponding Depth	0.50 FT	
Ponding Storage Provided *	157 CF	
Bed Depth *(Mulch, Media & Sand)*	4.00 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.14 AC**	
Q_{10} =	**0.72 CFS**	*Q=ciA*
Weir Length =	**20.00 FT**	*Check Dam*
$WSEL_{10}$ =	**352.05**	

Compute Safety Storm WSEL using Weir Equation**
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 659 CF

Bed #2 Dimensions

Filter Bed Elevation	349.5	
Overflow Crest Elevation	350.0	
Top of Embankment Elevation	351.0	*0.92' of Freeboard is provided*

Safety Storm

T_c (min) =	**5**
i_{10} =	**7.07**
A_{10} =	**0.28 AC**

Bottom Surface Area (Af)	429 SF
Filter Surface Area (SF)	429 SF
Ponding Depth	0.50 FT
Ponding Storage Provided *	215 CF
Bed Depth *(Mulch, Media & Sand)*	4.00 FT
Filter Bed Porosity	0.40
Additional Stone Storage Area	00 SF
Additional Stone Storage Depth	0.00 FT
Additional Stone Storage Porosity	0.40

Applicable if facility is an enhanced filter

Applicable if facility is an enhanced filter

Q_{10} =	**1.44 CFS**	*Q=ciA*
Weir Length =	**20.00 FT**	*Check Dam*
$WSEL_{10}$ =	**350.08**	

Compute Safety Storm WSEL using Weir Equation**
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 901 CF

Bed #3 Dimensions

Filter Bed Elevation	348.8
Overflow Crest Elevation	349.3
Top of Embankment Elevation	350.3
Bottom Surface Area (Af)	286 SF
Filter Surface Area (SF)	286 SF
Ponding Depth	0.50 FT
Ponding Storage Provided *	143 CF
Bed Depth *(Mulch, Media & Sand)*	3.50 FT
Filter Bed Porosity	0.40
Additional Stone Storage Area	00 SF
Additional Stone Storage Depth	0.00 FT
Additional Stone Storage Porosity	0.40

0.73' of Freeboard is provided

Applicable if facility is an enhanced filter

Applicable if facility is an enhanced filter

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.42 AC**	
Q_{10} =	**2.15 CFS**	*Q=ciA*
Weir Length =	**5.00 FT**	*J-Inlet*
$WSEL_{10}$ =	**349.57**	

Compute Safety Storm WSEL using Weir Equation**
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 543 CF

Total Provided Facility Storage = Combined provided storage in all beds
= 2,103 CF

Treatment Volume Provided = **2,103 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **2.0 Inches** $P_E = (ESDv * 12) / (Rv * A)$

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-3** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: North side of site east of Fire House

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	9334	0.21	61%
Open Space/Woods	5945	0.14	39%
Total Drainage Area	**15279**	**0.35**	100%

Impervious Area Breakdown	
On-Site Impervious Area	916 SF
Off-Site Impervious Area	8418 SF

Facility Concept Design

Facility Name: **M6-3**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 15,279 SF
Total Impervious Area = 9,334 SF
I = 61%
Rv = 0.60
C = 0.65

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**764 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**764 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**1,986 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	354.0	
Overflow Crest Elevation	355.0	
Top of Embankment Elevation	356.0	*0.74' of Freeboard is provided*
Bottom Surface Area (Af)	786 SF	
Ponding Depth	1.00 FT	
Ponding Storage Provided *	786 CF	
Bed Depth *(Mulch, Media & Sand)*	3.00 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.35 AC**	
Q_{10} =	**1.60 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**355.26**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,729 CF

Treatment Volume Provided = **1,729 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **2.3 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-4** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: East of parking area near north entrance

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	10963	0.25	55%
Open Space/Woods	9012	0.21	45%
Total Drainage Area	**19975**	**0.46**	100%

Impervious Area Breakdown	
On-Site Impervious Area	10963 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-4**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 19,975 SF
Total Impervious Area = 10,963 SF
I = 55%
Rv = 0.54
C = 0.61

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**905 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**905 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**2,354 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	355.0	
Overflow Crest Elevation	356.0	
Top of Embankment Elevation	357.0	*0.7' of Freeboard is provided*
Bottom Surface Area (Af)	671 SF	
Ponding Depth	1.00 FT	
Ponding Storage Provided *	671 CF	
Bed Depth *(Mulch, Media & Sand)*	4.00 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.46 AC**	
Q_{10} =	**1.97 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**356.30**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,745 CF

Treatment Volume Provided = **1,745 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **1.9 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-5** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: East of parking area near north entrance

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	8312	0.19	44%
Open Space/Woods	10707	0.25	56%
Total Drainage Area	**19019**	**0.44**	100%

Impervious Area Breakdown	
On-Site Impervious Area	8312 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-5**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 19,019 SF
Total Impervious Area = 8,312 SF
I = 44%
Rv = 0.44
C = 0.53

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**703 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**703 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**1,827 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	355.5	
Overflow Crest Elevation	356.0	
Top of Embankment Elevation	357.0	*0.74' of Freeboard is provided*
Bottom Surface Area (Af)	463 SF	
Ponding Depth	0.50 FT	
Ponding Storage Provided *	232 CF	
Bed Depth *(Mulch, Media & Sand)*	2.75 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	463 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	1.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.44 AC**	
Q_{10} =	**1.65 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**356.26**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 926 CF

Treatment Volume Provided = **926 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **1.3 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-6** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: East of parking area near Playground

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	9838	0.23	49%
Open Space/Woods	10113	0.23	51%
Total Drainage Area	**19951**	**0.46**	100%

Impervious Area Breakdown	
On-Site Impervious Area	9838 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-6**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 19,951 SF
Total Impervious Area = 9,838 SF
I = 49%
Rv = 0.49
C = 0.57

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**821 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**821 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**2,135 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	352.3	
Overflow Crest Elevation	352.8	
Top of Embankment Elevation	353.5	*0.52' of Freeboard is provided*
Bottom Surface Area (Af)	704 SF	
Ponding Depth	0.50 FT	
Ponding Storage Provided *	352 CF	
Bed Depth *(Mulch, Media & Sand)*	2.75 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	704 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	1.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.46 AC**	
Q_{10} =	**1.85 CFS**	*Q=ciA*
Weir Length =	**7.85 FT**	*30 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**352.98**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,408 CF

Treatment Volume Provided = **1,408 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **1.7 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-7** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: East of parking area near Playground

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	9928	0.23	58%
Open Space/Woods	7079	0.16	42%
Total Drainage Area	**17007**	**0.39**	100%

Impervious Area Breakdown	
On-Site Impervious Area	9928 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-7**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 17,007 SF
Total Impervious Area = 9,928 SF
I = 58%
Rv = 0.58
C = 0.63

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**815 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**815 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**2,120 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	351.0	
Overflow Crest Elevation	352.0	
Top of Embankment Elevation	352.80	*0.53' of Freeboard is provided*
Bottom Surface Area (Af)	616 SF	
Ponding Depth	1.00 FT	
Ponding Storage Provided *	616 CF	
Bed Depth *(Mulch, Media & Sand)*	3.00 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	616 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	1.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.39 AC**	
Q_{10} =	**1.74 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**352.27**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,602 CF

Treatment Volume Provided = **1,602 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **2.0 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-8** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: North of Basketball Courts

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	9091	0.21	49%
Open Space/Woods	9583	0.22	51%
Total Drainage Area	**18674**	**0.43**	100%

Impervious Area Breakdown	
On-Site Impervious Area	9091 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-8**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 18,674 SF
Total Impervious Area = 9,091 SF
I = 49%
Rv = 0.49
C = 0.57

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**760 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**760 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**1,975 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	347.0	
Overflow Crest Elevation	348.0	
Top of Embankment Elevation	348.8	*0.55' of Freeboard is provided*
Bottom Surface Area (Af)	780 SF	
Ponding Depth	1.00 FT	
Ponding Storage Provided *	780 CF	
Bed Depth *(Mulch, Media & Sand)*	2.75 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.43 AC**	
Q_{10} =	**1.72 CFS**	*Q=ciA*
Weir Length =	**6.28 FT**	*24 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**348.20**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,638 CF

Treatment Volume Provided = **1,638 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **2.2 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M6-9** Facility Type: Micro-Bioretention
Study Area: **A**
Location Description: South of Basketball Courts

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	11344	0.26	74%
Open Space/Woods	3929	0.09	26%
Total Drainage Area	**15273**	**0.35**	100%

Impervious Area Breakdown	
On-Site Impervious Area	11344 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M6-9**
Facility Type: Micro-Bioretention

Drainage Area (DA) = 15,273 SF
Total Impervious Area = 11,344 SF
I = 74%
Rv = 0.72
C = 0.73

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**914 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**914 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**2,378 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Filter Bed Elevation	349.5	
Overflow Crest Elevation	350.0	
Top of Embankment Elevation	351.0	*0.72' of Freeboard is provided*
Bottom Surface Area (Af)	793 SF	
Ponding Depth	0.50 FT	
Ponding Storage Provided *	397 CF	
Bed Depth *(Mulch, Media & Sand)*	4.75 FT	
Filter Bed Porosity	0.40	
Additional Stone Storage Area	00 SF	*Applicable if facility is an enhanced filter*
Additional Stone Storage Depth	0.00 FT	*Applicable if facility is an enhanced filter*
Additional Stone Storage Porosity	0.40	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.35 AC**	
Q_{10} =	**1.82 CFS**	*Q=ciA*
Weir Length =	**3.93 FT**	*15 " Diam. Nyloplast Str.*
$WSEL_{10}$ =	**350.28**	

Compute Safety Storm WSEL using Weir Equation***
WSEL = ESD WSEL + (Q/3.1*LW)2/3
****Note: Safety storm WSEL must be less than top of dam*

* Ponding Storage Provided calculated as Bottom Surface Area * Ponding Depth

Provided Facility Storage = Ponding Storage + Filter Bed Storage + Additional Stone Storage
= 1,903 CF

Treatment Volume Provided = **1,903 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **2.1 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **N2-1** Facility Type: Non-Rooftop Disconnectio
Study Area: **A**
Location Description: Sidewalk Disconnection

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	1839 AC	0.04	100%

Impervious Area Breakdown	
On-Site Impervious Area	1839 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **N2-1**
Facility Type: Non-Rooftop Disconnection

Total Impervious Area = 1,839 SF
I = 100%
Rv = 0.95
C = 0.90

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**146 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**146 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**379 CF**	*Using WQv formula with P= Rainfall Depth*

Target ESD Rainfall Depth is greater than 1 inch. Therefore, a maximum treated rainfall of 1 inch can be treated if sufficient disconnection length can be provided.

Compute Treatment Volume Provided

Facility Dimensions
Max Contribution Length = 16 FT
Max Disconnection Length = 16 FT

Is the disconnection slope less than or equal to 5%? YES

Treated Rainfall, P_E = **1.0 Inches** *P_E = (ESDv * 12) / (Rv * A)*
Treatment Volume Provided = **146 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **N2-2** Facility Type: Non-Rooftop Disconnectio
Study Area: **A**
Location Description: Picnic Pavillion

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	3419 AC	0.08	100%

Impervious Area Breakdown	
On-Site Impervious Area	3419 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **N2-2**
Facility Type: Non-Rooftop Disconnection

Total Impervious Area = 3,419 SF
I = 100%
Rv = 0.95
C = 0.90

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**271 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**271 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**704 CF**	*Using WQv formula with P= Rainfall Depth*

Target ESD Rainfall Depth is greater than 1 inch. Therefore, a maximum treated rainfall of 1 inch can be treated if sufficient disconnection length can be provided.

Compute Treatment Volume Provided

Facility Dimensions
Max Contribution Lenth = 22 FT
Max Disconnection Length = 22 FT

Is the disconnection slope less than or equal to 5%? YES

Treated Rainfall, P_E = **1.0 Inches** *P_E = (ESDv * 12) / (Rv * A)*
Treatment Volume Provided = **271 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*

Adaquate storage volume is provided to treat ESDv.

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MICRO-BIORETENTION FACILITY - CONCEPT DESIGN

Project Name: Hillandale Local Park SWM Concept Plan
Project No.: 43-032 Date: 4/3/2015 By: RAB

Facility Summary

Facility Name: **M8-1** Facility Type: Bioswale
Study Area: **A**
Location Description: South Side of play area north of parking area.

Hydrology Summary			
Land Use	Area (sf)	Area (ac)	%
Impervious Area	5616	0.13	37%
Open Space/Woods	9667	0.22	63%
Total Drainage Area	**15283**	**0.35**	100%

Impervious Area Breakdown	
On-Site Impervious Area	5616 SF
Off-Site Impervious Area	0 SF

Facility Concept Design

Facility Name: **M8-1**
Facility Type: Bioswale

Drainage Area (DA) = 15,283 SF
Total Impervious Area = 5,616 SF
I = 37%
Rv = 0.38
C = 0.49

Target WQ Rainfall Depth (P) =	1.00"	
Target WQv =	**485 CF**	*WQv = [P * Rv * A]/12*
Target ESD Rainfall Depth (P_E) =	1.00"	*Composite P_E value previously calculated for Study Area*
Target ESDv =	**485 CF**	*ESDv = [PE * Rv * A]/12*
1-Year 24-Hour Storm Rainfall Depth =	2.60"	
1-Year 24-Hour Storm Runoff Volume =	**1,261 CF**	*Using WQv formula with P= Rainfall Depth*

Required ESDv is less than 1 Yr. runoff volume. Therefore, the Total ESDv can be treated if sufficient storage can be provided.

Compute Treatment Volume Provided

Facility Dimensions

Swale Bottom Width	5 FT	
Swale Bottom Length	30 FT	
Swale Depth	2.00 FT	
Bed Depth (*Media, Sand & Stone*)	3.50 FT	
Filter Bed Porosity	0.40	
Bottom Surface Area (Af)	150 SF	Increase Af to >=2% of DA **
1-Year Storm Flow Depth *	0.08 FT	
1-Year Storm Flow Velocity *	0.74 FPS	
10-Year Storm Flow Depth *	0.14 FT	*1.86' of Freeboard is provided*
10-Year Storm Flow Velocity *	1.02 FPS	

* See Attached Computations

1-Year Storm Discharge

per Appendix D.10 of the 2000 Maryland Stormwater Design Manual

Q_a =	0.99	*Qa=P * Rv*
CN =	81	
T_c (hr) =	0.083	
I_a =	0.48	
I_a/P =	0.19	
q_u (csm/in) =	975	*from TR-55 Exhibit 4-II*
Q_1 =	**0.53 CFS**	

Safety Storm

T_c (min) =	**5**	
i_{10} =	**7.07**	
A_{10} =	**0.35 AC**	
Q_{10} =	**1.21 CFS**	*Q=ciA*

Provided Facility Storage = Filter Bed Storage
= 210 CF

Treatment Volume Provided = **210 CF** *The lesser of the Provided Facility Storage or the 1-Year Storm Runoff Volume*
Treated Rainfall, P_E = **0.4 Inches** *P_E = (ESDv * 12) / (Rv * A)*

Inadaquate storage volume is provided to treat ESDv.

** Note: The space available for this facility is very limited and additional bed area could not be provided to meet the minimum required bed area. However, M-NCPPC did not want the parking lot draining to this location to receive no treatment. Therefore, this facility is proposed to provide some level of treatment for the drainage area. It should be noted that the required ESDv for the site is achieved through the other proposed facilities and treatment practices without accounting for the volume provided in this facility.

Geotechnical Report

GEOTECHNICAL ENGINEERING REPORT

HILLANDALE PARK
HILLANDALE, MARYLAND

KIM
ENGINEERING, INC.

Consulting Geotechnical Engineers

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KIM
ENGINEERING, INC.

January 13, 2015

Ms. Robyn Barnhart
Charles P. Johnson & Associates
1751 Elton Road, Suite 300
Silver Spring, MD 20903

Project: **Geotechnical Services Report**
Hillandale Park
1061 New Hampshire Avenue,
Hillandale, Maryland
KEI Project Number: G14222BC

Dear Ms. Barnhart:

Kim Engineering Inc. (KEI) is pleased to submit a copy of our report for the above referenced project. This investigation was conducted in accordance with our proposal and your subsequent approval.

Services performed include the drilling of seventeen (17) SPT test borings, nine (9) stormwater management test borings, fourteen (14) topsoil sampling, nine (9) in-site infiltration tests, geotechnical laboratory testing, horticultural laboratory testing and preparation of a geotechnical service report.

Our geotechnical services report includes the following:

- An evaluation of the estimated subsurface conditions and groundwater conditions at the proposed site.
- Foundation, base slab and retaining wall design recommendations.
- Stormwater management infiltration rate information and associated testing depth information for the stormwater management areas.
- Comments on geotechnical aspects of construction that was readily apparent at the time of, in the area of, and to the depth of the investigation.
- An analysis of soil nutrients, and recommendations of additives based on M-NCPPC requirements.

Services with respect to surveying for line and grade, specific dewatering recommendations, environmental matters, temporary slopes, pavement design, seepage analysis, slope stability, erosion control, cost or quantity estimates, plans, specifications, and construction observation and testing were not included in the scope of services.

Soil samples will be held for a period of thirty (30) days after the date of this report and then disposed of, unless an alternate disposition is requested.

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We appreciate the opportunity to be of service to you for this project. If you have any questions regarding this project please do not hesitate to contact either of the undersigned.

Very truly yours,

KIM ENGINEERING, INC.

Ron Pyles, P.E.
Principal Engineer

01-13-14
GH22280

Nick Sangwa
Project Engineer

STATE OF MARYLAND
RONALD L. PYLES
NO. 13535
REGISTERED
PROFESSIONAL ENGINEER

KIM
ENGINEERING, INC.

GEOTECHNICAL SERVICES REPORT
HILLANDALE PARK
NEW HAMPSHIRE AVENUE
HILLANDALE, MARYLAND

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1.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of our conclusions and recommendations:

a. Subsurface conditions in the proposed construction areas generally indicate naturally occurring silty sand with varying amounts of clay and gravel of stratum A.

b. The naturally occurring materials are suitable for support of spread footings. We recommend a design soil bearing pressure of 2,500 psf for footings founded on approved soil or on new compacted fill placed over approved soil.

c. The naturally occurring silty sand of stratum A is also suitable for infiltration purposes at the points and at the depths tested except for that at INF-8.

d. Compacted fill should typically be classified sandy silt (ML) or more granular per ASTM D2487, and compacted to at least 95 percent of maximum dry density per ASTM D698. The majority of the on-site soils of stratum A may be considered suitable for reuse as fill and backfill; however, some importing or substitution may be necessary.

e. Floor slabs may be supported on the natural soils or new compacted fill. A minimum 4 inch layer of crushed stone should be placed below the slabs to act as a moisture barrier and to provide structural support.

f. Earth pressure coefficients presented within should be considered for the stability of the proposed retaining walls against sliding and overturning. Coefficients were determined based on naturally occurring soil conditions.

g. The site is classified as "D" for seismic design considerations according to the 2012 International Building Code.

h. Variations in soil conditions may be encountered during construction. Determination of such variations will permit correlation between the subsurface exploration data of this report and actual conditions encountered during construction and verification of conformance with the plans and specifications. We recommend that Kim Engineering, Inc. be retained to perform professional observations of foundation subgrades.

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This report is based on information available to us on the proposed construction. If the project characteristics are changed from those indicated herein, our recommendations may require some modifications. Please advise us of any changes in the proposed construction.

We recommend that the project specifications include the following statement:

> "A geotechnical report has been prepared for this project by Kim Engineering, Inc. and is available to prospective bidders and/or contractors for informational purposes only. The report has been prepared for design purposes only and may not be sufficient to prepare an accurate bid for construction. Contractors wishing copies of this report may secure them from Kim Engineering Inc. at a nominal charge with the understanding that its scope is limited solely to generalized design considerations."

We have prepared this report in accordance with contemporary geotechnical engineering practices and make no warranties, either expressed or implied, as to the professional services provided under the terms of our agreement and included in this report.

2.0 SITE DESCRIPTION AND PROPOSED CONSTRUCTION

The site is located on New Hampshire Avenue, Hillandale, Maryland and consists of an existing park facility with typical lawn areas. The entire fieldwork was done in readily accessible areas working within the aforementioned lawn areas. The test borings were located in the field by CPJ. Accurate drawings of the site and surrounding areas were provided by our Client.

Kim Engineering understands that the proposed construction will generally include the development of the existing park facility. Facilities to be developed include retaining walls, a restroom building, sports field lighting, playground equipment foundations and a picnic pavilion. Landscaped planter areas will also be provided in selected areas of the site.

It is further understood that to accommodate the new construction, stormwater management will be incorporated into the design. It is anticipated that these facilities will be located in several areas of the site.

3.0 SUBSURFACE CONDITION

3.1 Test Boring

In order to approximate the subsurface conditions of the site for the study, a total of seventeen (17) standard penetration tests (SPT) borings and nine (9) continuous flight auger infiltration

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test borings were drilled in the accessible areas of the site. The approximate locations of the test borings are depicted in plan on Drawing No. 1 of Appendix A.

The standard penetration tests (SPT) borings were each drilled to a predetermined depth of approximately 20 feet. The continuous flight auger infiltration test borings were drilled to depths ranging from approximately 5 feet to 11 feet. The table below summarizes the test boring schedule.

Boring Location	Boring Identification	Depth of Boring (ft)
Proposed Construction	SB-1	20
	SB-2	20
	SB-3	20
	SB-4	20
	SB-5	20
	SB-6	20
	SB-7	20
	SB-8	20
	SB-9	20
	SB-10	20
	SB-11	20
	SB-12	20
	SB-13	20
	SB-14	20
	SB-15	20
	SB-16	20
	SB-17	20
Proposed Stormwater Management Facility	INF-1	6
	INF-2	8
	INF-3	5
	INF-4	9
	INF-5	11
	INF-6	11
	INF-7	9
	INF-8	7
	INF-9	10

Table 1: Summary of Test Borings

The test borings were accomplished using both a 4-wheel ATV mounted drill rig and a truck mounted drill rig. The exploration program was performed in the field from Friday October 4th to Monday November 10th, 2014. The borings were field located by CPJ in the approximate locations depicted on the Drawing No. 1 of Appendix A.

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Rotary drill rigs were used to drill the test borings. Hollow-stem augers were advanced to pre-selected depths and representative soil samples were recovered with a standard split-spoon sampler in general accordance with ASTM D-1586.

Disturbed representative soil samples were recovered while performing the Standard Penetration Test (SPT). This test consists of a 140 pound (lb) hammer falling over a distance of 30 inches. The number of blows required to drive the standard split spoon sampler (2 inch O.D., 1-3/8 inch I.D.) a distance of 12 inches after an initial set of 6 inches to ensure the sampler is in undisturbed material, is recorded as the Standard Penetration Resistance (N-Value) of the soil. Standard Penetration Tests were accomplished using a cathead apparatus.

The N-value, for the majority of subsurface situations, provides a generalized indication of in-situ soil conditions when reviewed by individuals with established geotechnical backgrounds. Various individuals and institutions have correlated the N-values with approximations of certain engineering properties of the soils.

The test borings were advanced using auger techniques to depths indicated in table 1 above. Subsurface water level readings were taken in each of the test borings during and immediately upon completion of the drilling process. Upon completion of drilling, the boreholes were backfilled with auger cuttings (soil). The backfill material was compacted to the extent feasible; however, some subsidence of the backfill could occur at a future date. As a result, it is recommended that the boreholes be monitored periodically.

Representative portions of the split-spoon soil samples obtained throughout the exploration program were placed in glass jars and transported to our laboratory. In the laboratory, the soil samples were evaluated by a member of our professional staff in general accordance with techniques outlined in the visual-manual identification procedure (ASTM D-2488) and the Unified Soil Classification System. The soil descriptions and classifications discussed in this report and shown on the attached boring logs are based on visual observation and, as previously noted, should be considered approximate.

Split-spoon soil samples recovered on this project will be stored at Kim Engineering, Inc. for a period of thirty (30) days from the date of this report. After thirty (30) days, the samples will be discarded unless prior notification for an alternate disposition is provided to us in writing.

3.2 General Stratification

The subsurface conditions discussed below and those shown on the boring logs represent an estimate of the subsurface conditions based on an interpretation of the boring data using geotechnical engineering judgment. In most instances the relatively small sample obtained in the field may be insufficient to definitely describe the possible origin of the subsurface material. Transitions between different soil strata are usually less distinct than those shown on the boring

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logs. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates shown, they are not necessarily indicative of subsurface conditions at other locations or at other times.

More comprehensive descriptions of the materials encountered are included on the attached test boring logs. The subsurface investigation indicated that the following generalized strata underlie the site in the areas and to the depths investigated:

Stratum A: Light brown, brown, red, yellow and orange, damp, very loose to very dense silty sand (SM) with varying amounts of clay and gravel was encountered in all of the borings. This naturally occurring soil was encountered underlying the topsoil layer or the ground surface. This stratum extended to the end of all the borings at depths indicated in table 1. The relative density of this stratum was determined by performing standard penetration tests. Standard Penetration Resistance (N-Value) of this material ranged generally from 3 to in excess of 50 blows per foot.

Approximately 7 inches of asphalt and 4 inches of crushed rock and sand were encountered at the top of stratum A in boring SB-4. Up to 6 inches of topsoil was encountered at the top of the remaining borings.

The soil symbols indicated in the stratum descriptions and on the boring logs represent the Unified Soil Classification (ASTM D-2488) group symbols and are based primarily on visual observation of the specimens recovered. Criteria for visual-manual classification of soil samples are given in Appendix B of this report.

3.3 Geology

The Geological Map of Maryland relating to the location of the project sites was used to determine the historical geologic interpretation of their subsurface conditions. As indicated by the map, the site is located in the Lower Pelitic Schist. This formation was formerly mapped as oligoclase facies of Wissahickon Formation. It consists of medium to coarse grained biotite-oligoclase muscovite quartz schist with garnet, staurolite, and kyanite; fine to medium grained semipelitic schist; and fine grained granular to weakly schistose psammitic granulite. Psammitic beds increase upward. The apparent thickness of this formation is approximately 5,500 feet or more.

The borings at this location confirm the occurrence of the formations.

3.4 Groundwater

Groundwater observations were performed at the test boring locations. Groundwater level readings were recorded during the drilling process and at the end of the drilling operation. Groundwater was encountered in boring SB-14 at a depth of approximately 18 feet. No

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groundwater was encountered in the remaining borings during the drilling operation or to the cave depth at the end of the drilling operation.

Groundwater level readings are considered to be reliable indication of the water levels at the time indicated. Fluctuations of groundwater levels, as well as perched water, may be expected with variations in precipitation, evaporation, surface runoff, and related factors.

3.5 Soil Geotechnical Laboratory Testing

Geotechnical laboratory testing was performed on jar samples obtained from selected test borings for soil classification and determination of the moisture content. All tests were performed in accordance with ASTM Standards. Results of these tests are included in the Summary of Lab Test Results in Appendix C.

Classification tests were performed on selected samples recovered from the boreholes. The tests that were performed and the associated ASTM methods are presented below:

ASTM Method	Description
D-2216	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D-422	Standard Test Method for Particle-Analysis (Grain Size Distribution)

The results confirmed the high strength, low compressibility nature of the soils of stratum A underlying the site. The results of the classification tests indicate that primarily low plasticity silty sands of stratum A underlie the site.

Laboratory test results revealed that the approximate composition of the soils of stratum A ranged generally as follows:

- 43% to 88% sand,
- 0% to 37% gravel,
- 11% to 49% fines inclusive of silt and/or clay.

This material is classified as a silty sand (SM). The natural moisture content of this material ranged generally between 6% and 18%.

4.0 GEOTECHNICAL ENGINEERING ANALYSIS

Geotechnical engineering analyses were based on the subsurface exploration data resulting from our field investigation and soil geotechnical laboratory testing as well as the structural data supplied to us.

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4.1 Foundation Design Considerations of Proposed Construction

The site is typically underlain by what appears to be naturally occurring deposits of silty sand with varying amounts of clay and gravel, all of which, based upon the results of our test borings, are currently judged to have sufficient strength to support conventional spread footing foundations for moderately loaded structures similar to the configuration of the proposed construction. Accordingly, it is the opinion of Kim Engineering that the proposed construction may be supported on a spread footing foundation system bearing on approved naturally occurring materials or, if necessary, on limited quantities of structural fill placed over approved natural soils.

4.1.1 Allowable Soil Design Bearing Capacity

Our current study, incorporating the SPT N-values and the soil classifications, indicates that conventional spread footing foundations should be designed using a maximum net allowable soil design bearing pressure not in excess of 2,500 pounds per square foot for foundations bearing on approved residual soil deposits or denser materials. To reduce the possibility of localized shear failures strip footings should be a minimum of 18 inches wide, while column footings should be a minimum of 30 inches square. Perimeter footing subgrade foundation should be at least 30 inches below the final exterior grade for frost protection. Variable bearing conditions may occur at the project site; therefore, we recommend that the footings be properly reinforced to provide them with greater bending capacity.

4.1.2 Uplift Capacity

The picnic pavilion and the sports field lighting poles will be subject to uplift forces. Allowable uplift resistances should be based on assumed depth of burial and dimensions of the foundations. The uplift resistance of the foundations is based on the area above the foundation backfilled using the cohesionless soils present at the sites. The uplift capacity can be determined as a function of soil breakout factor, and the area and weight of the foundations and facilities. The internal angle of friction of the soils was inferred from the results of the Standard Penetration Tests.

Design to resist uplift/overturning should include dead weight of the footing concrete and the applicable wedge of soils above the top of footing. A conical shaped wedge of soils extending above the top of the footing and outside the footing edges should be based on an angle, $\theta = 20$ degrees, measured from the vertical. We recommend using a moist unit weight of soil, $\gamma = 125$ pound per cubic foot, for backfill above the footing for design to resist uplift and lateral loading.

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4.1.3 Settlement

Based on the boring data and the anticipated structural loads, we estimate that total settlements for the foundations should not exceed one inch with differential settlement expected to be less than half the total settlement. The magnitude of differential settlements will be influenced by the distribution of loads and the variability of underlying materials. Quality control during construction is considered to be extreme importance to ensure that subsequent settlements, following the construction process, are kept to a minimum.

4.1.4 Floor Slab

Natural soils or new compacted fill are expected at floor slab subgrades. The natural soils and new compacted fill are considered suitable for supporting floor slabs. All debris and soft soils near the final floor slab subgrade as a result of construction operations should be stripped and removed prior to placement of underfloor stone. The floor slab subgrade should be observed by the geotechnical engineer to evaluate any need for undercutting soft or unsuitable soils.

A 4-inch minimum thickness of crushed stone meeting the requirement of AASHTO No.57 should be placed below the floor slab to serve as a capillary break. An impermeable plastic membrane should be placed on top of the crushed stone layer to assist as a moisture barrier. Special attention should be given to the surface curing of the slab in order to minimize uneven drying of the slab and associated cracking.

We recommended that the floor slab be isolated from the footings, so that differential settlement of the structure, should it occur, will not induce shear stresses on the floor slab. Also, in order to minimize the development of any shrinkage cracks near the slab, we recommend (fiber or welded wire fabric) reinforcement be included in the design of the floor slab. If welded wire fabric is used, the mesh should be located in the top half of the slab to be effective.

4.1.5 Seismic Site Classification

We are providing a Seismic Site Class Definition per 2012 International Building Code (IBC). Our scope of services did not include a site specific geophysical survey to determine shear wave velocity information. The 2012 International Building Code (IBC) however provides a methodology for interpretation of Standard Penetration Test resistance values (N-values) to determine a Site Class Definition.

We note that the borings for this project generally encountered loose to very dense materials beneath the recommended bearing levels for proposed foundations. Based on the subsurface data and in general accordance with 2012 IBC guidelines, we recommend that a Site Classification "D" be used for further evaluations relative to Earthquake Load design.

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4.2 Design Considerations of Earth Retaining Walls

Earth pressures on retaining walls below grade are influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction, and the strength of the materials being restrained. The most common conditions for earth retaining wall design are the active and at-rest conditions. Active conditions apply to relatively flexible earth retention structures, such as free-standing wall, where some movement and rotation may occur to mobilize internal soil shear strength. Walls that are rigidly restrained, such as sublevel basement walls, will require design using at-rest earth pressures.

The passive state represents the maximum possible pressure when a structure is pushed against the soil. This force, however, is generally only used with keyways. The passive force is typically not applied to front portions of the wall as excavations may possibly occur in front of the walls subsequent to construction thus creating an unsafe condition. Instead, passive resistance associated with the use of keyways is generally supplemented with the frictional resistance along the base of the wall footing for lateral resistance to movement.

For design, a resistance to sliding can be calculated using a value of 0.30 for the coefficient of friction between concrete surfaces and approved underlying subgrade soils. Passive resistance associated with keyways for the single wall can be determined using an equivalent fluid pressure of 180 pounds per square foot per foot. Significant movement is generally required to fully mobilize passive resistance; therefore, the aforementioned value is a reduced value so as to minimize necessary movements.

It is currently anticipated that the sublevel retaining wall excavations will encounter the prevalent on-site naturally occurring silty sand material. The wall will most likely be subjected to exterior surcharge loading conditions. As a result, surcharge loads for the wall should be evaluated using the appropriate earth pressure coefficients. The effect of surcharge loads should then be added to the recommended earth pressures to determine total lateral stresses against the wall.

Based on the test boring results, the recommended lateral earth pressure coefficient and equivalent fluid pressure parameter for design of the wall for horizontal conditions behind the wall are provided in the following table:

Material Description	Earth Pressure Conditions	Coefficient	Recommended Equivalent Fluid Pressure (pounds per square foot per foot)
Silty Sand	At Rest (K_0)	0.46	58
Silty Sand	Active (Ka)	0.29	36

A soil moist unit weight of 125 pounds per cubic foot is considered appropriate for design calculations. Hydrostatic pressures will not have to be added to the various loads on the wall if an adequate drainage system is used on the exterior of the wall.

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The walls may be subjected to exterior surcharge loading conditions. As a result, surcharge loads for the walls should be evaluated using the appropriate earth coefficients. The effect of surcharge loads should then be added to recommended earth pressures to determine total lateral stresses against the walls. If feasible, the walls should be coated with a spray-on rubberized material so as to assist in minimizing the extent of the moisture invasion into the interior. Also, the various drainage considerations as included in the subsequent Drainage Provision section should be properly implemented so as to avoid the buildup of hydrostatic water pressures on the walls. Hydrostatic pressures will not have to be added to the various loads on the wall if an adequate drainage system is used on the exterior of the wall.

Trees and planter areas should not be provided influential to the retaining walls. Also, heavy equipment should not operate influential to the walls so as to prevent lateral pressures in excess of those cited.

The aforementioned retaining/below grade wall recommendations should not be correlated for use in geosynthetic-reinforced modular block wall design. We recommend that soil parameters for any modular block retaining wall design be established through appropriate laboratory testing by the wall designer.

4.3 Drainage Provisions

It is anticipated that the building could be subjected to normal rainfall infiltration. To avoid producing hydrostatic pressures on the walls, it is recommended that an approved vertical drain be constructed along the entire exterior of the sublevel walls. The drain would most likely be a commercial product such as Enka Drain or Geotech Drain Board. The commercial product would have filter fabric on its outer face and an impenetrable membrane on its inner face (next to the wall). The system would incorporate drain tile at the base covered with Marland No. 57 stone enveloped with filter fabric to route the water preferably to a gravity drain or to sumps and sump pumps, if gravity drainage is not feasible. An interior system should also be used.

4.4 Stormwater Management Facility

Infiltration tests were performed in associated infiltration test borings INF-1 through INF-9.

Infiltration tests were performed in a 5 inch diameter standpipe placed in the infiltration drilled hole. The standpipe was filled with water to presoak the soil for 24 hours. When the 24 hour presoak was complete the standpipe was refilled with a 24-inch head of water. Infiltration rates were then estimated by measuring the water level in the standpipe every 1/2 hour for 4 hours. Final depth selection should ensure that infiltration testing is not attempted in any fill. Estimated infiltration rate and test depth is presented in Table 2 below.

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Boring Identification	Depth of Boring (ft)	Infiltration Rate (inch/hour)
INF-1	6	3.25
INF-2	8	0.63
INF-3	5	3.00
INF-4	9	3.25
INF-5	11	7.25
INF-6	11	2.25
INF-7	9	1.63
INF-8	7	0.09
INF-9	10	11.00

Table 2: Estimated Infiltration Rate

Based on the fact that neither groundwater nor bedrock was encountered in the infiltration test borings, stormwater management is judged to be feasible for the project site except for that of INF-8. The flow rates obtained in the areas and to the depths tested are considered to be suitable for infiltration purposes except for that at INF-8.

5.0 Earthworks and Subgrade Preparations

Site development may require fill placement at this site. Before placing new fills, all topsoil, organic matter and other deleterious materials shall be removed from the ground surface. The exposed subgrade shall then be proof rolled to check whether any unstable areas exist. If any soft areas are detected by proof rolling, the unstable area shall be removed and be replaced with compacted granular fill.

Materials for compacted fill and backfill should consist of soils classified as sandy SILT (ML) or more granular per ASTM D2487. Compacted fill and backfill should be placed in 8 inch maximum loose thicknesses. All fills shall be compacted to not less than 95% of the laboratory determined maximum dry density and to within 3% of the optimum moisture content in accordance with ASTM Method D-698. This may require the contractor to dry soils during wet weather or add water during dry, hot weather. Backfill should be free of boulders and should have a maximum particle size no greater than 4 inches.

Fill material should be placed in horizontal lifts. New fill should be adequately keyed into a stripped and scarified subgrade and should, where applicable, be properly benched into slopes or laid back portions of the excavation. During fill operations, positive surface drainage should be maintained to prevent accumulation of water. In confined areas, portable compaction equipment and thinner lifts of 3 to 4 inches may be required to achieve adequate degrees of compaction.

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Trees and planter areas should not be provided influential to the retaining walls. Also, heavy equipment should not operate influential to the walls so as to prevent lateral earth pressures in excess of those sited.

The aforementioned earth retaining wall recommendations should not be correlated for use in geosynthetic - reinforced modular block wall design. We recommend that soil parameters for any modular block retaining wall design be established through appropriate laboratory testing by the wall designer.

We recommend that the contractor have equipment on site during earthwork for both drying and wetting of the soils as moisture alterations could very well be necessary at the time of the construction. Moisture control may be especially difficult during winter months or extended periods of rain. Attempts to work the soils when wet can be expected to result in deterioration of otherwise suitable soil conditions of previously placed and properly compacted fill.

The natural soil of stratum A is generally considered suitable for use as new compacted fill. All materials for fill should be approved by the geotechnical engineer prior to use.

The naturally occurring soils at the site are susceptible to disturbance when exposed to water or to construction activities. Care should be exercised after preparing fill subgrade that it does not remain exposed for long periods or be subjected to unnecessary construction traffic prior to placement of compacted fill.

6.0 Subsurface Water Conditions and Site Drainage

Subsurface water for the purposes of this report is defined as water encountered below the existing ground surface (groundwater). Based on the results of our exploration program, we generally would not anticipate that a phreatic ground water level would be encountered during construction. However fluctuations in subsurface water levels and soil moisture can be anticipated with seasonal changes, as well as changes in precipitations amounts and rainfall runoff characteristics of influential land.

If rain water or shallow perched (trapped) water is encountered during construction, pumping from sump pits to acceptable outfalls will have to be used to control the water flow. The pumping process may have to be supplemented with ditching and a number of sump pits and pumps (or other stabilization techniques) so as to permit the construction process to continue in a satisfactory manner.

It is considered essential that adequate drainage is provided at the site at all times to minimize any increase in moisture content of the subsurface materials. This is considered to be critical for the project due to the fine-grained nature of the on-site soils. The site drainage should also be such that the run-off onto adjacent properties is properly controlled.

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7.0 Construction Considerations

7.1 Footing Subgrade

Footing excavations should be observed by Kim Engineering Inc. to determine whether footings are placed on suitable bearing soils as recommended herein. These observations should include visual identification of the bearing soils and correlation with the test boring logs. Field testing by probing with a penetrometer at selected locations will also be necessary.

Care should be taken during excavation for footings to minimize disturbance of the subgrade. The footings should be excavated and poured the same day to minimize disturbance of the subgrade from surface runoff into the footing excavations. Disturbed or frozen soil should be removed prior to placement of concrete. The footing excavations should be essentially free of ponded water for observation by the geotechnical engineer during placement of concrete.

7.2 Earthwork Requirements

We recommend that placement and compaction of fill and backfill materials be scheduled during the months of April through October. It is likely that considerable difficulty in compaction of soils will be encountered if fill operations are scheduled outside of this time period. The on-site soils are susceptible to moisture and will become soft if exposed to water, high moisture levels, and equipment loadings.

8.0 Continuation of Services

Additional engineering, testing, and consulting services recommended for this project is summarized below:

General Review

It is recommended that Kim Engineering Inc. be given the opportunity to review the final design drawings and specifications when construction documents approach completion.

Site Preparation

Kim Engineering Inc. should observe the site after it has been stripped and excavated. The geotechnical engineer should determine if any undercutting or in-place densification is necessary to prepare a subgrade for structural fill placement or footing/floor slab support.

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Fill Placement and Compaction

The geotechnical engineer should witness any required fill operations and should verify that an adequate degree of compaction is achieved. The individual should observe and approve all on-site or borrow materials used and should determine if they are suitable.

Foundation Excavations

The geotechnical engineer should observe the foundation excavations and should verify that the design bearing pressure is available and that no loose or soft areas exist directly beneath the bearing surfaces of the footing excavations.

9.0 Limitations

This report has been prepared for the exclusive use by our Client for specific application to the proposed construction as presented herein. Our services were performed in accordance with contemporary soil and foundation engineering practices. No warranty, either expressed or implied, is made. Our conclusions and recommendations are based on the preliminary design information furnished to us, the data obtained from the subsurface exploration program, and current geotechnical engineering practices. The findings and recommendations do not reflect variations in subsurface conditions that could exist between the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon on-site observations of the conditions.

Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions in other areas will differ from those at the boring locations and the conditions may not be as anticipated by the designers. Additionally, the construction process may alter the soil conditions. Therefore, experienced geotechnical engineers should evaluate earthwork and foundation construction to verify that the conditions anticipated in design actually exist in the field at the time of construction. Otherwise, we assume no responsibility for construction compliance with the design concepts, specifications, or recommendations.

In the event that changes are made in the design or location of the proposed facilities, the recommendations presented in the report shall not be considered valid unless the changes are reviewed by our firm and conclusions of this report modified and/or verified in writing. If this report is copied or transmitted to a third party, it must be copied or transmitted in its entirety, including text, attachments, and enclosures. Interpretations based on only a part of this report may not be valid.

It is important to note that our study was done in an effort to assist planning and design personnel in the preparation of generalized drawings and specifications for the project. As a result of this, potential contractors should be encouraged to conduct their own individually

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tailored studies to assess soils conditions, rock levels, excavation slope gradients, temporary excavation support methods, and groundwater/perched water levels and conditions. Specifically, our report has been prepared for generalized purposes of planning and design and may not be sufficiently comprehensive for bid preparation purposes.

10.0 Soil Nutrient Analysis

In accordance with our scope of work, we have submitted soil samples to Cornell University's Nutrient Analysis Lab for the requested Potentially Mineralizable Nitrogen test along with the 1060 Modified Morgan & 1880 Soluble Salts tests. The results of the tests are included in Appendix E. Through the analyses conducted on these samples, recommendations on soil additives were done in accordance with the M-NCPPC's requirements.

The nutrient analyses were performed on 14 samples extracted from the soil borings. These 14 samples consist of loam, sandy loam, and clay loam. The properties and the elements of the samples were inspected, documented, and averaged. These averages were used to distinguish whether the soil in the examined area is fit to pass M-NCPPC specifications.

10.1 M-NCPCC Material Requirements for Soil in Lawn Areas

The soil shall closely match the mechanical analysis (percentage sand, silt and clay) of the existing subsoil. Soil shall be free of cinders, stones, slag, coarse fragments, gravel, sticks, trash, roots, and other debris over 3/4". Soil will be to a depth of 6" for lawn areas. It must also be free of plants or plant parts of Bermuda grass, Quack grass, Johnson grass, Nutsedge, Poison Ivy, Phragmites, Canada thistle, or any noxious weeds. The soil shall contain no substances harmful to plant growth. If the existing native subsoil is a bank run gravel, the topsoil or landscape bedding soil shall be a sandy loam.

The soil should also pass these addition requirements:

A. The pH shall be between 6.0 - 7.0 values.
B. The acceptable amount of Magnesium shall be 35 pounds per acre; Phosphorus shall be 100 pounds per acre; Potassium shall be 85 pounds per acre, and Nitrogen shall be a minimum of 50 pounds per acre.
C. Soluble salts shall not exceed 3 mmhos/cm. Calcium levels shall not exceed 2000 parts per million.
D. Organic Matter shall be greater than three percent.

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10.2 Soil Additive Recommendations and Comments

The laboratory results show that the majority of the soil components meet the requirements of M-NCPPC. From the project requirements previously mentioned, the laboratory results obtained from the nutrient analysis, and various additional calculations made on these results, the recommendations which follow were found to be the most effective solutions.

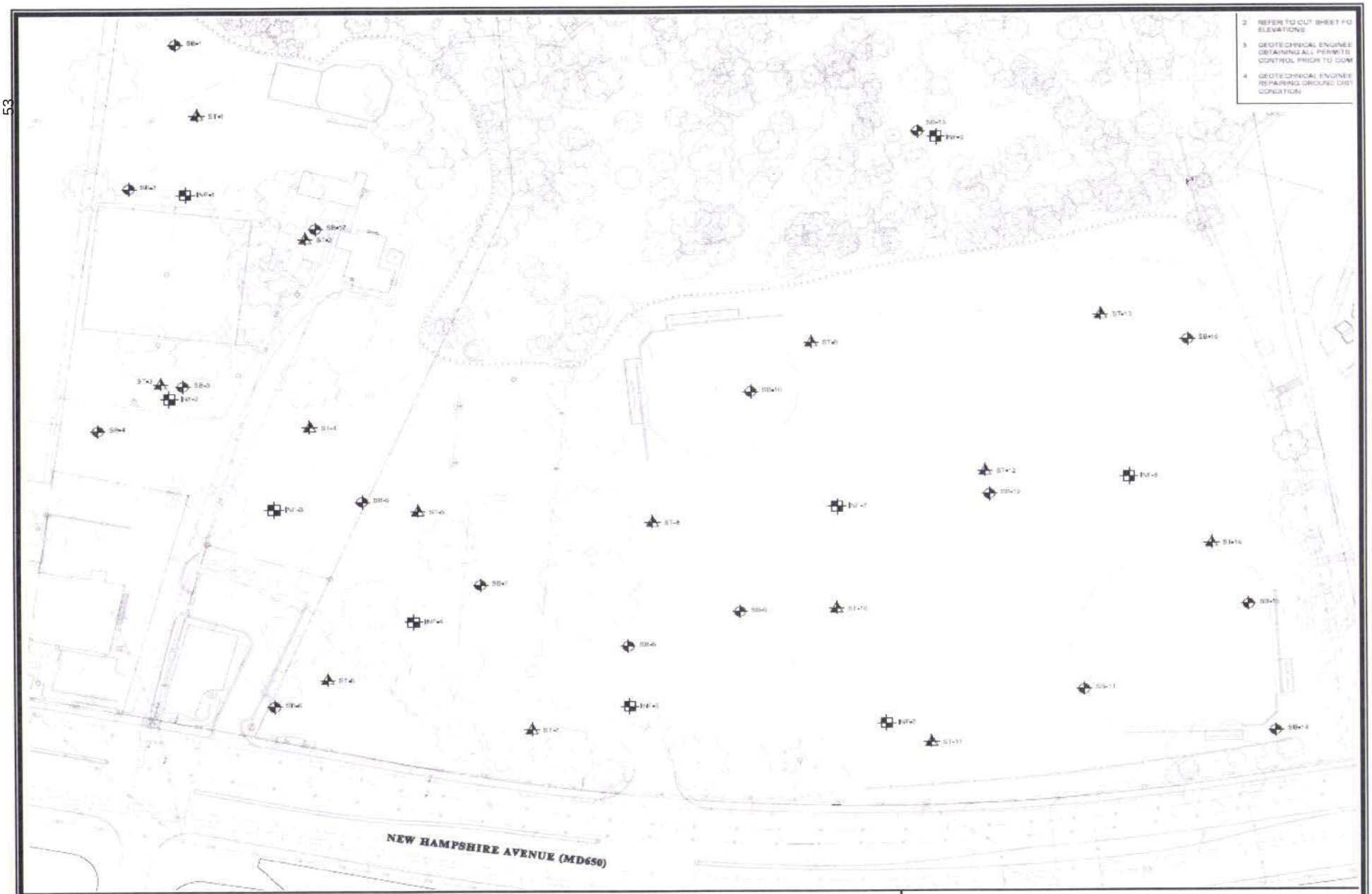
Soil pH levels should aim for a value of 6.5 because it is the most conventional state for topsoil preparation in our field. The results of the analysis indicate that the present average pH level of the current soil is 5.26. That is too acidic according to M-NCPPC standards. To correct the topsoil acidity from 5.26 to 6.5, we recommend that 60 lbs. of pulverized agricultural limestone is added per 1,000 ft^2.

For fertilizer the potassium is at an acceptable level; however, phosphorus is quite low. However, the current trend is to eliminate the phosphorus component from fertilizer. As such an application of 436 pounds per acre of 10-0-10 should be sufficient to stimulate the initial growth.

From the results of the examination of the soil, after the recommended actions are performed, the soil components will generally meet M-NCPPC requirements.

APPENDIX A

Site and Approximate Boring Location Map



Kim Engineering, Inc.

GEOTECHNICAL & MATERIALS ENGINEERS

Project No.: G14222BC

SCALE: NTS

DATE: October 27, 2014

Test Boring Location Plan, Hillandale Park, 1061 New Hampshire Avenue, Hillandale, Maryland

DRAWING NO.
1

APPENDIX B

Identification of Soil

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IDENTIFICATION OF SOIL

Soil Classification- ASTM D-2847

Coarse Grained Soils, More than 50% is retained on the No. 200 sieve	**Gravels-** More than 50% of the coarse fraction is retained on the No. 4 sieve. Coarse = 1" - 3" Medium= 1/2" - 1" Fine= 1/4" - 1/2"	Clean Gravels <5% Passing No. 200 sieve	**GW**	Well Graded Gravel
			GP	Poorly Graded Gravel
		Gravels with fines >12% passing No. 200 seive	**GM**	Silty Gravel
			GC	Clayey Gravel
	Sands- More than 50% of the coarse fraction passes the No. 4 sieve Coarse= No 10 to No. 4 Medium= No. 10 to No. 40 Fine= No. 40 to No. 200	Clean Sands <5 % passings No. 200 sieve	**SW**	Well Graded Sand
			SP	Poorly Graded Sand
		Sands with fines >12% passing No. 200 sieve	**SM**	Silty Sand
			SC	Clayey Sand
Fine Grained Soils, More than 50% passes the No. 200 Sieve	**Silts and Clays** Liquid Limit of 50 or less Low to medium plasticity	Inorganic	**ML**	Silt
			CL	Lean Clay
		Organic	**OL**	Organic Silt
				Organic Clay
	Silts and Clays Liquid Limit of 50 or greater Medium to high plasticity	Inorganic	**MH**	Elastic Silt
			CH	Fat Clay
		Organic	**OH**	Organic Silt
				Organic Clay
Highly Organic	Primarily Organic matter, dark color, organic odor		**PT**	Peat

Terminology and Definitions:

Portions of Soil Components		
Component Form	Description	Label
Noun	Gravel, Sand, Silt, Clay	50% or more
Adjective	Sandy, Silty, Clayey	35% to 49%
Some	some Sand, some Silt	12% to 34%
Trace	trace Sand, trace Clay	1% to 11 %
With	with Sand, with Silt	Presence only

Particle Size Identification	
Particle Size	Particle Dimension
Boulder	12" diameter or more
Cobble	3" to 12" diameter
Gravel	1/4" to 3" diameter
Sand	0.005" to 1/4" diameter
Silt/ Clay (fines)	Cannot See Particle

Cohesive Soils		
Field Description	N-Value	Consistency
Easily Molded in Hands	0-3	Very Soft
Easily Penetrated Several Inches by Thumb	4-5	Soft
Penetrated by Thumb with Moderate Effort	6-10	Medium
Penetrated by Thumb with Great Effort	11-30	Stiff
Indented by Thumb only with Great Effort	> 30	Hard

Granular Soils	
N- Values	Relative Density
0-4	Very Loose
5-10	Loose
11-30	Medium Dense
31-50	Dense
Greater Than 50	Very Dense

Fill: Man made deposit of soil, rock and waste material.
Probable Fill: Soils which contain no visually detected foreign matter but which may be man made deposit.
Rock Fragments: Angular Pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in soil matrix.
Disintegrated Rock: Residual rock material with SPT of more than 60 blows per ft. and less than refusal.
Karst: Descriptive term which denotes the potential for solutioning of limestone rock and the development of sink holes.
Alluvium: Recently deposited soils placed by water action, typically stream or river flood plain soils.
Ironite: Iron oxide deposited within a soil layer forming cemented deposits.
Quartz: A hard silica mineral often found in residual soils.
Mica: A soft plate of silica mineral found in many rocks. and in residual or transported soil derived there from.
Layers: 1/2 to 12 inch seam of minor soil component.
Lenses: 0 to 1/2 inch seam of minor soil component.
Pocket: Discontinuous body of minor soil component.

APPENDIX C

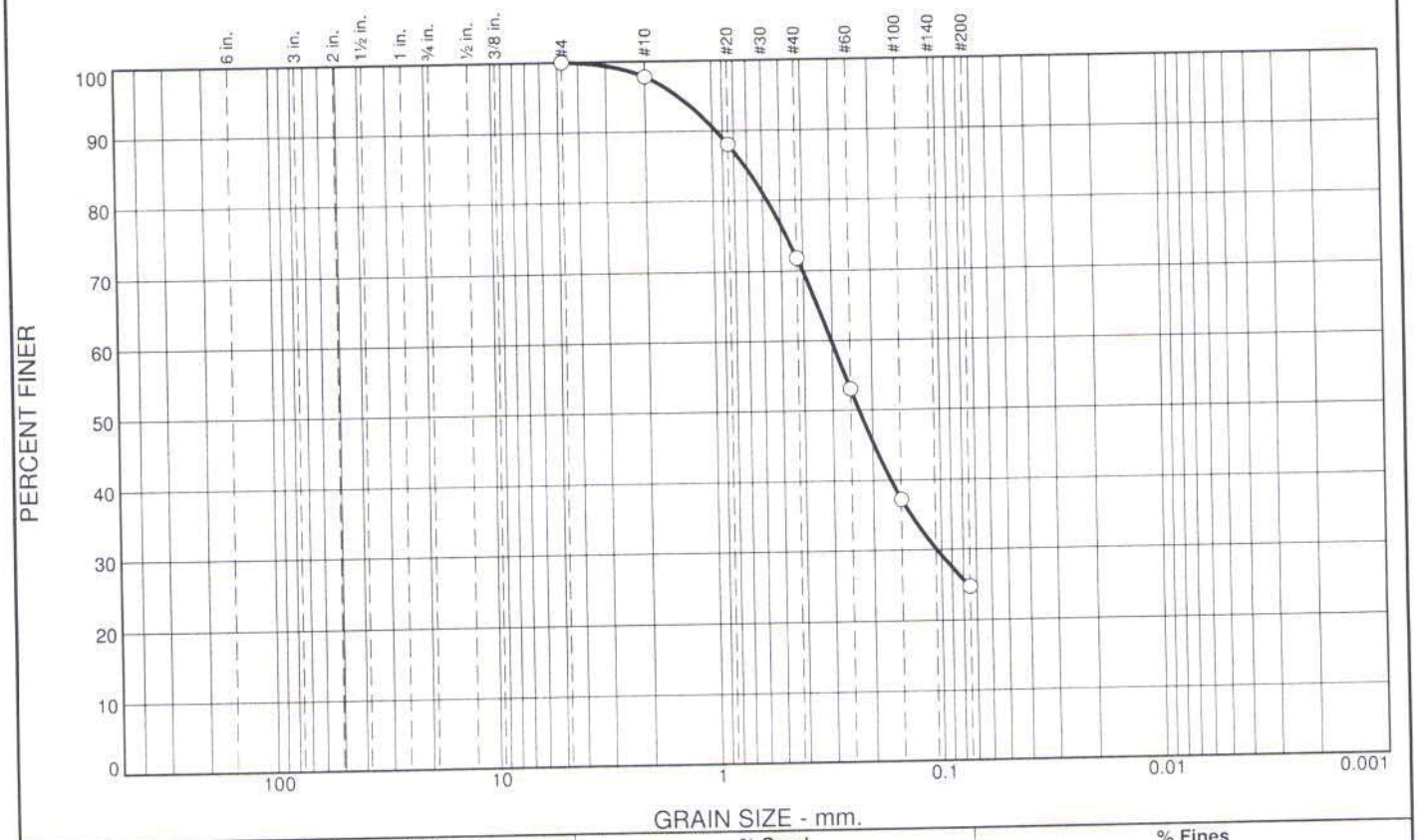
Summary of Geotechnical Laboratory Tests

- Natural Moisture Content
- Particle Size Distribution

Kim Engineering Inc
Hillandale Park
Laboratory Test Results
Natural Moisture Content

Borehole ID	Depth (ft)	Moisture Content (%)
SB-1	2.5	18
SB-17	5	6
SB-4	7.5	18
SB-16	7.5	18
SB-14	10	9
SB-7	13.5	16

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.2	26.0	47.1	24.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.8		
#20	88.0		
#40	71.8		
#60	53.1		
#100	37.3		
#200	24.7		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.9622 D_{85}= 0.7208 D_{60}= 0.3026
D_{50}= 0.2290 D_{30}= 0.1052 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-1 **Depth:** 2.5 **Date:** 11-05-2014
Sample Number: 2

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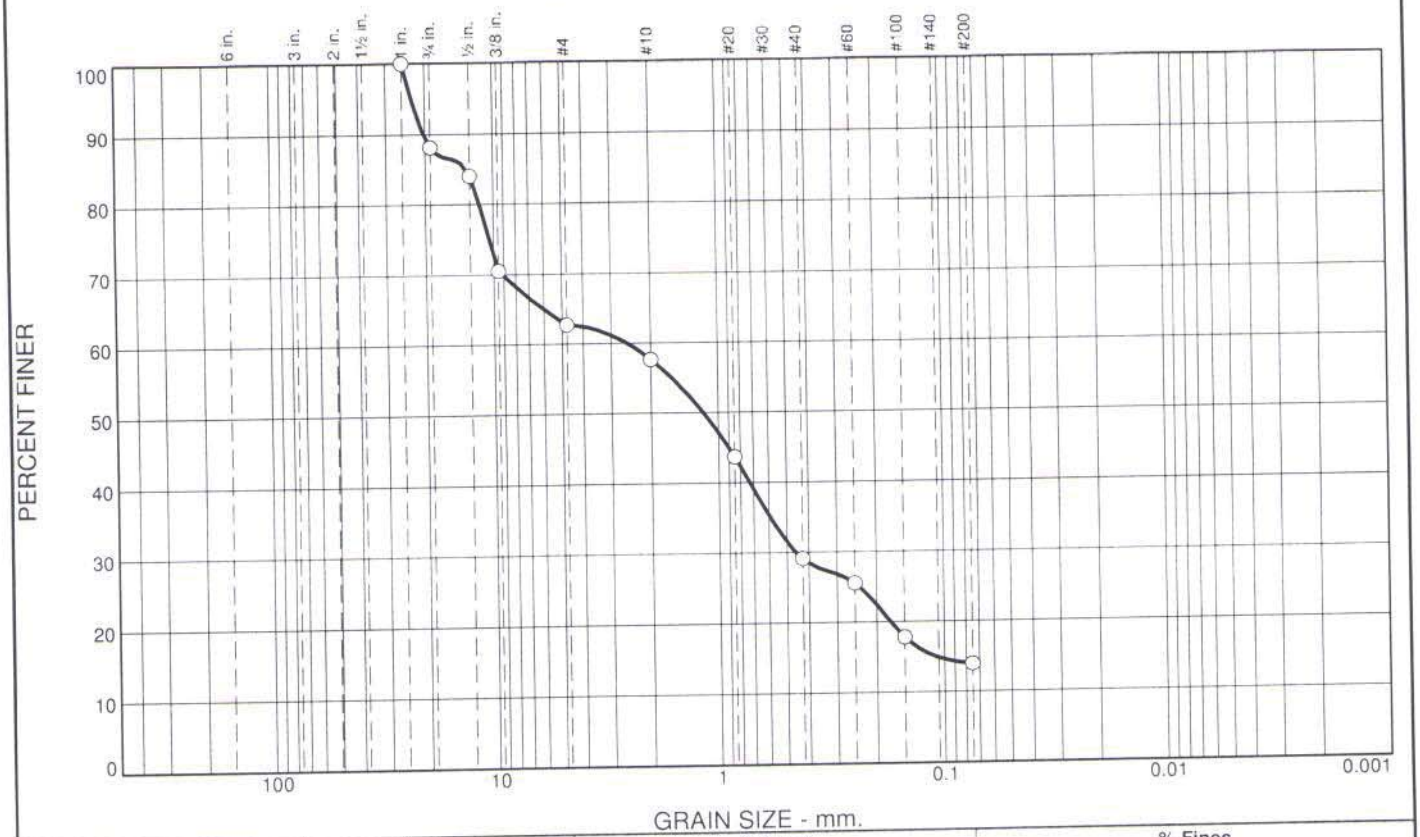
Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park
Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.9	25.4	5.0	28.6	15.2	13.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
0.75	88.1		
0.5	83.9		
0.375	70.5		
#4	62.7		
#10	57.7		
#20	43.7		
#40	29.1		
#60	25.5		
#100	17.8		
#200	13.9		

* (no specification provided)

Material Description

Silty Gravelly Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 20.3932 D_{85}= 13.2535 D_{60}= 2.5494
D_{50}= 1.1676 D_{30}= 0.4543 D_{15}= 0.1091
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-14 **Depth:** 10 **Date:** 11-05-2014
Sample Number: 5

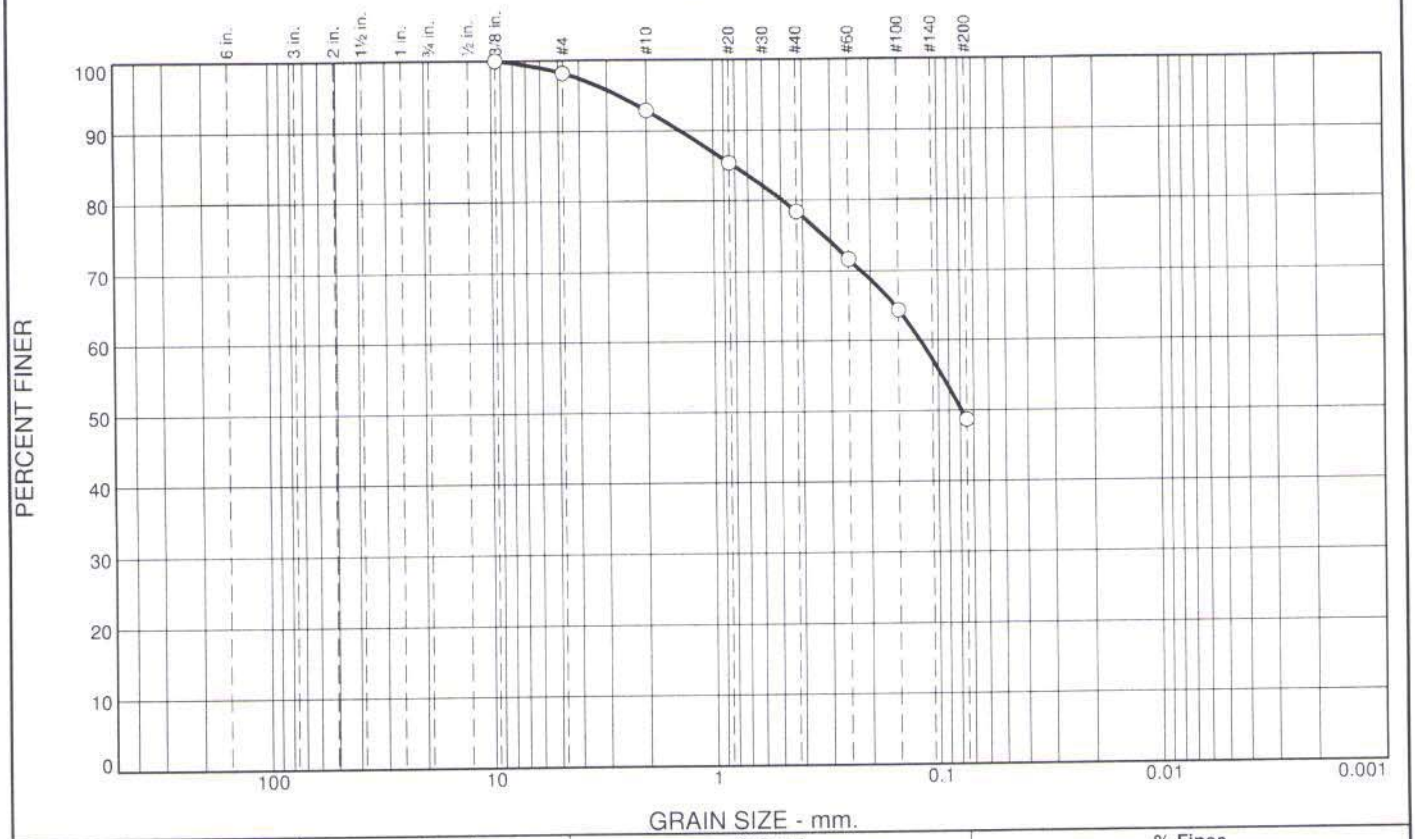
KIM ENGINEERING, INC.

Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park
Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.8	5.3	14.5	29.7	48.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	98.2		
#10	92.9		
#20	85.4		
#40	78.4		
#60	71.7		
#100	64.3		
#200	48.7		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.4115 D_{85}= 0.8176 D_{60}= 0.1205
D_{50}= 0.0789 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-16 **Depth:** 7.5
Sample Number: 4

Date: 11-05-2014

KIM ENGINEERING, INC.

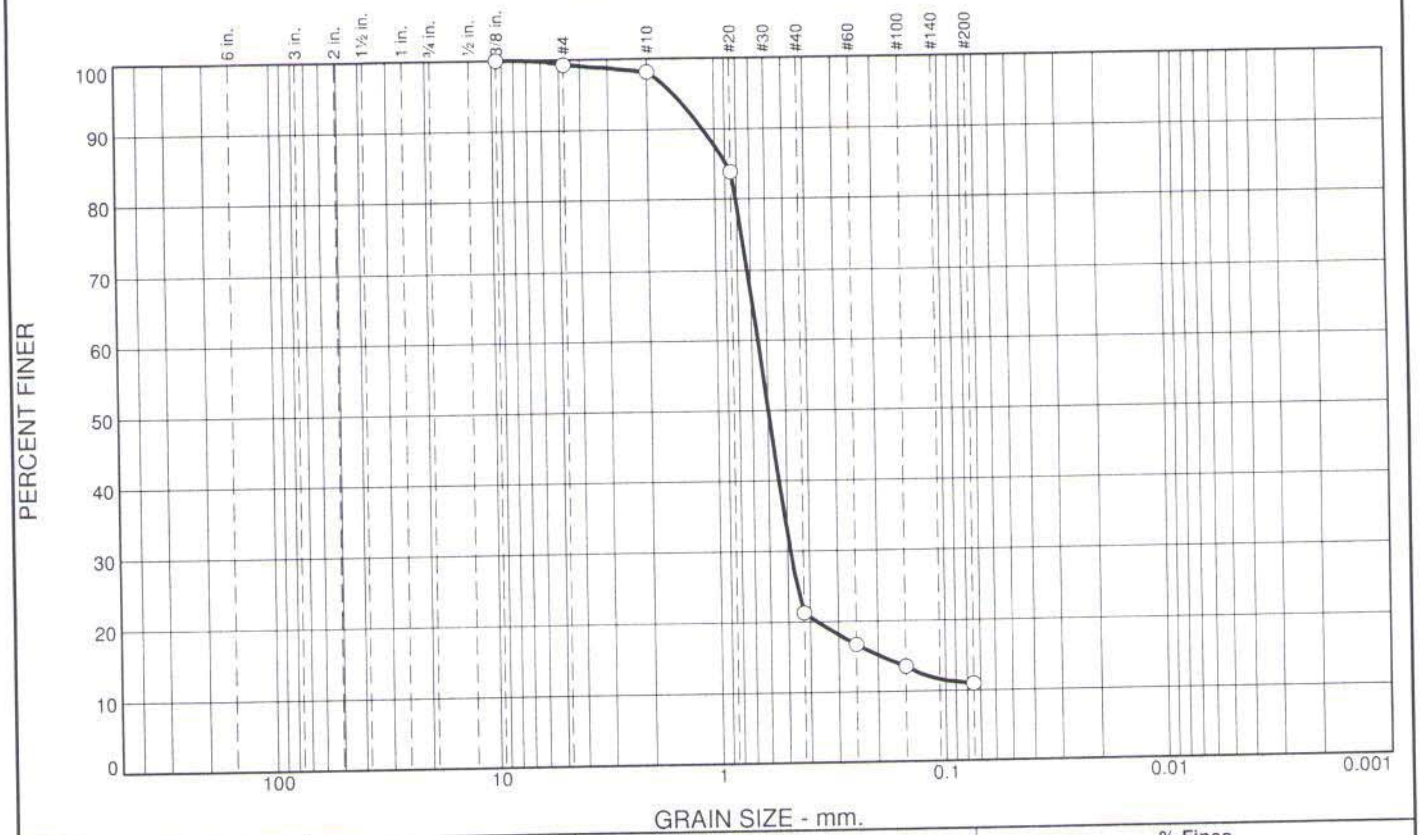
Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park

Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	1.1	77.0	10.2	11.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.3		
#10	98.2		
#20	83.8		
#40	21.2		
#60	16.7		
#100	13.5		
#200	11.0		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1283 D_{85}= 0.8943 D_{60}= 0.6575
D_{50}= 0.5976 D_{30}= 0.4843 D_{15}= 0.1939
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-17 **Depth:** 5 **Date:** 11-05-2014
Sample Number: 3

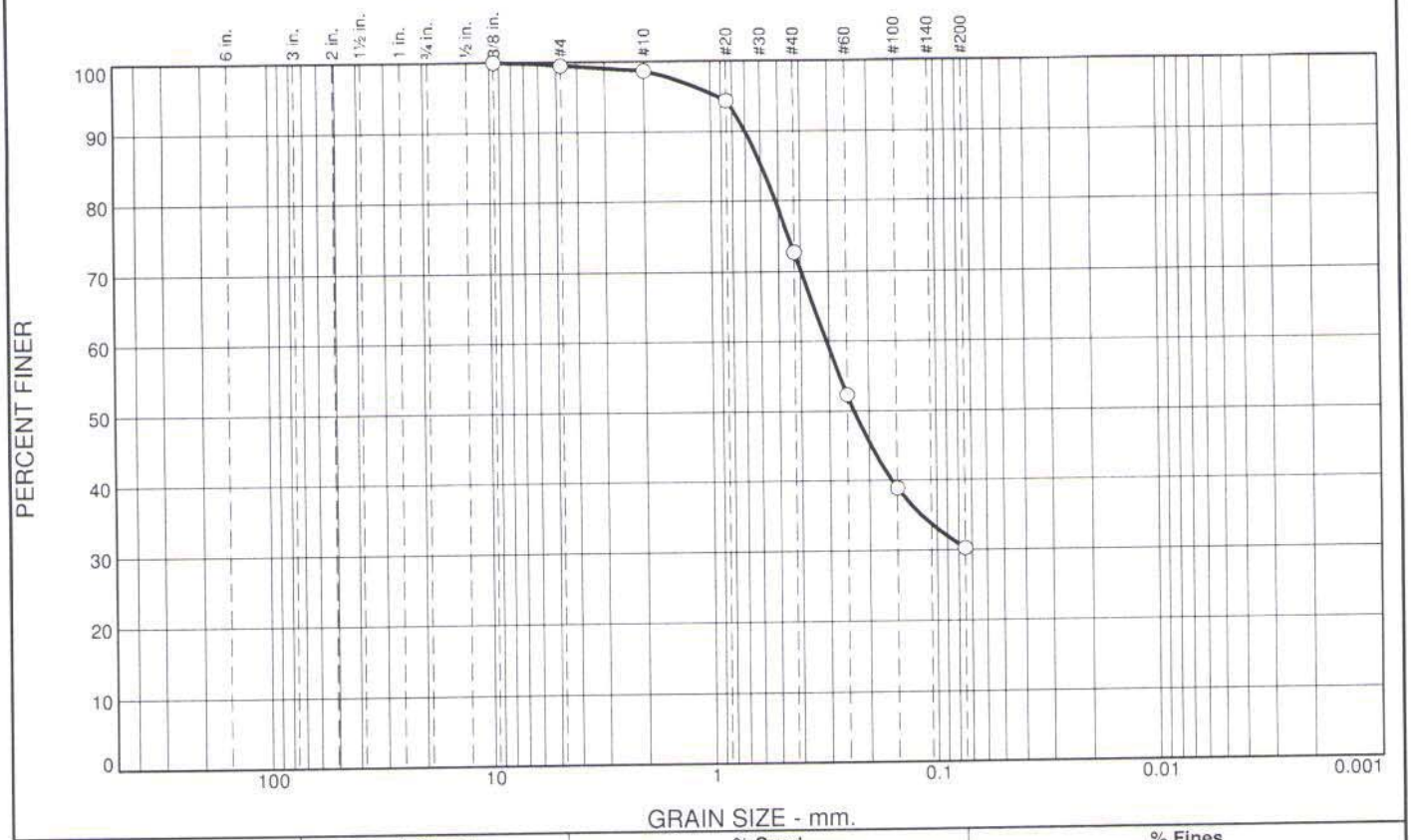
KIM ENGINEERING, INC.

Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park
Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.8	25.9	42.4	30.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	99.4		
#10	98.6		
#20	94.4		
#40	72.7		
#60	52.4		
#100	38.9		
#200	30.3		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.7031 D_{85}= 0.5952 D_{60}= 0.3082
D_{50}= 0.2325 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-4 **Depth:** 7.5
Sample Number: 4

Date: 11-05-2014

KIM ENGINEERING, INC.

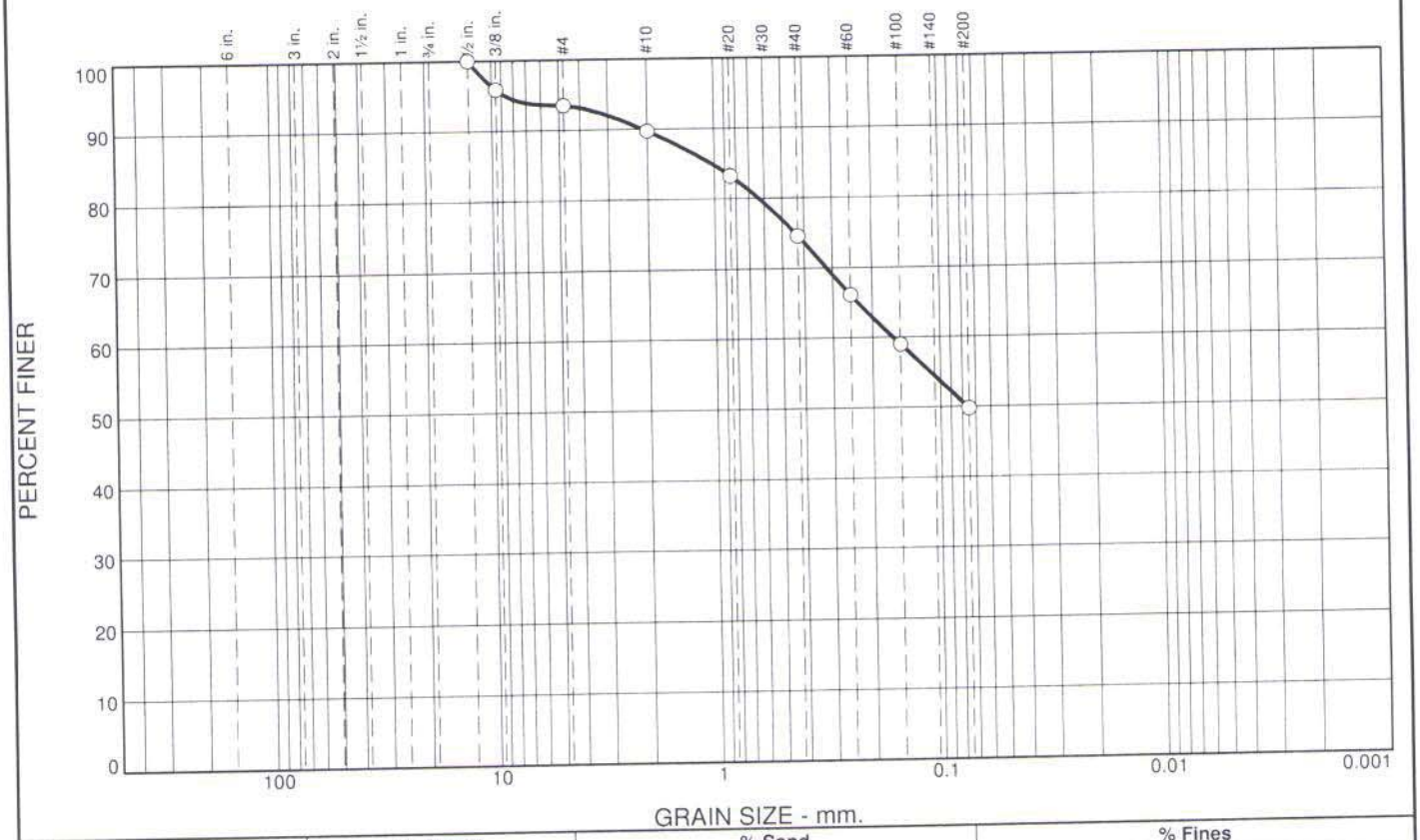
Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park

Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.5	3.8	15.1	24.8	49.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	95.8		
#4	93.5		
#10	89.7		
#20	83.2		
#40	74.6		
#60	66.1		
#100	59.0		
#200	49.8		

* (no specification provided)

Material Description

Silty Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 2.1038 D_{85}= 1.0368 D_{60}= 0.1620
D_{50}= 0.0761 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Source of Sample: SB-7 **Depth:** 13.5 **Date:** 11-05-2014
Sample Number: 6

KIM ENGINEERING, INC.

Gaithersburg, MD

Client: Charles P. Johnson & Associates
Project: Hillandale Park
Project No: G14222BC **Figure**

Tested By: Kim Engineering, Inc **Checked By:** Kim Engineering, Inc

APPENDIX E

Subsurface Investigation Report

- General Notes
- Test Boring Logs

SUBSURFACE INVESTIGATION REPORT

General Notes
Test Boring Logs

Descriptions of Subsurface Investigation Procedures:

1. Boring Locations and Grades

Test boring layout in field was approximated by KEI

2. Test Borings - Hollow Stem Augers

The borings are advanced by turning 6-inch diameter augers. Cuttings are brought to the surface by the auger flights. Sampling is performed in the drilled hole by standard methods. Usually, no water is introduced into the boring using this procedure.

3. Standard Penetration Tests

Testing is performed by driving a 2 inch O. D., 1-3/8 I.D. sampling spoon through three 6 inch intervals or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.

GENERAL NOTES

1. Numbers in the sampling data column indicated the number of blows required to drive a 2 inch O.D., 1-3/8 I.D. sampling spoon through three 6 inch intervals or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.

2. Strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System (ASTM D-2488).

3. The boring logs and related information depict subsurface conditions at these specific locations and the time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in changes in the subsurface soil and groundwater conditions at these boring locations.

4. The stratification lines represent the approximate boundary between soils typed as determined in the drilling and sampling operation. Some variation may also be expected vertical between samples taken. The soil profiles, water level observation, and penetration resistances presented o boring logs have been made with reasonable care and accuracy and must be considered only as approximate representations of subsurface conditions to be encountered at these locations.

5. Groundwater levels, if encountered, are indicated on the logs. These are only estimates from available data and may vary with precipitations, porosity of the soil, site topography and similar factors.

6. Elevations, if listed on the test boring logs, were estimated from a site topographical drawing, as such actual grades may differ from the values given.

7. Disintegrated rock is defined as residual earth material with a standard penetration resistance between 60 blows per foot and refusal which is defined as 100 blows per 2 inches or less penetration. This material may exhibit certain rock-like qualities. Some denser portions of this material could possess characteristics of soft rock and may require rock excavation methods for removal.

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Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-1

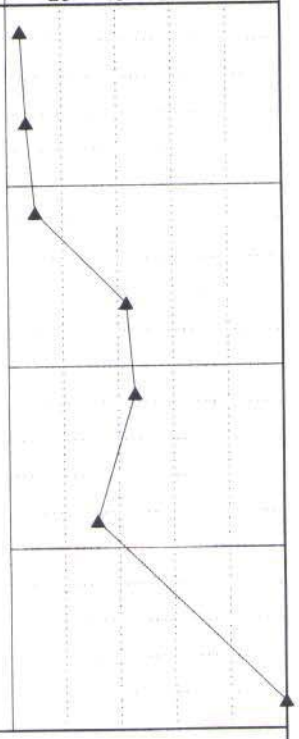
PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/27/14 **COMPLETED** 10/27/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S **CHECKED BY** A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 336.5 ft **HOLE SIZE** 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown and brown, damp, loose to very dense silty sand with varying amounts of clay and gravel.	SS 1	39	2-2-3 (5)		
			SS 2	89	2-3-4 (7)		
5			SS 3	67	3-5-5 (10)		
			SS 4	100	10-18-25 (43)		
10			SS 5	94	10-19-27 (46)		
			SS 6	89	25-16-16 (32)		
15							
			SS 7	39	20-50-50 (100)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Silver Spring, Maryland

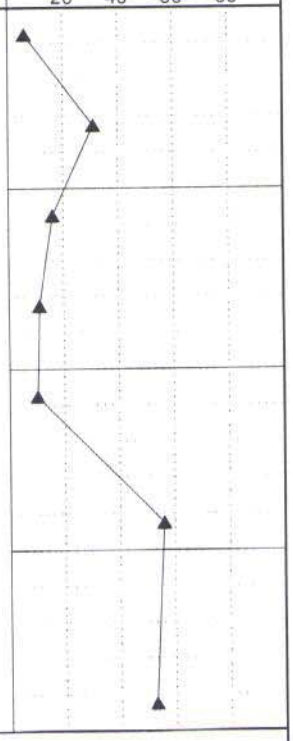
BORING NUMBER SB-2

PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/24/14 **COMPLETED** 10/24/14
GROUND ELEVATION 346.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown and brown, damp, loose to very dense silty sand with varying amounts of clay and gravel.	SS 1	56	2-2-4 (6)		
			SS 2	78	12-18-13 (31)		
5			SS 3	61	6-7-9 (16)		
			SS 4	100	4-5-6 (11)		
10			SS 5	67	4-5-5 (10)		
			SS 6	100	11-22-34 (56)		
15							
			SS 7	100	8-18-35 (53)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-3

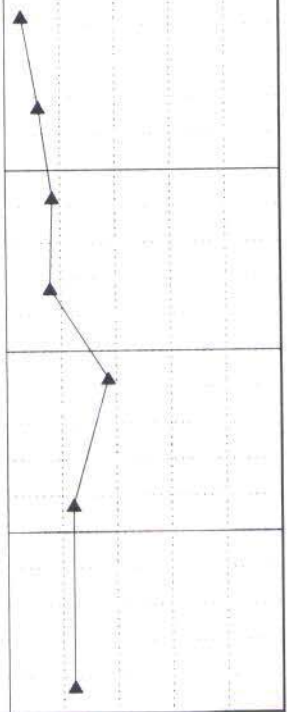
PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/24/14 **COMPLETED** 10/24/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S **CHECKED BY** A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 355.6 ft **HOLE SIZE** 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown, brown, yellow and orange, damp, loose to dense silty sand with varying amounts of clay and gravel.	SS 1	61	1-3-3 (6)		
			SS 2	100	2-4-8 (12)		
5			SS 3	17	4-8-9 (17)		
			SS 4	72	6-7-9 (16)		
10			SS 5	100	8-15-22 (37)		
			SS 6	100	9-11-13 (24)		
15							
			SS 7	100	12-12-12 (24)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Silver Spring, Maryland

BORING NUMBER SB-4

PAGE 1 OF 1

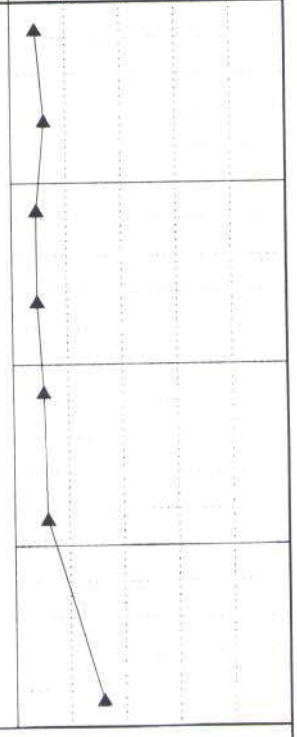
CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/29/14 **COMPLETED** 10/29/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S **CHECKED BY** A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 356.5 ft **HOLE SIZE** 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Asphalt and Crushed Rock	SS 1	67	4-4-5 (9)		
		(SM) Light brown, brown, yellow and orange, damp, loose to dense silty sand with varying amounts of clay and gravel.	SS 2	83	4-4-8 (12)		
5			SS 3	94	3-4-5 (9)		
			SS 4	56	4-4-5 (9)		
10			SS 5	100	2-5-6 (11)		
			SS 6	100	3-5-7 (12)		
15							
20			SS 7	100	5-12-20 (32)		

Bottom of borehole at 20.0 feet.

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-5

PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/27/14 **COMPLETED** 10/27/14
GROUND ELEVATION 356 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown, brown and black, damp, very loose to very dense silty sand with varying amounts of clay and gravel.	SS 1	56	1-3-4 (7)		
			SS 2	39	2-3-2 (5)		
5			SS 3	72	2-1-2 (3)		
			SS 4	56	1-4-6 (10)		
10			SS 5	17	50-50-50 (100)		
			SS 6	50	6-7-10 (17)		
15							
			SS 7	0	50-50-50 (100)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

BORING NUMBER SB-6

PAGE 1 OF 1

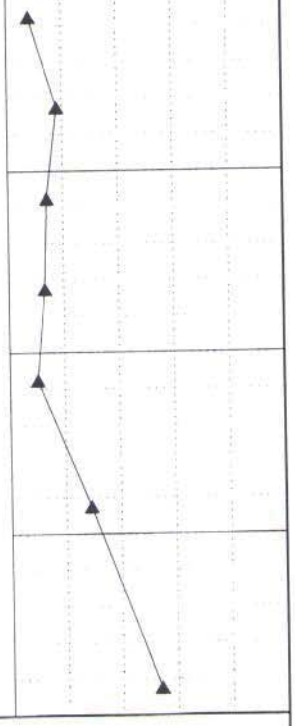
KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/24/14 COMPLETED 10/24/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S CHECKED BY A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 364 ft HOLE SIZE 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil	SS 1	56	2-4-4 (8)		
		Possible FILL material comprising of varying amounts of sand, silt, clay and gravel.					
		(SM) Light brown, brown, red, yellow and orange, damp, loose to very dense silty sand with varying amounts of clay and gravel.	SS 2	89	7-8-10 (18)		
5			SS 3	50	5-6-8 (14)		
			SS 4	78	6-6-7 (13)		
10			SS 5	89	4-5-5 (10)		
			SS 6	100	9-13-16 (29)		
15							
			SS 7	17	16-28-26 (54)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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BORING NUMBER SB-7

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Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/29/14 COMPLETED 10/29/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S CHECKED BY A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 357.5 ft HOLE SIZE 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Asphalt and Crushed Rock					
		(SM) Light brown and brown, damp, loose to medium dense silty sand with varying amounts of clay and gravel.	SS 1	61	2-3-6 (9)		
			SS 2	100	6-7-14 (21)		
5			SS 3	83	5-3-3 (6)		
			SS 4	28	8-5-4 (9)		
10			SS 5	78	2-3-2 (5)		
			SS 6	39	1-2-6 (8)		
15							
			SS 7	56	8-9-6 (15)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

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BORING NUMBER SB-8

PAGE 1 OF 1

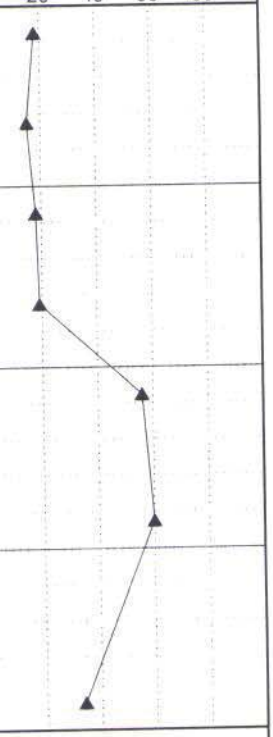
KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 11/4/14 COMPLETED 11/4/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S CHECKED BY A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 357 ft HOLE SIZE 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil	SS 1	56	5-9-9 (18)		
		(SM) Light brown, brown, orange and gray, damp, medium dense to very dense silty sand with varying amounts of clay and gravel.	SS 2	56	5-6-9 (15)		
5			SS 3	44	8-9-9 (18)		
			SS 4	89	7-10-9 (19)		
10			SS 5	67	5-27-29 (56)		
			SS 6	78	25-35-25 (60)		
15			SS 7	78	13-17-17 (34)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-9
PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/4/14 **COMPLETED** 11/4/14
GROUND ELEVATION 356.2 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown, brown, orange, white and gray, damp, loose to dense silty sand with varying amounts of clay and gravel.	SS 1	67	6-10-7 (17)		
			SS 2	67	6-7-8 (15)		
5			SS 3	56	4-4-4 (8)		
			SS 4	67	5-5-6 (11)		
10			SS 5	56	9-11-12 (23)		
			SS 6	78	12-16-22 (38)		
15							
			SS 7	67	12-12-12 (24)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

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BORING NUMBER SB-10

PAGE 1 OF 1

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/10/14 COMPLETED 11/10/14
GROUND ELEVATION 353.5 ft HOLE SIZE 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S CHECKED BY A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, white and gray, damp, loose to medium dense silty sand with varying amounts of clay and gravel.	SS 1	44	3-4-4 (8)			
			SS 2	67	4-6-6 (12)			
5			SS 3	56	5-3-3 (6)			
			SS 4	67	2-3-5 (8)			
10			SS 5	67	5-6-6 (12)			
			SS 6	67	6-6-8 (14)			
15			SS 7	67	7-8-10 (18)			
20		Bottom of borehole at 20.0 feet.						

GEOTECH BH PLOTS - GINT STD US.GDT - 11/24/14 10:12 - F:\HILLANDALE PARK\HILLANDALE PARK.GPJ

BORING NUMBER SB-11

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

CLIENT Charles P. Johnson & Associates
PROJECT NUMBER G14222BC
DATE STARTED 10/30/14 COMPLETED 10/30/14
DRILLING CONTRACTOR Kim Engineering, Inc
DRILLING METHOD Hollow Stem Auger
LOGGED BY P.S CHECKED BY A.B
NOTES

PROJECT NAME Hillandale Park
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
GROUND ELEVATION 353.7 ft HOLE SIZE 6
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown, brown, orange and yellow, damp, loose to medium dense silty sand with varying amounts of clay and gravel.	SS 1	61	1-3-6 (9)		
			SS 2	94	4-5-8 (13)		
5			SS 3	100	4-6-7 (13)		
			SS 4	72	3-8-11 (19)		
10			SS 5	89	5-5-7 (12)		
			SS 6	67	6-9-9 (18)		
15							
			SS 7	100	7-9-11 (20)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-12

PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/20/14 **COMPLETED** 11/20/14
GROUND ELEVATION 353.7 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / □ FINES CONTENT (%) □ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, white and gray, damp, loose to medium dense silty sand with varying amounts of clay and gravel.	SS 1	56	3-5-4 (9)			
			SS 2	67	4-6-5 (11)			
5			SS 3	56	5-3-5 (8)			
			SS 4	67	2-3-5 (8)			
10			SS 5	78	5-6-6 (12)			
			SS 6	67	6-6-7 (13)			
15								
			SS 7	89	7-9-10 (19)			
20		Bottom of borehole at 20.0 feet.						

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-13

PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/20/14 **COMPLETED** 11/20/14
GROUND ELEVATION 345 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, white and gray, damp, loose to medium dense silty sand with varying amounts of clay and gravel.	SS 1	67	4-3-4 (7)			
			SS 2	78	4-6-5 (11)			
5			SS 3	56	5-4-5 (9)			
			SS 4	89	3-3-5 (8)			
10			SS 5	78	5-6-7 (13)			
			SS 6	67	8-5-7 (12)			
15								
			SS 7	67	7-10-10 (20)			
20		Bottom of borehole at 20.0 feet.						

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-14

PAGE 1 OF 1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/30/14 **COMPLETED** 10/30/14
GROUND ELEVATION 352.1 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
▽ **AT TIME OF DRILLING** 18.00 ft / Elev 370.10 ft
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil	SS 1	56	1-3-5 (8)		
		(SM) Light brown and brown, damp to moist, loose to very dense silty sand with varying amounts of clay and gravel.	SS 2	89	5-10-13 (23)		
5			SS 3	100	5-6-7 (13)		
			SS 4	100	5-5-6 (11)		
10			SS 5	100	5-10-10 (20)		
			SS 6	28	19-24-16 (40)		
15		▽					
20			SS 7	100	12-42-49 (91)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
□ FINES CONTENT (%) □
20 40 60 80

Bottom of borehole at 20.0 feet.

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-15

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/29/14 **COMPLETED** 10/29/14
GROUND ELEVATION 352.3 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil	SS 1	33	3-6-9 (15)		
		(SM) Light brown, brown, red and green, damp, very loose to medium dense silty sand with varying amounts of clay and gravel.	SS 2	61	4-4-9 (13)		
5			SS 3	72	4-5-5 (10)		
			SS 4	83	2-2-2 (4)		
10			SS 5	100	2-2-4 (6)		
			SS 6	61	10-15-10 (25)		
15							
20			SS 7	56	4-6-9 (15)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 20.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-16

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/30/14 **COMPLETED** 10/30/14
GROUND ELEVATION 350.8 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown, brown and black, damp, very loose to loose silty sand with varying amounts of clay and gravel.	SS 1	44	2-4-4 (8)		
			SS 2	50	2-4-6 (10)		
5			SS 3	100	2-4-4 (8)		
			SS 4	100	3-3-3 (6)		
10			SS 5	28	1-2-1 (3)		
			SS 6	100	2-2-2 (4)		
15							
20			SS 7	56	1-2-3 (5)		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 20.0 feet.

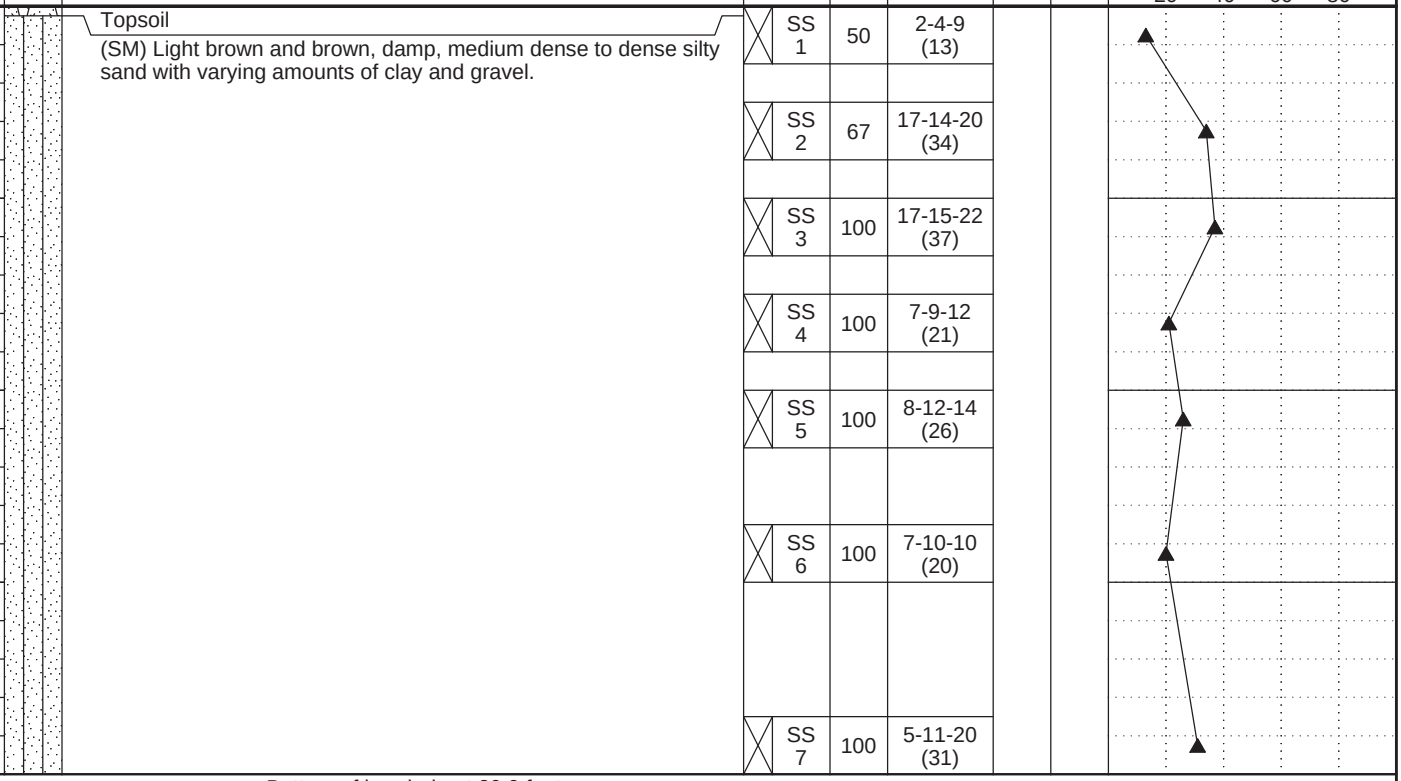
KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER SB-17

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/27/14 **COMPLETED** 10/27/14
GROUND ELEVATION 350 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		Topsoil					
		(SM) Light brown and brown, damp, medium dense to dense silty sand with varying amounts of clay and gravel.	SS 1	50	2-4-9 (13)		
			SS 2	67	17-14-20 (34)		
5			SS 3	100	17-15-22 (37)		
			SS 4	100	7-9-12 (21)		
10			SS 5	100	8-12-14 (26)		
			SS 6	100	7-10-10 (20)		
15							
			SS 7	100	5-11-20 (31)		
20		Bottom of borehole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/24/14 **COMPLETED** 10/24/14
GROUND ELEVATION 347 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown and brown, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 6.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-2

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/24/14 **COMPLETED** 10/24/14
GROUND ELEVATION 356.1 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, yellow and orange, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 8.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-3

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/27/14 **COMPLETED** 10/27/14
GROUND ELEVATION 352 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown and black, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 5.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-4

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/24/14 **COMPLETED** 10/24/14
GROUND ELEVATION 358.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown and brown, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 9.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-5

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/4/14 **COMPLETED** 11/4/14
GROUND ELEVATION 357.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, orange and gray, damp silty sand with varying amounts of clay and gravel.						
5								
10								

Bottom of borehole at 11.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-6

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/30/14 **COMPLETED** 10/30/14
GROUND ELEVATION 355.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, orange and yellow, damp silty sand with varying amounts of clay and gravel.						
5								
10								

Bottom of borehole at 11.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-7

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/10/14 **COMPLETED** 11/10/14
GROUND ELEVATION 354.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, white and gray, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 9.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-8

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 10/30/14 **COMPLETED** 10/30/14
GROUND ELEVATION 352.5 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown and black, damp silty sand with varying amounts of clay and gravel.						
5								

Bottom of borehole at 7.0 feet.

KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER INF-9

CLIENT Charles P. Johnson & Associates
PROJECT NAME Hillandale Park
PROJECT NUMBER G14222BC
PROJECT LOCATION 1061 New Hampshire Avenue, Hillandale, MD
DATE STARTED 11/20/14 **COMPLETED** 11/20/14
GROUND ELEVATION 345 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Kim Engineering, Inc
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING ---
LOGGED BY P.S **CHECKED BY** A.B
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil						
		(SM) Light brown, brown, white and gray, damp silty sand with varying amounts of clay and gravel.						
5								
10								

Bottom of borehole at 10.0 feet.

APPENDIX E
Soil Nutrient Analysis

- Cornell Nutrient Analysis Laboratory Results

1060 Modified Morgan & 1880 Soluble Salts

FN25628

Sample ID	Moisture	pH	pH Buffer	Soluble salts	LOI	Organic matter	Aluminum	Arsenic
FN25628								
	%			mmhos/cm	%	%	ppm	ppm
1	0.43	4.80	5.61	0.07	3.76	2.40	165.55	0.29
2	0.52	5.32	5.88	0.10	4.48	2.90	24.05	0.19
3	0.41	4.63	5.73	0.12	2.94	1.83	139.69	0.23
4	0.63	5.79	6.03	0.21	4.14	2.67	73.50	0.21
5	0.51	5.04	5.79	0.12	4.47	2.90	55.64	0.23
6	0.60	5.27	5.77	0.10	5.66	3.73	34.28	0.24
7	0.77	4.19	5.41	0.10	5.76	3.80	266.41	0.25
8	0.81	6.56	0.00	0.38	7.61	5.10	5.16	0.25
9	0.65	4.41	5.19	0.09	5.81	3.83	269.46	0.46
10	0.70	4.59	5.53	0.10	6.06	4.01	107.91	0.26
11	0.45	4.60	5.72	0.06	4.21	2.72	92.77	0.23
12	0.62	6.93	0.00	0.27	6.27	4.16	5.12	0.23
13	0.62	5.21	5.30	0.11	6.09	4.03	71.55	0.20
14	0.88	6.32	6.19	0.23	7.24	4.84	22.42	0.20
Avg in ppm	0.62	5.26	4.87	0.15	5.32	3.49	95.25	0.25
Avg in lb/ac	1.23	10.52	9.73	0.29	10.64	6.99	190.50	0.50

Sample Description: topsoil samples

Cornell Nutrient Analysis Laboratory
804 Bradfield Hall
Ithaca, New York 14853-4203
t.607.255.5410
f.607.255.7656
soiltest-mailbox@cornell.edu
web. http://www.cnal.cals.cornell.edu

Client: Andre Browne
andrebrowne@kimengineering.com

Boron	Barium	Beryllium	Calcium	Cadmium	Cobalt	Chromium	Copper	Iron
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
0.01	6.48	-	127.57	0.02	0.07	0.06	0.10	10.02
0.08	31.85	-	853.01	0.05	0.04	0.03	0.09	3.74
0.01	10.30	-	149.52	0.01	0.17	0.11	0.12	37.08
0.04	14.75	-	381.59	0.10	0.05	0.06	0.12	9.07
0.02	17.67	-	477.12	0.04	0.08	0.04	0.09	5.24
0.04	17.08	-	760.71	0.06	0.11	0.02	0.10	4.93
0.04	3.97	-	398.42	0.02	0.08	0.08	0.12	13.66
0.32	19.31	-	6289.66	0.02	0.01	0.03	0.05	1.66
0.01	16.83	-	152.67	0.03	0.13	0.09	0.16	21.18
0.01	10.41	-	553.38	0.02	0.22	0.06	0.05	5.74
0.01	5.53	-	377.87	0.02	0.08	0.08	0.15	39.89
0.41	19.58	-	6828.02	0.02	0.02	0.02	0.10	1.78
0.06	12.21	-	770.07	0.03	0.08	0.04	0.04	6.17
0.01	17.87	-	3068.02	0.01	0.04	0.05	0.02	3.40
0.08	14.56	-	1513.40	0.03	0.08	0.05	0.09	11.68
0.15	29.12	-	3026.81	0.06	0.17	0.11	0.19	23.36

Mercury	Potassium	Lithium	Magnesium	Manganese	Molybdenum	Sodium	Nickel	Phosphorus
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
-	33.44	-	19.04	12.29	0.02	20.08	0.12	5.86
-	92.45	-	98.70	11.11	0.00	23.05	0.13	6.58
-	19.72	-	23.89	11.12	0.02	50.07	0.12	5.88
-	84.83	-	39.44	7.16	0.01	186.43	0.24	1.60
-	112.49	-	95.55	9.30	0.01	22.96	0.19	2.41
-	107.21	-	146.19	9.79	0.01	27.24	0.36	2.90
-	68.99	-	70.45	6.10	0.02	23.15	0.20	2.10
-	179.26	-	155.35	10.35	-0.01	32.08	0.04	25.93
-	64.21	-	42.08	27.11	0.03	24.76	0.20	10.01
-	125.29	-	115.18	31.85	0.01	27.56	0.11	3.16
-	39.27	-	73.33	8.90	0.01	25.15	0.19	2.84
-	157.56	-	212.49	12.63	0.00	33.64	0.08	24.36
-	104.74	-	147.14	13.61	0.01	24.00	0.14	3.60
-	81.57	-	127.11	10.30	0.00	31.43	0.03	3.21
-	90.79	-	97.57	12.97	0.01	39.40	0.15	7.17
-	181.57	-	195.13	25.94	0.02	78.80	0.31	14.35

Lead	Sulfur	Antimony	Selenium	Silicon	Strontium	Titanium	Thallium	Vanadium
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
39.68	13.13	-	0.13	2.12	0.44	0.06	-	0.01
1.57	5.45	-	0.11	5.16	2.78	0.04	-	0.01
3.83	11.87	-	0.10	3.01	0.77	0.07	-	0.01
1.87	9.17	-	0.11	6.40	1.15	0.04	-	0.01
4.41	8.70	-	0.11	4.43	1.42	0.04	-	0.01
4.41	7.08	-	0.13	6.06	2.78	0.04	-	0.00
5.26	67.50	-	0.11	7.60	1.07	0.05	-	0.01
0.55	13.57	-	0.12	26.01	5.03	0.10	-	0.02
1.87	22.88	-	0.14	4.91	0.52	0.11	-	0.00
1.08	33.07	-	0.12	8.75	1.12	0.04	-	0.00
2.99	10.51	-	0.11	3.13	0.93	0.04	-	0.00
0.41	8.77	-	0.10	32.10	6.57	0.09	-	0.00
4.08	9.12	-	0.11	5.52	2.21	0.05		0.00
0.99	31.79	-	0.10	43.57	2.63	0.06	-	0.00
5.21	18.04	-	0.12	11.34	2.10	0.06	-	0.01
10.43	36.09	-	0.23	22.68	4.20	0.12	-	0.01

Zinc	PMN
ppm	ppm
0.90	11.81
2.14	49.43
0.77	13.14
1.06	32.80
1.69	36.95
1.94	24.47
1.80	42.92
0.67	190.15
1.49	66.09
1.04	63.69
1.49	39.29
0.97	42.17
1.95	88.56
0.35	57.70
1.30	54.23
2.61	108.45

A.5. State Highway Administration Review Request, Plans and Comments

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape Architects • Surveyors
Silver Spring, MD • Gaithersburg, MD • Frederick, MD • Fairfax, VA

February 10, 2014

Mr. Steve Foster
Maryland State Highway Administration
Access Management Division
707 North Calvert Street
Baltimore, Maryland 21202

Re: Hillandale Local Park

Dear Mr. Foster,

The Maryland-National Capital Park and Planning Commission (M-NCPPC) has begun the facility planning process for renovating Hillandale Local Park which is located on the northbound side of New Hampshire Avenue (MD-650), about 0.8 miles north of the Capital Beltway (I-495). M-NCPPC contracted with Charles P. Johnson & Associates, Inc. (CPJ) and Annapolis Landscape Architects (ALA) to prepare the Facility Plan which is a concept plan for the park renovations. As part of the facility planning process, we seek input from community stakeholders and regulatory agencies to ensure that the Facility Plan meets the needs of its users and all applicable regulations. Once the Facility Plan has been fully developed, staff presents the plan and a cost estimate for design and construction to the Montgomery County Planning Board for approval. Once approved, the Planning Board requests that the project and funding is included in the county's Capital Improvement Program (CIP).

The existing park currently includes three entrances off of New Hampshire Avenue (MD-650). The posted speed limit of New Hampshire Avenue is 40 mph in the park's vicinity. The northernmost entrance is located at the signalized intersection of Chalmers Road, between a M-NCPPC office building and the Hillandale Volunteer Fire Station. The shared entrance provides access to parking located behind the fire house. It is noted that the centerline of this entrance does not directly align with the centerline of opposing Chalmers Road. A second vehicular entrance is located immediately to the south of the existing M-NCPPC office building. This access point primarily provides access to the parking lot associated with the building.

The southern entrance is located across from the intersection of Rodney Road and currently allows for full vehicular turning movements through an opening in the median of MD 650. It is noted that under current conditions it can be challenging to make a left turn out of the park from this location because of limited sight distance due to a curve in the road alignment, and the volume and speed of northbound traffic. There is currently no internal vehicular connection between the park entrances, making it very difficult for users to access the dispersed parking areas. In addition, the 70+/- existing parking spaces are totally inadequate to support current park facilities.

The proposed park renovations include reducing the number of park entrances on New Hampshire Avenue from three to two, improving vehicular circulation within the park, and increasing the amount of parking provided. The northern entrance will be realigned directly across from Chalmers Road, which is possible with the demolition of the existing M-NCPPC office building. The existing parking lot adjacent to the M-NCPPC office building and associated ingress/egress point on MD650 will also be removed. Parking within the park will be increased and reconfigured to better serve park users. The southern entrance will be shifted farther south which will improve sight lines past the curve in the road alignment. We request that this new entrance include full vehicular movements which will require a new opening in the median.

The recently approved White Oak Master Plan identifies that this portion of New Hampshire Avenue include a future Bus Rapid Transit (BRT) corridor located in the median. This road section requires a minimum right-of-way width of 130 feet which would typically consist of a widened roadway, six foot wide buffer, 8 to 10 foot wide shared use path, and a two foot maintenance offset to the right-of-way line. It is our intention to locate all new park facilities outside of the increased right-of-way area as recommended by the White Oak Master Plan. We are considering constructing the shared use path as part of the park renovations to facilitate pedestrian access within the area. If the shared use path is installed, it would transition to existing sidewalks on adjacent properties. It is envisioned that the existing sidewalk along the park frontage would remain until future road widening occurs.

It is noted that the majority of park usage occurs during off-peak hours. Therefore, it is anticipated that park usage will generate less than 50 trips during peak hours.

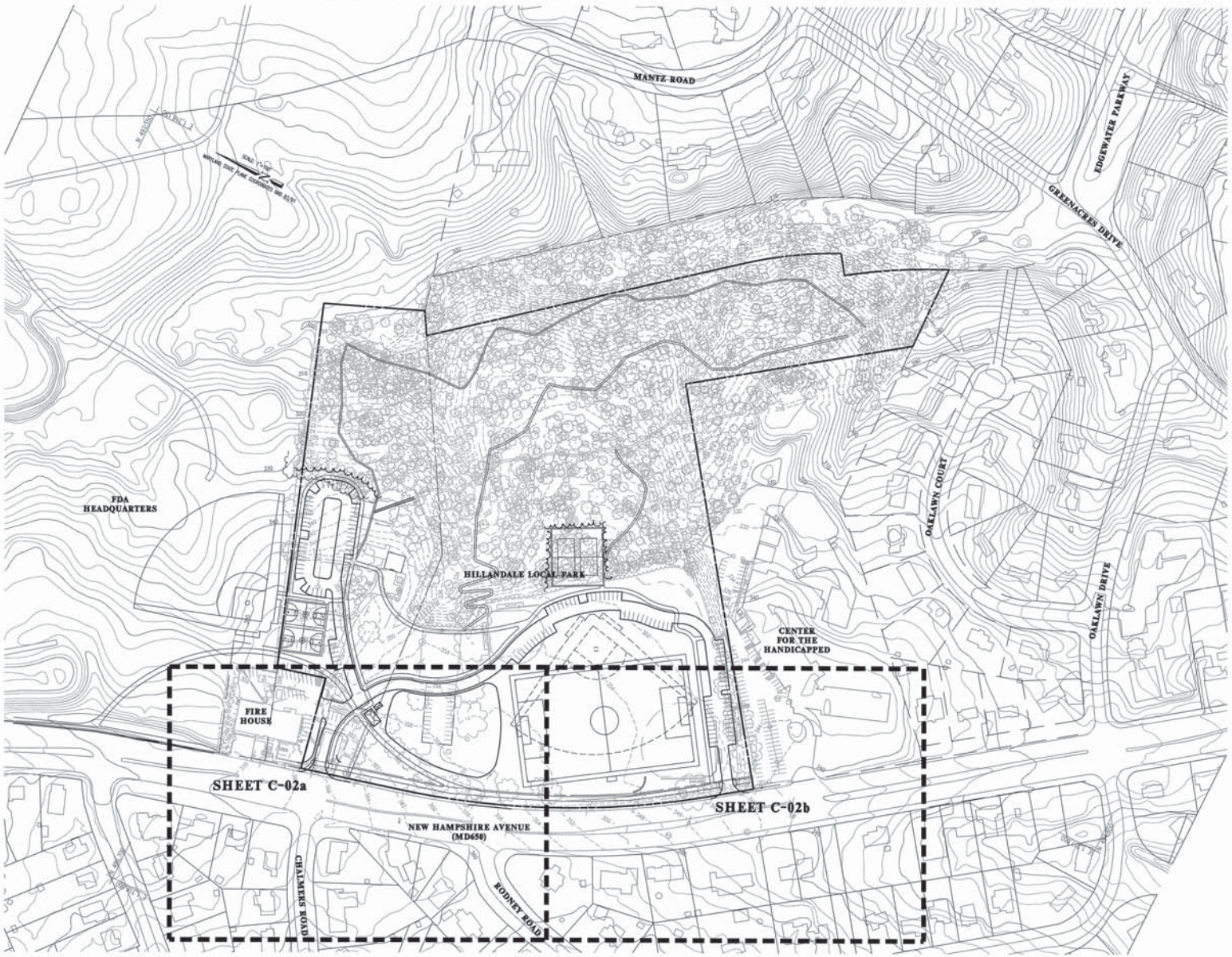
On behalf of our client we are submitting the enclosed plan of proposed improvements along New Hampshire Avenue for concept review. We look forward to your direction regarding the construction of the shared use path along the park frontage, and the location and possibility of maintaining full turning movements at the relocated southern park entrance.

If you have any questions or concerns, please feel free to contact me at (301) 434-7000.

Sincerely,

Robyn Barnhart
Public Sector Division
Charles P. Johnson & Associates, Inc.

CC: CPJ File No. 43-032



VICINITY MAP
SCALE: 1"=2000'
MAP 0287, GRID C6
Map Copyright © Kappa LLC
(800) 829-6277 Used with Permission

MASTER LEGEND

- FIELD VERIFIED TOPOGRAPHY
  - CONTOURS 452
  - INDEX CONTOURS 450
- GIS TOPOGRAPHY
  - CONTOURS
  - INDEX CONTOURS 450
- PARK PERIMETER PROPERTY LINE
- PARK INTERIOR PROPERTY LINE
- ADJACENT PROPERTY LINE
- ADJACENT GIS PROPERTY LINE
- FUTURE RIGHT-OF-WAY LINE
- EX. GAS LINE G
- EX. SEWER LINE S
- EX. WATER LINE W
- EX. OVERHEAD WIRE OH
- EXISTING STORM DRAIN PIPE EX. 36" C.M.P.
- EX. FENCE
- EX. SEWER MANHOLE
- EX. STORMDRAIN MANHOLE
- EX. LIGHT POLE
- EX. SIGN
- EX. FIRE HYDRANT
- EX. TREE
- EX. WOODS LINE
- PROP. WOODS LINE

GENERAL NOTES:
1. ALL UTILITIES SHOWN HEREON HAVE BEEN LOCATED USING UTILITY PLANS AVAILABLE AT THE TIME THIS PLAN WAS PREPARED. PRIOR TO DIGGING, THE CONTRACTOR MUST LOCATE ALL EXISTING UTILITIES.

GRAPHIC SCALE
100 0 50 100 200
SCALE: 1" = 100'

MISS UTILITY

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work. The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation. The excavator is responsible for compliance with requirements of Chapter 36A of the Montgomery County Code.

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN		
SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
BRIAN DAVILA		
Engineer	Date	Checked By:
ADC		RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/2015

STATE OF MARYLAND — BRIAN DAVILA — 19908 — PROFESSIONAL ENGINEER — 2/10/14

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON_____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

NEW HAMPSHIRE AVENUE (MD-650N) CONCEPT IMPROVEMENT PLAN

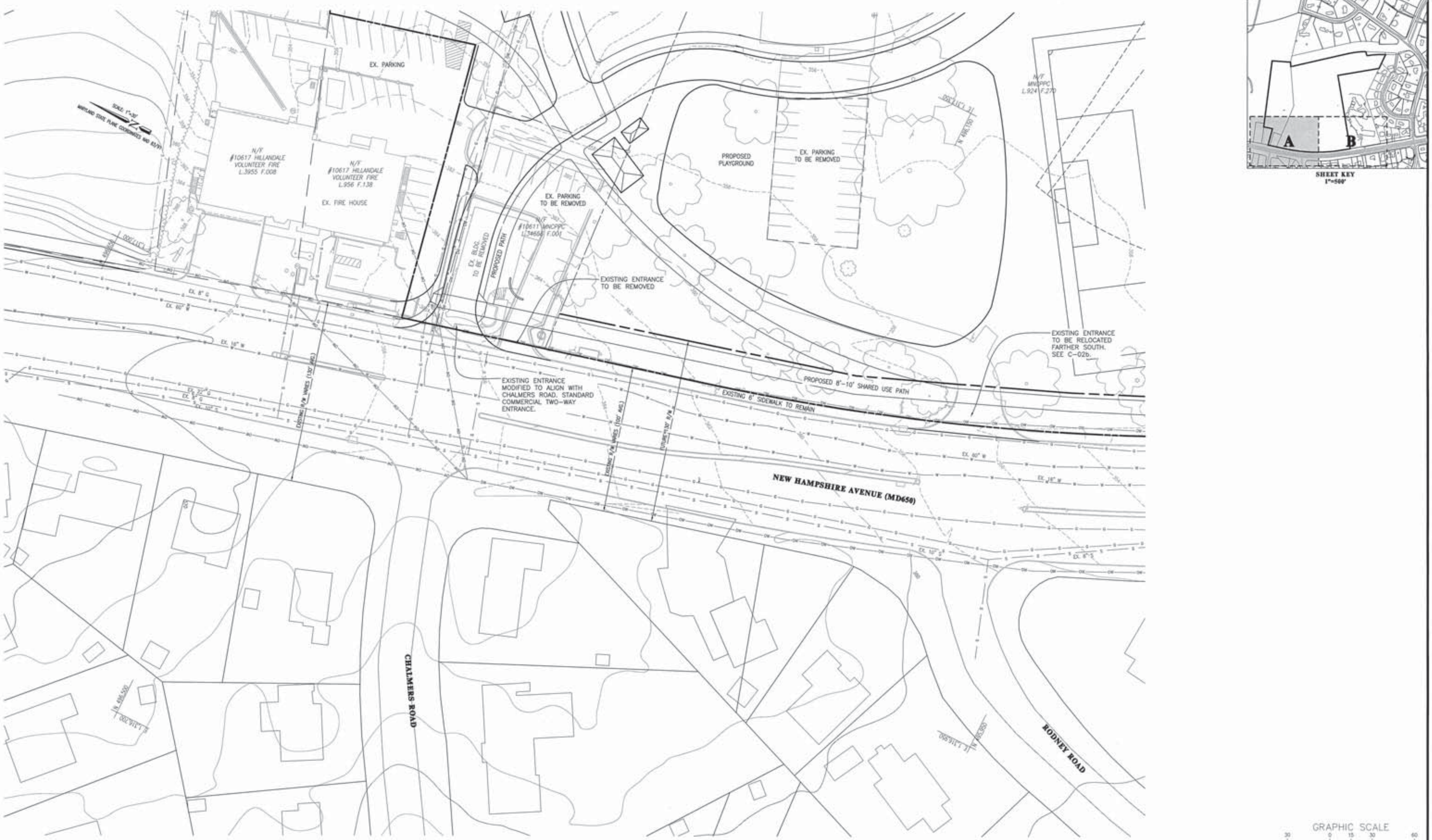
SCALE: 1" = 100'
DATE: DEC. 2013

Liber 924 927 34656
Folio 270 503 001

DPS DWG. # ___ of ___

C-01

SHT. # 1 of 3



CPJ Associates Charles P. Johnson & Associates, Inc. 1751 Elton Road, Suite 300, Silver Spring, MD 20903 P: 301-434-7000 F: 301-434-9394 www.cpja.com	**DESIGN** SHELLEY RENTSCH — Landscape Architect — Date — Checked By: Architect — Date — Checked By: BRIAN DAVILA — Engineer — Date — Checked By: RAB ADG — Drawn by — Date — Checked By:	**Professional Certification.** I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 19908 Expiration Date 1/6/2015

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON____

REVISIONS		
Rev. No.	Date	Description

Hillandale Local Park

NEW HAMPSHIRE AVENUE (MD-650N)
CONCEPT IMPROVEMENT PLAN

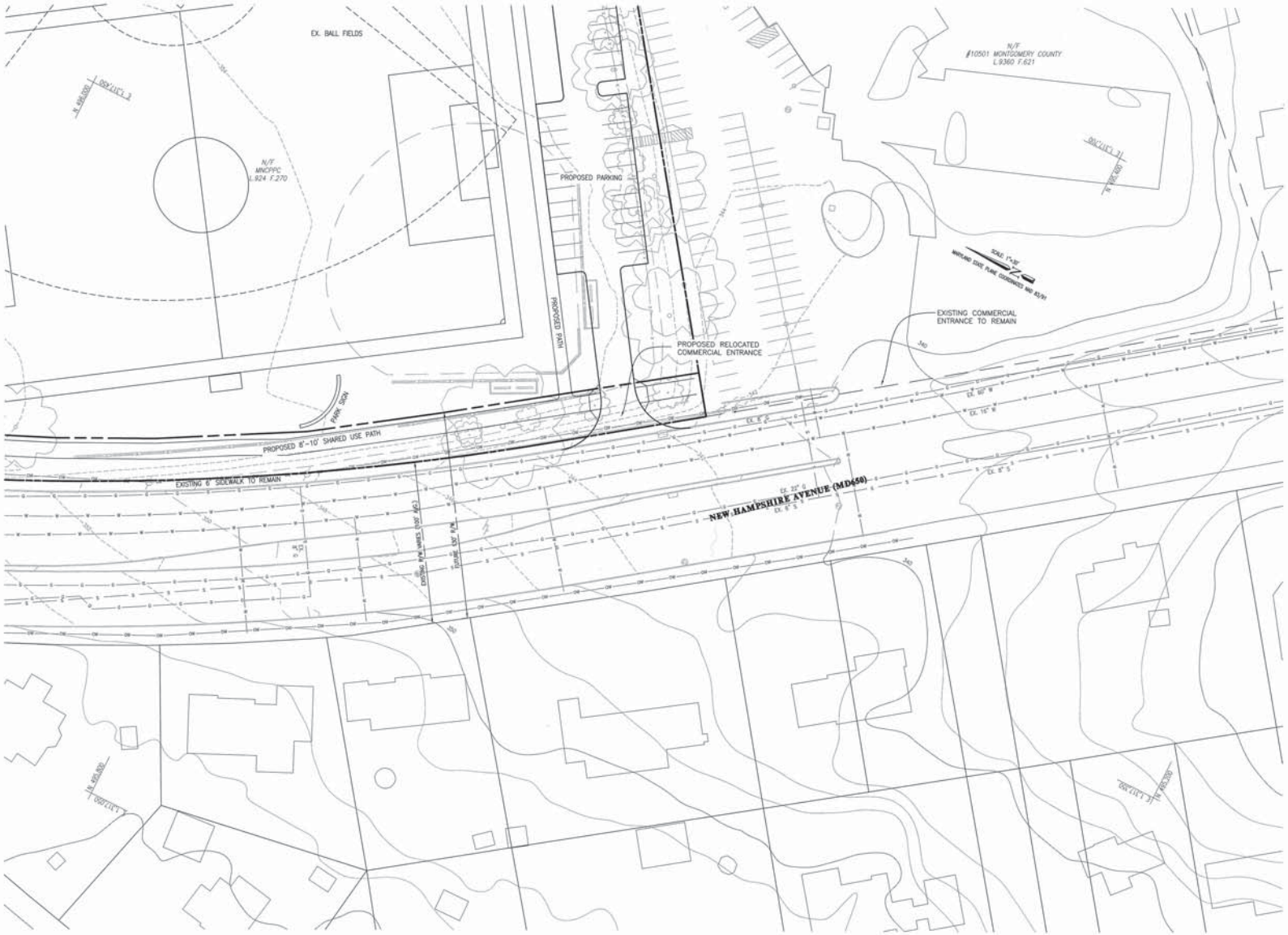
SCALE: 1" = 30'
DATE: DEC. 2013
Liber 924 927 34656 Folio 270 503 001

DPS DWG. # - of -

C-02a

SHT. # 2 of 3

PARK CODE: C10 PLAN SCANNED: FINAL SCANNED:



GRAPHIC SCALE
30 0 15 30 60
SCALE: 1" = 30'

FINAL SCANNED:
PLAN SCANNED:
PARK CODE: C10
N:\45037\DWG\64-01.dwg Layout1 (3) Plotted By: Robyn Bamford, 2/10/2014 2:05 PM

CPJ Associates
Charles P. Johnson & Associates, Inc.
1751 Elton Road, Suite 300, Silver Spring, MD 20903
P. 301-434-7000 F. 301-434-9394 www.cpja.com

DESIGN

SHELLEY RENTSCH		
Landscape Architect	Date	Checked By:
Architect	Date	Checked By:
BRIAN DAVILA		
Engineer	Date	Checked By:
ADC		RAB
Drawn by	Date	Checked By:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 19908

Expiration Date 1/6/2015

2/10/14

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL

Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON_____

REVISIONS

Rev. No.	Date	Description

Hillandale Local Park

NEW HAMPSHIRE AVENUE (MD-650N) CONCEPT IMPROVEMENT PLAN

SCALE: 1" = 30'
DATE: DEC. 2013

Liber 924 927 34656 Folio 270 503 001

DPS DWG. # - of -

C-02b

SHT. # 3 of 3

Martin O'Malley, *Governor*
Anthony G. Brown, *Lt. Governor*

State Highway Administration
MARYLAND DEPARTMENT OF TRANSPORTATION

James T. Smith, Jr., *Secretary*
Melinda B. Peters, *Administrator*

March 19, 2014

Ms. Robyn Barnhart
Charles P. Johnson and Associates, Inc.
1751 Elton Road, Suite 300
Silver Spring, Maryland 20903

RE: Montgomery County
MD 650 (New Hampshire Avenue)
Hillandale Local Park
SHA Tracking No.: 14APMO009XX
CPJ Job No.: 43-032
Mile Post: 4.09

Dear Ms. Barnhart:

Thank you for the opportunity to review the concept plan, received on February 18, 2014, for the proposed Hillandale Local Park development in Montgomery County. The State Highway Administration (SHA) offers the following comments:

Access Management Division Comments:

1. The SHA supports realigning the northern most entrance directly across from Chalmers Road and closing the existing entrance directly south of the MD 650 / Chalmers Road intersection.
2. The SHA supports shifting the southern most entrance further south to meet sight distance requirements, however, does not approve a full-movement entrance and median opening at the new location as the proposal violates median opening spacing standards given the close proximity of the existing full movement entrance to the adjacent property. The applicant shall coordinate with the adjacent property in an effort to provide a shared use access point. Otherwise, the proposed relocated entrance shall be a right-in, right-out only entrance and designed accordingly. In addition, all access point locations are subject to further review and comment upon receipt of a formal sight distance analysis. Please complete the attached sight distance evaluation form and P.E. stamp, sign, and certify the completed form.
3. If the shared use path is anticipated along the property frontage, the path shall adhere to the SHA Bicycle Policy and Design Guidelines which can be accessed at www.roads.maryland.gov by selecting the Business Center drop down menu and Business Standards and Specifications, Bicycle Policy and Design Guidelines. The policy can also be accessed directly at http://www.roads.maryland.gov/OHD2/Bike_Policy_and_Design_Guide.pdf. This includes providing a minimum 10 ft. width with 2 ft. graded shoulders on both sides of the path.
4. Provide SHA plat numbers used to establish the existing right-of-way and property rights in the vicinity of the proposed access points and improvements. Verify any denial of vehicular access along MD 650 within the project limits. Please contact Ms. Jane Heming, Chief, Records and Research Section, Office of Real Estate at 410-545-2829 or via email at jheming@sha.state.md.us for existing right-of-way information.
5. On the subsequent submission, provide a hydraulic analysis for the existing and proposed conditions, including drainage area maps and supporting computations, and local agency's plans, approvals and/or waivers for stormwater management and erosion/sediment control. Further comments from the SHA hydraulic reviewer will be provided on the subsequent submission. Include all the materials on the CD required in the subsequent submission.

6. The Access Management Division Plan Review Checklist needs to be used in drafting the improvement plans. Complete the checklist and submit a copy of the completed form on the subsequent submission. The checklist can be accessed at www.roads.maryland.gov by selecting the Business Center drop down menu and Access Management/Permits, Plan Submittal Checklist. The checklist can also be accessed directly at http://www.sha.maryland.gov/ohd2/Plan-check-list.pdf.

Further plan submittals should reflect the above comments. Please submit 6 sets of revised plans and a CD containing the plans and all supporting documentation in PDF format, as well as a point by point response, to reflect the comments noted above directly to Mr. Steven Foster attention of Mr. Jonathan Makhlouf. Please reference the SHA tracking number on future submissions. Please keep in mind that you can view the reviewer and project status via SHA Access Management Division web page at http://www.roads.maryland.gov/pages/amd.aspx. If you have any questions, or require additional information, please contact Mr. Jonathan Makhlouf at 410-545-5586, by using our toll free number in Maryland only at 1-800-876-4742 (x5586) or via email at jmakhlouf2@sha.state.md.us.

Sincerely,

for Steven D. Foster, Chief/ Development Manager
Access Management Division

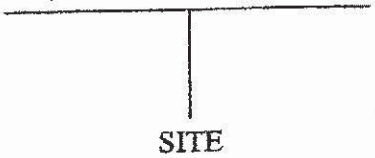
SDF/JWR/JMM

Attachment

cc: Ms. Robyn Barnhart (rbarnhart@cpja.com), Charles P. Johnson, and Associates, Inc.
Ms. Marian Elsasser, M-NCPPC
Mr. Victor Grafton, SHA - District 3 Utility Engineer
Mr. Mark McKenzie, SHA - Access Management Division
Ms. Anyesha Mookherjee, SHA - District 3 Traffic Engineer (Montgomery County)
Ms. Claudine Myers, SHA - Engineering Systems Team
Mr. Scott Newill, SHA - Access Management Division
Ms. Kim Paniati, M-NCPPC
Mr. Brian Young, SHA - District 3, District Engineer

Sight Distance Measurement and Evaluation Worksheet

LEFT (North) RIGHT (South)



INTERSECTION SIGHT DISTANCE	**MEASUREMENT (ft)**	
• 3.5' object placed at proposed access • 3.5' driver's eye height on approaching lane	LEFT	RIGHT
STOPPING SIGHT DISTANCE	**MEASUREMENT (ft)**	
• 2.0' object placed at proposed access • 3.5' driver's eye height on approaching lane	LEFT	RIGHT

Evaluation

Posted Speed = _____mph
Design Speed = Posted Speed + 10 mph = _____ mph (EAPD Policy)

Intersection Sight Distance (ISD):

Turning Movement	**State Standard ISD Requirement Based on Design Speed**	**Reduced ISD Requirement Based on Posted Speed ***
Left Turn from Site Access		
Left Turn into Site Access		
Right Turn from Site Access		

*Substandard condition meeting this requirement may be acceptable upon consideration of site specific traffic and safety conditions, feasibility constraints, etc. Mitigation may be required for any substandard condition.

Stopping Sight Distance (SSD):
SSD Required for the Design Speed: _____ ft (MUST be met)

Results

_____
_____
_____
_____
_____

A.6. Permission to Use Dedicated but Unbuilt Portion of Edgewater Parkway

Debby Smith

From: atiq.panjshiri <atiq.panjshiri@montgomerycountymd.gov>
Sent: Tuesday, December 09, 2014 2:24 PM
To: Gries, William
Cc: Komes, Linda; Cassedy, Michael; Turnbull, Bob; Contreras, Christina
Subject: Re: Permit Request to Use dedicated but unbilt portions of Edgewater Parkway as part of Hillandale Local Park

Dear Bill:

Please consider this email as permission to use dedicated but unmained right of way (ROW) portion of Edgewater parkway (east of Greenacres Drive), for the neighborhood temporary access to Hillandale Local Park. It is our understanding that your agency will improve this ROW with a natural surface hiking trail.

This permission is granted on a "**Revocable basis**". in the event this ROW is needed at any time in the future for road construction, any improvements that you may install within the ROW will be removed at no cost to Montgomer County Government.

Should have any further questions, please do not hesitate to call me at the telephone number below.

Atiq Panjshiri
Manager, Right of Way Plan Review
Divisoon of Land Development, MCDPS
Montgomery County, Maryland
255 Rockville Pike, 2nd Floor
Rockville, Maryland 20850
Tel: 240-777-6352
email: Atiq.Panjshiri@montgomerycountymd.gov

Have you tried DPS eServices?
http://permittingservices.montgomerycountymd.gov/DPS/eservices/AbouteServices.aspx

---

From: Gries, William <William.Gries@montgomeryparks.org>
Sent: Friday, December 5, 2014 11:43 AM
To: Panjshiri, Atiq
Cc: Komes, Linda; Cassedy, Michael; Turnbull, Bob
Subject: Permit Request to Use dedicated but unbilt portions of Edgewater Parkway as part of Hillandale Local Park

Atique: The Montgomery County Department of Parks of The Maryland-National Capital Park and Planning Commission is requesting permission to use the dedicated but unbilt portions of Edgewater Parkway, as shown on the attached map, as part of its park facility known as Hillandale Local Park. Our intent is to improve this un-used right-of-way with a natural surface hiking trail leading from Greenacres Drive, going northwards to undeveloped open space within the adjacent FDA office campus. This natural surface trail proposal is supported by the neighboring residential community. Please advise as to your Department's requirements for receiving this permission. Thank you.

Bill Gries
301-650-2861

A.7. Detailed Cost Estimate

HILLANDALE PARK FACILITY PLAN
ORDER OF MAGNITUDE ESTIMATE OF PROBABLE SITE COSTS

CIP	ITEM NO.	ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
SI		**SITE PREPARATION & DEMOLITION**			SUBTOTAL	**$596,150.00**
		Mobilization-Project Identification sign, site closed signs, construction waste disposal and general conditions (4% construction cost before mobilization)	1	LS	$250,000.00	$250,000.00
		Washout structure, install, maintain, remove	1	EA	$5,000.00	$5,000.00
		6' tall temporary construction fencing at perimeter	1850	LF	$3.00	$5,550.00
		Tree Protection Fencing (Woven Wire Fabric)	3000	LF	$5.00	$15,000.00
		Clearing & Grubbing including tree removal	1	LS	$115,000.00	$115,000.00
		Construction Stakeout	1	LS	$17,000.00	$17,000.00
		Maintenance of Traffic (signage, markings, barriers, flagmen, etc.)	1	LS	$7,000.00	$7,000.00
		Remove existing pavement and sidewalk	6960	SY	$10.00	$69,600.00
		Remove existing office building (incl. utilities)	1	LS	$100,000.00	$100,000.00
		Remove existing stairs	1	LS	$1,000.00	$1,000.00
		Remove existing baseball field	1	LS	$3,000.00	$3,000.00
		Remove existing playground	1	LS	$3,000.00	$3,000.00
		Remove existing chainlink fence	1	LS	$5,000.00	$5,000.00
SI		**SEDIMENTATION & EROSION CONTROL**			SUBTOTAL	**$298,500.00**
		Sediment Traps	4	EA	$16,000.00	$64,000.00
		Stabilized Construction Entrance	2	EA	$2,500.00	$5,000.00
		Inlet Protection	13	EA	$250.00	$3,250.00
		Filter Logs	3000	LF	$10.00	$30,000.00
		Super Silt Fence	2500	LF	$10.00	$25,000.00
		Safety Fence	2500	LF	$2.50	$6,250.00
		Temporary Stabilization - Seeding,Mulching	55000	SY	$1.00	$55,000.00
		Permanent Stabilization - Seeding,Mulching	55000	SY	$2.00	$110,000.00
SI		**EARTHWORK**			SUBTOTAL	**$382,225.00**
		Strip, Stockpile, Screen and Spread Topsoil, including testing and amendments	1	LS	$71,000.00	$71,000.00
		Excavation/Cut/Fill and fine grade	1	LS	$260,000.00	$260,000.00
		Excavation Hauled Off-site	215	CY	$35.00	$7,525.00
		Import and Spread Topsoil	950	CY	$46.00	$43,700.00
SI/U		**STORMWATER MANAGEMENT**			SUBTOTAL	**$582,750.00**
		Micro-bio M6-1 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$9,500.00	$9,500.00
		Micro-bio M6-2 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$25,500.00	$25,500.00
		Micro-bio M6-3 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$14,500.00	$14,500.00
		Micro-bio M6-4 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$16,000.00	$16,000.00
		Micro-bio M6-5 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$10,000.00	$10,000.00
		Micro-bio M6-6 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$14,500.00	$14,500.00
		Micro-bio M6-7 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$13,000.00	$13,000.00
		Micro-bio M6-8 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$13,500.00	$13,500.00
		Micro-bio M6-9 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$20,000.00	$20,000.00
		Bio-swale M8-3 - Mulch, Media, Sand, Gravel & Underdrain	1	LS	$3,600.00	$3,600.00
		15" Drain Basin	10	EA	$1,000.00	$10,000.00
		18" Drain Basin	1	EA	$1,000.00	$1,000.00
		24" Drain Basin	3	EA	$1,000.00	$3,000.00
		30" Drain Basin	1	EA	$1,000.00	$1,000.00
		J Inlet	2	EA	$5,000.00	$10,000.00
		48" Manhole	11	EA	$5,000.00	$55,000.00
		60" Manhole	1	EA	$5,000.00	$5,000.00
		Curb Cut Inlet	7	EA	$5,000.00	$35,000.00
		Standard Curb Inlet	1	EA	$5,000.00	$5,000.00
		12" H.D.P.E.	930	LF	$40.00	$37,200.00
		15" H.D.P.E.	80	LF	$50.00	$4,000.00
		24" H.D.P.E.	520	LF	$100.00	$52,000.00
		21" R.C.P.	605	LF	$130.00	$78,650.00
		24" R.C.P.	870	LF	$140.00	$121,800.00
		36" R.C.P.	25	LF	$175.00	$4,375.00
		36" Endwall	1	EA	$5,000.00	$5,000.00
		Directional Boring for 21" RCP	85	LF	$125.00	$10,625.00
		Concrete Check Dam	2	EA	$2,000.00	$4,000.00

CIP	ITEM NO.	ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
U		**UTILITIES**			SUBTOTAL	**$167,150.00**
		Electrical service (PEPCO connection)	1	LS	$40,000.00	$40,000.00
		6" Sewer Main	750	LF	$40.00	$30,000.00
		Sewer Manhole	4	EA	$350.00	$1,400.00
		WSSC Sewer Connection Fee	1	LS	$10,750.00	$10,750.00
		1" Water Line	270	LF	$30.00	$8,100.00
		2" Water Line	680	LF	$55.00	$37,400.00
		WSSC Water Connection Fee	1	LS	$10,000.00	$10,000.00
		Relocate Fire Hydrant	1	LS	$9,000.00	$9,000.00
		Water Fountain (Murdock)	2	EA	$5,000.00	$10,000.00
		Utility Pole Relocation	1	EA	$10,000.00	$10,000.00
		Gas Valve Adjustment	1	EA	$500.00	$500.00
SI		**VEHICULAR PAVEMENT**			SUBTOTAL	**$500,625.00**
		HMA Surface Course 9.5mm (3" deep)	6750	SY	$20.00	$135,000.00
		HMA Base Course 19.0mm (3" deep)	6750	SY	$25.00	$168,750.00
		Graded Aggregate Base (6" deep)	6750	SY	$10.00	$67,500.00
		Concrete curb and gutter, concrete band with granite cobble edge	305	LF	$75.00	$22,875.00
		Curb and gutter	3400	LF	$30.00	$102,000.00
		Parking striping	2800	LF	$0.50	$1,400.00
		Crosswalks - painted	4	EA	$400.00	$1,600.00
		Signage and wheel stops at accessible parking spaces	5	EA	$300.00	$1,500.00
SI		**PEDESTRIAN PAVEMENT & HARDSCAPE**			SUBTOTAL	**$457,050.00**
		Accessible concrete ramp and ADA pavers	10	EA	$1,000.00	$10,000.00
		Concrete pad at bleachers	200	SF	$12.00	$2,400.00
		Decorative Paving at 3 locations	1250	SF	$18.00	$22,500.00
		Asphalt trail	2265	SY	$20.00	$45,300.00
		Asphalt trail - above grade, 8'	200	SY	$40.00	$8,000.00
		Concrete sidewalk-8'	2400	SY	$50.00	$120,000.00
		Concrete sidewalk - above grade-8'	60	SY	$70.00	$4,200.00
		Concrete Steps - from CHI	1	LS	$5,000.00	$5,000.00
		Wall - stone retaining at CHI (120 LF)	180	SFF	$100.00	$18,000.00
		Wall - stone retaining at basketball court (220 LF)	700	SFF	$100.00	$70,000.00
		Wall - decorative concrete at playground (custom formliner)	100	SFF	$250.00	$25,000.00
		Wall - concrete at playground tree ring (190 LF)	190	SFF	$35.00	$6,650.00
		Wall - stone at tennis court (360 LF)	500	SFF	$100.00	$50,000.00
		Wall-stone checkdams in parking island (40 LF)	80	SFF	$100.00	$8,000.00
		Wall-stone with sign at entry	80	SFF	$100.00	$8,000.00
		Fencing - decorative at playground	520	LF	$100.00	$52,000.00
		Gate - decorative at playground	2	EA	$1,000.00	$2,000.00
SI		**RECREATION FACILITIES**			SUBTOTAL	**$1,226,123.54**
		Basketball Courts(2)				
		Paving,color coating, striping, fencing, benches, powdercoated posts, acrylic backboards, nets	1	LS	$60,000.00	$60,000.00
		Rectangular Playing Field (240' x 380')				
		Natural grass, upgraded section with under drain, irrigation, striping, (4) goal posts and nets, players benches, bleachers	1	LS	$300,000.00	$300,000.00
		Fencing (640 lf 16' high, 600 lf 10' high with 6 gates	1	LS	$92,000.00	$92,000.00
		Tennis Courts(2)				
		Paving, color coating, striping, fencing, benches, nets and posts	1	LS	$100,000.00	$100,000.00
		Concrete Freestanding BallWall	1	EA	$20,000.00	$20,000.00
		Playground				
		Playground surface - poured rubber	4745	SF	$22.00	$104,390.00
		Playground surface - 9" sand	40	CY	$40.00	$1,600.00
		Playground surface - 12" EWF	100	CY	$175.00	$17,500.00
		Concrete curb around playground	383	LF	$25.00	$9,575.54
		Snake Conc Unit Paver	889	SF	$22.00	$19,558.00
		Swing - age 5-12	1	EA	$2,000.00	$2,000.00
		Swing - tot (Kompan, KSW91013)	1	EA	$1,000.00	$1,000.00
		Spinner - tot (Kompan, NRO106)	1	EA	$5,000.00	$5,000.00
		Jumpers - tot (Kompan, NRO101, 102, 104)	3	EA	$3,000.00	$9,000.00
		Teepee (Landscape Structures)	1	EA	$50,000.00	$50,000.00
		Fire Circle with Drum (Landscape Structures)	1	EA	$16,000.00	$16,000.00
		Bear cave (Exploration Play, Tiger's Den)	1	EA	$8,000.00	$8,000.00
		Two-tier Platform, Incline Net, Bridge (custom)	1	EA	$100,000.00	$100,000.00
		Bird's Nest	1	EA	$8,000.00	$8,000.00
		Buffalo Indian Mound	1	EA	$5,000.00	$5,000.00
		Water Stream/Boulder Systems (Cem Rock)	1	EA	$125,000.00	$125,000.00
		Snake Head (Cem Rock)	1	EA	$15,000.00	$15,000.00

CIP	ITEM NO.	ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
		Wolf Sculpture - life-size (Cem Rock)	3	EA	$5,000.00	$15,000.00
		Dinosaur skelton (Exploration Play, T-Rex Dig)	1	EA	$25,000.00	$25,000.00
		Dinosaur eggs in nest (Cem Rock)	1	EA	$15,000.00	$15,000.00
		Log Steppers (Landscape Structures)	45	EA	$500.00	$22,500.00
		Balance rope w/two boulders (Playworld Systems, Castle B., Ridge B., Rope Bridge)	1	EA	$40,000.00	$40,000.00
		Adult Fitness Stations	4	EA	$10,000.00	$40,000.00
SI		**STRUCTURES**			SUBTOTAL	**$784,000.00**
		Restroom structure with trellis connection and picnic shelter	1	EA	$500,000.00	$500,000.00
		Picnic Pavilion structure with special paving/floor	1	EA	$175,000.00	$175,000.00
		Arbor at Playground Entrance	1	EA	$25,000.00	$25,000.00
		Pedestrian Boardwalk at drainage area	1200	SF	$70.00	$84,000.00
SI		**SITE LIGHTING, AMENITIES & FURNISHINGS**			SUBTOTAL	**$350,500.00**
		Lighting				
		Parking lot lighting	8	EA	$8,000.00	$64,000.00
		Basketball	1	LS	$35,000.00	$35,000.00
		Tennis	1	LS	$45,000.00	$45,000.00
		Sign lighting	1	LS	$5,000.00	$5,000.00
		Benches, footers and concrete pad	12	EA	$2,800.00	$33,600.00
		Picnic tables (Du Mor)	7	EA	$1,500.00	$10,500.00
		Kid's Picnic tables	3	EA	$1,900.00	$5,700.00
		Patio Tables (Landscape Forms)	3	EA	$3,500.00	$10,500.00
		Bicycle rack (with footing)	9	EA	$1,300.00	$11,700.00
		Trash receptacles (with footing)	5	EA	$1,800.00	$9,000.00
		Recycling receptacles (with footing)	5	EA	$1,900.00	$9,500.00
		Park Entry Sign Panel/Inset (stone wall separate)	2	EA	$5,000.00	$10,000.00
		HeartSmart Trail Markers, every 1/10 mile, 2,400 lf loop	5	EA	$200.00	$1,000.00
		Public Art Allowance	1	LS	$100,000.00	$100,000.00
SI		**LANDSCAPING**			SUBTOTAL	**$372,200.00**
		Shade trees (2.5"-3" caliper)	176	EA	$500.00	$88,000.00
		Evergreen trees (8'-10' height)	27	EA	$400.00	$10,800.00
		Ornamental trees (10' height)	35	EA	$400.00	$14,000.00
		Shrubs (30")	304	EA	$100.00	$30,400.00
		Sod	21000	SY	$4.00	$84,000.00
		Panicum planting at micro-bioretention areas	1800	EA	$25.00	$45,000.00
		Hypericum groundcover	2800	EA	$25.00	$70,000.00
		Two-Year Maintenance and Extended Warranty	1	LS	$30,000.00	$30,000.00
SI		**MISCELLANEOUS**			SUBTOTAL	**$180,000.00**
		As-Built Drawings(For SWM, underground utilities, ret. walls)	1	LS	$20,000.00	$20,000.00
		Electronic Submission of submittals	1	LS	$10,000.00	$10,000.00
		Restoration of tributaries - Allowance	400	LF	$375.00	$150,000.00
		CONSTRUCTION SUBTOTAL(Without Mobilization)				$5,647,273.54
		CONSTRUCTION SUBTOTAL				**$5,897,273.54**
		CONSTRUCTION CONTINGENCY (15% of Construction Subtotal)				**$884,591.03**
		ESTIMATED CONSTRUCTION TOTAL (Subtotal plus Contingency)				**$6,781,864.57**
		Design Contract with Contingency (8% of Construction Total)				$542,549.17
		Staff Chargebacks for Design (15% of Design Contract)				$81,382.37
		Construction Management & Inspections (2% of Construction Total)				$135,637.29
		ESTIMATED CONSTRUCTION TOTAL				**$7,541,433.40**

Appendix B: Public Meeting Minutes

PUBLIC MEETING #1 – MINUTES

Project: Hillandale Local Park
Date: July 24, 2013
Time: 7:00 – 8:30 pm
Location: White Oak Community Building

Staff/Consultant Attendees:
Linda Komes, M-NCPPC
Brooke Farquhar, M-NCPPC
Bill Tyler, M-NCPPC
Mitra Pedoeem, M-NCPPC
Brian Lewandowski, M-NCPPC
Thomas Nelson, M-NCPPC
Tricia McManus, M-NCPPC
Sabrina Pirtle, M-NCPPC
Robyn Barnhart, CPJ
Shelley Rentsch, ALA
Debby Smith, ALA

Public Attendees: See Sign-in Sheet

Meeting Purpose: Public Meeting 1

Purpose:

Presentation of site analysis, program goals and nine preliminary concepts with the goal of narrowing down desired program elements and preferred road layout within the park and identifying desired site elements.

Prensentation:

Linda Komes presented an overview of the scope of the project and the steps and likely timing for design and construction. Shelley Rentsch presented existing environmental conditions and constraints of the park, preliminary program elements identified for the park based on prior community meetings and park planning area needs, and nine preliminary concepts demonstrating how various program elements could be sited to demonstrate different circulation patterns and relationships between program elements. Questions and comments were taken following the presentation, and then meeting participants were given colored stickers to continue the conversation individually with staff by reviewing the plans posted around the room and identifying on the plans which elements they liked (green sticker), which elements they did not like (red sticker) and the element or concept plan they liked the best (gold sticker).

Approximately 21 people attended the public meeting (excluding M-NCPPC staff and consultants), and most were residents from the surrounding neighborhoods. The following is a summary of community questions and comments.

Comments Received:

General

1. The process to renovate this park has taken too long and the project has been delayed. There was disappointment expressed that the project will not be included in the FY15-20 capital improvements program for design and construction.
2. There was discussion about removal of the park building, and questions about whether there were immediate plans to remove the building. Staff indicated that the Montgomery County Planning Board has approved removal of the building, and it has been closed for public use due to the septic requirements by the Department of Permitting Services. Staff indicated that there were no immediate plans to remove it and it would likely remain closed and used for storage until funding was available to remove it.
3. The width of the stream valley buffer is 175 feet. There was a question about whether it could be narrowed to provide more space to move ball fields further east.
4. The completion of the facility plan and future park renovations are a long way off. There needs to be a temporary and interim approach to provide restroom facilities in the park that does not require capital funding. Consider an interim approach for building removal and bathroom. One attendee noted that it can be allowed if less than $20,000.
5. A former resident from the North Four Corners area indicated that it was ironic that staff is listening to the needs of this community but did not listen to the North Four Corners neighborhood when they did not want a ball field in their park.
6. There was a question regarding the service area for the park. Seem to be quite a few users from outside the area. Is this to be encouraged or discouraged? Staff explained that this is a local park, which serves a large area and not just the surrounding neighborhoods.
7. “What we want is what we have only newer and better!”

Parking

8. Park users often use the CHI parking lot. Look at shared parking with CHI for peak times.
9. Parking spaces for the park building need to be considered. They frequently leave Park trucks overnight.
10. Keep parking near basketball courts and trails.
11. Make sure to maximize the parking in the park, since this is a problem with the current park.
12. Staff should coordinate with the fire house, which competes for parking spaces within the park. Montgomery County police who commute from outside of the county park their vehicles there. In addition, the fire house brings their trucks into the parking lot to wash and service the vehicles.

Users

13. There are nearly 1,000 disabled people that attend daytime programs at the adjacent CHI Center, including severely disabled people. Make sure to provide easy access to the park for clients and caretakers, and orient activities to accommodate use by the center. There should be an accessible playground located at this end of the park. Is there a demand for accessible playgrounds? Consider locating accessible site elements closer to their property like the playground and pavilion.
14. Heavily used in the evenings. CHI would primarily be day-time users.
15. The unpermitted use of the ball fields is huge. There should be a survey done of the users of the park. Public volunteered to assist. County representative also volunteered.
16. There are senior citizens in the area. Be mindful of future population trends and provide activities and accessibility for young and old.

Site Elements

17. The field configurations shown on the plans won't work given the amount of use that occurs in the park.
18. Diamond fields are preferred over rectangles.
19. FDA athletic contact seemed interested in the idea of incorporating a shared baseball field on their property.
20. Tennis and volleyball are acceptable uses in the park.
21. Sand volleyball might cause problems with cats using it.
22. Like the tennis courts where they are by the trees and in the shade. Courts are well used by many groups including the firemen who take up one court. Additional courts could be useful. Would like a stand-alone practice wall.
23. There was a question as to where the community meeting room will be located in the park. Staff indicated that the White Oak Community Building is intended to serve this purpose. Opinions were expressed that there should be a community meeting room available in the park and that perhaps the Hillandale office building could provide community meeting space.
24. What about kitchen facilities at the park building?
25. Why can't real bathrooms be added to the park building?
26. Bathroom location(s) important to keep public from using the woods—ongoing problem. Multiple bathrooms suggested. Especially important to locate near basketball court.
27. Okay with portable bathrooms but would like running water for washing hands especially if picnic pavilions are being added.
28. Add water fountains.
29. Add pet waste bag station near trash cans
30. No dog park is needed/desired.
31. Want baseball field even if it is an overlay.
32. Dislike the crowds that soccer fields bring. A neighbor indicated that soccer field users park in the neighborhood across New Hampshire Avenue and urinate on private property and would prefer not to have a soccer field in the park. Are they necessary?
33. Soccer should not be eliminated as a use, but problems associated with parking, trash and restrooms need to be solved. There also needs to be ongoing enforcement and maintenance to address problems.
34. Basketball courts are well used. Consider keeping these centrally located to avoid foot traffic wear and tear on the fields.
35. Basketball is very popular and should be included in the plans. Consider increasing number of courts.
36. No interest in ping pong table. Look for activities that will withstand the test of time.
37. Do not like running trails in the woods. Do not feel safe running through woods alone.
38. Keep hard surface running trails in open areas (for security - not in the woods).
39. There were questions whether there has been a need or demand for community gardens in this area. Is it urban enough? Park Planning staff indicated that they have been very popular. Several attendees thought that gardens are a nice idea, but since there is so little land in the park it might not be the best use of space. Another tennis or basketball court could fit in the space provided for gardens and would be better based on the existing use of the park.

Layout

40. With respect to the park entrance, the existing intersection is dangerous and there are often accidents in this location. There's a blind curve in this location, which makes visibility difficult. The plans that show the entrance moved further south are preferred. A one-way traffic flow through the park might also be a good idea.
41. Like the vegetated buffer along New Hampshire Avenue.
42. Like the long, curved roadway, both the one where the parking is closest to New Hampshire and also the one with the parking closest to the woods line.
43. The plans that show parking next to New Hampshire Avenue provide a buffer next to the road and maximize open space for the park.
44. Like the entrance offset from Rodney Road.
45. The basketball courts should be in a visible location for security.
46. A pavilion near the CHI Center would be good.
47. Several people expressed their preference for Concept C, with the playground moved near the CHI Center.
48. Liked a concept that had the playground centrally located, not near the CHI Center.
49. Do not like the playground adjacent to the street.
50. Make playground central to site, not in back corner.
51. Some of the plans move the courts in locations that will create undesirable traffic flow across ball fields and green areas.

Green Dot / Red Dot / Gold Dot Summary:

- Concept A – 2 gold dots, one red dot
- Concept C – 2 gold dots
- Concept H – 2 red dots
- Concept I – 1 green dot
- The Elements that had the most red dots were: Ping Pong, Exercise Stations, Chess/Checkers, Skateboard Park, Amphitheater, Council Ring, Picnic Area in the Woods and "Stone" Structures (bridge and pavilion--wood structures had several green dots)
- The Elements that had the fewest green dots were: Community Garden and Sand Volleyball.

PUBLIC MEETING #2 – MINUTES

Project:	Hillandale Local Park Renovation
Date:	March 19, 2014
Time:	7:00 – 8:30 pm
Location:	White Oak Community Recreation Center
Staff/Consultant Attendees:	Linda Komes, M-NCPPC Mitra Pedoeem, M-NCPPC Brian Lewandowski, M-NCPPC Thomas Nelson, M-NCPPC Bill Tyler, M-NCPPC Tricia McManus, M-NCPPC Bill Kellogg, M-NCPPC Park Police Sabrina Pirtle, M-NCPPC Park Police Robyn Barnhart, CPJ Shelley Rentsch, ALA Debby Smith, ALA
Attendees:	See Sign-in Sheet
Meeting Purpose:	Public Meeting #2 – Eastern County Recreation Advisory Board Meeting

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Purpose:

To obtain community input on two park concept plans following an overview of the site analysis, program goals and preliminary concepts. A discussion of the advantages and disadvantages of each plan followed.

Presentation:

Linda Komes presented an overview of the scope of the project and the steps and likely timing for design and construction. Shelley Rentsch first presented the site analysis, program goals and preliminary concepts followed by a presentation of the two developed schemes and a discussion of their pros and cons.

Approximately 20 people attended the public meeting (excluding M-NCPPC staff and consultants), with some residents attending for other items on the agenda of the Eastern County Recreation Advisory Board meeting. Councilmembers Nancy Floreen and Cherri Branson attended the meeting, as well as County Executive Isiah Leggett. The following is a summary of community comments and discussion.

Comments and Discussion:

1. There was a question whether the existing recreation building would be removed, and park staff confirmed that it would be.
2. There was a question regarding the Chalmers Road entrance, and staff explained that the new park entrance would be aligned with Chalmers Road at the traffic light.

3. The basketball courts located in view of the firehouse provides added security for the park and is a good idea.
4. Trails should be provided to connect the park to the community.
5. The stream valley should be preserved.
6. The Department of Parks should take ownership of the paper street and stream located along the eastern property line of the park from the Department of Transportation, in order to protect the environment and restore the stream.
7. There was discussion regarding community gardens. One person requested community gardens to be included in the plan. Another participant did not want gardens to be included. Park staff indicated that community gardens were not supported as a program element at the first public meeting, so community members should contact staff if they would like them to be included in the plan.
8. Bathroom facilities should be provided for the park. If the Barnett Building is removed from the park, sanitary facilities with running water can be provided using existing service lines.
9. The design team needs to pursue locating a new ballfield on GSA property.
10. Overall, the plans appear to address community concerns.
11. The mature existing shade trees in parking areas, near the basketball courts, and behind the firehouse should be preserved if possible. Small new trees cannot replace mature existing trees, and many trees in the New Hampshire Avenue right-of-way have been lost. There is good existing shade near the ballfields.
12. There was support expressed for Scheme 2 and a question whether there would be fencing at the playground. The design team indicated that there would be a safe separation of the play area from New Hampshire Avenue, which could be achieved with fencing or grading techniques.
13. There was discussion regarding the poor condition of the existing ballfield and a question whether it would be renovated in the near future (and not wait until the entire park is renovated). Tom Nelson acknowledged the poor condition of the fields, noting that the field has been renovated every two years and the problem is overuse of the field. Tom indicated that the field was renovated last year and it is scheduled for renovation again in 2016. Seeding is done in the fall but the field becomes worn out, since the use is not controlled and multiple sports are playing on the same field. The field condition is reviewed annually along with all fields and maintenance is scheduled as needed.
14. There was a request that Park staff continue to work with Dr. Lovell at the CHI Centers, Inc. to ensure that the park is accessible and useful to clients.
15. Consider providing a running track around the field. There was discussion that a hard surface loop trail would be provided in the park, potentially with markers at every 1/10 mile (Heart Smart Trail). There should be a hard trail provided in a flatter area to walk or run.

PUBLIC MEETING #3 – MINUTES

Project:	Hillandale Local Park
Date:	March 26, 2014
Time:	7:30 – 9:00 pm
Location:	CHI Centers, Inc.
Staff/Consultant Attendees:	Linda Komes, M-NCPPC Brian Lewandowski, M-NCPPC Thomas Nelson, M-NCPPC Bill Tyler, M-NCPPC Tricia McManus, M-NCPPC Robyn Barnhart, CPJ Shelley Rentsch, ALA Debby Smith, ALA
Attendees:	See Sign-in Sheet
Meeting Purpose:	Public Meeting #3 – Hillandale Civic Association Meeting

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Purpose:

The purpose of the meeting was to obtain input from community following presentation of two park concept plans. The presentation included an overview of the site analysis, program goals and preliminary concepts. A discussion of the advantages and disadvantages of each plan followed.

Presentation:

Linda Komes presented an overview of the scope of the project and the steps and likely timing for design and construction. Shelley Rentsch presented the site analysis, program goals and preliminary concepts, followed by the two developed schemes. A discussion of the advantages and disadvantages of each scheme ensued. At the end of the meeting, each attendee was given a gold dot to place on the plan they favored. Approximately 35 people attended the public meeting (excluding M-NCPPC staff and consultants). The following is a summary of community comments and discussion.

Comments and Discussion:

1. The community requested that M-NCPPC make an official request to GSA as soon as possible for use of their property for a ballfield. The community expressed support to expand the park to the north and indicated that they would be advocates for this.
2. The park design should consider and confirm whether the expanded New Hampshire right-of-way will be split evenly on both sides of the road or whether all of the expanded area will be on the park and GSA property on the east side of the road. There is no room to expand the right-of-way onto some of the small residential properties on the west side of the road.

3. There was a question whether all of the parking shown on the plans is needed. The existing park has 40 spaces plus the parking at the CHI Center. The new plans have 120 spaces within the park, which seems to be too many.
4. If there is room, more than two basketball courts would be preferred since they get a lot of use. They should be lighted and real hoops should be provided (not double rims).
5. Concerns were expressed regarding glare and luminaire design for court lighting, especially where the courts are located near New Hampshire Avenue. Glare is a different issue from cut-off and spill lighting (which is more easily addressed). Court lights which stay on until 10:00 pm would be problematic with glare near the main road.
6. Restrooms should be provided now before the park is renovated, especially for the basketball courts. The Deputy Director of Parks, Mike Riley, said that he would investigate ways to provide acceptable portable toilets and running water. Options could include composting toilets.
7. The Association will be putting pressure on the M-NCPPC to provide interim improvements for the park, since it will be years until the park is fully renovated. Natural surface trails that connect to the community are one example of facilities that should be provided in the near future.
8. Recently renovated schools nearby include Cresthaven Elementary School and Francis Scott Key Middle School, which include facilities available for public use.
9. The paper street on the east boundary of the park should be conveyed to M-NCPPC Parks Department to maintain and improve the stream.
10. ADA accessible exercise equipment should be considered.
11. There was a question whether the fields at the new White Oak Recreation Center are being used. Park staff did not know but can acquire data on ballfield permit use.
12. The existing field does not get rested and gets torn up when wet. The soccer/softball field overlay also encourages overuse of the field. It can only be aerated once per year (based on the field use schedules), and if it's played on when wet afterwards the field becomes compacted again immediately. The Department of Parks closes fields during wet, soggy conditions but cannot control public use. Park Police will kick users off the field if they are called. Park policy allows people to play on fields without obtaining a use permit. The proposed plan to provide separate rectangular and diamond fields should help.
13. There were questions whether a new field would require less maintenance and whether a synthetic turf field would be considered. A discussion ensued regarding the location of turf fields within the park system, environmental concerns, and the fact that turf fields are typically lighted and permitted to promote more usage and are usually located in recreational and regional parks, not local parks.
14. There was a question whether the park needed both a soccer field and a diamond field. Staff indicated that both are needed based on current levels of use and community needs.
15. It was pointed out that the proposed plans did a good job to reflect and respond to the comments expressed by the community in the first meeting held in July of 2013.
16. There was a question regarding what is proposed for the Barnett Building. The design team explained that the building is proposed to be removed in all plan schemes. M-NCPPC staff would be relocated to the proposed new Wheaton Headquarters building, and removal of the Barnett office building would allow a four way traffic light and entrance to be created at Chalmers Road. This would provide a safer park entrance. There was also a comment that the timing of the light at Chalmers Road needed to be adjusted.
17. There was discussion that the Hillandale Volunteer Fire Department has a desire to relocate, because their existing facility is outdated and landlocked. They would need to acquire other property and then would need approval and funding from the County to build a new station. Their desire would be to locate slightly north of their current location on

GSA property or the shopping center property, where they could expand the size of the facility. These locations are slightly further from the Prince George's County line, which would also be preferable from the standpoint of focusing more of their efforts on service calls within Montgomery County.

18. A question was asked whether there is room for ballfields on the back side of the National Labor College and discussion that it would be too expensive and there is not enough room.
19. A large playground is desirable. The playground should be fenced for safety.
20. There was a question whether the playground would be designed to accommodate users from the CHI Center. Park staff responded that the Director of the CHI Center indicated that exercise stations along a paved accessible trail would be more useful, since clients are adults that would not use playground equipment.
21. Support for community gardens was mixed.
22. A resident across the street from the park does not want the rectangular field in that location in either plan and would prefer other facilities to be located in that area. Consider reducing the size of the soccer field to a junior size.
23. The funding process and timing of the future park renovations was discussed. Staff indicated that elected officials listen to community members, and projects that have broad community support are often placed higher in priority for funding.

Comments on Scheme 1:

- It would be preferable if another basketball court could be provided, but there doesn't appear to be room.
- The basketball court along New Hampshire is undesirable because of the noise for the residents across the street and the glare from the lights for drivers on New Hampshire Avenue. Cut-off lighting could be used to limit lighting spill but not glare.
- The paved parking lot and courts do not provide a good visual first impression of the park from New Hampshire Avenue.
- An alternative point of view was expressed that preferred paved areas located near New Hampshire Avenue. This would provide a more pleasurable experience for users within the park.
- Officer Joy Patil from Montgomery County Police offered preliminary comments from a public safety perspective and generally preferred Scheme 1. There is better visual access from New Hampshire Avenue to the facilities, including the parking area and basketball courts. The placement of the tennis courts closer to the fire station allows visual access into that facility. In general, the facilities that are lighted and used at night are located near the road for good visual access. If the right type of lighting is used, it can be shielded to prevent problems with glare. There is also more separation on Scheme 1 between the playground and New Hampshire Avenue.

Comments on Scheme 2:

- The parking seems to be too tight near the CHI Center, and perhaps the buffer could be expanded.
- This scheme is better than Scheme 1 to keep lighting glare away from neighboring residents and New Hampshire Avenue.

- The larger playground area is preferred.
- Councilmember Nancy Floreen suggested in a private conversation at the prior public meeting that a vehicular connection between the CHI Center and the park road in this scheme might improve traffic and circulation for the CHI Center and might also provide direct access for park users to the shared CHI Center parking lot. The peak use times for busses from the CHI Center are weekday mornings and evenings, which would not conflict with peak park use on weekends. This would allow the CHI Center to use the traffic light at Chalmers Road for left turns.
- The green edge of the park along New Hampshire is desirable.
- The basketball location near the fire station is more desirable than the location in Scheme 1.

There were aspects of both plans that were favorable and unfavorable to attendees. The meeting concluded with no clear consensus on which of the two plans was generally preferred. A walk in the woods with Park staff and community representatives will be scheduled within the next few weeks to review and discuss proposed natural surface trails and a stream crossing to connect to the neighborhood.

Appendix C: Intermediate Recreation Building Demolition and Pavilion Construction

1. Agreement to Close Recreation Buildings

2. Forest Conservation Plan Variance to Close Recreation Buildings

C.1. Agreement to Close Recreation Buildings

MONTGOMERY COUNTY DEPARTMENT OF PARKS
MARYLAND-NATIONAL CAPITAL PARK & PLANNING COMMISSION

MCPB Item # 8

October 11, 2012

MEMORANDUM

DATE: October 3, 2012

TO: **Montgomery County Planning Board**

VIA: Mary Bradford, Director of Parks
Michael F. Riley, Deputy Director of Parks

FROM: Dr. John E. Hench, Ph.D., Chief, Park Planning and Stewardship Division (PPSD)
Brooke Farquhar, Supervisor, Park & Trail Planning Section, PPSD
Mark Wallis, Planner Coordinator, Park & Trail Planning Section, PPSD

SUBJECT: **Hillandale Park Activity Building (PAB) and Adult Education Building Demolition**

Recommended Planning Board Action

Staff recommends APPROVAL of a phased closure and ultimate demolition of Hillandale Park Activity Building (PAB) and the former Adult Education Building by February 1, 2014, as follows:

- Closure date to coincide with septic tank agreement expiration – February 1, 2014.
- Available to the Public - November 2, 2012 to closure date of February 1, 2014, weekends only, maximum 3 events per weekend, maximum 50 people per event.
- Building to be demolished spring of 2014.

Background and Summary of Staff Findings

The Hillandale Local Park is located in the eastern portion of Montgomery County at 10615 New Hampshire Avenue in White Oak adjacent to the Food and Drug Administration (FDA) consolidated Headquarters ***(Figure 1).*** The approximately 22.5 acre park consists of ***(Figure 2)***:

- 2 tennis courts
- 2 basketball courts
- 2 diamond fields with a soccer overlay
- 1 playground
- a natural wooded area
- 1 Park Activity Building (PAB) attached by breezeway to a now-closed prefabricated structure (formerly the Adult Education Building)
- Hillandale Park Office Building

According to park site plans from the period, the PAB started serving the public in the mid 1940's as a summer log cabin. Over the years, use expanded to the spring and fall and finally in the 1950's to year-round activities with the addition of a heating system. Around 1955, a prefabricated World War II-era structure—one of six given to M-NCPPC from the Naval Surface Warfare Center—was connected to the PAB by a breezeway. In the 1980's, the original PAB was suffering from extensive termite damage and was essentially rebuilt (with the exception of the roof structure), according to records and the oral history of the crew that undertook the carpentry.

Around 2008 the Adult Education Building was damaged by fire from faulty equipment and subsequently closed. Cosmetic repairs to the siding have been completed.

Hillandale Local Park is scheduled to undergo Facility Planning by the Department of Parks, Park Development Division beginning in the next few months. Approval of the removal of the pair of joined buildings prior to completion of the Facility Plan is important in order to allow the maximum flexibility in redesigning the park to better meet the needs of the community and to develop the best possible plan for the park.

Prior Approvals

On June 28, 2007, the Planning Board reviewed the *Functional Plan for Recreation and Ancillary Buildings: Preliminary Staff Recommendations* ***(Attachment 1).*** Given the age and condition of many of the recreational buildings and the operational issues related to the leasing of ancillary buildings, an overall planning and management approach to these buildings was presented. Staff presented recommendations for future operations of the 31 park recreation buildings, including the Hillandale building, and key management changes for the 9 ancillary buildings. Park Activity Buildings were assigned to 4 basic categories and ancillary buildings to 2 basic categories.

The four Park Activity Building management categories were:

- Continue and Improve - 7 buildings
- Evaluate and Market – 8 buildings
- Transfer or Demolish - 5 buildings
- Assess Historical Priority – 1 building

The Hillandale PAB was recommended for the Transfer and Demolish management category for two basic reasons – cost of repair and duplication of services (see "Analysis", below).

At the June 28, 2007 Planning Board hearing, the Board directed staff to bring each Park Activity Building recommendation for Transfer or Demolish back to the Board one at a time. Subsequently, Park Planning staff met with community representatives who argued that the facility served an important need for community gatherings, since there would be a lack of this service in the area while the two local schools (Key Middle School and Cresthaven Elementary School) were closed, demolished and re-built. In addition, although the White Oak Recreation Center would eventually provide needed indoor meeting and recreation space, the exact construction and delivery date was uncertain at the time.

Status Since 2007

In response to community concerns, the Department of Parks continued to operate the PAB for community use. In the interim, Parks replaced the septic system to keep the building operational, under an MOU between the Commission and the Montgomery County Health Department. The MOU assigned a five-year term that expires February 1, 2014 (**Attachment 2).**

Since 2007, the two schools in the area have been re-built and the White Oak Community Recreation Center has opened, providing alternative locations for public indoor meeting spaces nearby.

In May 2012 staff met with the community members to provide the preliminary staff recommendation for a phased closure and building demolition.

Analysis

Staff has analyzed three operational factors that support demolishing the building:

- Existing Condition
- Duplication of Service
- Cultural Resource Evaluation

Existing Condition

The *Infrastructure Inventory and Assessment of Park Components* (Facility Engineering Associates, March, 2007 **(Attachment 3)** concluded that the septic system has failed and that a hookup to public sewer would cost approximately $30,000. The Health Department will not allow connection to either the Hillandale Park Office Building or the Fire Station. Park staff obtained an independent budget estimate for two options to connect the building to the public sewer system. The estimate showed that installing a gravity sewer through forested areas would cost $123,000. The second option would require tunneling under New Hampshire Avenue and would cost $222,000 **(Attachment 4).**

Staff concluded that the costs of septic hookup and fixing the building would exceed the building's current replacement value.

Duplication of Service

In evaluating the future operation of the PAB, staff examined other service providers including Libraries, Montgomery County Public Schools, closed schools, and the Recreation Department ***(Figure 3).*** In the specific case of Hillandale, the recent provision of public meeting spaces in two nearby facilities at the Cresthaven Elementary School, and the Key Middle School has increased the level of service for rentable indoor meeting space in the vicinity of the Hillandale Local Park. The White Oak Library is slightly over one mile north on New Hampshire Avenue from Hillandale Local Park. The Hillandale Civic Association is currently meeting in the former Hillandale Elementary School which is now leased to Centers for the Handicapped.

The addition of the White Oak Community Recreation Center (CRC) includes a public meeting space with a kitchen and other amenities in a park setting ***(Figure 4).*** This 33,000 square foot building, located on parkland, opened in June of 2012. The CRC layout includes a community room and kitchen equivalent to the PAB function in addition to the following services: Gymnasium, Exercise Room, Senior/Community Lounge, Arts/Kiln Room, Game room, Conference Room, and Activity Room.

Cultural Resource Evaluation

Cultural Resources Stewardship Section staff within the Department of Parks have an overarching interest in documenting the history of the Commission and the Department of Parks. The Section's Senior Historian has reviewed and begun writing up the history of the Commission. As part of that larger effort, the history of the original Hillandale recreation building and the World War II temporary structures has been evaluated. In addition, Cultural Resources staff understand the laws and principles of historic preservation within the county.

Cultural Resources staff consulted directly with the Historic Preservation Section staff, both in a detailed site visit and in two follow-up meetings, as part of its evaluation, and developed an internal staff-level strategic plan for how to protect the best of these types of buildings. Towards that end, Cultural Resources is now preparing a *Master Plan for Historic Preservation* amendment that will include the history of park activity buildings and the nomination of at least one building from each genre that has the best integrity. Six buildings dating from the 1930s to the 1960s will be nominated in FY 13 or 14. The buildings to be preserved are those that best meet the criteria of Chapter 24-A of the Montgomery County Code, the Historic Preservation Ordinance. Hillandale has lost much of its original building material in recent decades, according to the trades people who actually did the repairs. Therefore, Hillandale is not the best candidate for designation or preservation. A more suitable building to represent the era is its 'twin,' the Pinecrest recreation building, which will be part of the *Master Plan for Historic Preservation* amendment. It is worth noting that the Historic Preservation Section staff of the Planning Department did not recommend the designation of Hillandale within the White Oak Science Gateway Master Plan. (See "Area Master Planning Considerations" below).

Area Master Planning Considerations

The White Oak Science Gateway (WOSG) Master Plan is currently underway. The recommendation in the WOSG Preliminary Draft is as follows:

> *"Remove the Park Activity Building (upon approval by the Planning Board as part of a Parks Department agenda item), to allow for repurposing of parkland with facilities that are in demand, such as community open space, reconfigured play area, etc. (Final program and park design to be determined through the currently funded Facility Plan)."*

As mentioned above, Historic Preservation Section staff did not recommend the designation of the Hillandale PAB (with its attached Adult Education Building) to the *Master Plan for Historic Preservation*, but included the structures in the list titled, "Potential Historic Resources for Future Evaluation." Preservation staff also noted that the Hillandale buildings had "compromised integrity." At the September 20, 2012 presentation to the Planning Board of the Preliminary Recommendations, Parks staff noted the Historic Resources chapter language and voiced Park's opinion that Hillandale's compromised integrity makes Pinecrest, its "twin," a better example of the building type, and the better candidate for preservation.

Repurposing of the Site

The park is undergoing facility planning in the next few months. The facility planning public process will give the community opportunities to suggest alternate uses on the park activity building's footprint among other issues. Community input to date suggests relocation of the playground to make it more visible, and reconfiguration of the disjointed parking and driveway pattern. The facility plan will address these issues in a comprehensive re-thinking of the entire park.

PC:
John Nissel, Chief, Facilities Management Division, Department of Parks
Steve Chandlee, Acting Division Chief, Southern Parks, Department of Parks
Antonio Duvall Acting Chief, Park Police Division, Department of Parks
MaryEllen Venzke, Chief, Management Servces Division, Department of Parks
Mitra Pedoeem, Chief, Park Development Division
Kate Stookey, Chief, Public Affairs & Community Partnerships Division, Department of Parks
Joey Lampl, Cultural Resources Manager

Figure 1: Location Map

Figure 2: Park Map

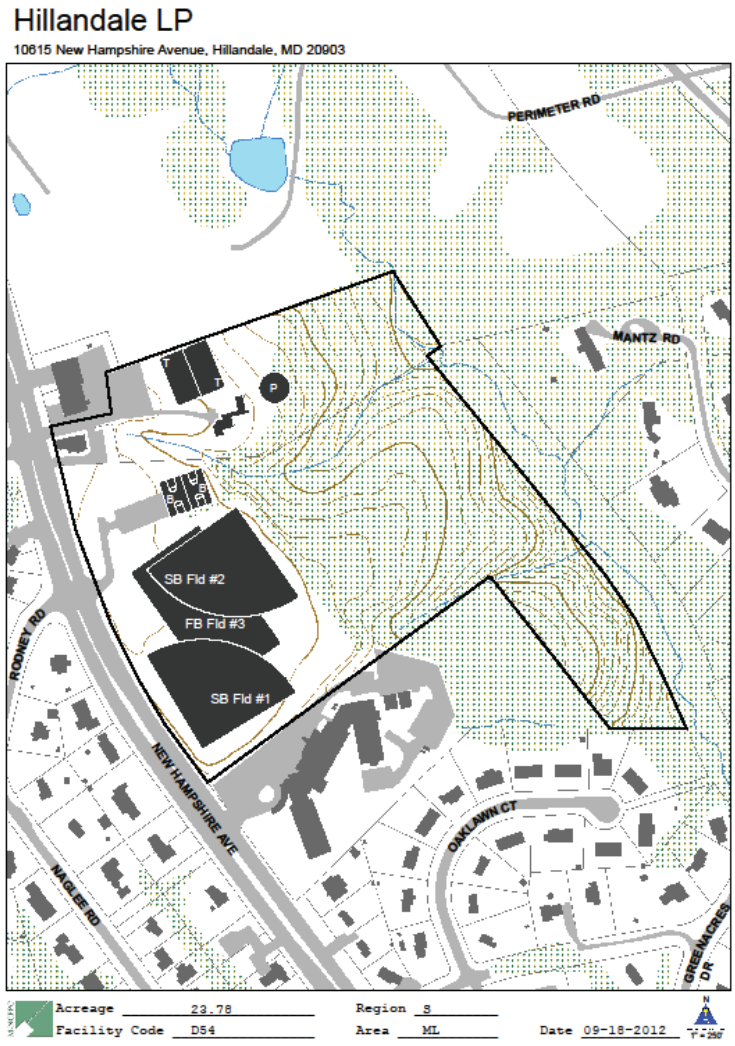

Figure 3: Recreation Buildings and other public meeting spaces near Hillandale Local Park

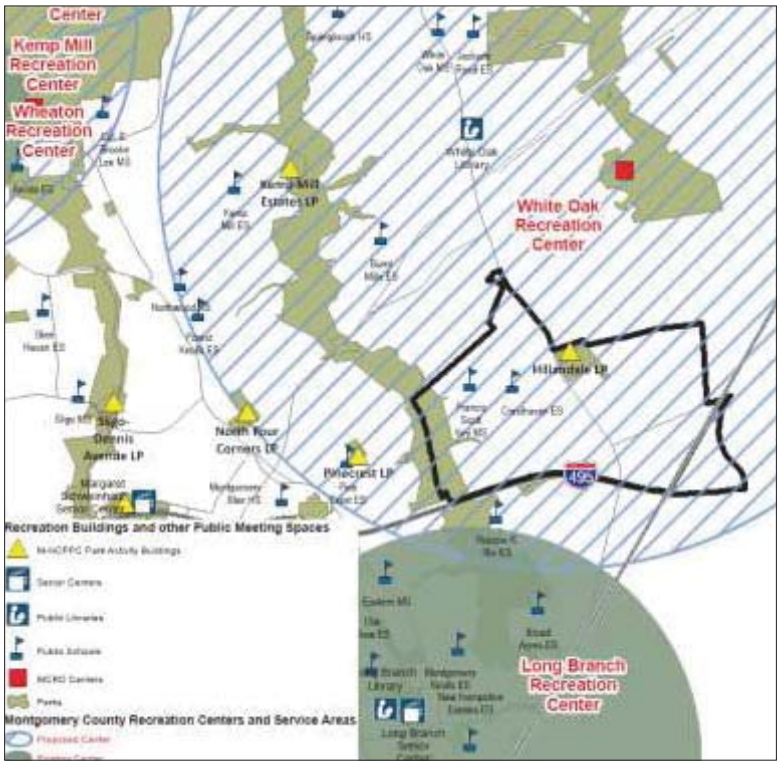

Figure 4: White Oak Community Recreation Center

Attachments

Attachment 1 – Planning Board Memo: June 28, 2007. Functional Plan for Recreation and Ancillary Buildings: PRELIMINARY STAFF RECOMMENDATIONS

Attachment 2 - Department of Permitting Services: Sewage Disposal System Permit

Attachment 3 - Facility Engineering Associates (FEA) Final Report - Infrastructure Inventory and Assessment of Park Components, March 2, 2007

Attachment 4 - W.F. Wilson & Sons, Inc., Budget Proposal

C.2. Forest Conservation Plan Variance to Close Recreation Buildings

MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

July 17, 2014

Ms. Linda Komes
M-CNPPC, Park Development Division
9500 Brunett Avenue
Silver Spring, MD. 20901

Re: Forest Conservation Exemption 42014193E; Hillandale Local Park

Based on the review by staff of the Montgomery County Planning Department, the Forest Conservation Exemption Request submitted on July 17, 2014 for the plan identified above, is confirmed. The project site is exempt from Article II of the Montgomery County Code, Chapter 22A (Forest Conservation Law), Section 22A-5(t) because the site is a modification to an existing developed property: (1) the modification will not remove move than 5,000 square feet of forest, (2) does not affect any forest in a stream buffer or located on property in a special protection area which must submit a water quality plan and (3) the modification does not require approval of a new subdivision plan.

An on-site pre-construction meeting is required after the limits of disturbance have been staked and flagged, but before any clearing or grading begins. The property owner should contact this inspector before construction to verify the limits of disturbance. The project manager, Parks Department arborist, private arborist, construction superintendent, forest conservation inspector, and the Department of Permitting Services (DPS) sediment control inspector should attend this pre-construction meeting.

If you have any questions regarding these actions, please feel free to contact by email at david.wigglesworth@montgomeryplanning.org or at (301) 495-4581.

Sincerely,

David Wigglesworth

David Wigglesworth
Sr. Planner
Development Applications & Regulatory Coordination

CC: Holly Thomas (M-NCPPC, Parks)
Eric J. Sturm (CPJ)
42014193E