TOWN OF HERNDON, VIRGINIA
PLANNING COMMISSION PUBLIC HEARING AGENDA
OCTOBER 26, 2020
HERNDON COUNCIL CHAMBERS BUILDING
765 LYNN STREET
7:00 P.M.

CALL TO ORDER

1. Roll Call

APPROVAL OF AGENDA

APPROVAL OF MINUTES

2. September 14, 2020 Work Session Minutes Draft Minutes

3. September 28, 2020 Public Hearing Draft Minutes

COMMENTS

2. Comments from the Staff Members

3. Comments from the Commissioners

4. Comments from the Audience

PUBLIC HEARINGS

5. **Comprehensive Plan Amendment – CPA #20-01, 315 Elden Street.** Pursuant to Section 15.2-2229 of the Code of Virginia, notice is hereby given of a Comprehensive Plan Amendment to amend the Town of Herndon 2030 Comprehensive Plan adopted August 12, 2008, as amended through February 26, 2019, in order to by change the 2030 Land Use Plan map for the approximately 6.48 acre parcel known as the Residence Inn property at 315 Elden Street, Herndon, Virginia, developed with 168 hotel units owned by Elden Street Owner LLC. from Business Corridor to Adaptive Area-Residential, a category which supports redevelopment and residential land use including multifamily. The property is located in the southwest quadrant of the Elden Street and Herndon Parkway intersection, Fairfax County Tax Map Reference Number: 0171-02-0007 and is zoned CS-Commercial Services. The existing density is 25.9 units per acre and the proposed amendment is the same or similar, based on adaptive reuse of the existing buildings. The Planning Commission will consider a resolution recommending the plan amendment to the Town Council for adoption.

6. **APPLICATION FOR A ZONING MAP AMENDMENT – ZMA #19-02, 1145 Herndon Parkway, Park Place Residential Development,** to consider a

zoning map amendment from C-O, Commercial Office, to PD-UR, Planned Development-Urban Residential with proffered conditions to allow the redevelopment of the site with townhouses and multi-family residential uses. The site is approximately 8.8 acres and is currently improved with four, one-story office buildings. The new development would have 85 three-story townhouses and 56 two-over-two multi-family units at a density of 16 units per acre. The property is located on the south side of Herndon Parkway approximately 520 feet west from its intersection with Elden Street. Fairfax County Tax Map Reference Number: 0161-02-0015G. Agent: Brian Winterhalter, Cooley, LLP. Applicant: Stanley Martin Companies, LLC. Property Owner: FMI Herndon Corporate Center, LLC.

7. **ZONING ORDINANCE TEXT AMENDMENT – ZOTA #20-01,** pursuant to Virginia Code §§ 15.2-2204, 15.2-2285, 15.2-2286, and an Initiating Resolution adopted by the Town Council on September 22, 2020, notice is hereby given to consider zoning text amendments to establish new, and clarify, revise and/or delete existing, regulations and definitions in order to change the name of the Heritage Preservation Overlay district to the Historic District Overlay and to allow for the administrative review of certain types of certificates of appropriateness. The proposed amendments under consideration include multiple sections of Chapter 78 (ZONING) and a new Section 78-155.10 (Certificates of Appropriateness).

8. **APPLICATION FOR A SPECIAL EXCEPTION – SE #17-03, 100, 150, 200 Fairbrook Drive, Fairbrook Business Park,** to consider a special exception under the Landmark Business Alternative Option to allow the redevelopment of these parcels with two office buildings, a residential building, and a mixed use building. The total site is approximately 28 acres and is improved with an 80,000SF office building and surface parking on one parcel. The other two parcels are comprised of natural areas. This case is also subject to SE#19-05 for development within a floodplain and RPA#17-01 for encroachment into a resource protection area, both of which will be reviewed concurrently with this case. The total proposed density is 1.25 FAR (floor area ratio). Access to the site is gained off Herndon Parkway, an internal private street network, and the extension of Fairbrook Drive. The property is zoned O&LI, Office & Light Industrial and is designated in the Comprehensive Plan as "Regional Corridor Mixed Use". The property is on the southeast side of Herndon Parkway approximately 1,200 feet from its intersection with Spring Street. Fairfax County Tax Map Reference Numbers: 0164-10-0005A, 0164-25-H, 0164-25-O. Agent: Elizabeth Baker, Walsh, Colucci, Lubeley & Walsh, PC. Applicant/Owner: Fairbrook Business Park Associates, LP and Fairbrook Business Park Associates II, LP.

9. **APPLICATION FOR A SPECIAL EXCEPTION – SE #19-05, 100, 150, 200 Fairbrook Drive, Fairbrook Business Park,** to consider a special exception to allow for development within the FPO, Floodplain Overlay district. The project consists of two office buildings, a residential building, and a mixed use building. This case is also subject to SE#17-03 for development under the O&LI, Office and Light Industrial – Landmark Business Alternative Option, and RPA#17-01 for encroachment into a resource protection area, both of which will be reviewed

concurrently with this case. Agent: Elizabeth Baker, Walsh, Colucci, Lubeley & Walsh, PC. Applicant/Owner: Fairbrook Business Park Associates, LP and Fairbrook Business Park Associates II, LP.

10. **APPLICATION FOR AN EXCEPTION TO THE CHESAPEAKE BAY PROTECTION AREAS – RPA #17-01, 100, 150, 200 Fairbrook Drive, Fairbrook Business Park,** to consider an exception to encroach into the RPA, Resource Protection Area, component of the CBPAO, Chesapeake Bay Preservation Area Overlay district. The project consists of two office buildings, a residential building, and a mixed use building. The total site is approximately 28 acres and is improved with an 80,000SF office building and surface parking on one parcel. The other two parcels are comprised of natural areas. This case is also subject to SE#17-03 for development under the O&LI, Office and Light Industrial – Landmark Business Alternative Option, and SE #19-05 for development within a floodplain, both of which will be reviewed concurrently with this case. Agent: Elizabeth Baker, Walsh, Colucci, Lubeley & Walsh, PC. Applicant/Owner: Fairbrook Business Park Associates, LP and Fairbrook Business Park Associates II, LP.

ADJOURNMENT

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chairman Romeo and Members of the Planning Commission**

Through: **Elizabeth M. Gilleran, Director of Community Development** *EMG*

From: **Dana Heiberg, Senior Planner** *DH*

Date: **October 21, 2020**

Subject: **CPA 20-01, 315 Elden Street**

Staff has received additional comments from agencies reviewing the proposed comprehensive plan amendment for the Residence Inn property at 315 Elden Street.

The Public Works Operations staff provided several comments and questions related to the potential future use of the site and how it will function as a multifamily development. The comments are technical in nature and will be addressed during the rezoning and site plan process, assuming the comprehensive plan amendment is recommended for approval by the Planning Commission and approved by the Town Council, and the property owner moves forward with a zoning map amendment application. It should be noted that staff anticipates additional comments from the department of public works during these future stages.

Mark Duceman, Transportation Program Manager, provided comments regarding the impact of the East Elden Street Improvement Project on site access and the Elden Street streetscape. A raised median will be installed along Elden Street, in front of the property in question. The median will restrict westbound vehicles from turning left into the site. With property entrances and exits on the Herndon Parkway and Grove Street, the future median should not have significant impact on access. Should this repurposing of the property progress to the rezoning stage, a traffic impact study will be required of the applicant and this future condition studied. In addition, the East Elden Street Improvement Project will require additional right-of-way along the northeast corner of the site. This land acquisition will improve the alignment of both the eastbound Elden Street vehicle lanes and the pedestrian sidewalk.

A revised PowerPoint presentation is attached to this memo.

If you have any questions please do not hesitate to contact Dana Heiberg at dana.heiberg@herndon-va.gov

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chair Romeo & Members of the Planning Commission**

From: **Bryce A. Perry, Deputy Director of Community Development**

Date: **October 22, 2020**

Subject: ZMA#19-02, Zoning Map Amendment, Park Place

This memo serves as an addendum to the above referenced case staff report dated October 5, 2020.

Since the Planning Commission work session, the following case updates have occurred:

- The ARB completed its informal review of the architecture and has generated a report on that review. See Attachment #3.
- Technical reviews of the last submission of the Generalized Development Plan (GDP) and Traffic Impact Analysis (TIA) were completed. See staff comments below.
- The applicant has provided a revised GDP addressing the issues raised by the staff technical review. See Attachment #4.
- The applicant has provided a revised proffer statement adding some further language regarding the trail connections off site. These changes were made at the request of the adjoining neighborhoods. See Attachment #2.
- Staff generated a recommended Planning Commission Resolution for Town Council consideration. See Attachment #1.

Updated Staff Analysis

1. Site Engineering. Several minor engineering details required attention in the last GDP including site adjustments to accommodate proper fire access, site revisions to meet the necessary standards in the Public Facilities Manual, and a few amendments to account for potential utility conflicts. The attached GDP, as revised, addresses all of the engineering items raised town staff. There are no further engineering comments that remain unsatisfied at this time.

2. Traffic Impacts. Review of the most recent TIA has been completed with no further staff concerns or comments. The proposed development will increase traffic along Herndon Parkway and nearby intersections compared to traffic levels seen today as generated from an underutilized office park however that increase will not reduce service levels any more than the traffic allowed by the current by-right use would.

Also, it should be noted that the project originally included two entrances into the proposed development however staff did not support the second entrance because its location did not meet minimum distance standards from other entrances along Herndon Parkway and it presented an additional point of conflict between motorists, pedestrians, and cyclists. In addressing that comment, the applicant removed the second entrance.

3. Parking. Concerns regarding parking were raised at the Planning Commission work session. This project's required parking, per Section 78-100.2 of the Zoning Ordinance, is 2.33 spaces per dwelling unit, which equates to 329 required spaces. The applicants propose more than the required parking. The parking rate, as proposed, is 2.62 spaces per unit, and the total number of spaces provided is 370. This includes either two or four spaces for the townhouses, two spaces for each stacked unit, and 56 private on-street spaces.

   Note that the 2.33 minimum required parking spaces per dwelling unit of PD-UR is above the 2.0 parking space per dwelling unit required in the downtown area and the 1.0 parking space per dwelling unit required in the Herndon Transit-oriented Core. Staff is continually seeking to balance the need for parking based on market conditions and the desire to manage land use demands of accommodating personal vehicles. Given that the applicant complies with the required parking requirements that were established with the recently approved ZOTA that created the PD-UR zoning district, staff is satisfied with the parking as proposed.

4. Housing. Though not required of the project or regulated by the comprehensive plan or zoning ordinance, staff believes further information on the proposed housing price points would be beneficial in understanding further how this project would fit within Herndon's housing profile. The applicant has been clear in expressing that the units will be market rated however has also stated an intent to keep some costs down to allow for lower price points. Staff has asked the applicant to further explain the intended market for this project at the public hearing.

5. Phase 1. A question regarding zoning disposition of the existing office building to remain in Phase 1 was raised at the Planning Commission work session. The office building is able to remain as an existing use in accordance with the GDP and proffer statement. It would exist following a rezoning of the property as a continuation of the current use and can be maintained and improved in some ways in order to allow the retention of that current use. The developer, Stanley Martin Companies, is under contract to redevelop the entire site including the remaining office building and intends to do so after the existing lease expires. Regarding any specifics of the lease terms, the applicant will be present at the public hearing to provide more information.

   Staff does not have concerns with the interim mixed use conditions of Phase 1. Although admittedly awkward in how the office building physically ties into the site improvements of the residential development, the applicant has addressed earlier staff concerns and provided acceptable interim vehicle and pedestrian connections and effectively integrated the office green spaces into the residential green spaces.

Also the continuation of the office use on-site will balance out traffic in the interim and given that the office building already exists, new residents should not be surprised by presence or operation.

6. Density. As a point of emphasis as stated in the staff report, this project complies with the intent, applicable principles, goals, and objectives of the Comprehensive Plan and is within the permitted density levels. It was this redevelopment proposal that kicked off the South Elden Area Plan that was then adopted as a Comprehensive Plan Amendment. The Planning Commission informally considered this project before recommending a larger area plan be conducted to consider the future land uses of the south Elden Street corridor. That plan, as supported by the Planning Commission, created a tiered approach to future changes in land uses with redevelopment. The subject property was placed in Tier 2, which call for for residential development at a recommended density of 18-20 dwelling units per acre. The Zoning Ordinance Text Amendment that adopted the Planned Development-Urban Residential zoning district reflected that density and permits up to 20 dwelling units per acre when there are two housing types. The proposed development at 16 dwelling units per acre is less than the maximum densities allowed in the zoning ordinance and recommended in the comprehensive plan. Staff supports the lower density level as a preferred option to better manage traffic and parking and allow more open space.

7. Pedestrian Public Access. To address a comment raised at the Planning Commission work session, the revised GDP as submitted now shows an east-west pedestrian connection with public access across the middle of the site. This is shown on Sheet C-03A.

Attachments:

1. Proposed Planning Commission Resolution
2. Revised Proffer Statement
3. ARB memo to the Planning Commission
4. Revised Generalized Development Plan

TOWN OF HERNDON, VIRGINIA

PLANNING COMMISSION

RESOLUTION

October 26, 2020

Resolution – Recommending approval of Zoning Map Amendment #19-02, 1145 Herndon Parkway, Park Place residential development, to the Town Council

WHEREAS, Cooley, LLP, the applicant, has submitted a zoning map amendment, ZMA #19-02, requesting redevelop of a parcel of land, identified as Fairfax County Tax Map Reference Number 0161-02-0015G and containing four office buildings, with a mixed single family and multi-family residential development containing 141 dwelling units; and

WHEREAS, The request includes a proffer statement dated August 25, 2020 and amended through October 19, 2020, and a generalized development plan dated October 2, 2019 and amended through October 19, 2020; and

WHEREAS, The request adheres to the South Elden Area Plan as integrated and adopted into the Town of Herndon 2030 Comprehensive Plan and complies with the Tier 2 land use provisions included within the South Elden Area Plan; and

WHEREAS, The applicant is requesting modifications to the following sections of the zoning ordinance: Section 78-51.1(g)(1) regarding the location of mechanical equipment, Section 78-51.1(e) regarding the maximum distance from a public right-of-way, and Section 78-51.1(e) regarding the minimum distance between buildings and development boundaries; and

WHEREAS, On October 26, 2020, the Planning Commission held a public hearing to consider ZMA #19-02; and

WHEREAS, The Planning Commission has determined that the applicant has demonstrated that the above referenced Proffer Statement and generalized development plan adheres to applicable sections of the Town of Herndon Zoning Ordinance, dependent upon a modification of aforementioned sections; and

WHEREAS, The Planning Commission has determined that the applicant has demonstrated that the requested modifications afford equal or greater assurances of meeting the applicable goals of the zoning ordinance.

NOW THEREFORE, BE IT RESOLVED by the Planning Commission of the Town of Herndon, Virginia that the Commission recommends to the Town Council of the Town of Herndon, Virginia approval of ZMA #19-02.

PARK PLACE
PROFFER STATEMENT
ZMA #19-02

August 25, 2020
October 19, 2020

Stanley Martin Companies, LLC ("Stanley Martin") is the contract purchaser of certain property described as Fairfax County Tax Map 161-02-0015G (the "Property"), that is located in the Town of Herndon (the "Town") and consists of approximately 8.81 acres. Stanley Martin, along with the Property's owner, FMI Herndon Corporate Center LLC (the "Owner") (collectively, the "Applicant") hereby voluntarily proffer, pursuant to Section 15.2-2303 of the Code of Virginia (1950), as amended, and Section 78-51.1 of the Zoning Ordinance of the Town of Herndon (the "Zoning Ordinance"), that in the event the Property is rezoned by the Herndon Town Council to the Planned Development –Urban Residential ("PD-UR") zoning district pursuant to zoning map amendment application ZMA #19-02 (the "Application"), the development of the Property will be in substantial conformance with the following proffered terms and conditions (the "Proffers"). Said proffered terms and conditions supersede any prior proffers that have been offered for any portion of the Property. Stanley Martin and the Owner, for themselves, their successors and assigns, agree that these proffers will be binding on the future development of the Property unless modified, waived, or rescinded in the future by the Herndon Town Council in accordance with applicable Town and State statutory procedures. In the event that the application is denied, these proffers will be immediately null and void and of no further force and effect.

1. Generalized Development Plan. Development of the Property will be in substantial conformance with the Generalized Development Plan dated October 2, 2019, and revised through October 19, 2020, prepared by VIKA Virginia LLC, and consisting of 40 sheets (the "GDP"). The GDP will control the use, layout, and configuration of the Property with reasonable allowances to be made for engineering and design alterations to meet applicable regulations and policies governing land development within the Town, unless modified by the language of this approval. Should there be any inconsistencies between the GDP and these Proffers, the Proffers shall govern.

2. Minor Modifications. Minor modifications to the GDP may be permitted without the need for an amendment to this Application when necessitated by sound engineering or final site design or engineering provided that the development is in substantial conformance with the GDP, and as approved by the Town of Herndon Architectural Review Board ("ARB"). Substantial conformity will be determined by the Zoning Administrator as provided in the Zoning Ordinance.

3. Future Applications. Any portion of the Property may be the subject of a Proffered Condition Amendment ("PCA"), Zoning Map Amendment ("ZMA"), Special Exception ("SE"), Master Sign Plan ("MSP"), Variance or other zoning action without the joinder and/or consent of the owners of the other land areas, provided that such application complies with Section 15.2-2302 of the Code of Virginia, as applicable. Previously approved proffered conditions or development conditions applicable to a particular portion of the Property that are not the subject of such an application will remain in full force and effect.

4. Proposed Development. The Property will be developed in accordance with the PD-UR standards, unless modified pursuant to this Application, to permit up to 85 single family townhouse units (the "Townhouses") and up to 56 stacked townhouse units (the "Stacked Townhouses"), for a total of 141 residential units (collectively, the "Proposed Development").

5. Phasing of Development. The Property may be developed in phases such that the existing office building in the southwest corner of the Property identified as 1165 Herndon Parkway (the "Existing Building") may remain as an interim condition as described herein and shown on the GDP, as follows:

A. Existing Building. The Existing Building, surface parking areas, driveways, sidewalks/trails, landscaping, and stormwater management facilities existing within the Property as of the date of the approval of this Application will collectively be referred to herein as the "Existing Development." The Existing Development is shown on Sheet C-03 of the GDP and may remain in operation in its existing condition. The Applicant may make minor modifications to the Existing Development in accordance with Article XV of the Zoning Ordinance without the need for a PCA or ZMA. Any modifications or improvements to the Existing Development, including but not limited to interior and exterior improvements, the securing of site plan approvals, the issuance of building permits, the issuance of occupancy permits, or any other land development approvals or permits will not trigger any monetary contributions, on-site improvements, or off-site improvements identified in these Proffers and will not require any physical changes to the Existing Development. Any exterior modifications to the Existing Development may be subject to the approval of the ARB, unless determined otherwise by the Zoning Administrator.

B. Phase 1. The development proposed with Phase 1 under this Application consists of 55 Townhouses, identified as Units 1 – 55, and 56 Stacked Townhouses, identified as Units 56 – 111, as shown on Sheet C-07 of the GDP. The Existing Building and associated portions of the Existing Development shown on Sheets C-03 and C-07 of the GDP may remain in operation in their existing condition during Phase 1 in accordance with Proffer 5.A above, provided, however, that during Phase 1 the Applicant also will have the right to make modifications to the Existing Development within the Phase 2 area of the Property identified as "Interim Improvements in Phase 2 to be provided in Phase 1" as shown on Sheet C-07 of the GDP. The Applicant may develop any portion of Phase 1 at any time, provided, however, that prior to the development of Phase 2 the Applicant will provide the site improvements associated with the Existing Building, including access, parking, and landscaping, as shown on Sheet C-07 of the GDP and further described in the Proffers.

C. Phase 2. The development proposed with Phase 2 under this Application consists of 30 Townhouses, identified as Units 112 – 141, as shown on Sheet C-07A of the GDP. The Applicant may develop any portion of Phase 2 at any time.

6. Building Design. The Proposed Development will be developed in substantial conformance with the architectural design shown on Sheets A-01 and A-02 of the GDP (the "Conceptual Elevations"). The Conceptual Elevations are conceptual and may be modified by the Applicant as part of final architectural engineering and building design, provided such modifications are in substantial conformance with the GDP and these Proffers as determined by the Zoning Administrator. Notwithstanding anything to the contrary contained in this Proffer 6, the Applicant will be permitted to develop the Proposed Development in conformance with any review and approval as may be required by the ARB without the need to secure a PCA or ZMA.

7. Right of Way Dedication Along Herndon Parkway. The Applicant will dedicate right-of-way along the Property's frontage, at no public cost, as depicted on Sheet C-03B of the GDP and labeled "R.O.W. Dedication (9,639 S.F.)." The Applicant also will grant any related easements, at no public cost, outside of such dedicated right-of-way necessary to accommodate the construction of the public road (such as slope maintenance, storm drainage, temporary construction, and utility relocation easements), provided the Applicant will have no obligation to grant any such easements that are reasonably expected to have a material adverse impact on the development or ongoing operation of the Proposed Development. The Applicant will dedicate the right-of-way and grant any required easements to the Town prior to or concurrent with the approval of the first record plat or site plan for the Proposed Development, whichever occurs first. The Applicant may reserve intensity/density credits as may be permitted by the provisions or regulations of the Zoning Ordinance for any eligible dedication as may be required by the Town, the Virginia Department of Transportation or any other public entity.

8. Herndon Parkway Streetscape and Cycle Track. Prior to the issuance of: (i) the first occupancy permit for Lots 1-8, Lots 27-34, or Stacked Townhouses 106-111, or (ii) the 30th occupancy permit for the Proposed Development, whichever occurs first, the Applicant will construct streetscape improvements along Herndon Parkway, consisting of a minimum 6-foot wide street tree zone with street trees, a 9-inch concrete band, an 8-foot wide asphalt cycle track, a 9-inch concrete band, and a minimum 6-foot wide concrete sidewalk (the "Streetscape"), as shown on Sheets C-03B, C-06 and L-02 of the GDP. Notwithstanding the foregoing, the Applicant will have the right, subject to site plan approval, to provide an interim construction access to the Property from Herndon Parkway through the Streetscape area during Phase 1 to facilitate the Applicant's construction of the Proposed Development.

9. Open Space and Recreational Amenities. The Applicant will provide a minimum of five open space areas with recreational features/amenities as shown on Sheets C-06, C-06A, C-06B, C-06C and L-03 of the GDP as follows:

A. Open Space 1. The Applicant will install an approximately 9,000-square-foot park and open space area proximate to Herndon Parkway to serve as an entry feature and gathering area for the Property generally as depicted on Sheets C-06 and C-06A of the GDP ("Open Space 1"). Open Space 1 will include features for passive recreation including, but not limited to, lawn areas, hardscape, landscape areas, benches/seating areas, a bicycle amenity/repair station, and similar amenities as conceptually shown on Sheet C-06A of the GDP. The Applicant may adjust the type and location of vegetation, the design of the open space, and the features/amenities comprising Open Space 1, provided the character and quality of

Open Space 1 is consistent with Sheet C-06A of the GDP. The Applicant also may adjust the extent of Open Space 1, provided such open space is in substantial conformance with the Sheet C-06A of the GDP as determined by the Zoning Administrator. The Applicant will install Open Space 1 prior to the issuance of the first occupancy permit for Lots 27-34.

B. Open Space 2. The Applicant will install an approximately 22,000-square-foot linear park and open space area along the western boundary of the Property generally as depicted on Sheets C-06 and C-06C of the GDP ("Open Space 2"). Open Space 2 will include features for active recreation including, but not limited to, a five-foot (5') wide trail, a minimum of six (6) exercise stations, lawn areas, landscape areas, and similar amenities as conceptually shown on Sheet C-06 of the GDP. The Applicant may adjust the type and location of vegetation, the design of the open space, and the features/amenities comprising Open Space 2, provided the character and quality of Open Space 2 is consistent with Sheet C-06 of the GDP. The Applicant also may adjust the extent of Open Space 2, provided such open space is in substantial conformance with the Sheets C-06 and C-06C of the GDP as determined by the Zoning Administrator. The Applicant will install Open Space 2 in phases, installing the portion within Phase 1 prior to the issuance of the eleventh (11th) occupancy permit for Lots 1 and 9-18, and install the portion within Phase 2 prior to the issuance of the eleventh (11th) occupancy permit for Lots 129-141.

C. Open Space 3. The Applicant will install an approximately 2,600-square-foot park and open space area along the southern boundary of the Property generally as depicted on Sheets C-06 and C-06C of the GDP ("Open Space 3"). Open Space 3 will include features for passive and active recreation including, but not limited to, lawn areas, landscape areas, a children's play area (tot lot), and similar amenities as conceptually shown on Sheet C-06 of the GDP. The Applicant may adjust the type and location of vegetation, the design of the open space, and the features/amenities comprising Open Space 3, provided the character and quality of Open Space 3 is consistent with Sheet C-06 of the GDP. The Applicant also may adjust the extent of Open Space 3, provided such open space is in substantial conformance with the Sheets C-06 and C-06C of the GDP as determined by the Zoning Administrator. The Applicant will install Open Space 3 prior to the issuance of the first occupancy permit for Lots 56-71.

D. Open Space 4. The Applicant will install an approximately 17,000-square-foot park and open space area in the center of the Property generally as depicted on Sheets C-06 and C-06B of the GDP ("Open Space 4"). Open Space 4 will include features for passive and active recreation including, but not limited to, lawn areas, hardscape/stamped concrete, landscape areas, benches/seating areas, and similar amenities as conceptually shown on Sheets C-06 and C-06B of the GDP. The Applicant may adjust the type and location of vegetation, the design of the open space, and the features/amenities comprising Open Space 4, provided the character and quality of Open Space 4 is consistent with Sheet C-06B of the GDP. The Applicant also may adjust the extent of Open Space 4, provided such open space is in substantial conformance with the Sheets C-06 and C-06B of the GDP as

determined by the Zoning Administrator. The Applicant will install Open Space 4 in phases, installing the portion within Phase 1 and the interim portion of Open Space 4 within the Phase 2 area identified as "Interim improvements in Phase 2 to be provided in Phase 1" as shown on Sheet C-07 of the GDP prior to the issuance of the first occupancy permit for Lots 43-46, and the ultimate portion of Open Space 4 within Phase 2 as shown on Sheet C-07A of the GDP prior to the issuance of the first occupancy permit for Lots 112-114.

E. Open Space 5. The Applicant will install an approximately 5,000-square-foot open space area along the eastern boundary of the Property generally as depicted on Sheets C-06 and C-06C of the GDP ("Open Space 5"). Open Space 5 will include landscaping and hardscaping to invite residents outside, as conceptually shown on Sheets C-06 and C-06C of the GDP. The Applicant may adjust the type and location of vegetation, the design of the open space, and the features/amenities comprising Open Space 5, provided the character and quality of Open Space 5 is consistent with Sheets C-06 and C-06B of the GDP. The Applicant also may adjust the extent of Open Space 5, provided such open space is in substantial conformance with Sheet C-06 of the GDP as determined by the Zoning Administrator. The Applicant will install Open Space 5 prior to the issuance of the seventh occupancy permit for Lots 94-105.

F. Remaining Open Space Areas. The Applicant will install the remainder of the open space areas and landscaping not designated as Open Spaces 1 – 5 above concurrently with the development of the Townhouses and/or Stacked Townhouses adjacent to or in the vicinity of such open space areas on a phased basis with the occupancy of each grouping of Townhouses or Stacked Townhouses as shown on Sheet L-03A of the GDP.

G. Public Access. As part of site plan approval for the Proposed Development, the Applicant will grant a public access easement for Open Space 1 to the Town of Herndon as shown on Sheet C-03A of the GDP. The public access easement will provide that Open Space 1 will, at a minimum, be open to the general public from dawn to dusk, provided that the Applicant reserves the right to: (i) establish reasonable rules and regulations governing the use of Open Space 1, (ii) temporarily limit access to Open Space 1 for reasonable periods of time for purposes of construction and/or maintenance, and (iii) temporarily limit access to Open Space 1 as may be necessary to host programmed events for residents of the Proposed Development and/or the local community. Within ninety (90) days of a request by the Town of Herndon, the Applicant also will grant a public access easement for pedestrian and vehicular ingress and egress through the Property in the locations shown on Sheet C-03A of the GDP, provided that the Applicant reserves the right to: (i) establish reasonable rules and regulations governing the pedestrian and vehicular connections, (ii) temporarily limit access to the pedestrian and vehicular connections for reasonable periods of time for purposes of construction and/or maintenance, and (iii) include a condition in the easement that the right of access by the public will not commence until the establishment of the first pedestrian or vehicular connection identified as "Future Pedestrian Connection" and "Future

Road Connection" as shown on Sheet C-06 of the GDP in accordance with Proffer 13 below.

10. Monetary Recreational Contribution. Due to the increase in demand that the Townhouses and Stacked Townhouses will place of the Town of Herndon's recreational facilities and services, the Applicant will contribute $1,800 per residential unit to the Town of Herndon prior to the issuance of the occupancy permit for each such residential unit. The Applicant also will provide recreational facilities within the Property with a minimum expenditure of $1,800 per residential unit for such on-site recreational facilities.

11. Landscape Plan. Landscaping and tree preservation will be provided on the Property as shown on Sheets L-02 and L-04 of the GDP. The Applicant may modify the landscaping design during site plan review to allow for final engineering and design considerations, provided that such modifications are in substantial conformance with the quality and quantity of plantings and materials as shown on the GDP. With the exception of open lawn areas consisting of turf, the Applicant will use principally native species, to be determined by the Applicant in consultation with the Town, for landscaping in Open Space 1, Open Space 2, Open Space 3, Open Space 4, and Open Space 5.

12. Green Building Certification. To promote energy conservation and green building techniques, all new dwelling units on the Property will be constructed to achieve the following program or an alternative third-party certification as approved by the Town's Department of Community Development. Selection of one of the following certification methods, or an alternative, will be within the Applicant's sole discretion at time of site plan submission:

A. Earth Craft. Certification in accordance with the Earth Craft House Program as demonstrated through documentation provided to the Town prior to the issuance of the residential occupancy permit for each dwelling unit; or

B. National Green Building Standard. Certification in accordance with the National Green Building Standard (NGBS) using the ENERGY STAR® Qualified Homes path for energy performance, as demonstrated through documentation submitted to the Town from a home energy rater certified through Home Innovation Research Labs that demonstrates that the dwelling unit has attained the certification prior to the issuance of the occupancy permit for each dwelling; or

C. Alternative Program. Where the Applicant has provided evidence sufficient for the Town to find that an alternative green building program that is administered by an independent third party or a proprietary homebuilders certification program or set of building standards (including, but not limited to, the Stanley Martin Homes Green Living Program) has demonstrated equivalence to Earth Craft, NGBS, or another independent third party rating system and will ensure that equivalent environmental and energy efficiency will be achieved in the project, the Zoning Administrator may approve the use of such alternative program, subject to such conditions as may be reasonably necessary to ensure that the alternative program will achieve the goals of this proffer prior to the issuance of the first building permit.

13. Future Pedestrian and Vehicular Connections.

A. Eastern Boundary. The Applicant will grant interparcel access easements and temporary construction and grading easements to the owner(s) of the property identified on the Fairfax County Tax Map as 16-1 ((2)) 15D and 15E (collectively, the "Shopping Center Property") in the general locations identified as "Future Pedestrian Connection" and "Future Road Connection" as shown on Sheet C-06 of the GDP within ninety (90) days of a request by the Town of Herndon, provided that such easements may include a condition that the owner(s) of the Shopping Center Property will not be permitted to install physical improvements to effectuate any pedestrian and/or vehicular connection(s) utilizing such temporary construction and grading easements or interparcel access easements prior to the owner(s) of the Shopping Center Property having obtained approval of a Zoning Map Amendment by the Town of Herndon that requires such interparcel access connection(s). Notwithstanding the general location of the interparcel access easements and temporary construction and grading easements identified on Sheet C-06 of the GDP, the final location of such easements may be adjusted as mutually agreed upon by the Applicant, the Town of Herndon, and the owner(s) of the Shopping Center Property.

B. Western Boundary. The Applicant will grant an interparcel access easement and temporary construction and grading easement to the owner of the property identified on the Fairfax County Tax Map as 16-1 ((15)) C (the "Four Seasons Property") in the general location identified as "Future Pedestrian Connection" along the western boundary of the Property, as shown on Sheet C-06 of the GDP within ninety (90) days of a request by the Town of Herndon, provided that the granting of such easements will be subject to the approval of the owner of the Four Seasons Property. Notwithstanding the general location of the interparcel access easement and temporary construction and grading easement identified on Sheet C-06 of the GDP, the final location of such easements may be adjusted as mutually agreed upon by the Applicant, the Town of Herndon, and the owner of the Four Seasons Property.

C. Southern Boundary. The Applicant will grant an interparcel access easement to the owner of the property identified on the Fairfax County Tax Map as 16-1 ((08)) B (the "Reflection Lake Townhouse Property") in the general location identified as "Future Pedestrian Connection" along the southern boundary of the Property, as shown on Sheet C-06 of the GDP and install a gate to allow access through the existing fence within ninety (90) days of a request by the Town of Herndon, provided that the granting of such easement and installation of the gate will be subject to the approval of the owner of the Reflection Lake Townhouse Property. Notwithstanding the general location of the interparcel access easement and identified on Sheet C-06 of the GDP, the final location of such easement may be adjusted as mutually agreed upon by the Applicant, the Town of Herndon, and the owner of the Reflection Lake Townhouse Property.

14. Bicycle Racks. The Applicant will provide at least two bicycle racks to accommodate a minimum of eight total bicycles within the Property generally as shown on Sheet C-06A of the GDP. The Applicant will determine the final locations of the bicycle racks in consultation with Town of Herndon prior to site plan approval for the Proposed Development. The bicycle racks will be designated on the site plan and installed prior to the issuance of the first occupancy permit for the Proposed Development.

15. Property Owners Association.

A. Purpose. All property owners at the Property will be a member of a Property Owners Association ("POA") established to provide standards for the construction, landscaping, and use of privately-owned land and structures within the Property. The Applicant intends to establish an overall, umbrella POA at the Property (referred to herein as the "POA").

B. Responsibilities. The POA will provide landscaping and lawn maintenance for all common areas and snow removal on all private streets, and will contract for trash removal services. The POA will be responsible for the maintenance of all common recreational facilities and buildings, all stormwater management facilities, all private streets, and all sidewalks and trails, not otherwise maintained by the Town or VDOT.

C. Establishment. Prior to the approval of the first site plan for the Proposed Development, the Applicant will submit draft documents for the establishment of the POA to the Town for review and approval. The POA will be established prior to recordation of the first record plat for the Proposed Development.

16. Public Schools Contribution. Per the Residential Development Criteria Implementation Motion adopted by the Fairfax County Board of Supervisors on January 7, 2003, prior to the issuance of a building permit for each residential unit, the Applicant will contribute $5,665 per Townhouse unit and $4,034 per Stacked Townhouse unit (based on an assumed rate of 0.462 students per Townhouse unit and 0.329 students per Stacked Townhouse unit included in such building permit application multiplied by $12,262.00 per new student generated) to the Town of Herndon for transfer to the Fairfax County School Board to be utilized for capital improvements and capacity enhancements to schools in the Herndon School Pyramid that serve the Property. The Applicant will provide documentation of the payment of such contributions to the Town of Herndon Zoning Administrator. The contributions will be based on the actual number of units constructed, so the total amount may vary. Following approval of this Application and prior to the first site plan approval for the Proposed Development, if Fairfax County should modify the ratio of students per Townhouse unit or Stacked Townhouse unit or the amount of contribution per student on a Countywide basis, the Applicant will pay the modified contribution amount to reflect the then-current ratio and/or contribution. Prior to the commencement of construction for the Proposed Development, the Applicant will notify the Fairfax County Public Schools of the intended construction and anticipated completion date for the Townhouses and Stacked Townhouse on the Property.

17. Universal Design. The Applicant will offer the following Universal Design Options in all residential units on the Property:

A. At the time of initial purchase, for units that have not yet been constructed, each purchaser will be offered the following Universal Design Options in all residential units on the Property at no additional cost to the purchaser:

1. Blocking for reinforcement of fall grab bars;

2. Front entrance doors that are a minimum of 36 inches wide;

3. Electrical outlets that are a minimum of 18 inches high on the wall;

4. Light switches and thermostats that are located a maximum of 48 inches high on the wall. Thermostats will be relocated to a maximum of 48 inches high on the wall at the request of the original home purchaser at the time of sale;

5. Clear knee space under the kitchen sink; and

6. Lever door handles instead of door knobs.

B. In addition to the Universal Design Options offered pursuant to Proffer 17.A above, at the time of initial purchase, and prior to construction, each purchaser will be offered the following additional Universal Design options at the purchaser's sole cost, which will include, but not necessarily be limited to:

1. A curb-less shower or a shower with a maximum two inch high curb;

2. Step-less entry for ground floor residential units from the garage to the house, to the extent permitted by the then current edition of the Virginia Statewide Building Code;

3. A turning radius of five feet near the first floor bathroom commode;

4. ADA-compliant grab bars in the bathrooms; and

5. A first floor bathroom console sink in lieu of a cabinet-style vanity.

18. Garage Use Restrictions. Any conversion or use of garages that precludes the parking of vehicles and the storage of trash and recycling containers within such garages is prohibited. Owners of the Townhouses and Stacked Townhouses will be required to store trash and recycling containers inside their garages, except on collection days. A covenant setting forth these restrictions will be recorded among the land records of Fairfax County in a form approved by the Town Attorney, which may be part of any recorded HOA/COA declaration, prior to the sale of any Townhouses or Stacked Townhouses and will run to the benefit of the HOA/COA and the Town of Herndon. These restrictions will be included in the marketing materials for the initial

sales of the units and disclosed in the HOA/COA documents. Prospective purchasers will be advised of these restrictions, in writing, prior to entering into a contract of sale for any unit.

19. Recreational Vehicle Restrictions. A covenant prohibiting the parking of recreational vehicles within the Property will be recorded among the land records of Fairfax County in a form approved by the Town Attorney, which may be part of any recorded HOA/COA declaration, prior to the sale of any Townhouse or Stacked Townhouse and will run to the benefit of the HOA/COA and the Town of Herndon. This restriction will be included in the marketing materials for the initial sales of the units and disclosed in the HOA/COA documents. Prospective purchasers will be advised of this restriction, in writing, prior to entering into a contract of sale for any unit.

20. Public Safety Contribution. Prior to the issuance of the 30th occupancy permit for the Proposed Development, the Applicant will contribute $17,500 to the Town of Herndon toward the cost of the Town equipping a uniformed police officer.

21. Herndon Parkway Signage. Prior to the issuance of the 30th occupancy permit for the Proposed Development, the Applicant will install signage along Herndon Parkway, to be determined in consultation with the Town prior to site plan approval, to warn drivers on Herndon Parkway of turning vehicles exiting the Property.

22. Zoning Administrator Extensions. Notwithstanding the foregoing commitments in these Proffers, upon demonstration by the Applicant that, despite diligent efforts by the Applicant or due to factors beyond the Applicant's control, any improvements and/or contributions required under these Proffers have been delayed or will be delayed beyond the time frames specified for the completion of such improvements and/or contributions, the Zoning Administrator may extend the timeframes for completion to a later date as determined by the Zoning Administrator.

23. Successors and Assigns. These Proffers will bind and inure to the benefit of the Applicant and its successors and assigns. Each reference to "Applicant" in this proffer statement will include within its meaning and will be binding upon Applicant's successor(s) in interest and/or developer(s) of the Property or any portion of the Property.

24. Counterparts. These proffers may be executed in one or more counterparts, each of which when so executed and delivered will be deemed an original, and all of which taken together will constitute but one and the same instrument.

25. Escalator. Unless otherwise specified in these Proffers, all cash contributions enumerated in these Proffers will be subject to an annual adjustment based on the Consumer Price Index for all urban consumers (CPI-U), 1982-1984=100 (not seasonally adjusted) as published by the Bureau of Labor Statistics, U.S. Department of Labor, Washington-DC-MD-VA-WV with a base year of 2020, in accordance with Section 15.2-2303.3 of the Code of Virginia. This adjustment will take effect on January 1, 2021, and will be applied effective each January 1 thereafter.

[SIGNATURE PAGES TO FOLLOW]

The undersigned hereby warrant that all owners with any legal interest in the Property have signed this Proffer Statement, that no signature from any additional party is necessary for these proffers to be binding and enforceable in accordance with their terms, that they, together with any others signing this document, have full authority to bind the Property to these conditions, and that the Proffers are entered into voluntarily.

OWNER:

FMI HERNDON CORPORATE CENTER LLC

BY: _____

NAME: _____

TITLE: _____

STATE OF _____)

) to-wit:

COUNTY/CITY OF _____)

The foregoing Proffer Statement was acknowledged before me this _____ day of _____, 2020, by

_____
Notary Public

My Commission Expires: _____

APPLICANT:

STANLEY MARTIN COMPANIES, LLC

BY: _____

NAME: _____

TITLE: _____

STATE OF _____)

) to-wit:

COUNTY/CITY OF _____)

The foregoing Proffer Statement was acknowledged before me this _____ day of _____, 2020, by

_____
Notary Public

My Commission Expires: _____

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: Chair Romeo and Members of the Planning Commission

From: Chair Walker and Members of the Architectural Review Board

Date: October 21, 2020

Subject: Architectural Review of ZMA #19-02, Park Place Zoning Map Amendment

---

The Architectural Review Board (ARB) reviewed the architecture and urban design for the above referenced project at its work sessions on June 3, 2020 and October 2, 2020. The reviews were completed as requirements of the associated zoning map amendment, ZMA #19-02, under consideration by the Town's Planning Commission.

Community Development Department staff provided a staff memo to the ARB explaining the scope of the project with staff analysis of the architecture and urban design prior to each of the Board's work sessions. The Board used those staff memos to help frame the review and discussion. The ARB generally agrees with the staff's analysis and all comments contained within them. The latest staff memo, presented to the ARB on October 7, 2020 has been attached for reference (Attachment #1).

Given the conceptual nature of a project's design at the zoning map amendment phase, it is usually a challenge for the ARB to fully evaluate architecture. It was no different for this review that lacked the level of detail that will be expected when the project returns for its formal ARB review. Given this challenge, the ARB sought to understand the design intent and basic design concepts and material palettes and judge based on whether the project is moving in the right direction architecturally or founded on sound and appropriate base designs.

Generally, the ARB is supportive of the architecture as revised and presented at the October 7, 2020. While details are missing and further refinement should occur before returning to the ARB formally, the ARB believes the applicant has made progress towards addressing staff and Board comments. Though supportive and appreciative of the responsiveness of the applicant the ARB offers the following design comments to supplement the staff analysis.

- At the conceptual design level, building variety and articulation are architectural characteristics that may be more substantially understood and evaluated as the design further develops. As presented to the ARB, the evolution of the building facades appears to be on the right path towards effectively breaking up the buildings into sensible, orderly components with varying wall planes and varying cladding treatments and patterns. Some Board members agreed with staff that features like

false parapets and long, unbroken roof lines appear more suburban in nature than urban styled and require additional attention to design.

- The drawings are still preliminary, and the proposed architecture has not been fully articulated throughout the building designs which limits the review. In some cases, the applicant has been successful at articulating street-facing or front facade architecture and details that results in an appropriate visual interest and variety of articulation. However, the architectural variations that can or will be used in the design of each segment of unit types remains in question.

- Overall, the open space and landscape design, in addition to the neighborhood design remains somewhat unclear. Perspective drawings internal to the site, though requested, were not provided and therefore a more thorough understanding of the urban design inside the development could not be achieved.

In summary, the Board appeared to agree with the staff's review of the proposed design concept, but also acknowledged the visual appeal of the design at this conceptual stage. The Board more broadly opined that the design was heading in the right direction and looked forward to a more detailed design during the required formal ARB review and approval.

The ARB appreciates the applicant's submission and the discussion that occurred at the Board's work sessions. The ARB also appreciates the applicant's stated willingness to work with the ARB to further the design and address any comments raised.

Thank you.

Attachment:

1. Park Place Zoning Map Amendment ARB Staff Memo, dated October 2, 2020

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: Chairman Walker and Members of the Architectural Review Board

From: Christopher J. Garcia, AICP, Community Design Planner
Bryce A. Perry, Deputy Director of Community Development

Date: October 2, 2020

Subject: Discussion Item – Park Place Zoning Map Amendment Design Review 2nd Submission

---

The following memo offers a follow-up staff evaluation of the conceptual building and landscape architecture for the above referenced plan. This evaluation should be reviewed as an addendum to the similar memo, dated May 29, 2020, provided to the ARB for its first design review of this plan, which has been attached for reference. (Attachment #1)

Review Process

As a review of the previous staff memo for this project, the applicant, Cooley LLC, on behalf of Stanley Martin Companies, Inc., has submitted a Zoning Map Amendment, ZMA #19-02, to allow redevelopment of a property from four existing office buildings to a mix of townhouse and two-over-two residential units under a proposed Planned Development – Urban Residential (PD-UR) Zoning District. The property is located at 1145 Herndon Parkway. Prior to Planning Commission review of a Zoning Map Amendment, the application's architectural and open space design must be reviewed by the Town's Architectural Review Board (ARB). Following review by the ARB, the Board will issue a report with an evaluation of the architecture and open space design based on the ARB's review at the work session. When finalized, the report from the ARB will be provided to the Planning Commission for consideration during the Commission's review of the application.

In this memo, staff offers its second set of design review comments for the Board to assess response to previous staff and Board comments, the qualities of the proposed design (at this stage of the process) and address any additional design information or aspects of the project that the Board could not evaluate due to missing information. The applicant has re-submitted a design exhibit (Attachment #2) with the following new information:

1) Response letter describing modifications and revision based on staff and Board comments on the 1st submission material;
2) Precedent imagery from other regional project from which were used as basis of designs;
3) Revised elevations of the proposed two-over-two and townhouse residential units

4) Revised perspectives of the proposed two-over-two and townhouse residential units; and
5) New street level perspectives of ground level architecture.

Following ARB review and forwarding of formal ARB comments on the Development Plan architecture and open space components, the Planning Commission will consider the plan, followed by Town Council consideration. If approved, the plan would then require (administrative) site plan review proceeded by formal ARB review and action prior to approval of any building permits. At the formal ARB case review, the Board will again evaluate the design based on the applicable design guidelines and sections of the Town Code of Ordinances. While the architecture is still conceptual in form at the Development Plan level, it should be remembered that the concepts proposed will be the core template for the final design and will be instrumental in setting the bar for the future development. Of course, extensive detailed information will be required for the formal ARB review, as is customary for all ARB case reviews.

Staff Comments

Staff offers the following comments related to the revised submission and previous design review comments:

1) **Additional Information:** The applicant has been generally responsive to the additional materials requested to better understand the building and landscape architecture. However there remains a few materials, as listed below, that may be beneficial for the evaluation of this project's design as the project continues through the ZMA review process and will be necessary when the project returns to the ARB for its formal review following an approval of the ZMA case and site plan.
    - Details of open space design in plan and perspective are missing leaving review of open spaces largely incomplete and will be integral to a future forma ARB review of the urban nature of this (re-)development project. These details should include, but not limited to materials, site / street furnishings, vertical open space features, and site lighting;
    - Perspective drawings from viewsheds internal to the development showing the arrangement of multiple sticks and their composition in relation to proposed open spaces and internal streets. One perspective is provided, however the scale and overuse of vegetation that will not occur for many years obscures the full evaluation of the ground level experience of the architecture and open spaces;
    - Information conveying the appearance of the proposed materials. The drawings, given their scale, cannot effectively portray the actual material textures, pattern, and scale. An architectural materials sheet with close up images of the materials to be used would be a useful and necessary to supplement to fill this gap in information in a future formal ARB submission;

2) **Elevation Options.** It appears that only three elevation options are proposed for the town houses and 2-over-2 units. For the 2-over-2's which appear more as multi-family buildings, the limited number of elevation options seem more appropriate. For the townhouses however, only three façade designs to choose from seem limiting and, given the length of several townhouse sticks, could create an overly repetitive and simplified image for the neighborhood.

3) **Façade Articulation.** Façade articulation remains a concern. Breaking up wall planes with more-than-surface-level reveal depths and utilizing recessed and protruding forms in addition to utilizing various cladding materials with differing colors and textures are all important solutions for dealing with the shallowness and flatness that is sometime inherent with contemporary architecture and buildings with simple building forms. The ARB has previously expressed the importance of this and should focus on this potential issue when reviewing the design during its formal review after site plan approval.

4) **Townhouse Roof.** There is an awkward juxtaposition between with townhouse façade roofline and the actual roof form. The roof line is comprised of a broken flat parapet while the roofs are low-pitch side gables. Applying cosmetic contemporary details to a highly visible and more traditional building form seems to undermine the design intent and is incompatible with the contemporary design of the development. Furthermore, the use of a singular side gable roof across the townhouse sticks creates a building mass that is inconsistent with the scale of the development and is reminiscent of dated suburban colonial townhouse designs. To address these concerns, the roofs should be converted to flat forms or, as done with the 2-over-2s, the flat parapet forms should continue across the entire front facades as varying heights and wall planes and wrapped along the side elevations. Note that this issue is highly visible from Herndon Parkway as shown in the perspective renderings.

Staff acknowledges that the applicant and design team have responded to several staff and Board comments and the design as now presented is improved from the first submission. There are some remaining concerns as stated above that staff is recommending the applicant continue to work on as the project continues through the ZMA review process. Further, the applicant should be aware of the significantly higher design completion expectations in advance of a formal ARB review. .

Staff recommends that the ARB consider staff comments very carefully in its deliberation and its report to the Planning Commission.

Thank you.

Attachments:

1) Park Place Zoning Map Amendment Design Review Staff Memo dated May 29, 2020
2) Park Place Zoning Map Amendment Design Review 2nd Submission

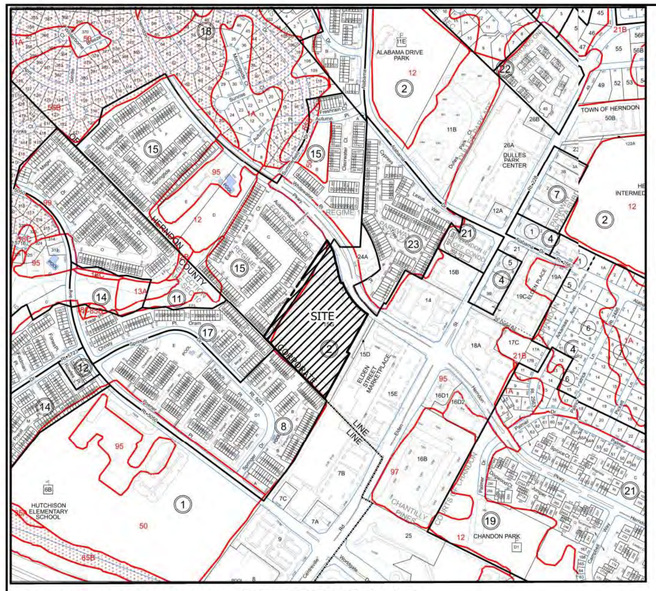
PARK PLACE

ZONING MAP AMENDMENT

ZMA-19-02

TOWN OF HERNDON,
VIRGINIA

OCTOBER 2, 2019
MARCH 27, 2020
AUGUST 25, 2020
SEPTEMBER 18, 2020
OCTOBER 19, 2020



SOIL TYPE CLASSIFICATION
95 - URBAN LAND

SITE SOILS MAP
1"=500'

Sheet List Table

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CIVIL	
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C-02	NOTES AND TABULATIONS
C-03	EXISTING CONDITIONS
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C-03B	R.O.W. DEDICATION EXHIBIT
C-O4	EXISTING TREE CONSERVATION
C-04A	EXISTING TREE INVENTORY
C-04B	EXISTING TREE INVENTORY
C-04C	EXISTING TREE INVENTORY
C-05	CONTEXT MAP
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C-10	PHASE 1 PEDESTRIAN & VEHICULAR CIRCULATION PLAN
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C-11	SIGHT DISTANCE PLAN
C-12	TYPICAL STREET CROSS SECTIONS
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C-14	OVERALL STORMWATER MANAGEMENT PLAN
C-15	PHASE 1 STORMWATER MANAGEMENT COMPUTATIONS
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A.01	ARCHITECTURAL IMAGES
A-02	ARCHITECTURAL IMAGES
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L-03	OPEN SPACE PLAN
L-03A	OPEN SPACE DISTRIBUTION
L-04	LANDSCAPE CALCULATIONS AND DETAIL
L-05	LIFESTYLE IMAGES



TAX MAP NO.
161-02-0015G

Attachment #4



VICINITY MAP 1" = 2000'

OWNER
FMI HERNDON CORPORATE CENTER LLC
7200 WISCONSIN AVENUE, SUITE 100
BETHESDA, MD 20814
ATTN: NEIL MARKUS
(301) 915-9460

APPLICANT
STANLEY MARTIN COMPANIES LLC
1400 PARK MEADOW DRIVE
SUITE 100N
CHANTILLY. VA 20151
ATTN: SOLEDAD PORTILLA
(703) 636-9237

ATTORNEY
COOLEY, LLP
RESTON TOWN CENTER
11951 TOWN CENTER
RESTON, VIRGINIA
ATTN: BRIAN WINTERHALTER, ESQ.
(703) 456-8168

ENGINEER
VIKA VIRGINIA LLC
8180 GREENSBORO DRIVE, SUITE 200
TYSONS, VIRGINIA 22102
ATTN: JOHN F. AMATETTI, PE
PETER RINEK, RLA
(703) 442-7800

TRANSPORTATION
GOROVE / SLADE ASSOCIATES, INC
3914 CENTREVILLE RD, SUITE 330
CHANTILLY, VIRGINIA 20151
ATTN: MARIA LASHINGER
(703) 787-9595

LANDSCAPE ARCHITECT
VIKA VIRGINIA LLC
8180 GREENSBORO DRIVE, SUITE 200
TYSONS, VIRGINIA 22102
ATTN: PETER RINEK, RLA
(703) 442-7800

COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT B. COCHRAN
Lic. No. 2012
LAND SURVEYOR

VIKA NUMBER VV8011D
SHEET C-01

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D COVER SHEET.dwg USER: rinek DATE: October 19, 2020 TIME: 4:39:09 PM

NOTES

1. THE PROPERTY THAT IS THE SUBJECT OF THIS ZONING MAP AMENDMENT CONSISTS OF THE PARCELS IDENTIFIED ON THE FAIRFAX COUNTY TAX ASSESSMENT MAP AS 0161 ((2)) PARCEL 15G. THE PROPERTY IS CURRENTLY ZONED CO. THE PURPOSE OF THIS APPLICATION IS TO REZONE THE PROPERTY TO PD-UR AND DEVELOP THE PARCELS WITH SINGLE FAMILY TOWNHOUSE UNITS (SFTHU) AND STACKED TOWNHOUSE UNITS (STU).
2. THE HORIZONTAL DATUM IS VIRGINIA STATE GRID NORTH VCS83.
3. THE TOPOGRAPHY SHOWN HEREON WAS FROM AN AERIAL SURVEY WITH LIMITED FIELD VERIFICATION BY VIKA VIRGINIA, LLC. AND THE CONTOUR INTERVAL IS TWO (2) FEET. NGVD 1929
4. THE BOUNDARY INFORMATION WAS PREPARED BY FIRST ORDER, LLC AND CHECKED BY VIKA VIRGINIA, LLC FROM RECORD INFORMATION.
5. PUBLIC WATER AND SANITARY SEWER ARE AVAILABLE TO SERVE THE DEVELOPMENT.
6. STORM WATER MANAGEMENT AND BMP FACILITIES FOR THE PROPOSED DEVELOPMENT WILL BE PROVIDED ON SITE AND AN ADEQUATE STORM DRAINAGE SYSTEM WILL BE PROVIDED IN ACCORDANCE WITH THE APPLICABLE ORDINANCES AND PRACTICES OF THE TOWN OF HERNDON STANDARDS AS WELL AS VIRGINIA DEQ STANDARDS AS SHOWN ON THE SWM SHEETS.
7. TO THE BEST OF OUR KNOWLEDGE, NO GRAVE SITES OR STRUCTURES MARKING A BURIAL SITE ARE PRESENT ON THE SUBJECT PROPERTY.
8. TO THE BEST OF OUR KNOWLEDGE, NO HAZARDOUS OR TOXIC SUBSTANCES ARE KNOWN TO EXIST ON THE SUBJECT PROPERTY.
9. THERE ARE EXISTING OFFICE STRUCTURES ON THE SUBJECT PROPERTY.
10. THERE IS NO R.P.A. ON THE SUBJECT PROPERTY. THERE NO MAJOR AND NO MINOR FLOODPLAIN AND NO ENVIRONMENTAL QUALITY CORRIDORS ON THE SUBJECT PROPERTY.
11. LIMITS OF CLEARING AND GRADING SHOWN ARE PRELIMINARY AND ARE SUBJECT TO MODIFICATION WITH FINAL ENGINEERING, PARTICULARLY IN THE AREA OF PUBLIC RIGHTS OF WAY, UTILITY RELOCATIONS AND INSTALLATIONS, TRAILS, AND EASEMENT AREAS. THE DEVELOPMENT OF THE SITE WILL BE IN GENERAL CONFORMANCE WITH THESE LIMITS. FINAL LIMITS OF CLEARING AND GRADING WILL TAKE INTO CONSIDERATION FINAL SITE ENGINEERING AND SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE TOWN'S ARBORIST AT THE TIME OF SITE PLAN REVIEW.
12. DEVELOPMENT WILL COMMENCE UPON COMPLETION OF ALL REQUIRED TOWN OF HERNDON PROCESSING AND APPROVALS. PHASING WILL PROCEED BASED ON MARKET CONDITIONS AND AS DETERMINED BY THE APPLICANT.
13. OPEN SPACE AREAS SHOWN HEREON ARE CONCEPTUAL AND MAY BE MODIFIED AT THE TIME OF SITE PLAN IN ACCORDANCE WITH THE ZONING ORDINANCE.
14. THE BUILDING FOOTPRINTS, GARAGES, RETAINING WALLS, PLAZAS, PARKS AND ROADS REPRESENTED HEREON ARE APPROXIMATE AND ARE SUBJECT TO MODIFICATION WITH THE FINAL SITE PLAN. BUILDING FOOTPRINTS MAY BE INCREASED OR DECREASED AND THE NUMBER OF PARKING SPACES OUTSIDE AND IN THE STRUCTURES MAY BE MODIFIED, (INCREASED OR DECREASED), SO LONG AS THE MINIMUM PARKING REQUIREMENT IS MET AND THE OPEN SPACE PROVIDED IN THE TABULATION, AND THE AMOUNT OF LANDSCAPING AND THE MINIMUM DIMENSIONS TO THE PERIPHERAL LOT LINES ARE NOT DIMINISHED.
15. THE PROPOSED DEVELOPMENT ON THE SUBJECT PROPERTY WILL NOT POSE ADVERSE EFFECT ON ADJACENT OR NEIGHBORING PROPERTIES.
16. THE PROJECT WILL MEET THE MINIMUM PARKING REQUIREMENTS AS APPROVED WITH THIS APPLICATION.
17. SIGNAGE WILL BE PROVIDED IN ACCORDANCE WITH THE TOWN OF HERNDON ORDINANCES.
18. PARKING LOT LANDSCAPING AND TREE COVER REQUIREMENTS WILL BE PROVIDED IN ACCORDANCE WITH Z.O. UNLESS WAIVED BY THE TOWN OF HERNDON.
19. THE FINAL LOCATION AND TYPE OF ACCESSIBLE RAMPS AND STREET ACCESSIBLE PARKING SPACE LOCATIONS SHALL BE DETERMINED AT SITE PLAN.
20. ALL ENTRANCES ON PUBLIC STREETS SHALL TYPICALLY BE CONSTRUCTED AS VDOT STANDARD ENTRANCES UNLESS INDICATED OTHERWISE AND AS DETERMINED BY VDOT AND THE TOWN OF HERNDON.
21. ALL LANDSCAPING INSTALLED WILL BE OF NON-INVASIVE SPECIES (INCLUDING TEMPORARY AND PERMANENT SEED).
22. BUILDING EXTERIOR ENTRANCE LOCATIONS AND NUMBER INDICATED ON THESE PLANS ARE ILLUSTRATIVE AND WILL BE DETERMINED AT FINAL SITE PLAN.
23. SPECIAL AMENITIES FOR THE SITE INCLUDE ACTIVE AND PASSIVE OPEN SPACE, LANDSCAPE AREAS.
24. ALL FENCING IS NOT SHOWN BUT THIS DEVELOPMENT WILL CONFORM TO TOWN OF HERNDON STANDARDS.
25. BUILDING ARCHITECTURE SHOWN IS ILLUSTRATIVE AND IS MEANT TO SHOW QUALITY OF DESIGN.
26. FINAL SITE DESIGN AND ENGINEERING SHOWN SHALL BE IN GENERAL CONFORMANCE BUT MAY CHANGE DURING THE FINAL SITE PLAN
27. AT THE TIME OF SITE PLAN SUBMISSION, THE ENGINEER SHALL VERIFY THAT ADEQUATE CLEAR WIDTH IS PROVIDED TO ALLOW MAINTENANCE FOR ALL TOWN-MAINTAINED UTILITIES. WIDTH OF UTILITY EASEMENTS MUST BE APPROVED BY THE TOWN OF HERNDON.
28. APPROVAL OF THIS ZONING MAP AMENDMENT DOES NOT CONSTITUTE A WAIVER OF APPLICABLE STATE AND LOCAL DESIGN REQUIREMENTS.

WAIVERS AND MODIFICATIONS

ZONING ORDINANCE MODIFICATIONS REQUESTED

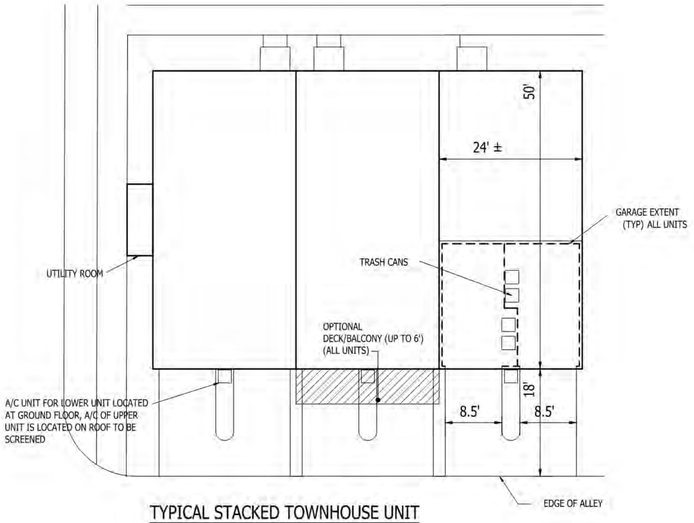
ZONING ORDINANCE (PD-UR)

1. SECTION 78.51.1 (G)(1) UTILITIES. MODIFICATION THAT ALL MECHANICAL EQUIPMENT SHALL BE LOCATED ON THE ROOF OR INCORPORATED INTO THE FACADE OF EACH UNIT.
   JUSTIFICATION: ALL UNITS WILL HAVE MECHANICAL EQUIPMENT ON THE ROOF EXCEPT THE LOWER UNIT OF STACKED TOWNHOUSE. THE OWNER DOES NOT HAVE ACCESS TO THE ROOF FOR REPAIRS
2. SECTION 78.51.1 (E) MODIFICATION OF THE DISTANCE FROM A PUBLIC RIGHT-OF-WAY:15'; MAY BE INCREASED TO 93' TO ACCOMMODATE A LANDSCAPE PARK/SITTING AREAS FOR NO MORE THAN 30% OF THE LINEAR FRONTAGE TO THAT SHOWN OF THE CONCEPT PLAN.
   JUSTIFICATION: THE CURVATURE OF HERNDON PARKWAY ALONG WITH THE LAYOUT PREVENTS THE UNITS BEING IN THE REQUIRED SETBACK. PARK SPACES ARE PROVIDED TO ENHANCE PUBLIC ROW SPACE.
3. SECTION 78.51.1(e) MODIFICATION TO THE MINIMUM DISTANCE BETWEEN BUILDING AND THE BOUNDARY ON THE EASTERN PROPERTY LINE FROM 18' TO 15' AS SHOWN.
   JUSTIFICATION: THE JOG IN THE PROPERTY LINE ALLOWS FOR THREE UNITS WHERE WE MAINTAIN THE CONSISTENT PEDESTRIAN EXPERIENCE WITH LITTLE IMPACT TO THE ADJACENT COMMERCIAL USE.

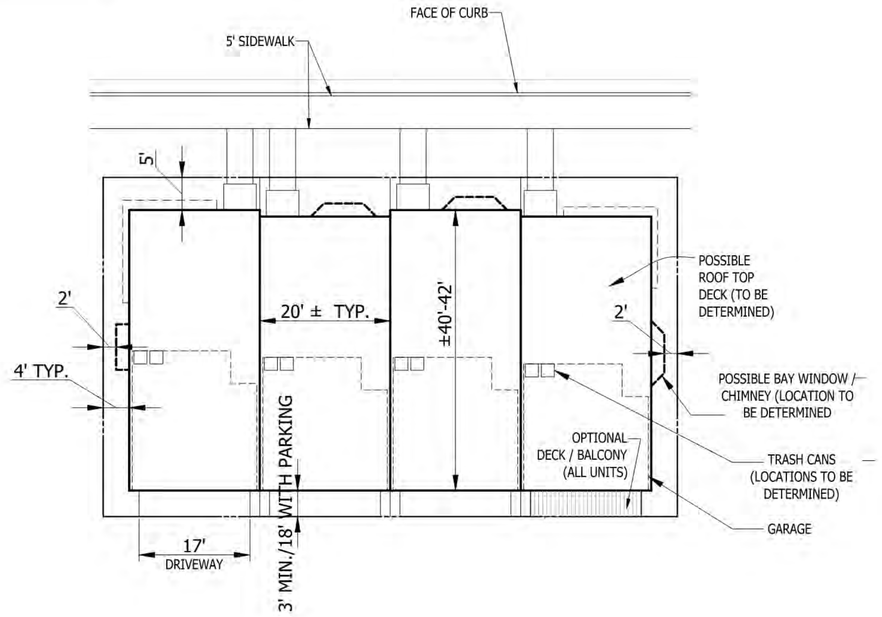
TABULATION

REQUIRED		PROPOSED	
		SITE AREA:	8.8170AC. OR 384,068 SF.
		AREA OF DEDICATION:	9,639 SF.
		SITE AREA AFTER DEDICATION:	8.59 AC. OR 374,429 SF.
ZONE:	PD-UR	ZONE:	PD-UR
MIN. DISTRICT SIZE:	2.5 AC.	DISTRICT SIZE:	8.81 AC
USE:		USE:	SINGLE FAMILY TOWNHOUSE UNITS (SFTHU)
MAX. DENSITY:		DENSITY:	16 DU/AC.
1) HOUSING TYPE	15 DU/AC		
2) HOUSING TYPE	20 DU/AC		
MIN. SETBACKS	10' FROM PUBLIC RIGHT OF WAY; 5' FROM PRIVATE RIGHT OF WAY	MIN. SETBACKS	
		FRONT:	5'
		SIDE:	4'
		REAR:	3' OR 18' WITH PARKING
LOT WIDTH:		LOT WIDTH:	20' INTERIOR; 24' CORNER LOT
UNITS:		UNITS:	141
		SINGLE FAMILY ATTACHED	85 UNITS
		STACKED 2 OVER 2 CONDOS	56 UNITS
BUILDING LOT COVERAGE:		BUILDING LOT COVERAGE	115,220 (30%)
MIN. OPEN SPACE:	20% OF SITE	OPEN SPACE:	118,915 SF (31%)
MIN. SPACE FOR RECREATION:	8% OF SITE	RECREATION OPEN SPACE:	38,410 (10%)
PARKING:	2.33/UNIT	PARKING (2.49/UNIT)	352 SPACES
		GUEST PARKING:	56 SPACES
		GARAGE PARKING:	226 SPACES
		DRIVEWAY:	88 SPACES
MAX. BUILDING HEIGHT:	40' WHEN LOCATED WITHIN 50' OF THE PROPERTY ZONED R-15, R-10, PD-R, OR RTC; OTHERWISE 50'	BUILDING HEIGHT:	
		SINGLE FAMILY ATTACHED:	40'
		STACKED TOWNOUSE UNITS	50'
NUMBER OF FLOORS:	ONE FLOOR	NUMBER OF FLOORS:	
		TOWNHOUSES:	3 FLOORS
		2 OVER 2S:	4 STORIES
MAX. DISTANCE FROM RIGHT OF WAY	15'; MAY BE INCREASED TO 40' TO ACCOMMODATE A LANDSCAPE PARK FOR NO MORE THAN 30% OF THE LINEAR FOOTAGE	MAX. DISTANCE FROM RIGHT OF WAY	87' See Sheet C-07
MIN. DISTANCE BETWEEN BUILDINGS AND THE BOUNDARIES OF THE DEVELOPMENT	18'	MIN. DISTANCE BETWEEN BUILDINGS AND THE BOUNDARIES OF THE DEVELOPMENT	18'
MIN. DISTANCE (FEET) BETWEEN PAVED SURFACES AND THE BOUNDARIES OF THE DEVELOPMENT	SUBJECT TO BUFFER REQUIREMENTS IN ARTICLE XI, DEVELOPMENT STANDARDS	MIN. DISTANCE (FEET) BETWEEN PAVED SURFACES AND THE BOUNDARIES OF THE DEVELOPMENT	0' See Sheet C-07

* SEE MODIFICATIONS



TYPICAL STACKED TOWNHOUSE UNIT



TYPICAL SINGLE FAMILY TOWNHOUSE UNIT

*NOTES:
1. FINAL LOT WIDTH SUBJECT TO CHANGE WITH FINAL ENGINEERING PLANS AND PLATS.
2. SETBACKS ARE MEASURED TO THE OUTER VERTICAL FACADES AND DO NOT INCLUDE ANY ARCHITECTURAL ELEMENTS SUCH AS BAY WINDOWS, COVERED BALCONIES, PORCHES, CHIMNEYS, EAVES, ETC.

VIKA

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LANDSCAPE ARCHITECTS GEOMATICS

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COMMONWEALTH OF VIRGINIA
10/1/20
ROBERT B. COCHRAN
LIC. NO. 2012

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

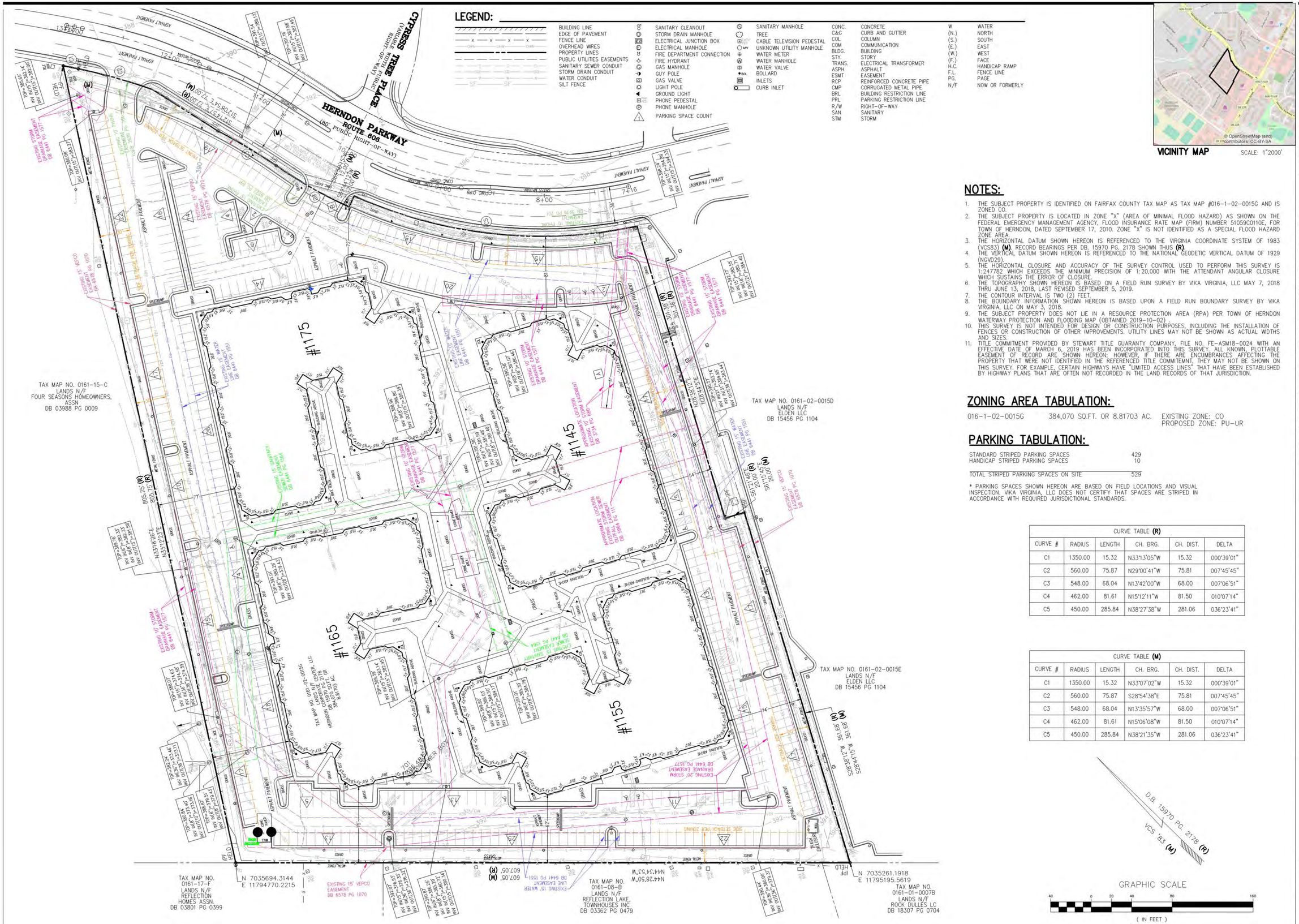
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

NOTES AND TABULATIONS

DRAWN BY:
DESIGNED BY: PR
DATE ISSUED: OCTOBER 2, 2019
DWG. SCALE: AS SHOWN
JOB NO.: VV8011D
SHEET NO.: C-02

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D NOTES.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:42:08 PM LAYOUT: C-02 NOTES AND TABULATIONS



VICINITY MAP SCALE: 1"2000'

NOTES:

1. THE SUBJECT PROPERTY IS IDENTIFIED ON FAIRFAX COUNTY TAX MAP AS TAX MAP #016-1-02-0015G AND IS ZONED CO.
2. THE SUBJECT PROPERTY IS LOCATED IN ZONE "X" (AREA OF MINIMAL FLOOD HAZARD) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP (FIRM) NUMBER 51059C0110E, FOR TOWN OF HERNDON, DATED SEPTEMBER 17, 2010. ZONE "X" IS NOT IDENTIFIED AS A SPECIAL FLOOD HAZARD ZONE AREA.
3. THE HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM OF 1983 (VCS83) **(M)**. RECORD BEARINGS PER DB. 15970 PG. 2178 SHOWN THUS **(R)**.
4. THE VERTICAL DATUM SHOWN HEREON IS REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)
5. THE HORIZONTAL CLOSURE AND ACCURACY OF THE SURVEY CONTROL USED TO PERFORM THIS SURVEY IS 1:247782 WHICH EXCEEDS THE MINIMUM PRECISION OF 1:20,000 WITH THE ATTENDANT ANGULAR CLOSURE WHICH SUSTAINS THE ERROR OF CLOSURE.
6. THE TOPOGRAPHY SHOWN HEREON IS BASED ON A FIELD RUN SURVEY BY VIKA VIRGINIA, LLC MAY 7, 2018 THRU JUNE 13, 2018, LAST REVISED SEPTEMBER 5, 2019.
7. THE CONTOUR INTERVAL IS TWO (2) FEET.
8. THE BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON A FIELD RUN BOUNDARY SURVEY BY VIKA VIRGINIA, LLC ON MAY 3, 2018.
9. THE SUBJECT PROPERTY DOES NOT LIE IN A RESOURCE PROTECTION AREA (RPA) PER TOWN OF HERNDON WATERWAY PROTECTION AND FLOODING MAP (OBTAINED 2019-10-02) .
10. THIS SURVEY IS NOT INTENDED FOR DESIGN OR CONSTRUCTION PURPOSES, INCLUDING THE INSTALLATION OF FENCES OR CONSTRUCTION OF OTHER IMPROVEMENTS. UTILITY LINES MAY NOT BE SHOWN AS ACTUAL WIDTHS AND SIZES.
11. TITLE COMMITMENT PROVIDED BY STEWART TITLE GUARANTY COMPANY, FILE NO. FE-ASM18-0024 WITH AN EFFECTIVE DATE OF MARCH 6, 2019 HAS BEEN INCORPORATED INTO THIS SURVEY. ALL KNOWN, PLOTTABLE EASEMENT OF RECORD ARE SHOWN HEREON; HOWEVER, IF THERE ARE ENCUMBRANCES AFFECTING THE PROPERTY THAT WERE NOT IDENTIFIED IN THE REFERENCED TITLE COMMITMENT, THEY MAY NOT BE SHOWN ON THIS SURVEY. FOR EXAMPLE, CERTAIN HIGHWAYS HAVE "LIMITED ACCESS LINES" THAT HAVE BEEN ESTABLISHED BY HIGHWAY PLANS THAT ARE OFTEN NOT RECORDED IN THE LAND RECORDS OF THAT JURISDICTION.

ZONING AREA TABULATION:

016-1-02-0015G 384,070 SQ.FT. OR 8.81703 AC. EXISTING ZONE: CO
PROPOSED ZONE: PU-UR

PARKING TABULATION:

STANDARD STRIPED PARKING SPACES	429
HANDICAP STRIPED PARKING SPACES	10
TOTAL STRIPED PARKING SPACES ON SITE	529

* PARKING SPACES SHOWN HEREON ARE BASED ON FIELD LOCATIONS AND VISUAL INSPECTION. VIKA VIRGINIA, LLC DOES NOT CERTIFY THAT SPACES ARE STRIPED IN ACCORDANCE WITH REQUIRED JURISDICTIONAL STANDARDS.

CURVE TABLE **(R)**

CURVE #	RADIUS	LENGTH	CH. BRG.	CH. DIST.	DELTA
C1	1350.00	15.32	N33°13'05"W	15.32	000°39'01"
C2	560.00	75.87	N29°00'41"W	75.81	007°45'45"
C3	548.00	68.04	N13°42'00"W	68.00	007°06'51"
C4	462.00	81.61	N15°12'11"W	81.50	010°07'14"
C5	450.00	285.84	N38°27'38"W	281.06	036°23'41"

CURVE TABLE **(M)**

CURVE #	RADIUS	LENGTH	CH. BRG.	CH. DIST.	DELTA
C1	1350.00	15.32	N33°07'02"W	15.32	000°39'01"
C2	560.00	75.87	S28°54'38"E	75.81	007°45'45"
C3	548.00	68.04	N13°35'57"W	68.00	007°06'51"
C4	462.00	81.61	N15°06'08"W	81.50	010°07'14"
C5	450.00	285.84	N38°21'35"W	281.06	036°23'41"

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

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Lic. No. 2778
8/25/20
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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT
TOWN OF HERNDON, VA

EXISTING CONDITIONS

DRAWN BY:
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DWG. SCALE 1" = 40'
JOB NO. VV8011D
SHEET NO. C-03

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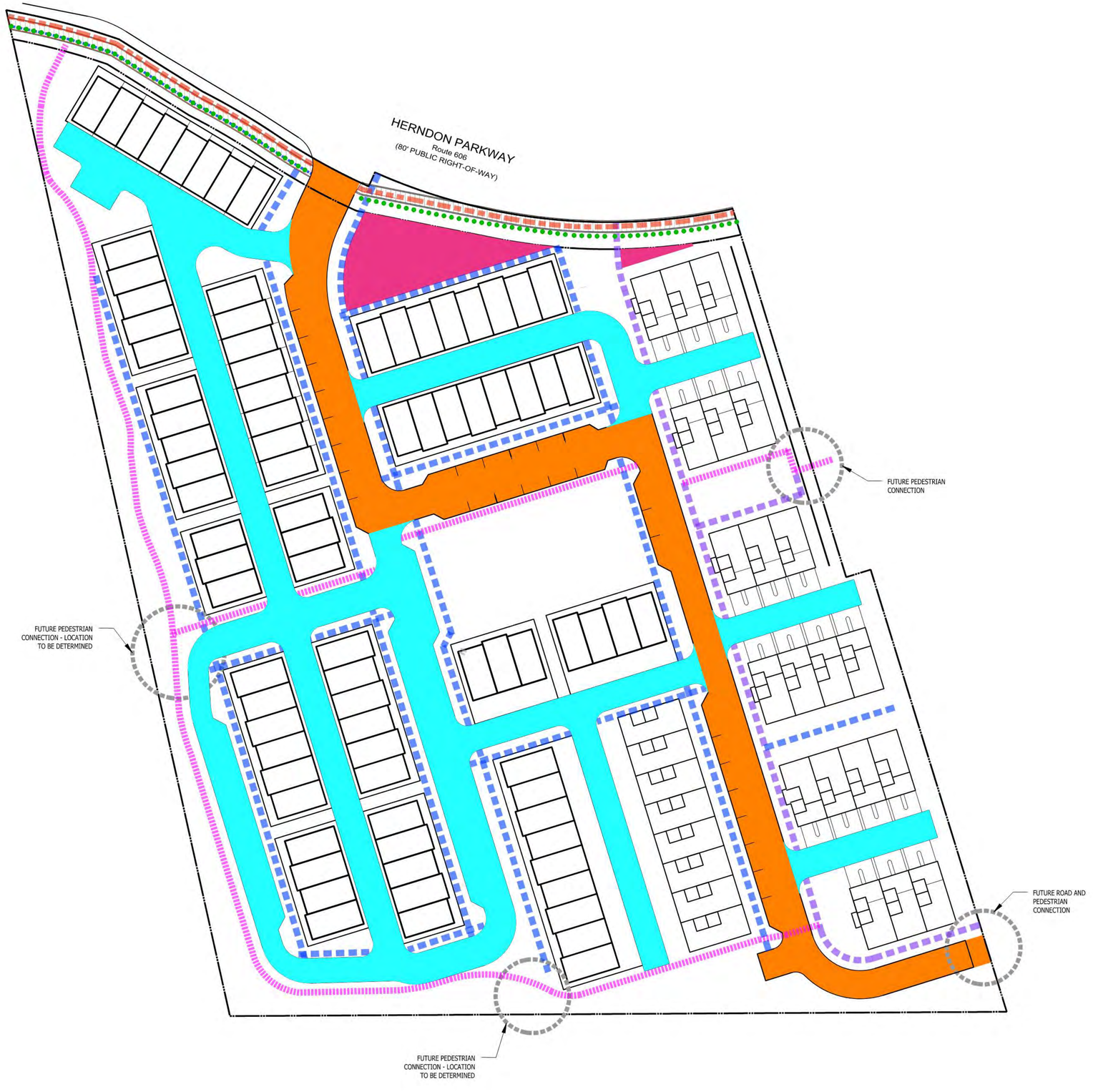

LEGEND:

PUBLIC ACCESS EASEMENTS

- PUBLIC VEHICLE INGRESS / EGRESS EASEMENT
- PUBLIC ACCESS PARK AREA / OPEN SPACE
- LIMITED INGRESS-EGRESS EASEMENT FOR OWNERS AND VISITORS
- LOCATION OF FUTURE ROAD AND PEDESTRIAN CONNECTIONS
- 5' PEDESTRIAN SIDEWALK
- 5' PEDESTRIAN SIDEWALK W/ PUBLIC ACCESS EASEMENT
- 5' PEDESTRIAN TRAIL W/ PUBLIC ACCESS EASMENT
- 8' CYCLE TRACK
- 6' SIDEWALK

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PEDESTRIAN ACCESS

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DWG. SCALE	1" = 40'
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SHEET NO.	C-03A

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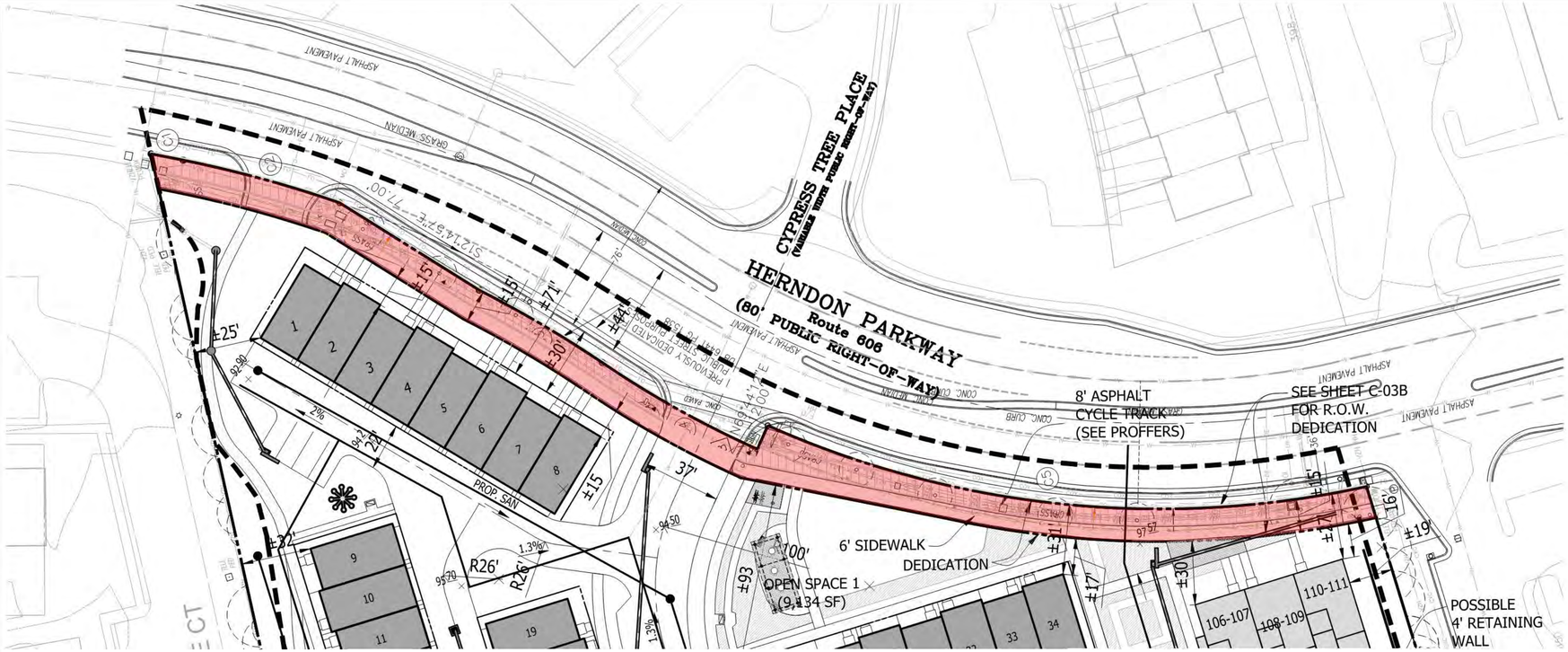
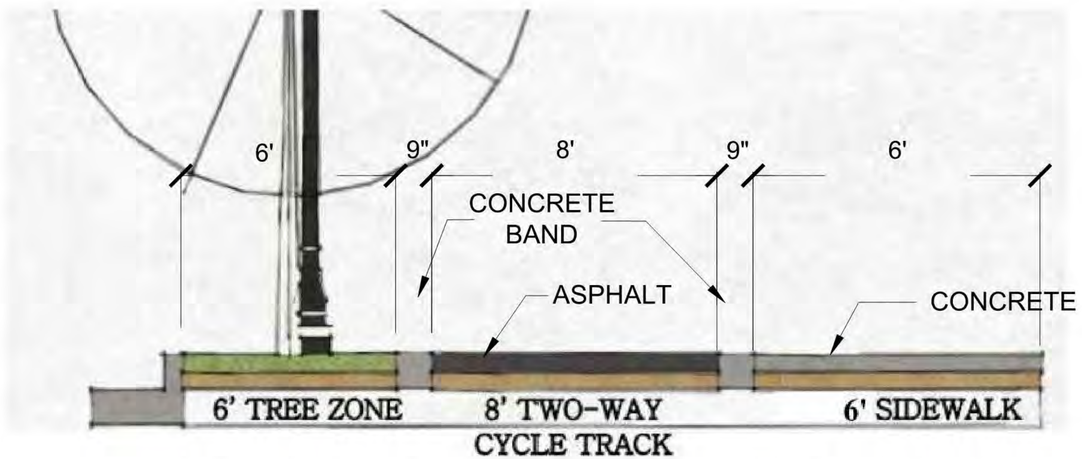


LEGEND

R.O.W. DEDICATION (9,639 S.F.)

NOTE:

1. DEDICATION SHOWN VARIES, BUT ADHERES TO HERNDON'S STANDARD CYCLE TRACK SECTION (SEE HERNDON PARKWAY STREETSCAPE DETAIL ON THIS SHEET).
2. STREET LIGHTS IN THE R.O.W. WILL CONFORM TO THE HERNDON STREETSCAPE MANUAL.



HERNDON PARKWAY STREETSCAPE SECTION

NO SCALE

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

R.O.W. DEDICATION EXHIBIT

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-03B

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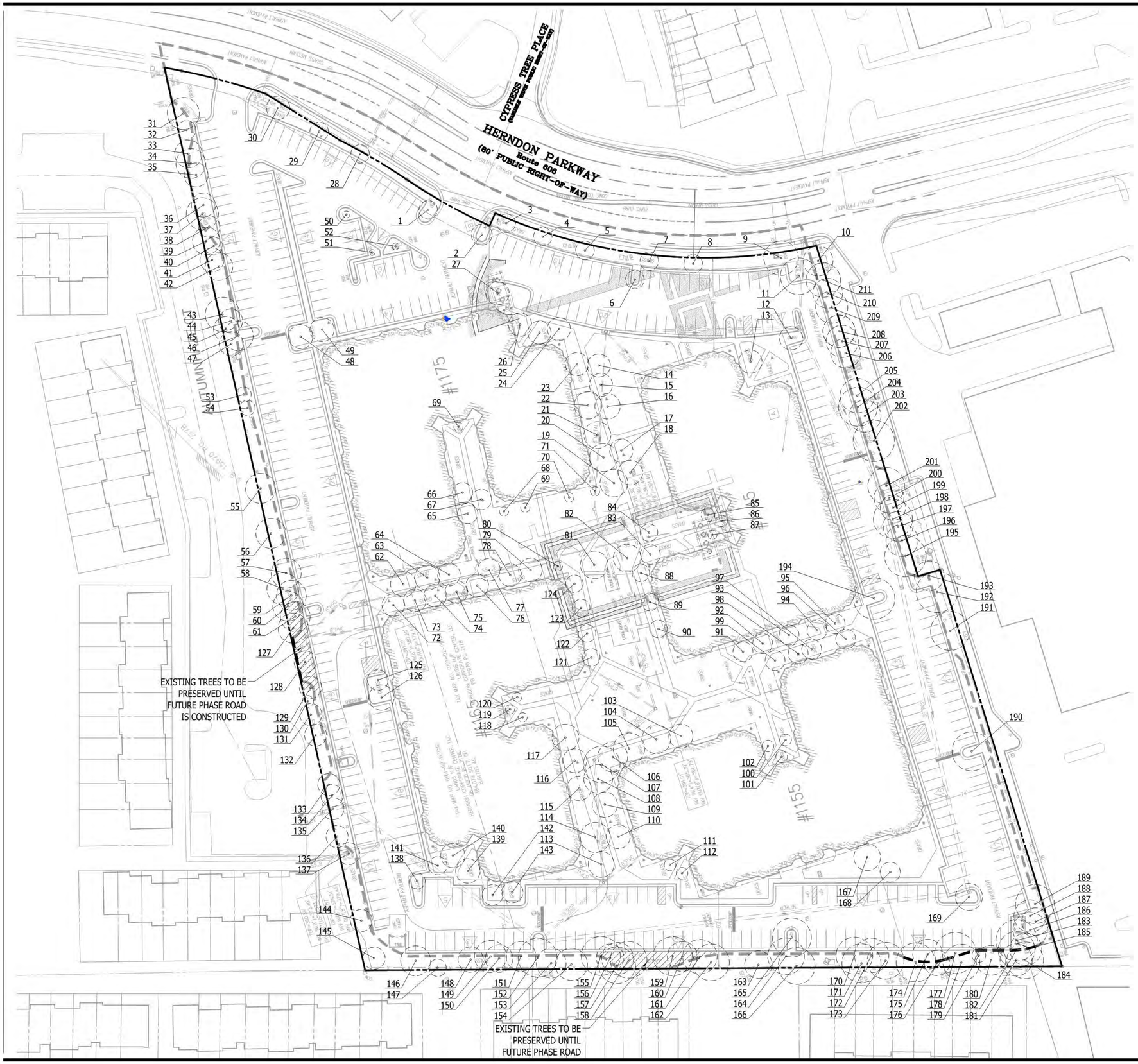

LEGEND

LIMITS OF CLEARIDNG AND GRADING

EXISTING TREE CANOPY COVER = 57,292 SF

PLAN PREPARED BY: NELSON P. KIRCHNER, RLA
ISA CERTIFIED ARBORIST No. MA-4720AM

SIGNATURE: _____

DATE: 02/14/2020

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

EXISTING TREE INVENTORY

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-04

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D EXISTING TREE CONSERVATION.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:43:25 PM LAYOUT: C-04 EXISTING TREE INVENTORY

Tree No.	Species	Size	CRZ	Condition	Canopy Position	Crown Desnsity	Average Crown Radius	Existing Conditions / Observations
		*DBH (in)	R (ft)	%		%	R (ft)	
1	Acer rubrum, red Maple	7.2	8	0.63	Codominant	0.50	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
2	Acer rubrum, red Maple	9.0	9	0.53	Codominant	0.55	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. SLIGHT BARK EXFOLIATE.
3	Acer rubrum, red Maple	9.0	9	0.50	Codominant	0.50	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. OPEN CANKER AT ROOT CROWN.
4	Acer rubrum, red Maple	9.0	9	0.20	Codominant	0.50	14.0	TREE SHOWS DECLINE & DECAY AT ROOT CROWN.
5	Acer rubrum, red Maple	9.5	10	0.58	Codominant	0.45	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
6	Acer rubrum, red Maple	7.0	8	0.58	Codominant	0.55	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
`	Acer rubrum, red Maple	9.0	9	0.60	Codominant	0.55	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
8	Acer rubrum, red Maple	8.3	9	0.40	Codominant	0.60	12.0	NO SEVERE BIOTIC ISSUES OBSERVED. UPPER BRANCH STEM W/ VERTICLE CRACK.
9	Acer rubrum, red Maple	12.0	12	0.58	Codominant	0.55	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
10	Pinus Virginiana, Virginia Pine	13.5	14	0.54	Codominant	0.40	13.0	NO APPARENT BIOTIC ISSUES OBSERVED. LOW/MODERATE CANOPY RATO.
11	Platanus occidentalis, American Sycamore	9.3	10	0.63	Codominant	0.60	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
12	Platanus occidentalis, American Sycamore	16.8	17	0.65	Dominant	0.65	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
13	Crataegus spp, Hawthorn	10.8	11	0.58	Intermediate	0.55	12.0	NO APPARENT BIOTIC ISSUES OBSERVED. EXPOSED ROOT ZONES AT GRADE.
14	Prunus xyedoensis, Yoshino Cherry	9.3	10	0.54	Intermediate	0.45	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
15	Prunus xyedoensis, Yoshino Cherry	8.3	9	0.57	Intermediate	0.45	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
16	Prunus xyedoensis, Yoshino Cherry	10.0	10	0.53	Intermediate	0.45	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
17	Prunus xyedoensis, Yoshino Cherry	8.2*	9	0.56	Intermediate	0.50	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
18	Prunus xyedoensis, Yoshino Cherry	14*	14	0.60	Intermediate	0.50	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
19	Prunus serrulata, Kwanzan Cherry	10.5*	11	0.58	Intermediate	0.55	17.0	NO SEVERE BIOTIC ISSUES OBSERVED.
20	Prunus x yedonensis,	16*	16	0.59	Intermediate	0.55	17.0	NO SEVERE BIOTIC ISSUES OBSERVED
21	Prunus x yedonensis,	10.0	10	0.52	Intermediate	0.55	15.0	NO SEVERE BIOTIC ISSUES . OPEN CANKER AT ROOT CROWN.
22	Prunus x yedonensis,	11.2	12	0.52	Intermediate	0.55	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. OPEN CAVITY AT LOW TRUNK STEM.
23	Prunus x yedonensis,	12.2	13	0.60	Intermediate	0.55	17.0	NO APPAERNT BIOTIC ISSUES OBSERVED.
24	Prunus x yedonensis,	14.5*	15	0.59	Intermediate	0.55	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
25	Crataegus spp, Hawthorn	11.5	12	0.60	Intermediate	0.55	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
26	Crataegus spp, Hawthorn	6.5	7	0.50	Intermediate	0.30	10.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING. CAVITY AT ROOT CROWN.
27	Crataegus spp, Hawthorn	11.5	12	0.57	Intermediate	0.40	16.0	NO SEVERE BIOTIC ISSUES OBSERVED.
28	Acer rubrum, red Maple	9.5	10	0.54	Codominant	0.60	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. OPEN CAVITY FROM STORM DAMAGE IN CANOPY.
29	Acer rubrum, red Maple	9.0	9	0.60	Codominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED. SLIGHT ROOT GIRDLE.
30	Acer rubrum, red Maple	9.3	10	0.57	Codominant	0.60	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
31	Pinus Virginiana, Virginia Pine	12.0	12	0.30	Codominant	0.25	14.0	TREE 31 SHOWS DECLINE AND STRESS. NEAR NECROSIS.
32	Pinus Virginiana, Virginia Pine	14.5	15	0 - 0.50	Codominant	0.65	13.0	TREE 32 IN DECLINE. NEAR NECROSIS.
33	Pinus Virginiana, Virginia Pine	9.5	10	0.00	Codominant	0.75	12.0	NECROTIC
34	Pinus Virginiana, Virginia Pine	14.0	14	0.00	Codominant	0.75	13.0	NECROTIC
35	Pinus Virginiana, Virginia Pine	12.3	13	0.00	Codominant	0.75	14.0	NECROTIC
36	Pinus Virginiana, Virginia Pine	13.7	14	0.53	Codominant	0.75	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE 36 SHOWS STRESS.
37	Pinus Virginiana, Virginia Pine	12.4	13	0.00 - 0.05	Codominant	0.75	14.0	TREE 37 IS IN DECLINE, NEAR NECORSIS.
38	Pinus Virginiana, Virginia Pine	11.0	11	0.00	Codominant	0.50	10.0	NECROTIC
39	Pinus Virginiana, Virginia Pine	10.8	11	0.00 - 0.05	Codominant	0.65	12.0	TREE 39 SHOWS IN DECLINE, NEAR NECROSIS.
40	Pinus Virginiana, Virginia Pine	13.5	14	0.57	Codominant	0.60	13.0	NO SEVERE BIOTIC ISSUES OBSERVED.
41	Pinus Virginiana, Virginia Pine	11.5	12	0.53	Codominant	0.60	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE 41 SHOWS SLIGHT STRESS.
42	Pinus Virginiana, Virginia Pine	9.6	10	0.57	Codominant	0.60	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
43	Pinus Virginiana, Virginia Pine	11.6	12	0.53	Codominant	0.45	15.0	TREE 43 SHOWS ASPECTS OF STRESS.
44	Pinus Virginiana, Virginia Pine	11.8	12	0.50	Codominant	0.60	12.0	TREE 44 SHOWS SLIGHT STRESS.
45	Pinus Virginiana, Virginia Pine	9.5	10	0.00	Codominant	0.45	11.0	NECROTIC
46	Pinus Virginiana, Virginia Pine	15.5	16	0.00	Codominant	0.55	13.0	NECROTIC
47	Pinus strobus, White Pine	12.0	12	0.60	Intermediate	0.75	11.0	NO APPARENT BIOTIC ISSUES OBSERVED.
48	Fraxinus americans, White Ash	13.0	13	0.62	Dominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
49	Platanus occidentalis, American Sycamore	15.7	16	0.64	Dominant	0.60	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
50, 52	Lagerstroemia indica, Crapemyrtle	1-3" (multi-stem)	8	0.58	Intermediate	0.40	3.0	NO APPARENT BIOTIC ISSUES OBSERVED.
51	Lagerstroemia indica, Crapemyrtle	1" (multi-stem)	8	0.30	Intermediate	0.45	2.5	VEGETATION SHOWS STRESS & DECLINE.
53	Pinus strobus, White Pine	5.5	8	0.61	Intermediate	0.75	11.0	NO APPARENT BIOTIC ISSUES OBSERVED.
54	Pinus strobus, White Pine	6.5	8	0.61	Intermediate	0.75	11.0	NO APPARENT BIOTIC ISSUES OBSERVED.
55	Pinus Virginiana, Virginia Pine	14.5	15	0.60	Codominant	0.60	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
56	Quercus palustris, Pin Oak	15.7	16	0.62	Codominant	0.75	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
57	Pinus Virginiana, Virginia Pine	13.7	14	0.59	Codominant	0.75	15.0	NO APPARENT BIOTIC ISSUES OBSERVED. SHOWS SLIGHT STRESS.
58	Pinus Virginiana, Virginia Pine	12.4	13	0.58	Codominant	0.75	14.0	NO SEVERE BIOTIC ISSUES OBSERVED.
59	Pinus Virginiana, Virginia Pine	11.8	12	0.59	Codominant	0.70	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
60	Pinus Virginiana, Virginia Pine	11.0	11	0.58	Codominant	0.65	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
61	Pinus Virginiana, Virginia Pine	18.6	19	0.43	Codominant	0.70	13.0	TREE 61 SHOWS STRESS & DECLINE.
62	Prunus serrulata, Kwanzan Cherry	10.6	11	0.40	Codominant	0.50	18.0	OPEN CANKER AT ROOT CROWN. DECAY WOOD ON TRUNK STEM. ROOT GIRDLE.
63	Prunus serrulata, Kwanzan Cherry	9.8	10	0.50	Codominant	0.50	17.0	TREE WITH ROOT GIRDLE & WATERSPROUTS.
64	Prunus serrulata, Kwanzan Cherry	15*	15	0.52	Codominant	0.50	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
65	Fraxinus americans, White Ash	14.0	14	0.00	Dominant	0.30	17.0	NECROTIC
66	Fraxinus americans, White Ash	15.5	16	0.00	Dominant	0.25	16.0	NECROTIC
67	Fraxinus americans, White Ash	13.4	14	0.00	Dominant	0.60	16.0	NECROTIC
68, 69, 70, 71	Lagerstroemia indica, Crapemyrtle	2 -4" (multi-stem)	8	0.60	Intermediate	0.30	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
72	Prunus serrulata, Kwanzan Cherry	11.0	11	0.30	Codominant	0.50	16.0	TREE 72 SHOWS CANOPY DECLINE. STORM DAMAGE / DEADWOOD.
73	Prunus serrulata, Kwanzan Cherry	10.4	11	0.59	Codominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED. SHOWS SLIGHT STORM DAMAGE.
74	Prunus serrulata, Kwanzan Cherry	10.8	11	0.52	Codominant	0.50	16.0	NO APPARENT BIOTIC ISSUES OBSERVED. WATERSPROUTS & ROOT GIRDLE.
75	Prunus serrulata, Kwanzan Cherry	10.7	11	0.30	Codominant	0.50	16.0	TREE 75 HAS CANOPY STORM DAMAGE W/ OPEN STEM CAVITY.
76	Prunus serrulata, Kwanzan Cherry	10.4	11	0.25	Codominant	0.50	15.0	TREE 76 SHOWS STRUCTURE STORM DAMAGE W/ UPPER SPLT STEM.
77	Prunus serrulata, Kwanzan Cherry	10.5	11	0.45	Codominant	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
78	Prunus serrulata, Kwanzan Cherry	11.5	12	0.57	Codominant	0.60	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
79	Prunus serrulata, Kwanzan Cherry	12.6	13	0.60	Codominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
80	Lagerstroemia indica, Crapemyrtle	2 - 3" (multi-stem)	8	0.60	Intermediate	0.40	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
81	Platanus occidentalis, American Sycamore	8.3	9	0.62	Dominant	0.55	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
82	Gleditsia triacanthos, Honeylocust	16.7	17	0.62	Dominant	0.60	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
83	Prunus serrulata, Kwanzan Cherry	8.0	8	0.58	Intermediate	0.45	12.0	NO SEVERE BIOTIC ISSUES OBSERVED.
84	Prunus serrulata, Kwanzan Cherry	6.0	8	0.53	Intermediate	0.40	11.0	NO SEVERE BIOTIC ISSUES OBSERVED.
85	Lagerstroemia indica, Crapemyrtle	2 -4" (multi-stem)	8	0.63	Intermediate	0.60	6.0	NO APPARENT BIOTIC ISSUES OBSERVED.
86	Lagerstroemia indica, Crapemyrtle	2 -4" (multi-stem)	8	0.63	Intermediate	6.00	5.0	NO APPARENT BIOTIC ISSUES OBSERVED.
87	Lagerstroemia indica, Crapemyrtle	2 -4" (multi-stem)	8	0.63	Intermediate	0.50	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
88	Prunus serrulata, Kwanzan Cherry	8.6	9	0.40	Intermediate	0.45	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/POOR SCAFFOLD BRANCHING W/ DEADWOOD & ROOT GIRDLE.
89	Prunus serrulata, Kwanzan Cherry	9.7	10	0.44	Intermediate	0.45	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/POOR SCAFFOLD BRANCHING W/ DEADWOOD & DEADWOOD.
90	Prunus serrulata, Kwanzan Cherry	11.3	12	0.57	Intermediate	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD (F/G)SCAFFOLD BRANCHING W/ DEADWOOD.
91	Prunus x yedonensis,	9.8	10	0.53	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. EXPOSED ROOT ZONES AT GRADE W/ F/G SCAFFOLD BRANCHING.
92	Prunus x yedonensis,	13.5	14	0.54	Intermediate	0.50	18.0	NO SEVERE BIOTIC ISSUES OBSERVED. CANOPY W/ STROM DAMAGE.
93	Prunus x yedonensis,	9.8	10	0.54	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. F/G SCAFFOLD BRANCHING W/ STORM DAMAGE.
94	Prunus x yedonensis,	5.6	8	0.40	Intermediate	0.40	12.0	TREE 94 SHOWS DECAY AT ROOT CROWN & STORM DAMAGE.
95	Prunus x yedonensis,	10.8	11	0.49	Intermediate	0.50	17.0	OPEN CAVITY AT MID-TRUNK STEM W/ STORM DAMAGE. NO SEVERE BIOTIC ISSUES OBSERVED.
96	Prunus x yedonensis,	11.4	12	0.54	Intermediate	0.55	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. EXPOSED ROOT ZONES AT GRADE. DEADWOOD W/ STORM DAMAGE.
97	Prunus x yedonensis,	10.7	11	0.40	Intermediate	0.50	14.0	NECROSIS IN CANOPY W/ FAIR/POOR (F/P) SCAFFOLD BRANCHING.
98	Prunus x yedonensis,	10.0	10	0.40	Intermediate	0.55	15.0	DEADWOOD IN CANOPY W/ F/P SCAFFOLD BRANCHING. ROOT GIRDLE.

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COMMONWEALTH OF VIRGINIA
10/4/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

EXISTING TREE INVENTORY

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-04A

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011C EXISTING TREE CONSERVATION INVENTORY.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:43:39 PM LAYOUT: C-4A EXISTING TREE CONSERVATION INVENTORY

Tree No.	Species	Size	CRZ	Condition	Canopy Position	Crown Desnsity	Average Crown Radius	Existing Conditions / Observations
		*DBH (in)	R (ft)	%		%	R (ft)	
99	Prunus x yedonensis,	11.5	12	0.50	Intermediate	0.55	16.0	NO SEVERE BIOTIC ISSUES OBSERVED.
100	Lagerstroemia indica, Crapemyrtle	3 -4" (multi-stem)	8	0.60	Intermediate	0.55	7.0	NO APPARENT BIOTIC ISSUES OBSERVED.
101	Lagerstroemia indica, Crapemyrtle	3 -4" (multi-stem)	8	0.60	Intermediate	0.55	7.0	NO APPARENT BIOTIC ISSUES OBSERVED.
102	Lagerstroemia indica, Crapemyrtle	3 -4" (multi-stem)	8	0.60	Intermediate	0.55	7.0	NO APPARENT BIOTIC ISSUES OBSERVED.
103	Prunus x yedonensis,	14.5	15	0.57	Intermediate	0.55	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
104	Prunus x yedonensis,	14.0	14	0.59	Intermediate	0.55	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
105	Prunus x yedonensis,	14.0	14	0.56	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
106	Prunus x yedonensis,	12.0	12	0.50	Intermediate	0.55	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. CANOPY STORM DAMAGE & ROOT GIRDLE.
107	Prunus x yedonensis,	12*	12	0.55	Intermediate	0.50	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
108	Prunus x yedonensis,	13*	13	0.58	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED.
109	Prunus x yedonensis,	10.5	11	0.56	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
110	Prunus x yedonensis,	14.0	14	0.51	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. OPEN CANKER AT LOW TRUNK STEM. ROOT GIRDLE.
111	Lagerstroemia indica, Crapemyrtle	2 -4" (multi-stem)	8	0.60	Intermediate	0.45	5.0	NO APPARENT BIOTIC ISSUES OBSERVED.
112	Lagerstroemia indica, Crapemyrtle	3 -4" (multi-stem)	8	0.60	Intermediate	0.40	6.0	NO APPARENT BIOTIC ISSUES OBSERVED.
113	Prunus x yedonensis,	13*	13	0.53	Intermediate	0.50	17.0	NO SSEVERE BIOTIC ISSUES OBSERVED. SHOWS TRUNK STEM DAMAGE. ROOT GIRDLE.
114	Prunus x yedonensis,	16.5	17	0.54	Intermediate	0.50	17.0	NO SEVERE BIOTIC ISSUES OBSERVED. SHOWS A 4VF CANKER.
115	Prunus x yedonensis,	11.0	11	0.52	Intermediate	0.50	17.0	OPEN CANKER ON TRUNK STEM (~2.5 VF). ROOT GIRDLE.
116	Prunus x yedonensis,	12.5	13	0.40	Intermediate	0.55	16.0	TREE 116 SHOWS DECLINE AND DECAY W/ TRUNK STEM CANKER.
117	Prunus x yedonensis,	13.0	13	0.58	Intermediate	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED.
118	Lagerstroemia indica, Crapemyrtle	2 - 3" (multi-stem)	8	0.60	Intermediate	0.50	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
119	Lagerstroemia indica, Crapemyrtle	2 - 3" (multi-stem)	8	0.60	Intermediate	0.50	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
120	Lagerstroemia indica, Crapemyrtle	2 - 3" (multi-stem)	8	0.60	Intermediate	0.50	4.0	NO APPARENT BIOTIC ISSUES OBSERVED.
121	Prunus serrulata, Kwanzan Cherry	9.4	10	0.46	Intermediate	0.45	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. F/P SCAFFOLD BRANCHING W/ DEADWOOD & STORM DAMAGE.
122	Prunus serrulata, Kwanzan Cherry	9.8	10	0.52	Intermediate	0.50	16.0	NO SEVERE BIOTIC ISSUES OBSERVED.
123	Prunus serrulata, Kwanzan Cherry	8.6	9	0.52	Intermediate	0.50	16.0	NO SEVERE BIOTIC ISSUES OBSERVED.
124	Prunus serrulata, Kwanzan Cherry	6.8	7	0.38	Intermediate	0.50	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. F/P SCAFFOLD BRANCHING W/ DEADWOOD & STORM DAMAGE.
125	Quercus palustris, Pin Oak	10.6	11	0.60	Codominant	0.70	9.0	NO APPARENT BIOTIC ISSUES OBSERVED.
126	Quercus palustris, Pin Oak	11.4	12	0.60	Codominant	0.70	11.0	NO APPARENT BIOTIC ISSUES OBSERVED.
127	Pinus Virginiana, Virginia Pine	13.0	13	0.55	Codominant	0.65	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. OPEN CANKER AT LOW TRUNK STEM.
128	Pinus Virginiana, Virginia Pine	15.2	16	0.56	Codominant	0.60	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE SHOWS SLIGHT CHLORSIS.
129	Pinus strobus, White Pine	5.5	8	0.60	Intermediate	0.75	10.0	NO APPARENT BIOTIC ISSUES OBSERVED.
130	Juniperus virginiana, Eastern Redcedar	3.0	8	0.65	Intermediate	100.00	6.0	NO APPARENT BIOTIC ISSUES OBSERVED.
131	Pinus strobus, White Pine	3.8	8	0.60	Intermediate	100.00	7.0	NO APPARENT BIOTIC ISSUES OBSERVED.
132	Pinus Virginiana, Virginia Pine	11.5	12	0.57	Codominant	0.50	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE SHOWS SLIGHT CHLORSIS.
133	Pinus Virginiana, Virginia Pine	16.6	17	0.57	Codominant	0.55	14.0	NO SEVERE BIOTIC ISSUES OBSERVED.
134	Pinus Virginiana, Virginia Pine	11.5	12	0.47	Codominant	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE SHOWS SLIGHT CHLORSIS.
135	Pinus Virginiana, Virginia Pine	16.0	16	0.47	Dominant	0.50	17.0	TREE SHOWS CHLORSIS & DECLINE.
136	Pinus Virginiana, Virginia Pine	18.8	19	0.42	Dominant	0.75	18.0	TREE SHOWS CHLORSIS & DECLINE.
137	Pinus Virginiana, Virginia Pine	14.5	15	0.59	Codominant	0.55	16.0	NO SEVERE BIOTIC ISSUES OBSERVED.
138	Lagerstroemia indica, Crapemyrtle	2 - 3" (multi-stem)	8	0.60	Intermediate	0.40	7.0	NO APPARENT BIOTIC ISSUES OBSERVED.
139	Crataegus spp, Hawthorn	10.0	10	0.38	Intermediate	0.15	10.0	NO SEVERE BIOTIC ISSUES OBSERVED. VERY POOR SYMMETRY & SCAFFOLD BRANCHING.
140	Crataegus spp, Hawthorn	11.0	11	0.58	Intermediate	0.35	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
141	Crataegus spp, Hawthorn	9.0	9	0.10	Intermediate	0.20	8.0	TREE 141 IS IN DECLINE.
142	Quercus palustris, Pin Oak	9.0	9	0.50	Codominant	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED. TREE WITH ~13° LEAN. FUNGUS ON MID-TRUNK STEM.
143	Quercus rubra, Northern Red Oak	12.0	12	0.53	Codominant	0.75	16.0	NO APPARENT BIOTIC ISSUES OBSERVED. TREE 143 HAS A MID-TRUNK STEM CRACK & ROOT GIRDLE.
144	Pinus Virginiana, Virginia Pine	14.0	14	0.60	Codominant	0.70	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
145	Pinus Virginiana, Virginia Pine	16.3	17	0.60	Codominant	0.70	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
146	Pinus Virginiana, Virginia Pine	12.5	13	0.54	Codominant	0.50	15.0	NO SEVERE BIOTIC ISSUES OBSERVED.
147	Tilia cordata, Littleleaf Linden	12.6	13	0.35	Codominant	0.60	16.0	TREE 147 SHOWS DECLINE. OPEN CANKER, EXFOLIATING BARK & ROOT GIRDLE.
148	Pinus Virginiana, Virginia Pine	9.4	10	0.35	Codominant	0.35	11.0	TREE 148 HAS POOR SCAFFOLD BRANCHING BUT SHOWS NO SEVERE BIOTIC ISSUES OBSERVED.
149	Tilia cordata, Littleleaf Linden	10.5	11	0.58	Codominant	0.60	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
150	Pinus Virginiana, Virginia Pine	12.5	13	0.59	Codominant	0.50	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
151	Pinus Virginiana, Virginia Pine	12.3	13	0.59	Codominant	0.60	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
152	Pinus Virginiana, Virginia Pine	16.4	17	0.60	Codominant	0.65	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
153	Pinus Virginiana, Virginia Pine	11.4	12	0.50	Codominant	0.45	13.0	TREE 148 HAS POOR SCAFFOLD BRANCHING BUT SHOWS NO SEVERE BIOTIC ISSUES OBSERVED.
154	Pinus Virginiana, Virginia Pine	11.4	12	0.58	Codominant	0.45	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
155	Tilia cordata, Littleleaf Linden	13.0	13	0.60	Codominant	0.65	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
156	Pinus Virginiana, Virginia Pine	10.0	10	0.58	Codominant	0.45	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
157	Pinus Virginiana, Virginia Pine	15.8	16	0.60	Dominant	0.75	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
158	Pinus Virginiana, Virginia Pine	13.3	14	0.58	Dominant	0.75	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
159	Tilia cordata, Littleleaf Linden	14.3	15	0.60	Dominant	0.75	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
160	Pinus Virginiana, Virginia Pine	10.5	11	0.54	Codominant	0.60	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
161	Pinus Virginiana, Virginia Pine	12.7	13	0.59	Codominant	0.55	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
162	Pinus Virginiana, Virginia Pine	19.5	20	0.62	Codominant	0.75	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
163	Pinus Virginiana, Virginia Pine	13.3	14	0.54	Codominant	0.60	12.0	NO APPARENT BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
164	Pinus Virginiana, Virginia Pine	17.2	18	0.58	Codominant	0.65	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
165	Tilia cordata, Littleleaf Linden	14.8	15	0.60	Codominant	0.75	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
166	Pinus Virginiana, Virginia Pine	15.7	16	0.62	Codominant	0.75	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
167	Tilia cordata, Littleleaf Linden	12.7	13	0.60	Codominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
168	Crataegus spp, Hawthorn	7.5*	8	0.60	Intermediate	0.50	12.0	NO APPARENT BIOTIC ISSUES OBSERVED.
169	Platanus occidentalis, American Sycamore	9.0	9	0.60	Codominant	0.50	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
170	Tilia cordata, Littleleaf Linden	12.2	13	0.60	Codominant	0.55	16.0	NO APPARENT BIOTIC ISSUES OBSERVED. ROOT GIRDLE.
171	Pinus Virginiana, Virginia Pine	14.0	14	0.60	Dominant	0.55	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
172	Pinus Virginiana, Virginia Pine	10.7	11	0.57	Codominant	0.65	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
173	Pinus Virginiana, Virginia Pine	13.0	13	0.53	Codominant	0.55	16.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
174	Pinus Virginiana, Virginia Pine	12.3	13	0.60	Codominant	0.65	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
175	Pinus Virginiana, Virginia Pine	13.0	13	0.57	Codominant	0.55	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
176	Pinus Virginiana, Virginia Pine	11.3	12	0.40	Codominant	0.20	11.0	NO SEVERE BIOTIC ISSUES OBSERVED. LOW CANOPY RATIO W/ F/P SCAFFOLD BRANCHING.
177	Tilia cordata, Littleleaf Linden	11.5	12	0.60	Codominant	0.60	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
178	Pinus Virginiana, Virginia Pine	10.5	11	0.60	Codominant	0.55	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
179	Pinus Virginiana, Virginia Pine	5.2	8	0.00 - 0.05	Intermediate	0.20	6.0	TREE 179 IS IN DECLINE. NEAR NECROSIS.
180	Pinus Virginiana, Virginia Pine	10.2	11	0.40	Codominant	0.25	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. F/P SCAFFOLD BRANCHING.
181	Pinus Virginiana, Virginia Pine	10.0	10	0.53	Codominant	0.60	14.0	NO APPARENT BIOTIC ISSUES OBSERVED. F/G SCAFFOLD BRANCHING.
182	Pinus Virginiana, Virginia Pine	12.2	13	0.60	Codominant	0.40	16.0	NO APPARENT BIOTIC ISSUES OBSERVED.
183	Platanus occidentalis, American Sycamore	9.1	10	0.60	Codominant	0.50	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
184	Platanus occidentalis, American Sycamore	7.5	8	0.58	Codominant	0.65	16.0	NO APPARENT BIOTIC ISSUES OBSERVED. ASYMMETRIC CANOPY & CANOPY STORM DAMAGE.
185	Pinus Virginiana, Virginia Pine	11.5	12	0.59	Codominant	0.60	14.0	NO APPARENT BIOTIC ISSUES OBSERVED. F/G SCAFFOLD BRANCHING.
186	Pinus Virginiana, Virginia Pine	12.0	12	0.59	Codominant	0.65	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.
187	Pinus Virginiana, Virginia Pine	10.5	11	0.56	Codominant	0.40	12.0	NO APPARENT BIOTIC ISSUES OBSERVED. ASYMMETRIC CANOPY & CANOPY STORM DAMAGE.
188	Pinus Virginiana, Virginia Pine	11.5	12	0.57	Codominant	0.55	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
189	Pinus Virginiana, Virginia Pine	15.0	15	0.58	Codominant	0.60	17.0	NO APPARENT BIOTIC ISSUES OBSERVED. CODOM TRUNK STEMS AT 3.5VF (INCLUDED).
190	Platanus occidentalis, American Sycamore	9.0	9	0.63	Dominant	0.50	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
191	Pinus Virginiana, Virginia Pine	12.0	12	0.58	Dominant	0.35	17.0	NO APPARENT BIOTIC ISSUES OBSERVED. DEADWOOD IN CANOPY.

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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

EXISTING TREE INVENTORY

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-04B

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011C EXISTING TREE CONSERVATION INVENTORY.dwg LAYOUT: C-04B EXISTING TREE CONSERVATION INVENTORY 2 USER: Masangkay DATE: October 19, 2020 TIME: 4:43:43 PM

Tree No.	Species	Size	CRZ	Condition	Canopy Position	Crown Desnsity	Average Crown Radius	Existing Conditions / Observations
		*DBH (in)	R (ft)	%		%	R (ft)	
192	Pinus Virginiana, Virginia Pine	14.0	14	0.63	Dominant	0.75	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
193	Pinus Virginiana, Virginia Pine	13.0	13	0.59	Dominant	0.45	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. DEADWOOD IN CANOPY.
194	Platanus occidentalis, American Sycamore	12.0	12	0.65	Dominant	0.60	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
195	Platanus occidentalis, American Sycamore	11.0	11	0.63	Dominant	0.65	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
196	Pinus Virginiana, Virginia Pine	14.0	14	D	Dominant	0.60	14.0	FAIR/POOR VIGOR & VITALITY. F/P SCOFFOLD BRANCHING
197	Pinus Virginiana, Virginia Pine	11.3	12	0.58	Dominant	0.70	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
198	Platanus occidentalis, American Sycamore	11.8	12	0.63	Dominant	0.65	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
199	Pinus Virginiana, Virginia Pine	11.5	12	0.40	Codominant	0.15	11.0	NO SEVERE BIOTIC ISSUES OBSERVED. LOW CANOPY RATIO. FAIR/POOR SCAFFOLD BRANCHING.
200	Pinus Virginiana, Virginia Pine	13.3	14	0.59	Codominant	0.75	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
201	Pinus Virginiana, Virginia Pine	15.4	16	0.60	Dominant	0.25	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
202	Pinus Virginiana, Virginia Pine	18.0	18	0.63	Codominant	0.75	18.0	NO APPARENT BIOTIC ISSUES OBSERVED.
203	Pinus Virginiana, Virginia Pine	12.0	12	0.54	Codominant	0.25	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. DEADWOOD & LOW CANOPY RATIO.
204	Platanus occidentalis, American Sycamore	9.0	9	0.60	Codominant	0.50	17.0	NO APPARENT BIOTIC ISSUES OBSERVED.
205	Pinus Virginiana, Virginia Pine	12.5	13	0.60	Codominant	0.75	14.0	NO SEVERE BIOTIC ISSUES OBSERVED. CANOPY DEADWOOD & STORM DAMAGE.
206	Pinus Virginiana, Virginia Pine	11.0	11	0.54	Codominant	0.65	13.0	NO SEVERE BIOTIC ISSUES OBSERVED. FAIR/GOOD SCAFFOLD BRANCHING.
207	Pinus Virginiana, Virginia Pine	13.5	14	0.60	Codominant	0.75	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
208	Pinus Virginiana, Virginia Pine	10.2	11	0.58	Codominant	0.70	14.0	NO APPARENT BIOTIC ISSUES OBSERVED.
209	Pinus Virginiana, Virginia Pine	13.4	14	0.58	Codominant	0.70	14.0	NO APPARENT BIOTIC ISSUES OBSERVED. CODOM TRUNK STEMS AT ~10VF (INCLUDED).
210	Pinus Virginiana, Virginia Pine	8.7	9	0.58	Codominant	0.70	13.0	NO APPARENT BIOTIC ISSUES OBSERVED.
211	Pinus Virginiana, Virginia Pine	11.2	12	0.62	Codominant	0.70	15.0	NO APPARENT BIOTIC ISSUES OBSERVED.

DBH = Diameter at Breast Height (measured 4.5 feet above ground).

CRZ =Critical Root Zone (1 foot of radius per inch of tree diameter). CRZ for trees with multiple stems are calculated based on the diameter of a tree with the basal area equal to the sum of the basal areas for all stems measured.

* = Indicates that low branching precludes trunk caliper measurement at 4.5 feet. Measurement is from smallest circumference below the lowest branching.

Conditions Ratings are provided as percentages and are based on methods outlined in the "Guide for Plant Appraisal", 9th edition, published by the International Socielty of Arboriculture.

P:\projects\8011\8011D\DATA\Landscape & Trees\Ex Tree Inventory\[Ex Tree Invtory (2020.02.25).xls]Sheet1

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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

EXISTING TREE INVENTORY

DRAWN BY:
DESIGNED BY: PR
DATE ISSUED: OCTOBER 2, 2019

DWG. SCALE: 1" = 40'
JOB NO.: VV8011D
SHEET NO.: C-04C

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011C EXISTING TREE CONSERVATION INVENTORY.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:43:48 PM LAYOUT: C-04C EXISTING TREE CONSERVATION INVENTORY 3



VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)
1 inch = 250 ft.

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ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

CONTEXT MAP

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 250'
JOB NO.	VV8011D
SHEET NO.	C-05

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D CONTEXT.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:44:13 PM LAYOUT: C-05 CONTEXT MAP



LEGEND

- PROPOSED SINGLE FAMILY TOWNHOUSES
- PROPOSED STACKED TOWNHOUSES
- PROPOSED SIDEWALK
- PROPOSED TRAIL
- PROPOSED SPECIAL PAVING
- PROPOSED 8' ASPHALT CYCLE TRACK
- PROPOSED LIMITS OF CLEARING AND GRADING
- PROPERTY LINE
- MAILBOX
- STAMPED COLORED ASPHALT CROSSWALK
- PROPOSED BENCH

NOTES:

- ALL INTERNAL STREETS WILL HAVE A POSTED SPEED LIMIT OF 25 MPH.
- ALL CURB RAMPS, GUTTER PANELS, AND CROSSWALKS WILL ADHERE TO ADA DESIGN AND STANDARDS.
- ALL CROSSWALKS TO BE STAMPED ASPHALT.
- PROPOSED SIGNS AND EASEMENTS WILL BE PROVIDED AT FUTURE ROAD AND PEDESTRIAN CONNECTIONS AT THE TIME OF FINAL SITE PLAN.
- SCHOOL BUSES ARE NOT EXPECTED TO ENTER THE SITE. SCHOOL BUS STOP WILL BE LOCATED ON HERNDON PARKWAY
- EXERCISE LOCATIONS TO BE DETERMINED AT SITE PLAN.
- FUTURE PEDESTRIAN/ROAD CONNECTIONS TO BE PROVIDED BY OTHERS WITH ADJACENT REDEVELOPMENT.

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

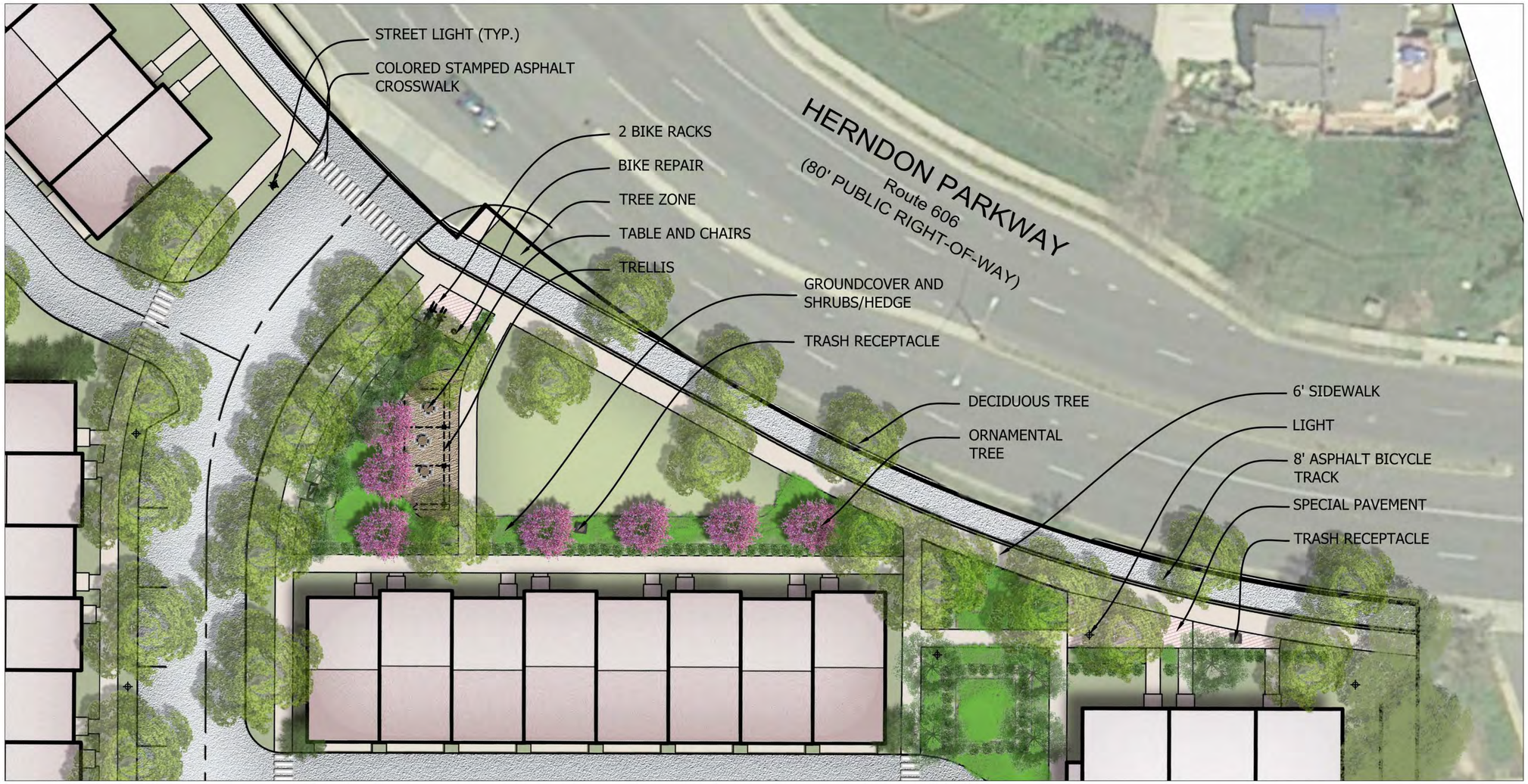
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OVERALL CONCEPT PLAN

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-06

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D OVERALL CONCEPT PLAN.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:44:42 PM LAYOUT: C-06 OVERALL CONCEPT PLAN





BICYCLE REPAIR STATION



GARBAGE BIN



STREET LIGHT



PARK BENCH

NOTE: SITE FURNISHINGS TO CONFORM TO THE HERNDON STREETSCAPE MANUAL.

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

15 0 7.5 15 30 60

(IN FEET)
1 inch = 15 ft.

VIKA

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REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

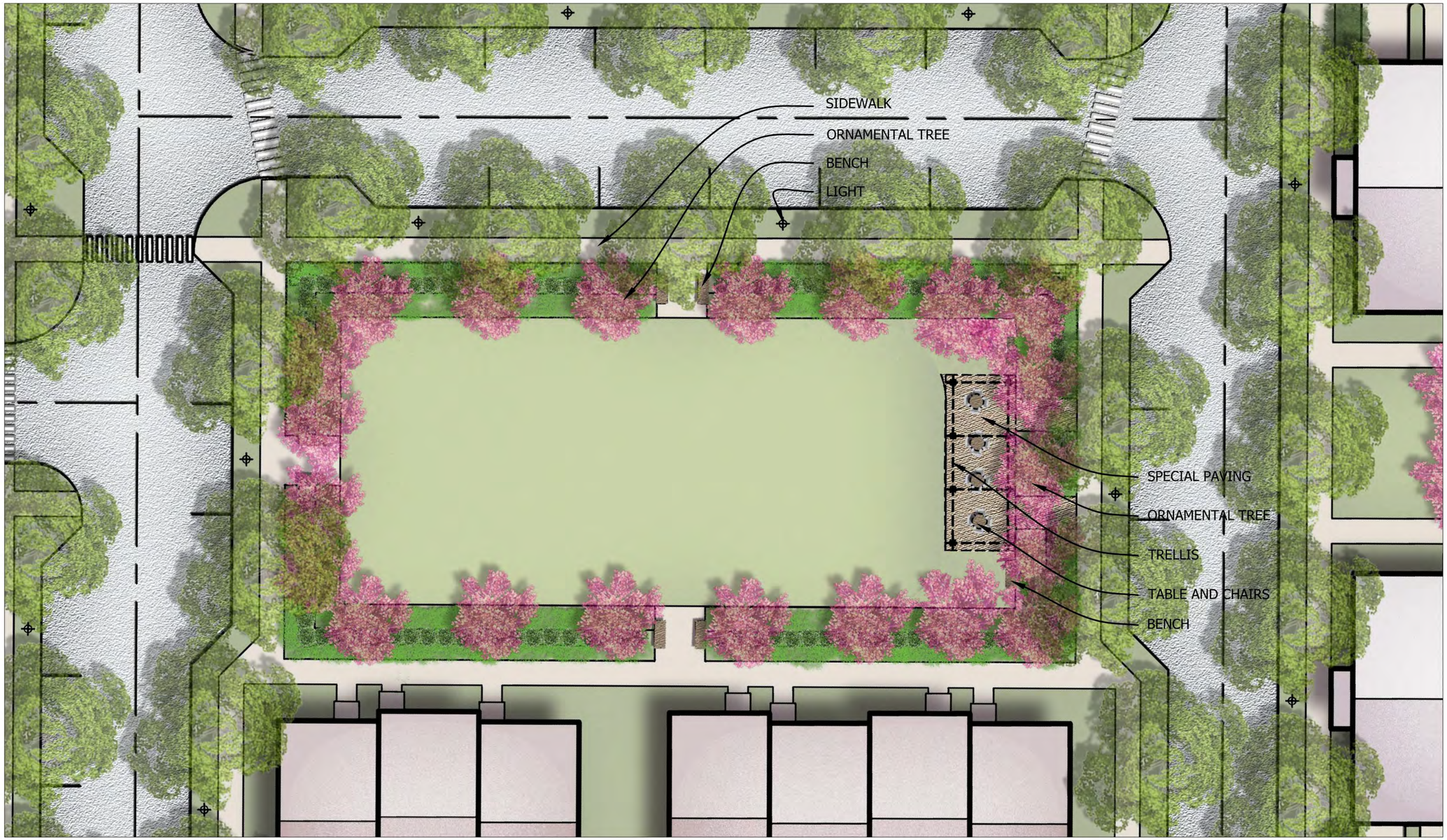
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ENLARGEMENT OPEN SPACE 1

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	AS SHOWN
JOB NO.	VV8011D
SHEET NO.	C-06A

FILE: P:\projects\80111D\CADD\PLANNING\PLANNING DRAWINGS\80111D OVERALL CONCEPT PLAN.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:45:02 PM LAYOUT: C-06A ENLARGEMENT OPEN SPACE 1



VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

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LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ENLARGEMENT OPEN SPACE 4

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	AS SHOWN
JOB NO.	VV8011D
SHEET NO.	C-06B

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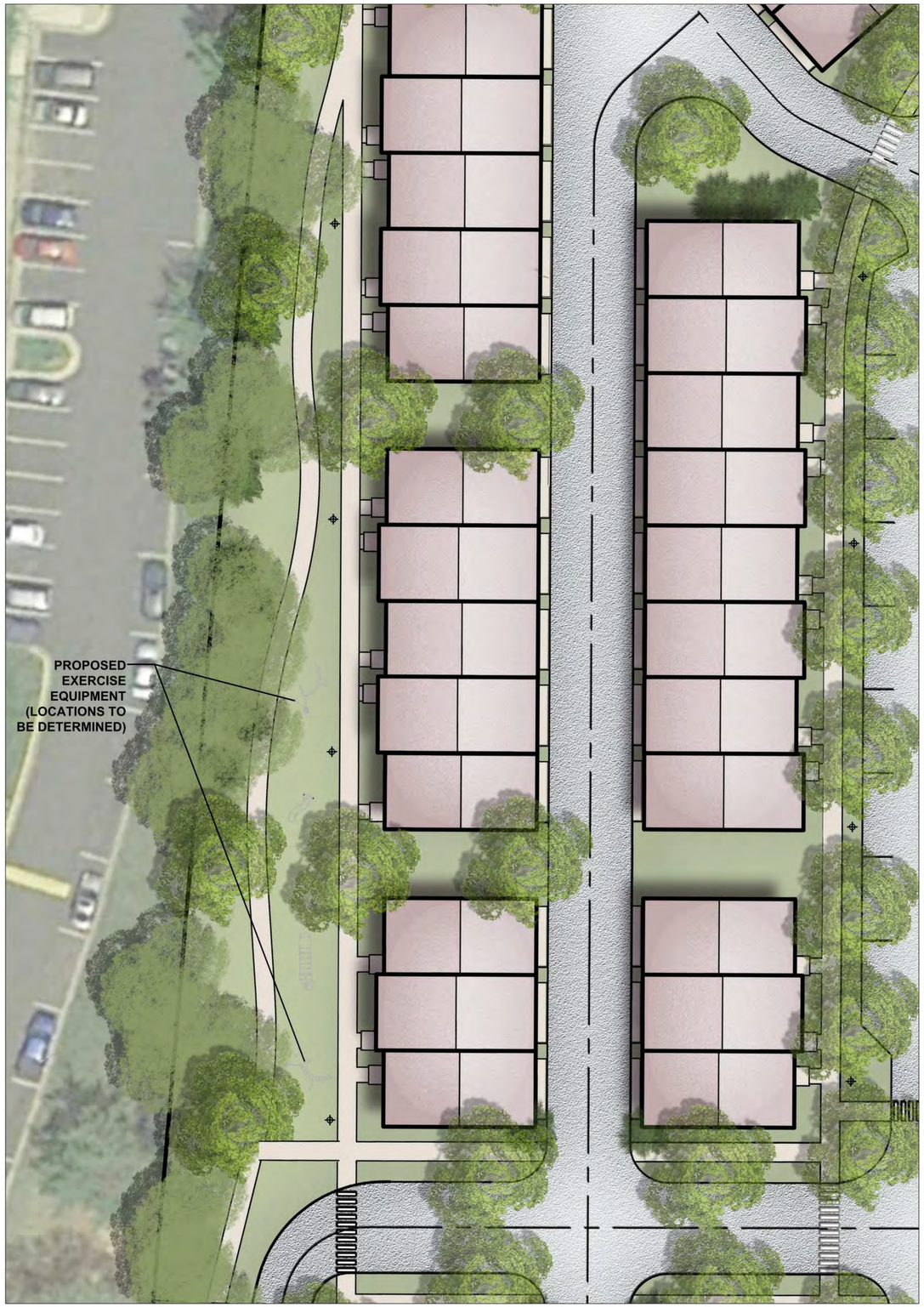
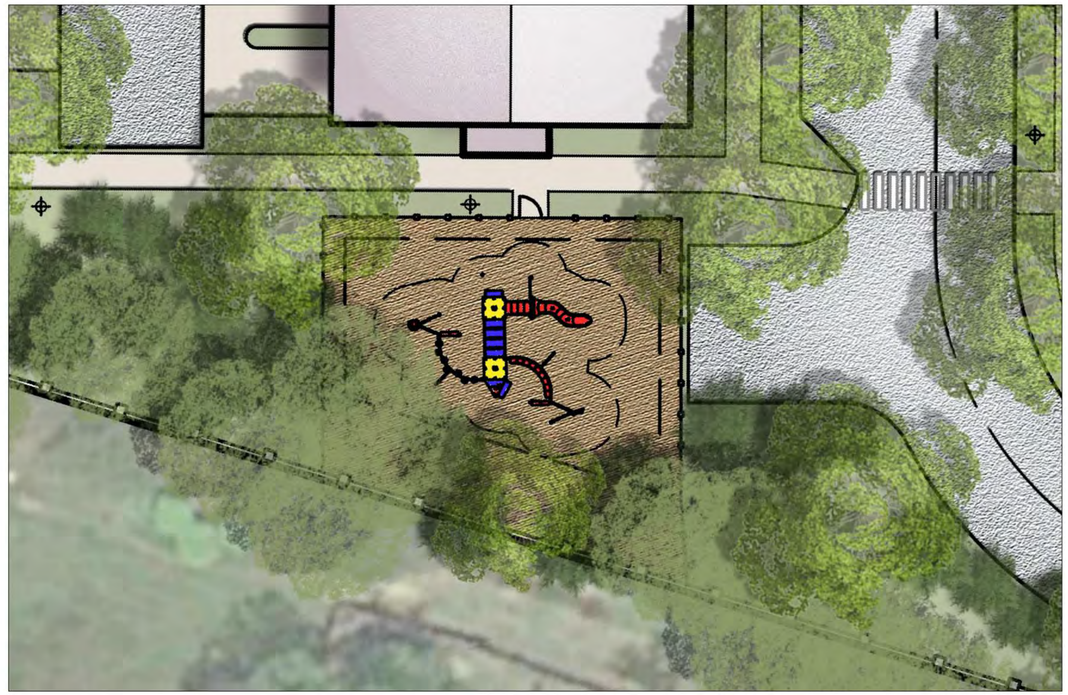
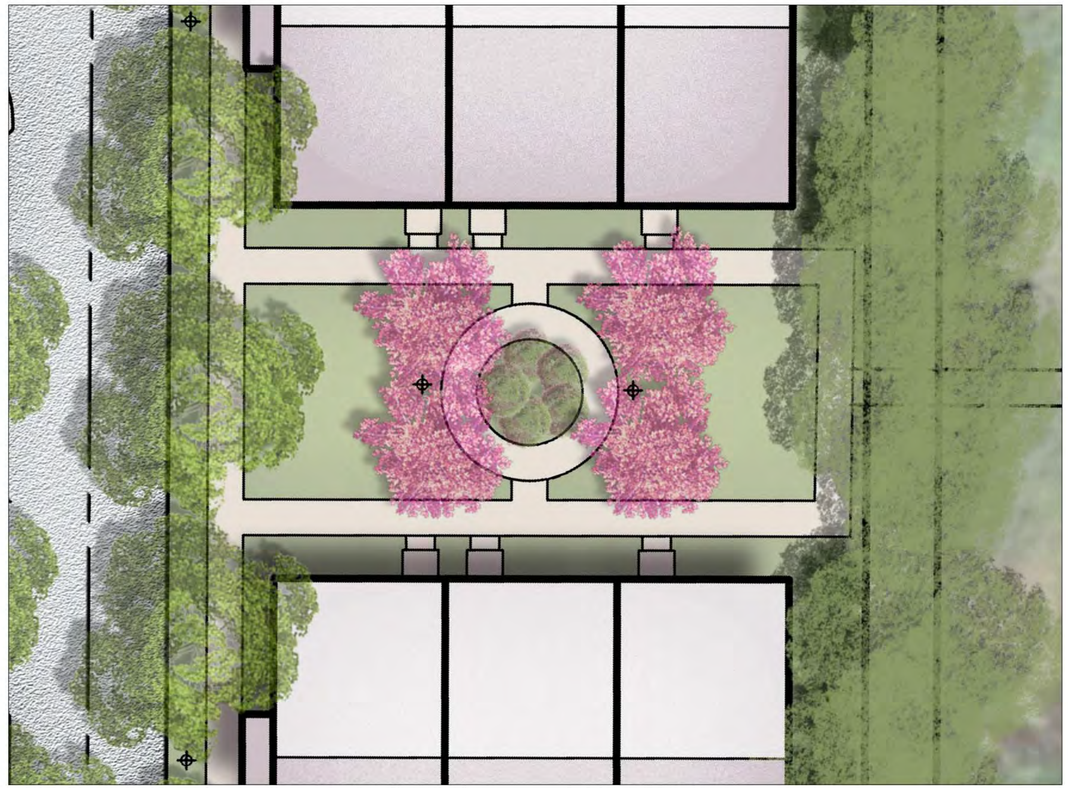


PROPOSED TRAIL - OPEN SPACE 2



PROPOSED TOTLOT - OPEN SPACE 3



PROPOSED OPEN SPACE 5

ENGINEERS PLANNERS SURVEYORS
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10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ENLARGEMENT OPEN SPACE 2, 3 AND 5

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	AS SHOWN
JOB NO.	VV8011D
SHEET NO.	C-06C

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OPEN SPACE 1



COURTYARD GREEN SPACE



PANORAMIC VIEW - OPEN SPACE 1

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PERSPECTIVE VIEWS

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	AS SHOWN
JOB NO.	VV8011D
SHEET NO.	C-06D

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LEGEND

- PROPOSED SINGLE FAMILY TOWNHOUSES
- PROPOSED STACKED TOWNHOUSES
- PROPOSED SIDEWALK
- PROPOSED TRAIL
- PROPOSED SPECIAL PAVING
- PROPOSED 8' ASPHALT CYCLE TRACK
- PROPOSED LIMITS OF CLEARING AND GRADING
- PHASE 1 LINE
- PROPERTY LINE
- MAILBOX
- STAMPED COLORED ASPHALT CROSSWALK
- PROPOSED BENCH
- INTERIM IMPROVEMENTS IN PHASE 2 TO BE PROVIDED IN PHASE 1

PHASE 1 TABULATION

REQUIRED		PROPOSED	
		SITE AREA	8.8170AC. OR 384,068 SF.
		AREA OF DEDICATION	9,639 SF.
		SITE AREA AFTER DEDICATION	8.59 AC. OR 374,429 SF.
ZONE:	PD-UR	ZONE:	PD-UR
MIN. DISTRICT SIZE:	2.5 AC.	DISTRICT SIZE:	8.81 AC.
USE:		USE:	SINGLE FAMILY TOWNHOUSE UNITS (SFTHU), STACKED TOWNHOUSE (STU), OFFICE
MAX. DENSITY:		DENSITY:	12.6 DU/AC.
1) HOUSING TYPE	15 DU/AC		
2) HOUSING TYPE	20 DU/AC		
3) EX. OFFICE		31,580 sf	NON CONFORMING
MIN. SETBACKS	10' FROM PUBLIC RIGHT OF WAY; 5' FROM PRIVATE RIGHT OF WAY	MIN. SETBACKS	
		FRONT:	5'
		SIDE:	4'
		REAR:	3' OR 18' WITH PARKING
LOT WIDTH:		LOT WIDTH:	20' INTERIOR; 24' CORNER LOT
UNITS:		UNITS:	111
		SINGLE FAMILY ATTACHED	55 UNITS
		STACKED 2 OVER 2 CONDOS	56 UNITS
BUILDING LOT COVERAGE:		BUILDING LOT COVERAGE	79430 (29%)
MIN. OPEN SPACE:	20% OF SITE	OPEN SPACE:	89459 SF (23%)
MIN. SPACE FOR RECREATION:	8% OF SITE	RECREATION OPEN SPACE:	27,050(10%)
PARKING: HOUSING	2.33/UNIT	PARKING (2.63/UNIT)	269 SPACES
		GUEST PARKING:	34 SPACES
		GARAGE PARKING:	166 SPACES
		DRIVEWAY:	82 SPACES
PARKING: OFFICE	1/300 GFA	1/300 GFA	106 SPACES
MAX. BUILDING HEIGHT:	40' WHEN LOCATED WITHIN 50'OF THE PROPERTY ZONED R-15, R-10, PD-R, OR RTC; OTHERWISE 50'	BUILDING HEIGHT:	
		SINGLE FAMILY ATTACHED:	40'
		STACKED TOWNHOUSE UNITS	50'
NUMBER OF FLOORS:	ONE FLOOR	NUMBER OF FLOORS:	
		TOWNHOUSES:	3 FLOORS
		2 OVER 2S:	4 FLOORS
		OFFICE	1 FLOOR
MAX. DISTANCE FROM RIGHT OF WAY	15', MAY BE INCREASED TO 40' TO ACCOMMODATE A LANDSCAPE PARK FOR NO MORE THAN 30% OF THE LINEAR FOOTAGE	MAX. DISTANCE FROM RIGHT OF WAY	87' See Sheet C-07
MIN. DISTANCE BETWEEN BUILDINGS AND THE BOUNDARIES OF THE DEVELOPMENT	18'	MIN. DISTANCE BETWEEN BUILDINGS AND THE BOUNDARIES OF THE DEVELOPMENT	18'
MIN. DISTANCE (FEET) BETWEEN PAVED SURFACES AND THE BOUNDARIES OF THE DEVELOPMENT	SUBJECT TO BUFFER REQUIREMENTS IN ARTICLE XI, DEVELOPMENT STANDARDS	MIN. DISTANCE (FEET) BETWEEN PAVED SURFACES AND THE BOUNDARIES OF THE DEVELOPMENT	0' See Sheet C-07

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

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10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PHASING PLAN PHASE 1

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-07

FILE: P:\projects\80110\CADD\PLANNING\PLANNING DRAWINGS\80110 PHASING PLAN-1.dwg LAYOUT: C-07 PHASING PLAN PHASE 1
USER: Masangkay DATE: October 19, 2020 TIME: 4:46:28 PM



LEGEND

- PROPOSED SINGLE FAMILY TOWNHOUSES
- PROPOSED STACKED TOWNHOUSES
- PROPOSED SIDEWALK
- PROPOSED TRAIL
- PROPOSED SPECIAL PAVING
- PROPOSED 8' ASPHALT CYCLE TRACK
- PROPOSED LIMITS OF CLEARING AND GRADING
- PHASE 1 LINE
- PROPERTY LINE
- MAILBOX
- STAMPED COLORED ASPHALT CROSSWALK
- PROPOSED BENCH

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

VIKA

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CHANTILLY, VA 20151
MARIA LASHINGER
703-787-9595

COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PHASING PLAN PHASE 2

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-07A

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D PHASING PLAN-1.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:46:38 PM LAYOUT: C-07A PHASING PLAN PHASE 2





ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

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OWNER:
FM HERNDON CORPORATE CENTER LLC.
7200 WISCONSIN AVENUE, SUITE 100
BETHESDA, MD 20814
NEIL MARKUS
301-915-9460

APPLICANT:
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14200 PARK MEADOW DRIVE, SUITE 100N
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SOLEDAD PORTILLA
703-636-9237

APPLICANTS REPRESENTATIVE:
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RESTON, VA 20190
BRIAN WINTERHALTER ESQ.
703-456-8168

LANDSCAPE ARCHITECT:
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Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OVERALL ILLUSTRATIVE PLAN

DRAWN BY:	PR
DESIGNED BY:	
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 50'
JOB NO.	VV8011D
SHEET NO.	C-07B

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D PHASING PLAN-1.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:46:55 PM LAYOUT: C-07B OVERALL ILLUSTRATIVE PLAN



LEGEND

- PROPOSED LIMITS OF CLEARING AND GRADING
- PROPERTY LINE
- PHASE 1 LINE

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

GRADING AND UTILITY PHASE 1

DRAWN BY:	PR
DESIGNED BY:	
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-08

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D GRAD & UTIL.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:47:19 PM LAYOUT: C-08 GRADING AND UTILITY PHASE 1

LEGEND

- PROPOSED LIMITS OF CLEARING AND GRADING
- PROPERTY LINE

CYPRESS TREE PLACE (VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)

HERNDON PARKWAY ROUTE 606 (90' PUBLIC RIGHT-OF-WAY)

AUTUMNHAZE CT

EXISTING WATERMAIN

CONNECT TO EX. STORM

CONNECT TO EX. WATER

PROP. B.O.V.

PROP. WATER

PROP. SAN

PROP. STORM

CONNECT TO EX. SANITARY

PROPOSED MANHOLE WITH FLOW SPLITTER TO BYPASS PUBLIC STORM

PROP. STORM VAULT

3 TYP.

20' TYP.

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

ENGINEERS PLANNERS SURVEYORS
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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
CIVIL ENGINEER

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

GRADING AND UTILITY PHASE 2

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-08A

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D GRAD & UTIL.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:47:30 PM LAYOUT: C-08A GRADING AND UTILITY PHASE 2


CYPRESS TREE PLACE
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)
HERNDON PARKWAY
Route 606 (MINOR ARTERIAL)
(80' PUBLIC RIGHT-OF-WAY)
ASPHALT PAVEMENT
GRASS MEDIAN
CONC. CURB
AUTUMNHAZE CT
D.B. 19970 PG. 2178
EX. FH TO REMAIN IN PHASE 1
EX. FDC TO REMAIN
3 TYP.
20' TYP.
100'±
1-2
3-4
5-6
7-8
9-10
11-12
13-14
15-16
17-18
19-20
21-22
23-24
25-26
27-28
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49-50
51-52
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57-58
59-60
61-62
63-64
65-66
67-68
69-70
71-72
73-74
75-76
77-78
79-80



LEGEND:

EMERGENCY VEHICLE ACCESS PATH (TO BE PAINTED AND SIGNED AS NEEDED)

FIRE ACCESS SHEET REQUIREMENTS

1. ALL ROADS PROPOSED BY THE PROJECT, AS WELL AS ADJOINING ROADS; THE CLASSIFICATIONS OF THE ROADS (I.E. ARTERIAL, COLLECTOR, ETC.) SHOULD BE NOTED. (PROVIDED)
2. LOCATION AND DIMENSIONS OF ALL FIRE ACCESS LANES AND TURNAROUNDS; VEHICLE ACCESS TO THE REAR OF BUILDINGS, INCLUDING INTERIOR COURTYARDS FOR STICK-BUILD, DONUT-SHAPED BUILDINGS, NEEDS TO BE SHOWN. (TO BE PROVIDED)
3. ARROW DIAGRAMS INDICATING WHERE EMERGENCY VEHICLES CAN ACCESS BUILDINGS. (TO BE PROVIDED)
4. DIMENSIONS OF THE DISTANCE BETWEEN THE PORTIONS OF THE ROADWAY THAT ARE ACCESSIBLE TO FIRE TRUCKS AND THE FAÇADES OF THE BUILDINGS. THE TARGET DISTANCE IS BETWEEN 15 AND 30 FEET SEPARATION. (PROVIDED)
5. IMPROVEMENTS PLANNED FOR THE AREA BETWEEN THE PORTIONS OF THE ROADWAY THAT ARE ACCESSIBLE TO FIRE TRUCKS AND THE FACADES OF THE BUILDINGS, INCLUDING PARKING LANES, GARAGE PODIUMS, LANDSCAPED AREAS, STEEP SLOPES, SIDEWALKS, PLAZAS, YARDS, OUTDOOR SEATING AREAS, STEPS, PLANTERS, SCULPTURES, ETC. (PROVIDED)
6. CLEAR IDENTIFICATION OF BUILDING FOOTPRINTS, CANTILEVERED EXTENSIONS, PENTHOUSES, BALCONIES, PATIOS, ETC. (PROVIDED)
7. HEIGHTS OF THE PROPOSED BUILDINGS; FOR BUILDINGS WITH MULTIPLE HEIGHTS DUE TO STEP BACKS, THE HEIGHT AND NUMBER OF STORIES OF EACH BUILDING SEGMENT SHOULD BE CLEARLY NOTED. (PROVIDED)
8. LOCATION OF OVERHEAD UTILITY LINES. (PROVIDED)
9. IDENTIFICATION OF CONSTRUCTION TYPE FOR EACH BUILDING; FOR MULTIPLE BUILDINGS LOCATED ON A SINGLE GARAGE PODIUM, THE CONSTRUCTION TYPE FOR EACH BUILDING MUST BE IDENTIFIED - THE GARAGE PODIUM CAN BE IDENTIFIED AS A BLOCK, WITH EACH BUILDING IDENTIFIED SEPARATELY. EACH PORTION OF STRUCTURE WITH A DIFFERENT CONSTRUCTION TYPE IS CONSIDERED A SEPARATE BUILDING. STRUCTURES THAT ARE SEPARATED BY A FIRE WALL ARE ALSO CONSIDERED SEPARATE BUILDINGS. (PROVIDED)
10. TYPE OF BUILDING SKIN MATERIAL (COMBUSTIBLE/NON-COMBUSTIBLE), TYPE OF SPRINKLERS (TYPE NFPA 13; IF 13R PLEASE EXPLAIN), AND ROOF TYPE (CLASS A PREFERRED). (PROVIDED)
11. LOCATION OF PROPOSED BUILDING ENTRANCES, BOTH PEDESTRIAN AND VEHICULAR; ACCESS DOORS AND ELEVATORS, INCLUDING MEDEVAC ELEVATORS, SHOULD BE SHOWN ON THE FDP. ALSO, ANY INTERIOR ROUTES AVAILABLE FOR EMERGENCY VEHICLE USE, SUCH AS SUITABLY SIZED DRIVEWAYS THROUGH PARKING GARAGES AND COURTYARDS, SHOULD BE DELINEATED (PROVIDED)
12. LOADING AREAS AND WHETHER THEY ARE ACCESSIBLE TO EMERGENCY VEHICLES. (PROVIDED)
13. ACCESS TO ACTIVE COURTYARDS (ESPECIALLY WITH POOLS, TENNIS COURTS, ETC.) NEEDS TO BE SHOWN - HOW WILL THE MEDICAL STAFF GET THERE, WITH THEIR EQUIPMENT, QUICKLY (PROVIDED)

NOTES

1. ALL AREAS IDENTIFIED AS FIRE LANES, FIRE DEPARTMENT TURNAROUNDS, FIRE DEPARTMENT ACCESS AREAS OR OTHER RESTRICTED AREAS WILL HAVE BOLLARDS, PAINT, SIGNAGE AND OTHER REQUIRED IDENTIFICATION INSTALLED AS REQUIRED PRIOR TO STRUCTURE OCCUPANCY.
2. THE SITE DOES NOT EXCEED 6% IN GRADE ALONG FIRE ACCESS ROUTES
3. STAIR AND ELEVATOR LOCATIONS ARE CONCEPTUAL. FINAL LOCATIONS TO BE DETERMINED AT FINAL SITE PLAN.

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA
ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS
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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
AND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PHASE 2 FIRE ACCESS PLAN

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-09A

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D FIRE ACCESS.dwg LAYOUT: C-09A PHASE 2 FIRE A
USER: Masangkay DATE: October 19, 2020 TIME: 4:48:10 PM



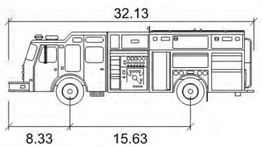
SCALE: 1" = 40'



SCALE: 1" = 20'



SCALE: 1" = 20'



PUMPER TRUCK	feet
Width	: 8.00
Track	: 7.89
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY

VA STATE GRID NORTH (VSC 83)

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

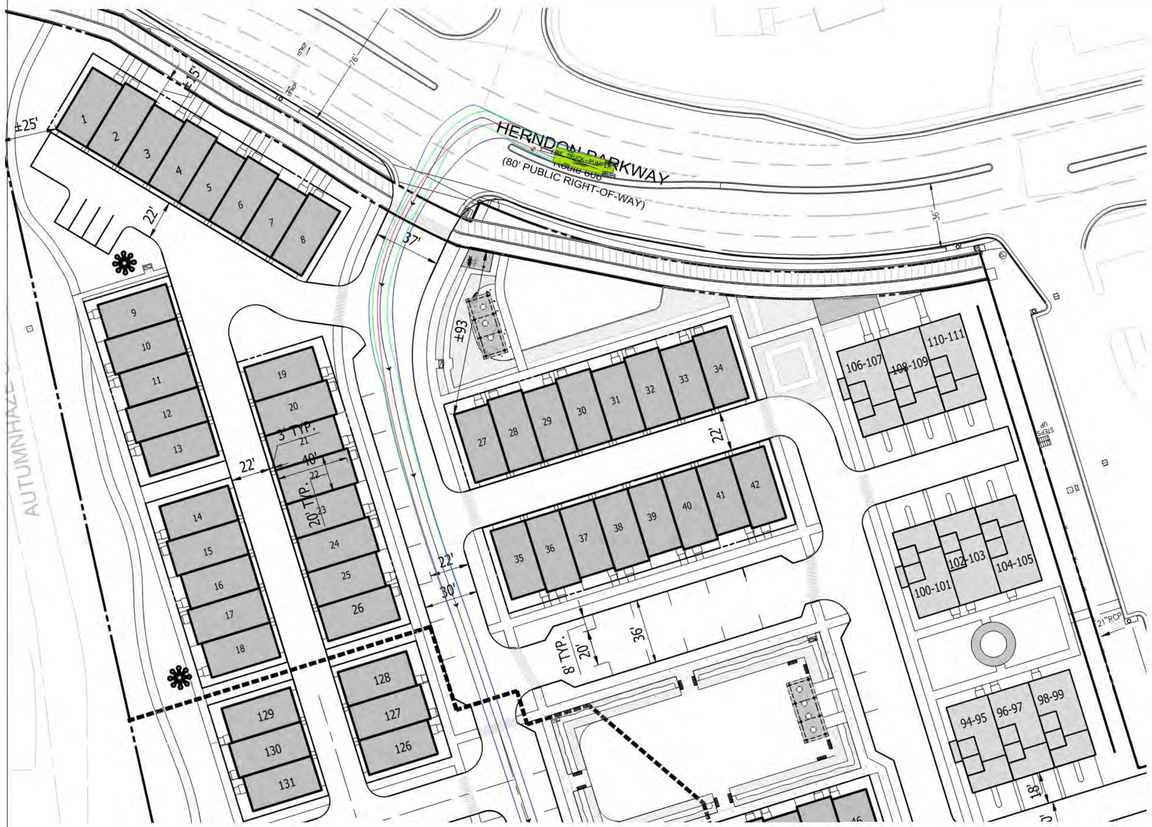
PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

AUTOTURN EXHIBIT PHASE 1

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	AS NOTED
JOB NO.	VV8011D
SHEET NO.	C-09B

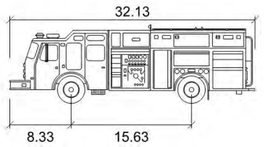
FILE: P:\projects\80111D\CADD\PLANNING DRAWINGS\80111D AUTOTURN EXHIBITS.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:48:36 PM LAYOUT: AUTOTURN EXHIBIT PHASE 1



SCALE: 1" = 40'



SCALE: 1" = 30'



PUMPER TRUCK	feet
Width	: 8.00
Track	: 7.89
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

LEGEND

FRONT TIRES

REAR TIRES

VEHICLE BODY

VA STATE GRID NORTH (VSC 83)

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PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

AUTOTURN EXHIBIT PHASE 2

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DATE ISSUED:	OCTOBER 2, 2019
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JOB NO.	VV8011D
SHEET NO.	C-09C

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D AUTOTURN EXHIBITS.dwg LAYOUT: AUTOTURN EXHIBIT PHASE 2 USER: Masangkay DATE: October 19, 2020 TIME: 4:48:45 PM



LEGEND:

- PUBLIC VEHICULAR ACCESS (NO IMPROVEMENTS)
- PRIVATE VEHICULAR ACCESS
- 5' PEDESTRIAN SIDEWALK
- 5' PEDESTRIAN TRAIL
- 8' CYCLE TRACK
- 6' SIDEWALK

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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TYSONS, VA. GERMANTOWN, MD.

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PHASE 1 PEDESTRIAN & VEHICULAR CIRCULATION PLAN

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-10

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D TRAFFIC & PED.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:49:07 PM LAYOUT: C-10 PHASE 1 PEDESTRIAN & VEHICULAR CIRCULATION PLAN



LEGEND:

- PUBLIC VEHICULAR ACCESS (NO IMPROVEMENTS)
- PRIVATE VEHICULAR ACCESS
- 5' PEDESTRIAN SIDEWALK
- 5' PEDESTRIAN TRAIL
- 8' CYCLE TRACK
- 6' SIDEWALK

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

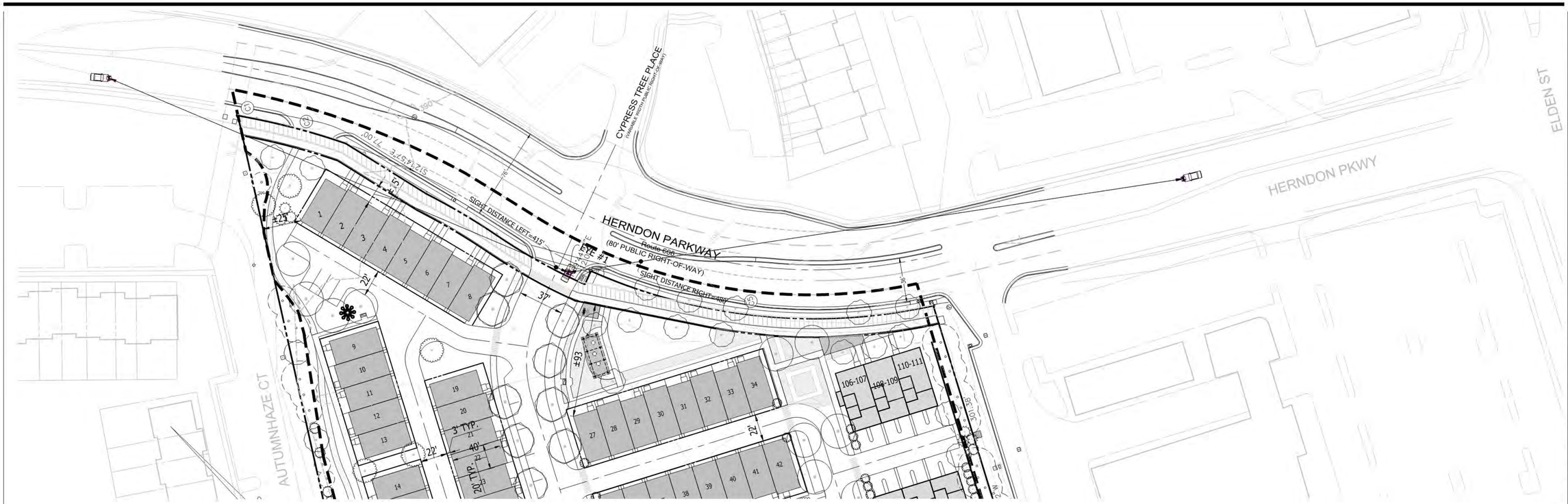
ZONING MAP AMENDMENT

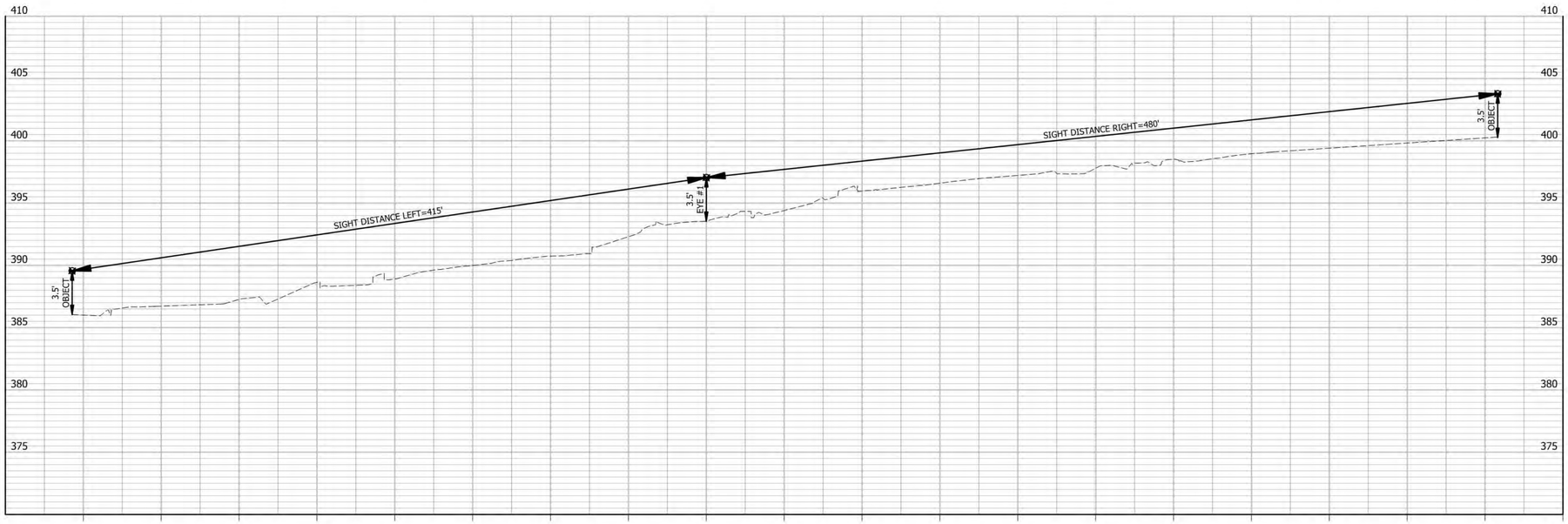
TOWN OF HERNDON, VA

PHASE 2 PEDESTRIAN & VEHICULAR CIRCULATION PLAN

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-10A

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D TRAFFIC & PED.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:49:13 PM LAYOUT: C-10A PHASE 2 PEDESTRIAN & VEHICULAR CIRCULATION PLAN





POSTED SPEED 35 MPH

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

VIKA

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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

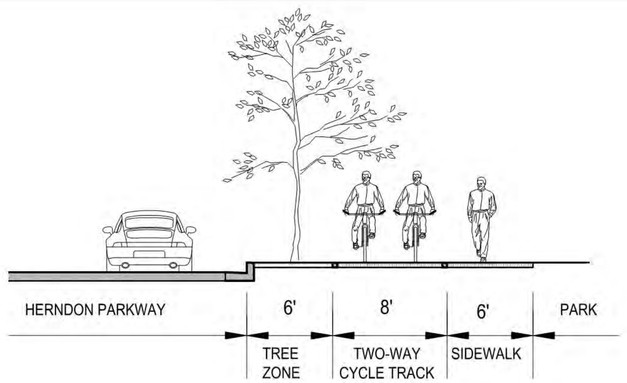
TOWN OF HERNDON, VA

SIGHT DISTANCE PLAN

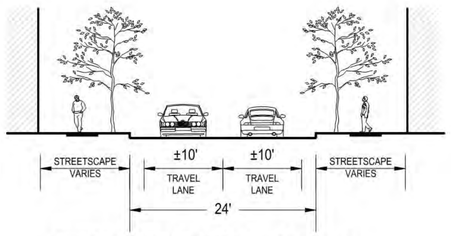
DRAWN BY:
DESIGNED BY: PR
DATE ISSUED: OCTOBER 2, 2019
DWG. SCALE: H:1" = 40'; V: 1"=5'
JOB NO.: VV8011D
SHEET NO.: C-11

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D SIGHT DISTANCE P&P.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:49:34 PM LAYOUT: C-11 SIGHT DISTANCE PLAN

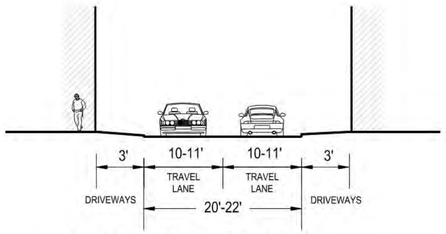




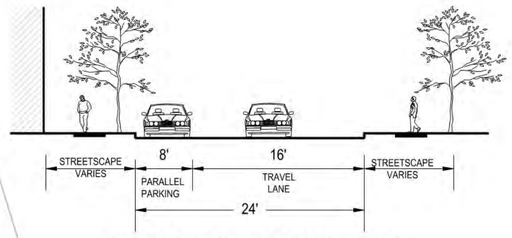
TYPICAL STREET SECTION E - E
SCALE: 1' = 5'



TYPICAL STREET SECTION A - A
SCALE: 1' = 10'

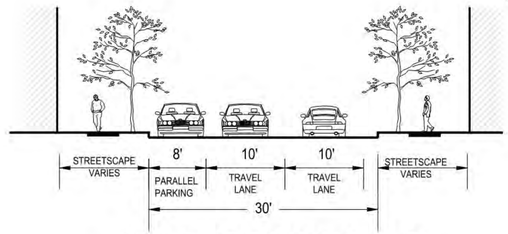


TYPICAL ALLEY SECTION B - B
SCALE: 1' = 10'

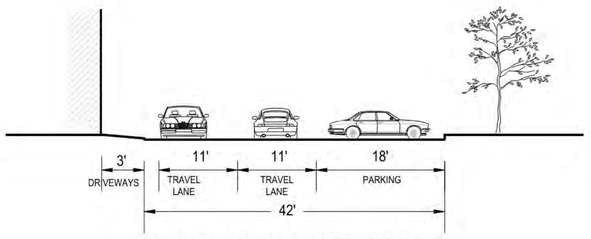


TYPICAL STREET SECTION F - F
SCALE: 1' = 10'

SEE PLAN FOR BUILDING LOCATIONS



TYPICAL STREET SECTION C - C
SCALE: 1' = 10'



TYPICAL STREET SECTION D - D
SCALE: 1' = 10'

* FINAL SITE DESIGN AND ENGINEERING SHOWN SHALL BE IN GENERAL CONFORMANCE BUT MAY CHANGE DURING THE FINAL SITE PLAN

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

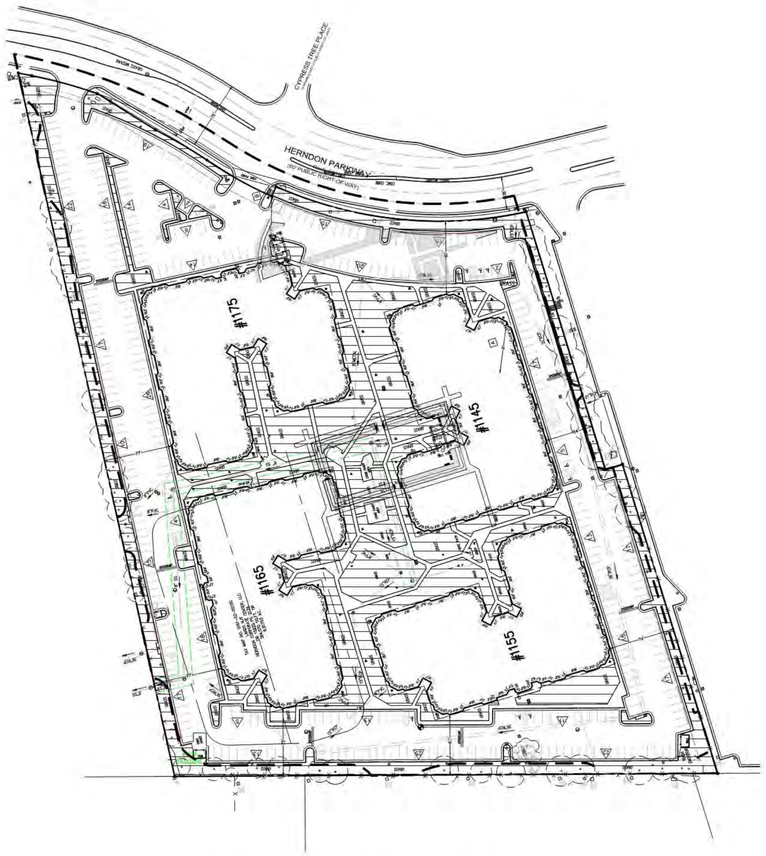
REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT
TOWN OF HERNDON, VA

TYPICAL STREET CROSS SECTIONS

DRAWN BY:
DESIGNED BY: PR
DATE ISSUED: OCTOBER 2, 2019
DWG. SCALE: 1" = 50'
JOB NO.: VV8011D
SHEET NO.: C-12

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D ROAD SECTION.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:50:04 PM LAYOUT: C-11 TYPICAL STREET CROSS SECTIONS





LEGEND

PRE DEVELOPMENT MANAGED TURF AREA

POST DEVELOPMENT IMPERVIOUS AREA

PRE-DEVELOPMENT DRAINAGE AREA TABULATION

IMPERVIOUS AREA = 6.53 ACRES
MANAGED TURF = 2.29 ACRES
TOTAL AREA = 8.82 ACRES

POST-DEVELOPMENT DRAINAGE AREA TABULATION - ULTIMATE CONDITIONS

IMPERVIOUS AREA = 5.60 ACRES
MANAGED TURF = 3.22 ACRES
TOTAL AREA = 8.82 ACRES

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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10/19/20
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CIVIL ENGINEER

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REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

PRE & POST DEVELOPMENT DRAINAGE AREA TABULATION

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 80'
JOB NO.	VV8011D
SHEET NO.	C-13

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D SWM.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:50:32 PM LAYOUT: C-12 PRE & POST DEVELOPMENT DRAINAGE AREA TABULATION



STORMWATER LEGEND

DEVICE	DCR STD./SPEC (COMMON NAME)
	CONTRIBUTING DRAINAGE TO PROPRIETARY BMP DEVICE

STORMWATER MANAGEMENT NARRATIVE

EXISTING SITE CONDITIONS:
THE EXISTING SITE MAINLY CONSISTS OF OFFICE BUILDINGS AND AN ASPHALT PARKING LOT. THE EXISTING GROUND COVER IS 74% IMPERVIOUS. NO CRITICAL OR STEEP SLOPES EXIST ON SITE. THE SITE RUNOFF IS CAPTURED VIA STORM DRAIN SYSTEM AND OUTFALLS INTO TWO STORM PIPES TO THE WEST OF THE SITE. OFFSITE RUNOFF IS CAPTURED AND CONVEYED THROUGH THE STORM DRAIN SYSTEM.

PROPOSED SITE CONDITIONS:
THE REDEVELOPMENT PROPOSES DEMOLITION OF THE EXISTING OFFICE BUILDINGS AND ASPHALT PARKING LOT AND BUILD APPROXIMATELY 150 TOWNHOUSES IN THREE PHASES. THE SITE PROPOSES A REDUCTION OF IMPERVIOUS AREA FROM THE EXISTING CONDITION.

ADJACENT PROPERTIES:
RUNOFF FROM THE EAST PROPERTY (ELDEN STREET MARKETPLACE) WILL BE CAPTURED BY THE PROPOSED UNDERGROUND STORM DRAIN SYSTEM AND CONVEYED TO THE OUTFALLS AT THE WEST SIDE OF THE SITE.

DETENTION REQUIREMENTS:
SITE RUNOFF WILL BE CAPTURED BY THE PROPOSED STORM DRAIN SYSTEM AND CONVEYED TO AN UNDERGROUND VAULT AT THE SITE'S MAIN OUTFALL. THE VAULT WILL BE OFFLINE OF THE STORM DRAIN SYSTEM AND STORM DRAIN MANHOLES WITH FLOW SPLITTERS WILL BE USED TO CONTROL THE OUTFLOW. THE VAULTS HAVE BEEN SIZED TO REDUCE THE 10 YEAR DESIGN STORM OUTFLOW 25% BELOW THE PRE-DEVELOPMENT.

WATER QUALITY REQUIREMENTS:
THE PROPOSED REDEVELOPMENT REDUCES THE IMPERVIOUS COVER FROM 6.53 ACRES TO 5.60 ACRES IN THE ULTIMATE CONDITION. THE WATER QUALITY REQUIREMENT WAS CALCULATED USING THE VIRGINIA RUNOFF REDUCTION METHOD (VRRM) FOR REDEVELOPMENT SPREADSHEET. THE PHOSPHORUS REMOVAL REQUIREMENT WILL BE MET USING THE PROPOSED STORMWATER MANAGEMENT VAULT. DUE TO THE PROPOSED DEVELOPMENT PHASING, THE SWM VAULT HAS BEEN SIZED AND DESIGNED TO MEET THE REQUIREMENTS OF THE ULTIMATE SITE CONDITIONS (1.21 LB/YR IN PHASE 1 < 1.61 LB/YR IN ULTIMATE CONDITION).

ADEQUATE OUTFALL ANALYSIS:
THE PROPOSED REDEVELOPMENT WILL UTILIZE TWO EXISTING OUTFALLS ON SITE. BOTH OUTFALLS ARE PART OF AN UNDERGROUND STORM DRAIN SYSTEM. SEE SHEET C-16 FOR OUTFALL MAP AND NARRATIVE.

INSPECTION AND MAINTENANCE:
ALL STORMWATER MANAGEMENT FACILITIES SHALL BE INSPECTED NO LESS THAN ONCE EVERY 5 YEARS PER TOWN OF HERNDON SECTION 26-330(d)(4). A MAINTENANCE AGREEMENT SHALL BE PROVIDED FOR PRIVATE STORMWATER MANAGEMENT FACILITIES PER TOWN OF HERNDON SECTION 26-330(d).

STORMWATER MANAGEMENT BMP ACCESS:
A 12' WIDE ACCESS EASEMENT IS PROVIDED FOR ALL STORMWATER MANAGEMENT FACILITIES.

NOTES:

1. THIS PLAN IS A CONCEPTUAL PLAN AND AS SUCH THE FINAL DESIGN OF UTILITIES, STORMWATER (SWM) FACILITIES, AND SITE FEATURES MAY BE SUBJECT TO MINOR MODIFICATIONS WITH FINAL CONSTRUCTION DOCUMENTS. AS SUCH, THE APPLICANT RESERVES THE RIGHT TO MODIFY THE TYPE, NUMBER, SHAPE, LOCATION, SIZE AND ALL OTHER CHARACTERISTICS OF THE SWM FACILITIES SHOWN HEREON, SO LONG AS THE ULTIMATE REQUIREMENTS FOR PHOSPHOROUS LOAD REDUCTION AND POST DEVELOPED PEAK RELEASE RATES ARE MET. IT SHALL ALSO BE UNDERSTOOD THAT THE APPLICANT RESERVES THE RIGHT TO USE ANY STORMWATER CONTROL FACILITY ALLOWED IN THE PFM AT THE TIME OF FINAL CONSTRUCTION DOCUMENTS, EVEN IF IT IS NOT DEPICTED IN THIS PLAN, SO LONG AS ALL REQUIRED DESIGN CRITERIA FOR SUCH FACILITY IS MET. DETENTION VAULTS AND FILTERING SYSTEM VAULTS MAY BE RELOCATED THROUGHOUT THE SITE WITH FINAL CONSTRUCTION PLANS TO MORE EFFICIENTLY OR EFFECTIVELY PROVIDE THE REQUIRED QUALITY/QUANTITY TREATMENT WITH FINAL CONSTRUCTION DOCUMENTS. IN ADDITION, SUCH FACILITIES MAY BE ELIMINATED (OR ADDITIONAL FACILITIES ADDED) WITH FINAL CONSTRUCTION DOCUMENTS.
2. COMPUTATIONS HEREON ARE BASED ON APPROXIMATIONS OF PROPOSED PERVIOUS/IMPERVIOUS AREA. AT THE TIME OF FINAL CONSTRUCTION PLANS, BASED ON FINAL PERVIOUS/IMPERVIOUS AREAS, THE FINAL SWM VOLUME REQUIREMENTS WILL BE DETERMINED. THE METHODOLOGY USED SHALL BE CONSISTENT WITH THAT SHOWN HEREON.
3. ALL GRADING SHOWN IS CONCEPTUAL AND SUBJECT TO CHANGE WITH THE FINAL SITE PLAN.
4. THE SWM SYSTEM AND BMP PRACTICES PROPOSED IN THE PLAN SHALL MEET ALL STATE AND LOCAL TOWN OF HERNDON REQUIREMENTS AT THE TIME OF SITE PLAN REVIEW. ALL SWM QUALITY AND QUANTITY REQUIREMENTS FOR THE PROJECT (INCLUDING REQUIREMENTS GENERATED BY OFFSITE DISTURBED AREAS AND FRONTAGE IMPROVEMENT AREAS) SHALL BE MET ON-SITE. ALL PROPOSED SWM FACILITIES SHALL BE PROVIDED ON-SITE AND WILL BE PRIVATELY MAINTAINED.

VA STATE GRID NORTH (VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OVERALL STORMWATER MANAGEMENT PLAN

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	C-14

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D SWM.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:50:42 PM LAYOUT: C-13 OVERALL STORMWATER MANAGEMENT PLAN

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

☐ 2011 BMP Standards and Specifications ☑ 2013 Draft BMP Standards and Specifications

Project Name: Herndon Gateway Phase 1/1A
Date: 8/25/2020
Linear Development Project? No

CLEAR ALL

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 8.82

Check:

Maximum reduction required:	20%	BMP Design Specifications List:	2013 Draft Stds & Specs
The site's net increase in impervious cover (acres) is:	0	Linear project?	No
Post-Development TP Load Reduction for Site (lb/yr):	1.21	Land cover areas entered correctly?	✔
		Total disturbed area entered?	✔

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				2.29	2.29
Impervious Cover (acres)				6.53	6.53
					8.82

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				3.47	3.47
Impervious Cover (acres)				5.35	5.35
Area Check	OK.	OK.	OK.	OK.	8.82

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	**Listed**	**Adjusted[1]**
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	2.29	2.29
Weighted Rv(turf)	0.25	0.25
% Managed Turf	26%	26%
Impervious Cover (acres)	6.53	6.53
Rv(impervious)	0.95	0.95
% Impervious	74%	74%
Total Site Area (acres)	**8.82**	**8.82**
Site Rv	**0.77**	**0.77**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)		*Land Cover Summary-Post*		*Land Cover Summary-Post*	
Post ReDev. & New Impervious		**Post-ReDevelopment**		**Post-Development New Impervious**	
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00		
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00		
% Forest	0%	% Forest	0%		
Managed Turf Cover (acres)	3.47	Managed Turf Cover (acres)	3.47		
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25		
% Managed Turf	39%	% Managed Turf	39%		
Impervious Cover (acres)	5.35	ReDev. Impervious Cover (acres)	5.35	New Impervious Cover (acres)	0.00
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)	--
% Impervious	61%	% Impervious	61%		
Final Site Area (acres)	**8.82**	**Total ReDev. Site Area (acres)**	**8.82**		
Final Post Dev Site Rv	**0.67**	**ReDev Site Rv**	**0.67**		

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.5647	0.5647	**Final Post-Development Treatment Volume (acre-ft)**	0.4958	**Post-ReDevelopment Treatment Volume (acre-ft)**	0.4958	**Post-Development Treatment Volume (acre-ft)**	--
Pre-ReDevelopment Treatment Volume (cubic feet)	24,597	24,597	**Final Post-Development Treatment Volume (cubic feet)**	21,599	**Post-ReDevelopment Treatment Volume (cubic feet)**	21,599	**Post-Development Treatment Volume (cubic feet)**	--
Pre-ReDevelopment TP Load (lb/yr)	**15.45**	**15.45**	**Final Post-Development TP Load (lb/yr)**	**13.57**	**Post-ReDevelopment Load (TP) (lb/yr)***	**13.57**	**Post-Development TP Load (lb/yr)**	--
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.75	1.75	Final Post-Development TP Load per acre (lb/acre/yr)	1.54	Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.54		
Baseline TP Load (lb/yr) (**0.41 lbs/acre/yr** applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*3.62*			**Max. Reduction Required (Below Pre-ReDevelopment Load)**	20%		
					TP Load Reduction Required for Redeveloped Area (lb/yr)	**1.21**	**TP Load Reduction Required for New Impervious Area (lb/yr)**	**0**

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**1.21**

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	110.56	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	97.08

1 C-15 PHASE 1 STORMWATER MANAGEMENT COMPUTATIONS
NOT TO SCALE

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

☐ 2011 BMP Standards and Specifications ☑ 2013 Draft BMP Standards and Specifications

Project Name: Herndon Gateway Phase 2
Date: 8/25/2020
Linear Development Project? No

CLEAR ALL

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 8.82

Check:

Maximum reduction required:	20%	BMP Design Specifications List:	2013 Draft Stds & Specs
The site's net increase in impervious cover (acres) is:	0	Linear project?	No
Post-Development TP Load Reduction for Site (lb/yr):	1.61	Land cover areas entered correctly?	✔
		Total disturbed area entered?	✔

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				2.29	2.29
Impervious Cover (acres)				6.53	6.53
					8.82

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed				3.22	3.22
Impervious Cover (acres)				5.60	5.60
Area Check	OK.	OK.	OK.	OK.	8.82

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	**Listed**	**Adjusted[1]**
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	2.29	2.29
Weighted Rv(turf)	0.25	0.25
% Managed Turf	26%	26%
Impervious Cover (acres)	6.53	6.53
Rv(impervious)	0.95	0.95
% Impervious	74%	74%
Total Site Area (acres)	**8.82**	**8.82**
Site Rv	**0.77**	**0.77**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)		*Land Cover Summary-Post*		*Land Cover Summary-Post*	
Post ReDev. & New Impervious		**Post-ReDevelopment**		**Post-Development New Impervious**	
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00		
Weighted Rv(forest)	0.00	Weighted Rv(forest)	0.00		
% Forest	0%	% Forest	0%		
Managed Turf Cover (acres)	3.22	Managed Turf Cover (acres)	3.22		
Weighted Rv (turf)	0.25	Weighted Rv (turf)	0.25		
% Managed Turf	37%	% Managed Turf	37%		
Impervious Cover (acres)	5.60	ReDev. Impervious Cover (acres)	5.60	New Impervious Cover (acres)	0.00
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)	--
% Impervious	63%	% Impervious	63%		
Final Site Area (acres)	**8.82**	**Total ReDev. Site Area (acres)**	**8.82**		
Final Post Dev Site Rv	**0.69**	**ReDev Site Rv**	**0.69**		

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.5647	0.5647	**Final Post-Development Treatment Volume (acre-ft)**	0.5104	**Post-ReDevelopment Treatment Volume (acre-ft)**	0.5104	**Post-Development Treatment Volume (acre-ft)**	--
Pre-ReDevelopment Treatment Volume (cubic feet)	24,597	24,597	**Final Post-Development Treatment Volume (cubic feet)**	22,234	**Post-ReDevelopment Treatment Volume (cubic feet)**	22,234	**Post-Development Treatment Volume (cubic feet)**	--
Pre-ReDevelopment TP Load (lb/yr)	**15.45**	**15.45**	**Final Post-Development TP Load (lb/yr)**	**13.97**	**Post-ReDevelopment Load (TP) (lb/yr)***	**13.97**	**Post-Development TP Load (lb/yr)**	--
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.75	1.75	Final Post-Development TP Load per acre (lb/acre/yr)	1.58	Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.58		
Baseline TP Load (lb/yr) (**0.41 lbs/acre/yr** applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*3.62*			**Max. Reduction Required (Below Pre-ReDevelopment Load)**	20%		
					TP Load Reduction Required for Redeveloped Area (lb/yr)	**1.61**	**TP Load Reduction Required for New Impervious Area (lb/yr)**	**0**

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**1.61**

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	110.56	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	99.94

2 C-15 PHASE 2 STORMWATER MANAGEMENT COMPUTATIONS
NOT TO SCALE

VIKA
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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
CIVIL ENGINEER/SURVEYOR

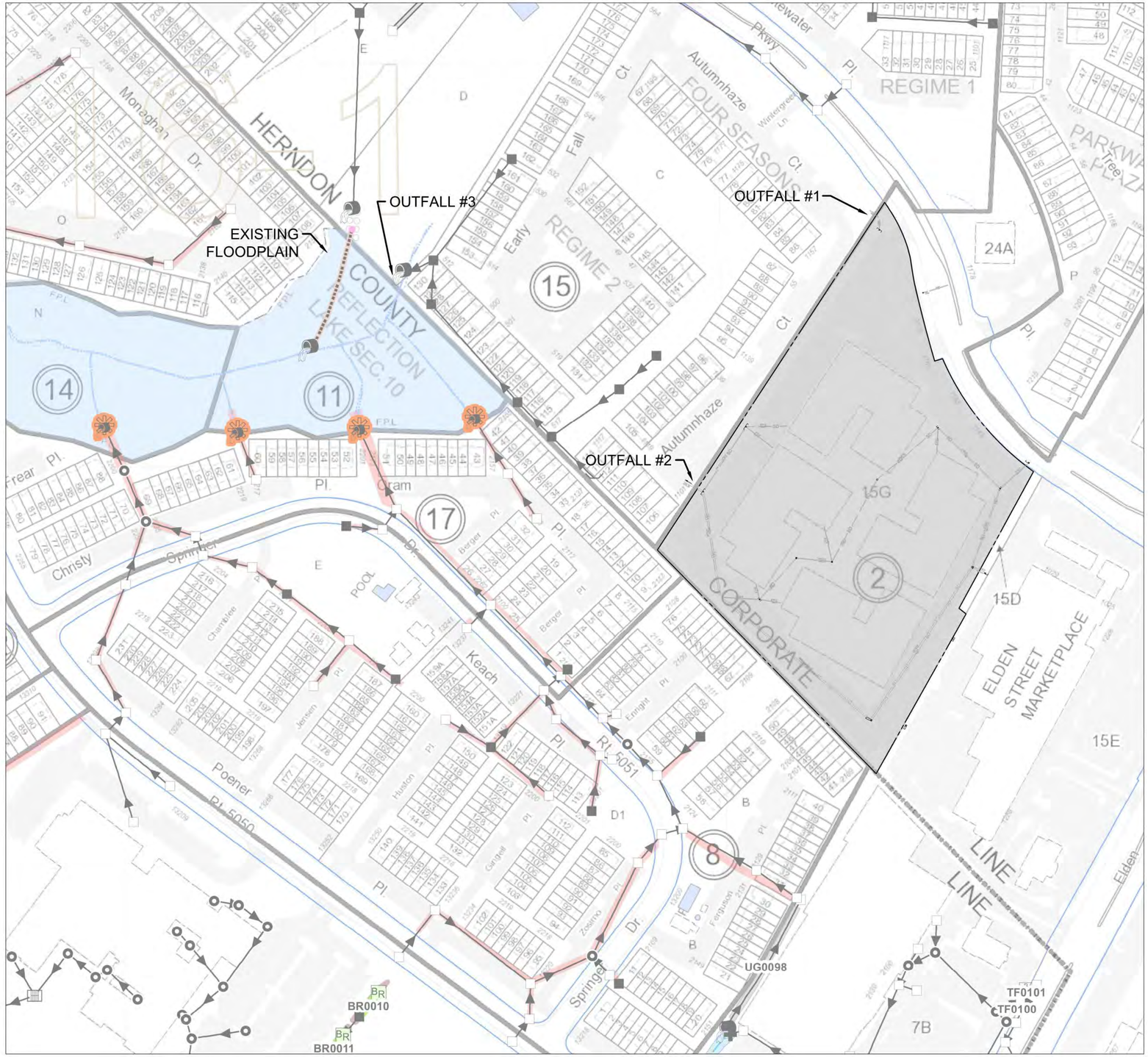
REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT
TOWN OF HERNDON, VA

PHASE 1 STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	N/A
JOB NO.	VV8011D
SHEET NO.	C-15

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D SWM COMPS.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:50:56 PM LAYOUT: C-14 STORMWATER MANAGEMENT COMPUTATIONS



* FINAL SITE DESIGN AND ENGINEERING SHOWN SHALL BE IN GENERAL CONFORMANCE BUT MAY CHANGE DURING THE FINAL SITE PLAN

ADEQUATE OUTFALL NARRATIVE

ONSITE STORMWATER PRACTICES INCLUDING BUT NOT LIMITED TO DETENTION VAULTS SHALL REDUCE THE POST DEVELOPMENT PEAK DISCHARGE AND RUNOFF TO EQUAL OR LESS THAN THE EXISTING CONDITIONS. STORM DRAIN COMPUTATIONS SHALL BE PROVIDED AT FINAL ENGINEERING SITE PLAN TO ENSURE DOWNSTREAM UNDERGROUND STORM DRAIN SYSTEMS HAVE ADEQUATE CAPACITY AND WILL NOT BE NEGATIVELY IMPACTED WITH THIS DEVELOPMENT. THE FINAL COMPUTATIONS AND DESIGN SHALL ENSURE REQUIREMENTS OF SECTION 26-329 OF THE TOWN CODE RELATED TO TECHNICAL DESIGN CRITERIA (INCLUDING CHANNEL PROTECTION AND FLOOD PROTECTION) ARE MET WITH THE FINAL DESIGN. APPLICANT RESERVES THE RIGHT TO PROVIDE ADDITIONAL SWM CONTROL MEASURES AS NECESSARY TO ACHIEVE THIS COMPLIANCE WITH FINAL DESIGN WITHOUT THE NEED TO AMEND THE SUBJECT ENTITLEMENT PLAN.

STORMWATER PRACTICES USED MAY CHANGE WITH FINAL ENGINEERING SITE PLAN.

THE PROPOSED REDEVELOPMENT WILL UTILIZE TWO EXISTING OUTFALLS ON SITE. BOTH OUTFALLS ARE PART OF AN UNDERGROUND STORM DRAIN SYSTEM. THE STORMWATER IS THEN CONVEYED THROUGH THE OFFSITE STORM DRAIN SYSTEM AND OUTFALLS INTO AN EXISTING FLOODPLAIN.

OUTFALL 1 IS AN EXISTING 18" REINFORCED CONCRETE PIPE (RCP) AND OUTFALL 2 IS AN EXISTING 36" RCP. OUTFALLS 1 AND 2 TIE INTO THE EXISTING UNDERGROUND STORM DRAIN SYSTEM OFFSITE AND THEN OUTFALL INTO THE REFLECTION LAKE FLOODPLAIN OFFSITE AT OUTFALL 3.

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

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10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

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ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ADEQUATE OUTFALL ANALYSIS AND NARRATIVE 2

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 100'
JOB NO.	VV8011D
SHEET NO.	C-16

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D ADEQUATE OUTFALL.dwg LAYOUT: C-15 ADEQUATE OUTFALL ANALYSIS AND NARRATIVE 2 TIME: 4:51:13 PM DATE: October 19, 2020 USER: Masangkay

TOWNHOUSE





SIDE ELEVATION



REAR ELEVATION



SIDE ELEVATION - HIGH VISIBILITY

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ARCHITECTURAL IMAGES

DRAWN BY:	
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	A.01

FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D ARCH IMAGES.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:51:18 PM LAYOUT: A.01 ARCHITECTURAL IMAGES

2 OVER 2





TYPICAL SIDE ELEVATION
(HIGH VISIBILITY SIDE ELEVATION)



TYPICAL REAR ELEVATIONS



TYPICAL SIDE ELEVATION WITH
OPT. ROOFTOP TERRACE & UTILITY SHED

VIKA

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COMMONWEALTH OF VIRGINIA
10/19/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
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PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

ARCHITECTURAL IMAGES

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SHEET NO.	A-02

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VA STATE
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VIKA

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PARK PLACE

ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OVERALL ILLUSTRATIVE PLAN

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SHEET NO.	L-01

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CYPRESS TREE PLACE
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)
EXISTING WATERMAIN
HERNDON PARKWAY
Route 5000
(80' PUBLIC RIGHT-OF-WAY)
GRASS MEDIAN
PROP. B.O.V.
EX. B.O.V.
EX. CURB
PROP. CURB
EX. WATER
PROP. WATER
EX. STORM
PROP. STORM
EX. SANITARY
PROP. SANITARY
EX. GAS
PROP. GAS
EX. UTILITIES
PROP. UTILITIES
EX. TREE LINE
PROP. TREE LINE
EX. CONTOUR
PROP. CONTOUR
EX. SPOT ELEV.
PROP. SPOT ELEV.
EX. STORM MANHOLE
PROP. STORM MANHOLE
EX. SANITARY MANHOLE
PROP. SANITARY MANHOLE
EX. WATER VALVE
PROP. WATER VALVE
EX. GAS VALVE
PROP. GAS VALVE
EX. FIRE HYDRANT
PROP. FIRE HYDRANT
EX. LIGHT POLE
PROP. LIGHT POLE
EX. TRAFFIC SIGNAL
PROP. TRAFFIC SIGNAL
EX. TELEPHONE PEDESTAL
PROP. TELEPHONE PEDESTAL
EX. TELEPHONE MANHOLE
PROP. TELEPHONE MANHOLE
EX. ELECTRIC MANHOLE
PROP. ELECTRIC MANHOLE
EX. ELECTRIC VAULT
PROP. ELECTRIC VAULT
EX. ELECTRIC BOX
PROP. ELECTRIC BOX
EX. TELEPHONE BOX
PROP. TELEPHONE BOX
EX. GAS METER
PROP. GAS METER
EX. GAS MANHOLE
PROP. GAS MANHOLE
EX. GAS BOX
PROP. GAS BOX
EX. MAILBOX
PROP. MAILBOX
EX. SIGN
PROP. SIGN
EX. BENCH
PROP. BENCH
EX. TRASH CAN
PROP. TRASH CAN
EX. BOLLARD
PROP. BOLLARD
EX. FENCE
PROP. FENCE
EX. RETAINING WALL
PROP. RETAINING WALL
EX. BUILDING
PROP. BUILDING
EX. CONCRETE
PROP. CONCRETE
EX. ASPHALT
PROP. ASPHALT
EX. GRAVEL
PROP. GRAVEL
EX. CURB INLET
PROP. CURB INLET
EX. STORM INLET
PROP. STORM INLET



LEGEND

TOTAL OPEN SPACE (20% REQUIRED, 31% 118,915 SF PROVIDED)

BUILDING COVERAGE (60% MAXIMUM, 30% 115,220 SF PROVIDED)

RECREATION AREAS (8% REQUIRED, 10% (38,410 SF PROVIDED)

NOTE:
THE DRAWINGS AND IMAGES SHOWN HEREON ARE INTENDED TO REPRESENT TYPICAL LANDSCAPE ARCHITECTURAL CONCEPTS THAT PORTRAY THE GENERAL APPEARANCE AND CHARACTER FOR THE PROJECT. THE APPLICANT RESERVES THE OPTION TO MODIFY THE PLAN PER FINAL SITE DESIGN, PROVIDED OVERALL QUALITY AND DESIGN INTENT ARE MAINTAINED.
THESE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION.

VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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REVISIONS	09/18/2020
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PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OPEN SPACE PLAN

DRAWN BY:	RYM
DESIGNED BY:	PR
DATE ISSUED:	OCTOBER 2, 2019
DWG. SCALE	1" = 40'
JOB NO.	VV8011D
SHEET NO.	L-03

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VA STATE
GRID NORTH
(VSC 83)

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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LANDSCAPE ARCHITECTS GEOMATICS

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PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

OPEN SPACE DISTRIBUTION

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SHEET NO.	L-03A

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DECIDUOUS TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
	AR	35	ACER RUBRUM `ARMSTRONG`	RED MAPLE	2" CAL.	B&B
	CK	36	CLADRASTIS KENTUKEA	AMERICAN YELLOWWOOD	2" CAL.	B&B
	OA	37	OXYDENDRUM ARBOREUM	SOURWOOD TREE	2" CAL.	B&B
	TA	35	TILIA AMERICANA	AMERICAN BASSWOOD	2" CAL.	B&B
EVERGREEN TREES	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**CONTAINER**
	IAQ	46	ILEX AQUAFOLIUM	ENGLISH HOLLY	6` HT.	B&B
	IA	44	ILEX OPACA	AMERICAN HOLLY	6` HT.	B&B
	JE	37	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6` HT.	B&B
	CL	49	X CUPRESSOCYPARIS LEYLANDII	LEYLAND CYPRESS	6` HT.	B&B
ORNAMENTAL TREES	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**CONTAINER**
	AL	12	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	1.5" CAL.	B&B
	CC	11	CERCIS CANADENSIS	EASTERN REDBUD MULTI-TRUNK	1.5" CAL.	B&B
	CF	8	CORNUS FLORIDA	EASTERN DOGWOOD	1.5" CAL.	B&B
	MS	37	MAGNOLIA VIRGINIANA	SWEET BAY	1.5" CAL.	B&B

NOTE: PLANT TYPES MAY CHANGE AT SITE PLAN

Herndon Corporate Center
Perimeter Buffer Planting

Buffer	Length (Lin. Ft.)	Required Buffer	Required Plantings				Provided Plantings			
			Canopy Trees	Evergreen Trees	Understory Trees	Total	Canopy Trees	Evergreen Trees	Understory Trees	Total
West	775	A-10	26	26	15	67	8	45	0	53
South	592	A-10	20	20	12	52	8	44	0	52
East	629	A-10	21	21	13	55	8	51	4	63

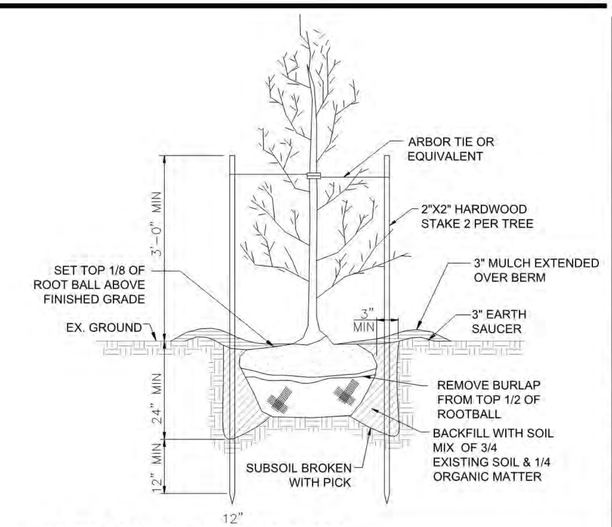
NOTE: AT TIME OF SITE PLAN PERIMETER EVERGREENS WILL BE REEVALUATED TO DETERMINE IF THEY WILL STAY. IF REMOVED THEY WILL BE REPLACED WITH REQUIRED BUFFER PLANTINGS TO CODE.

TABLE 78-110.3(a): REQUIRED SITE LANDSCAPE PLANTINGS	
TYPE OF USE	**REQUIRED PLANTINGS***
SINGLE-FAMILY DETACHED DWELLING, TWO-FAMILY DWELLING, GROUP HOME, OR QUADRUPLEX	4 canopy trees, 3 evergreen trees, and at least 12 shrubs per dwelling unit
TOWNHOUSE DWELLING	1 canopy tree, 1 evergreen tree, and at least 10 shrubs per dwelling unit lot
TOWNHOUSE DEVELOPMENT COMMON AREA	16 canopy trees + 10 evergreen trees per acre, and at least one shrub per each 5 feet of outer building perimeter
MULTIPLE-FAMILY DWELLING, AND HOME FOR THE ELDERLY	12 canopy trees + 7 evergreen trees per acre, and at least 1 shrub per each 5 feet of outer building perimeter
PUBLIC AND INSTITUTIONAL USES	16 canopy trees + 10 evergreen trees per acre, and at least 1 shrub per each 5 feet of outer building perimeter
BUSINESS USES	16 canopy trees + 10 evergreen trees per acre, and at least 1 shrub per each 5 feet of outer building perimeter
*For purposes of calculating required plantings, the acreage of the entire site shall be used.	

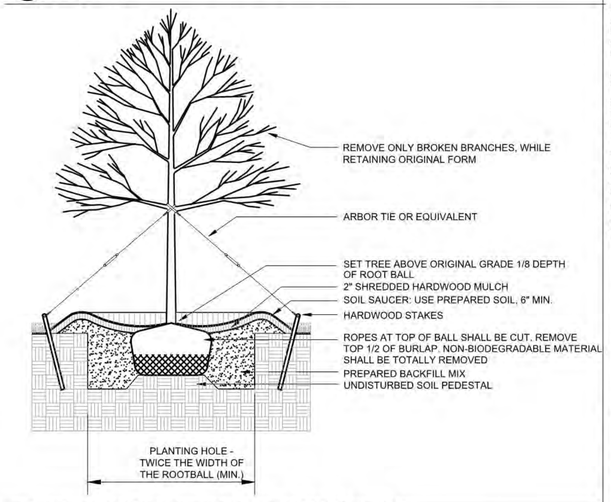
Herndon Corporate Center
Site Landscaping

Townhouse Lots(SFA,SFTHU):	85	**TH Common Area :**	1.75 AC	**Multi-Family:**	0.94 AC				
Landscaping Required						**Total Landscape Requried**		**Total Landscaping Provided**	
Canopy Trees	85	Canopy Trees	28	Canopy Trees	12	Canopy Trees	125	Canopy Trees	173
Evergreen Trees	85	Evergreen Trees	18	Evergreen Trees	7	Evergreen Trees	110	Evergreen Trees	176
		Per 5' of Adjacent Building Perimeter (1,820')		Per 5' of Adjacent Building Perimiter (1,948')					
Shrubs	850	Shrubs	364	Shrubs	3,901	Shrubs	1,604	Shrubs	1,604 (AT SITE PLAN)

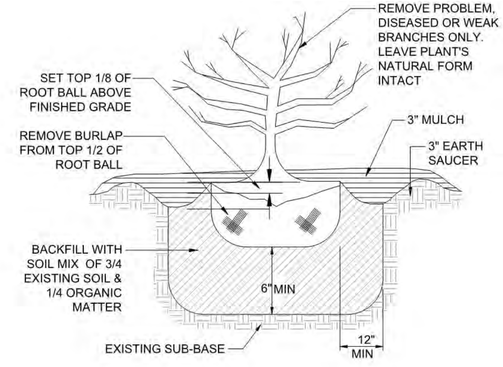
NOTE:
1) SHRUBS WILL BE PROVIDED IN FULL AT TIME OF SITE PLAN
2)BUFFER PLANTING INCLUDED IN TOTAL TREES PROVIDED



1 EVERGREEN PLANTING
SCALE: NTS



2 DECIDUOUS TREE PLANTING
SCALE: NTS



3 SHRUB PLANTING DETAIL
SCALE: NTS

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10/8/20
ROBERT R. COCHRAN
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REVISIONS	DATE
ACCEPTANCE COMMENTS	03/27/2020
REVISIONS	08/25/2020
REVISIONS	09/18/2020
REVISIONS	10/19/2020

PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

LANDSCAPE CALCULATIONS AND DETAIL

DRAWN BY:	
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DATE ISSUED:	OCTOBER 2, 2019
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FILE: P:\projects\8011\8011D\CADD\PLANNING\PLANNING DRAWINGS\8011D LANDSCAPE CALCULATIONS AND DETAILS.dwg USER: Masangkay DATE: October 19, 2020 TIME: 4:52:54 PM LAYOUT: L-04 LANDSCAPE CALCULATIONS AND DETAIL













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PARK PLACE
ZONING MAP AMENDMENT

TOWN OF HERNDON, VA

LIFESTYLE IMAGES

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SHEET NO.	L-05

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TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chairman Romeo and Members of the Planning Commission**

From: **David Stromberg, AICP, Zoning Administrator** DS

Date: **October 22, 2020**

Subject: **ZOTA #20-01 – Change Heritage to Historic and allow for staff review of certificates of appropriateness**

This memo serves as an addendum to the staff report dated October 5, 2020 and provided for the work session.

The correct attachment for this case was emailed to the commissioners on Tuesday, October 6, 2020. Two additional minor changes have been made to the draft since that version. The changes made between the October 6, 2020 version and the version sent out with this memo are highlighted in yellow for convenience.

The changes are:

1. Additional strikethroughs and terminology changes to make the language read more simply or that were missed in earlier drafts.

2. Extending the validity period of an approved certificate of appropriateness from the current 1 year to 5 years. Staff has seen an increasing number of requests for extensions of certificates of appropriateness or applicants who were not able to request an extension in the allotted timeframe and were required to obtain a new certificate appropriateness for the same application. Reasons provided by applicants for extension requests are typically related to regulatory plan/permit review, funding, availability of construction materials or labor. Any certificate of appropriateness for new construction (new single family, major additions, new nonresidential building) is almost always tied to an approved site plan, which has a state-mandated validity period of 5 years. Extending the validity of a COA to 5 years will correlate the approval period with the site plan approval period for new construction.

Attachment:

1. Draft Ordinance Language

TOWN OF HERNDON, VIRGINIA
ORDINANCE
_____, 2020

Ordinance – to amend Chapter 78 (ZONING), Article I (Introductory Provisions), Section 78-10.3 (Purpose and Intent), Article II (Zoning Districts), Section 78-20.2 (Establishment of Overlay Zoning Districts), Section 78-20.3 (Relationship of Base Districts to Overlay Zoning Districts), Section 78-20.5 (Transition to New Zoning Districts), Article V (Planned Development Districts), Section 78-50.2 (Standards for all Planned Development Districts), Section 78-50.6 (PD-D, Planned Development-Downtown), Section 78-50.7 (PD-TD, Planned Development-Traditional Downtown), Article VI (Overlay Districts), Section 78-60.2 (Floodplain Overlay District (FPO)), Section 78-60.3 (Heritage Preservation Overlay District (HP District), Section 78-60.4 (Chesapeake Bay Preservation Area Overlay District (CBPAO)), Article VII (Use Regulations), Section 78-71.13 (Commercial Utilities Use Category), Article VIII (Accessory Uses), Section 78-80.3 (Accessory Structure Standards), Section 78-80.4 (Standards for Specific Accessory Uses and Structures by Use Type), Article XI (Development Standards), Section 78-110.3 (Site Landscaping (Not Contained in Perimeter Buffer Strips and Vehicular Use Areas)), Section 78-114.1 (Additional Screening Requirements), Section 78-115.1 (Retaining Walls), Section 78-115.2 (Fencing, Walls (Except Retaining Walls) and Hedges, Article XIV (Signs), Section 78-140.4 (Prohibited Signs), Section 78-140.5 (Sign License Required), Section 78-141.6 (Sign Standards for Downtown and Mixed-Use Districts), Article XV (Decision-Making Authorities, Application Review and Permitting), Section 78-150.1 (Town Council), Section 78-150.2 (Planning Commission), Section 78-150.4 (Heritage Preservation Review Board), Section 78-150.5 (Architectural Review Board), Section 78-150.6 (Zoning Administrator) Section 78-151. (Summary Table of Development Review Responsibilities), Section 78-152.2 (Application Submission, Requirements and Acceptance), Section 78-153.2 (Review Process for Applications Requiring a Public Hearing (Approval by Decision Making Body)), Section 78-155.1 (Zoning Map Amendment (ZMA)), Article XVI (Nonconformities), Section 78-160.1 (Generally), Section 78-160.3 (Nonconforming Structures), Article XVII (Enforcement, Violations and Remedies), Section 78-170.3 (Types of Violations), Section 78-170.4 (Penalties, Fines and Remedies for Violations), Article XVIII (Definitions), Section 78-180. (Definitions), and adding a new Section 78-155.10 (Certificates of Appropriateness) to change the name of the Heritage Preservation Overlay district to the Historic District Overlay and to allow for the administrative review of certain types of certificates of appropriateness.

BE IT ORDAINED by the Council for the Town of Herndon that:

1. Chapter 78 (ZONING) of the Herndon Town Code is amended and reenacted as follows.

Section 78-10.3 – Purpose and Intent.

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(b) Intent. *This chapter is intended to:*

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(5) Protect against destruction of or encroachment upon historic ~~and heritage~~ areas.

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(19) Enhance the unique characteristics of historic ~~and heritage~~ resources and ensure a built environment that is a worthy heritage for future generations.

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Section 78-20.2 – Establishment of overlay zoning districts.

The overlay zoning districts established in this chapter are shown in Table 78-20.2: Overlay Zoning Districts.

TABLE 78-20.2: OVERLAY ZONING DISTRICTS	
Abbreviations	**District Name**
FPO	Floodplain Overlay ~~District~~
~~HPO~~ *HDO*	~~Heritage Preservation~~ *Historic District* Overlay ~~District~~
CBPAO	Chesapeake Bay Preservation Area Overlay ~~District~~

Section 78-20.3 – Relationship of base districts to overlay zoning districts.

Three overlay districts are established in addition to the base zoning districts: The Floodplain Overlay (FPO) ~~District~~, the ~~Heritage Preservation~~ *Historic District* Overlay ~~(HPO)~~ *(HDO)* ~~District~~, and the Chesapeake Bay Preservation Area *Overlay* (CBPAO) ~~district~~. Where land is classified into an overlay district as well as a base zoning district, the regulations governing the development in the overlay district shall apply in addition to the regulations governing the development in the underlying base zoning district. In the event of an express conflict, as determined by the zoning administrator, between the standards governing an underlying base zoning district and those governing an overlay district, the standards governing the overlay district shall control.

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Section 78-20.5 – Transition to new zoning districts.

Upon adoption of this chapter, land that was zoned within a zoning district classification existing prior to July 1, 2006, shall be classified within one of the zoning district classifications set forth in Article II, Zoning Districts, and as shown in Table 78-20.5, Transition to New Zoning Districts. The following table summarizes the transition from former zoning ordinance districts to new districts set forth in this chapter.

TABLE 78-20.5: TRANSITION TO NEW ZONING DISTRICTS	
Overlay Districts:	
Floodplain Overlay ~~District~~ (FPO)	Floodplain Overlay ~~District~~ (FPO)
~~Heritage Preservation~~ *Historic District* Overlay ~~District~~ ~~(HPO)~~ *(HDO)*	~~Heritage Preservation~~ *Historic District* Overlay ~~District~~ ~~(HPO)~~ *(HDO)*
Chesapeake Bay Preservation Area Overlay ~~District~~ (CBPAO)	Chesapeake Bay Preservation Area Overlay ~~District~~ (CBPAO)

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Section 78-50.2 – Standards for all planned development districts.

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(b) Review board approval for PD development. Development located within a planned development district and outside of the ~~heritage preservation~~ *historic district* overlay ~~district~~, other than single-family detached units, shall be subject to the approval of the architectural review board. Development within a planned development district in the ~~heritage preservation~~ *historic district* overlay ~~district~~ shall be subject to the approval of the ~~heritage preservation~~ *historic district* review board.

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Section 78-50.6 – Planned development downtown district.

(a) Purpose and intent. The intent of the PD-D district is to encourage revitalization and creative design for residential and commercial lands located in the Downtown Overlay of the Herndon 2030 Comprehensive Plan (adopted August 12, 2008), as may be amended, and to provide flexibility in land planning for residential and commercial development located in the downtown area.

(1) Objectives. Objectives of the PD-D district include:

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e. Adhering to the standards and guidelines of the Herndon 2030 Comprehensive Plan (adopted August 12, 2008), as may be amended, and the Herndon ~~Heritage Preservation Handbook, revised July 1990, as may be amended from time to time (the Heritage Preservation Handbook).~~ *Historic District Overlay Guidelines, as amended.*

(2) Additional considerations to ensure purpose and intent are met. Decisions on PD-D zoning map amendments shall involve consideration of the existence or provision of an adequate road network and parking facilities, provision of public facilities and amenities, the use or mix of uses offered in proposed development plans, the merit of proposed site design in achieving the goals of the comprehensive plan and the ~~heritage preservation handbook~~ *Historic District Overlay Guidelines*, and the contribution of the proposed development to revitalization of the downtown. The flexibility of PD-D district regulations does not mean that an applicant is entitled to such a rezoning by meeting the minimum

requirements of this division or that proposals approaching the maximum permitted density are entitled to a PD-D zoning map amendment.

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(f) *Dimensional Standards.* The PD-D district shall be subject to the following dimensional standards:

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(2) *Increases in intensity.* The floor area ratio of development shall not exceed 0.5 in the Downtown Overlay in the Herndon 2030 Comprehensive Plan (adopted August 12, 2008), as may be amended, except as allowed in section 78-50.6(f)(2), increases in intensity. The town council may, as part of the review of the PD-D district, increase the floor area ratio (i) up to 2.50 in sectors 1, 2 and 6 or (ii) up to 0.7 in sectors 3 and 4 of the Downtown Overlay, if the PD-D development meets three or more of the following criteria.

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(d.) Building façade design that excels at meeting the objectives and guidelines contained in the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines*, subject to preliminary review by the ~~heritage preservation~~ *historic district* review board as provided in section 78-155.1(i)(a).

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(h) *Site planning and building design in PD-D.* Sites and buildings within the PD-D district shall meet the following standards:

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(6) ~~*HPRB*~~ *HDRB review required for increased FAR.* Site and building design shall comply with guidelines in the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines* as determined by the ~~HPRB~~ *HDRB* prior to the planning commission public hearing when the increased floor area ratio is considered.

Section 78-50.7 – PD-TD – Planned development traditional downtown district.

(h) *Site planning and building design in PD-TD.* Sites and buildings within the PD-TD district shall meet the following standards:

***

(5) ~~*HPRB*~~ *HDRB review required.* Site and building design shall comply with guidelines in the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines* as determined by the ~~HPRB~~ *HDRB* prior to the planning commission public hearing in accordance with section 78-155.1(h)(2).

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Section 78-60.2 – Floodplain overlay ~~district~~ (FPO).

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Section 78-60.3 – ~~Heritage Preservation~~ Historic District Overlay ~~district~~ (~~HP~~ HDO ~~district~~).

(a) *Purpose and intent.* The ~~heritage preservation~~ *historic district* overlay ~~district~~ (~~HP~~ *HDO* ~~district~~) is *established pursuant to the authority granted to localities by Virginia Code § 15.2-2306. It is intended to promote and protect the unique character of the town through the identification, preservation and enhancement of buildings, structures, settings, neighborhoods, places and features with historical architectural significance to the town. The HDO further intends to:* ~~intended to provide for the establishment of historic landmarks and preservation districts as a means of preserving the historical, cultural, and architectural heritage of the town and protecting designated historic resources and is adopted pursuant to the authority granted to localities by Virginia Code §15.2-2306.~~

(1) *Ensure that additions, repairs, modifications, and new construction enhance rather than detract from the town's historic architectural settings.*

(2) *Preserve the architectural, artistic, and historic merit of individual structures.*

(3) *Protect historic resources from neglect and demolition.*

(4) *Retain important townscapes, streetscapes, and viewsheds integral to the identity of Herndon.*

(b) *Applicability.* No building, structure, or sign located in the ~~HP~~ historic district *overlay* shall be erected, reconstructed, altered, demolished, moved, expanded or restored except in accordance with the provisions of 78-60.3(g), certificate of appropriateness in the ~~heritage preservation~~ *historic district* overlay. ~~district~~.

(c) *District boundaries and maps*. The boundaries of the ~~HP district~~ *historic district overlay* shall be shown on the town's official zoning map and on the appropriate comprehensive plan maps after action by the planning commission and town council.

(d) *Revision of ~~HP district~~ historic district overlay boundary and designation of landmarks*. The boundaries of the ~~HP district~~ *HDO* may be amended or areas, sites, buildings, and structures may be designated as historic landmarks in compliance with the following:

(1) *Amendment procedures*. The procedures for amendment of the ~~HP district~~ *HDO* boundaries or designation of historic landmarks shall be as provided for as an amendment to the official zoning map pursuant to section 78-155.1, zoning map amendment. In addition, the following procedures shall apply:

a. The planning commission shall conduct or delegate a survey of the town. The survey shall identify and inventory all landmarks, buildings, or structures, in areas being proposed within the proposed district boundaries. The planning commission shall also prepare reports recommended to be included in the ~~HP district~~ *HDO*.

b. Prior to establishing or expanding the ~~HP district~~ *HDO* the town council shall:

1. Provide for public input from the community and affected property owners in accordance with Code of Virginia, § 15.2-2204;

2. Follow the written criteria set out below to be used to determine which properties should be included within the ~~HP district~~ *HDO*; and

3. Review the inventory and the criteria to determine which properties in the areas being considered for inclusion within the proposed district meet the criteria to be included in the ~~HP district~~ *HDO*.

c. Upon the inclusion of an area in the ~~HP district~~ *HDO*, the owner of each property within the established district boundaries therein shall be given written notification, including a description of the factors justifying the designation.

(2) *Review of ~~HP district~~ HDO boundary amendments*. The advisability of amending the ~~HP district~~ *HDO* boundary is a matter committed to the legislative discretion of the town council and is not controlled by any one factor. The following shall be considered by the town council, and its advisory bodies as part of the deliberation process:

a. In considering an amendment to ~~HP district~~ *the HDO* boundary, the town council may adopt a change for only part of the area surveyed by the planning commission. The town council may amend the ~~HP district~~ *HDO* boundary to include any area that has been considered by the planning commission.

b. The following criteria shall be used by the historic ~~preservation~~ *district* review board, planning commission, and town council in evaluating the potential expansion of the ~~HP district~~ *HDO*. The historic ~~preservation~~ *district* review board and planning commission may recommend, and the town council may so ordain, a landmark, building, or structure, for designation as ~~a HP district which~~ *within the HDO, provided it* meets one or more of the following criteria:

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5. The property or properties are closely related to or contiguous with properties that meet criteria a-d as related to their visual character or historic pattern of development; or otherwise contribute to the historic and architectural context of the proposed or existing ~~HP district~~ *HDO*.

c. Such ~~HP district~~ *HDO* boundaries may be adjusted to exclude properties along the perimeter that do not meet the criteria. The town council shall include only the geographical areas in the ~~HP district~~ *HDO* where a majority of the properties meet the criteria established below by the town in accordance with this section. However, parcels of land contiguous to arterial streets or highways found by the town council to be significant routes of tourist access to the town or to be designated historic landmarks, buildings, structures, or districts therein, or in a contiguous locality, may be included in the ~~HP district~~ *HDO* notwithstanding the provisions of this subsection.

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(e) *Reduction of setback*. In the ~~HP district~~ *HDO*, the front setback for a single-family detached dwelling may be reduced from 35 feet to a lesser amount but not less than 20 feet, in instances

where the ~~HPRB~~ *HDRB* makes a finding that such reduction shall cause the subject structure to be more compatible with nearby contributing structures.

(f) *Development within the ~~heritage preservation~~ historic district overlay ~~district~~*. Development located within ~~a preservation district~~ *the historic district overlay* shall be completed in accordance with the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines*, and the following standards:

(1) ~~Alteration, restoration or reconstruction.~~ *Standards for Alterations.* A certificate of appropriateness ~~for altering, restoring, or reconstruction of~~ *to* a building or structure shall be approved only after ~~considering the following standards, as well as other appropriate matters:~~ *meeting the following standards:*

a. ~~Whether or not reasonable~~ *Reasonable* effort ~~shall be~~ *is* made to alter the site, building, ~~or~~ structure, and its environment to the minimal extent practicable.

b. ~~Whether or not alteration~~ *Alteration* of the original, distinguishing qualities or character of a site, building, ~~or~~ structure, and its environment and the removal or alteration of any historic material or distinctive architectural features ~~shall be~~ *is* avoided to the greatest extent practicable.

c. ~~Whether all sites, buildings and structures shall be recognized as products of their own time, with alterations~~ *Alterations* ~~and reconstruction~~ to existing buildings, ~~and~~ structures, *and sites* ~~to be~~ *are* consistent with the original style of such buildings and structures.

d. ~~Whether or not distinctive~~ *Distinctive* stylistic features or examples of skilled craftsmanship that characterize a building, ~~or~~ structure, or site shall be retained and restored to the greatest extent practicable.

e. ~~Whether or not deteriorated~~ *Deteriorated* architectural features shall be repaired, rather than replaced, wherever reasonably possible~~., and, if~~ *If* replacement is necessary, ~~whether or not~~ new materials shall match the material being replaced in composition, design, color, texture, and other visual qualities to the greatest extent practicable.

f. ~~Whether or not repair or replacement~~ *Repair or replacement* of missing architectural features shall, to the greatest extent possible, be based on accurate duplications of the original features, substantiated by historic, physical, or pictorial evidence, rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.

g. ~~Whether or not the surface cleaning~~ *Cleaning* of buildings and structures constituting historic landmarks shall be undertaken with the gentlest means practicable; provided, however, that sandblasting and other cleaning methods that may damage the existing building materials shall not be approved.

h. *When more than 49 percent of the original or historic facades or roofs on the structure are removed, the provisions of Section 78-60.3(f)(2), New Construction, or Section 78-60.3(f)(4), Demolition, apply.* ~~Whether or not partial demolition of buildings or structures within preservation districts may be approved when one or more of the existing facades are retained for the purpose of integrating new construction into existing historic buildings or structures when such is appropriate and in accordance with the intent of this article. The town does not advocate this procedure, as it goes against the Secretary of the Interior's guidelines for rehabilitation and credits would not be allowed in such projects.~~

i. ~~Whether or not, to the greatest extent practicable, every~~ *Every* effort shall be made to protect and preserve archeological resources within or adjacent to the ~~heritage preservation overlay~~ *historic* district~~.~~ *to the greatest extent practicable.*

j. ~~Whether or not contemporary~~ *Contemporary* design ~~for~~ *of* alterations ~~and additions~~ to existing buildings and structures ~~is~~ *shall be* compatible with the size, scale, color, material *texture*, and character of the building and structures within preservation districts~~,~~. ~~and whether or not such~~ *Such* alterations ~~and additions would~~ *shall not* destroy *or negatively impact* significant historical, architectural, or cultural material.

k. ~~Whether or not the proposed additions or alterations~~ *Alterations* to existing buildings and structures shall be done in such a manner that, if such additions or

alterations were to be removed in the future, the essential form and integrity of the *original* building or structure would be unimpaired. ~~Whenever possible, new additions or alterations to existing buildings and structures shall be done in such a manner that, if such additions or alterations were to be removed in the future, the essential form and integrity of the building or structure would be unimpaired.~~

(2) *New Construction*. A certificate of appropriateness for new construction of a building or structure may be approved only after ~~considering~~ *meeting* the following standards~~, as well as other appropriates matters~~:

a. ~~Whether or not the design will~~ *The design shall* be architecturally compatible with the historic landmarks, buildings, and structures in the ~~heritage preservation~~ *historic district* overlay ~~district~~ in terms of size, scale, color, material, and character.

b. No specific architectural style shall be adopted or imposed on the administration of this section.

c. *Alterations of more than 49 percent of the original or historic facades, or more than 49 percent of the roof of the structure, as determined by the zoning administrator, shall be considered new construction.*

(3) *Moving or relocating a building*. A certificate of appropriateness to move or relocate a building or structure may be approved only after ~~considering the following, as well as other appropriate matters~~ *meeting the following standards*:

a. ~~Whether or not the proposed relocation may~~ *The relocation shall not* have a detrimental effect on the structural soundness of the building~~;~~.

b. ~~Whether or not the proposed relocation would have a negative or positive~~ *The relocation shall not have a negative* effect on other historic landmarks or on other sites, buildings, or structures located within the ~~heritage preservation overlay district~~ *historic district overlay*~~;~~.

c. ~~Whether or not the~~ *The* proposed relocation ~~would~~ *shall* provide new surroundings that would be compatible with the architectural aspect of the building or structure~~;~~.

d. ~~Whether or not the~~ *The* proposed relocation is the only practicable means of saving the structure from demolition~~; and~~.

e. ~~Whether or not the~~ The building or structure ~~will~~ *shall* be relocated to another site within the corporate limits of the town or to another adjacent site that is subject to ~~preservation control~~ *protections enumerated in the district*.

(4) *Demolition*. A certificate of appropriateness to demolish a building or structure may be approved, only after ~~reviewing and considering the circumstances and conditions of the structure or building or the part proposed for demolition, and considering the following factors as well as all other appropriate matters~~ *meeting the following standards*:

a. ~~Whether or not the~~ *The* building or structure ~~is an historic landmark or is a building within the heritage preservation overlay district that~~ *does not contribute* ~~contributes~~ to the character of the ~~heritage preservation overlay~~ *historic* district~~;~~.

b. ~~Whether or not the~~ *The* building or structure ~~is of such interest or significance that it~~ would *not* qualify as a national or state landmark building or structure listed on the National Register of Historic Places or the Virginia Landmarks Register~~;~~.

c. ~~Whether or not the building or structure is of such old or uncommon design, texture or scarce material that it could not be reproduced or could be reproduced only with great difficulty and expense;~~ *The building or structure has a common design that could reasonably be reproduced.*

d. ~~Whether or not historic events occurred in the building or structure;~~ *No historic events occurred in the building or structure.*

e. ~~Whether or not the building or structure is structurally unsound and to what extent;~~ *It is determined the building or structure has a degree of structural unsoundness.*

f. ~~Whether or not a relocation of the building or structure or a portion thereof would be to any extent practicable as a preferable alternative to demolition;~~ *It is not practicable to relocate the building or structure, or portion thereof.*

g. ~~Whether or not the~~ *The* proposed demolition ~~could potentially~~ *does not* adversely affect other historic landmarks located within ~~a preservation district~~ *the historic district overlay* or adversely affect the character of ~~a preservation district~~ *the historic district overlay*~~;~~*.*

~~h. If a building is damaged by a fire or other natural hazard, the building inspector shall determine if a building is structurally sound and is in imminent danger to public safety and should be demolished;~~

~~i.~~*h.* ~~The reason for demolishing the building or structure and whether or not any alternatives to demolition exist.~~ *Practicable alternatives to demolition do not exist.*

~~j.~~*i.* ~~Whether or not there has been a professional, economic, and structural feasibility study for rehabilitating or reusing the structure and whether or not its findings support the proposed demolition.~~ *An economic and structural feasibility study prepared by a qualified professional is submitted that concludes rehabilitating or reusing the building or structure is not a practicable alternative.*

(g) *Certificate of appropriateness (COA) in the ~~heritage preservation overlay district~~ historic district overlay*. The purpose of this section is to establish the procedures and standards for the review of certificates of appropriateness in the ~~heritage preservation overlay district~~ *historic district overlay*.

(1) *Applicability*. Unless exempted pursuant to section 78-60.3(g)*(2)*, exemptions, a certificate of appropriateness must be approved prior to:

a. ~~Erecting, reconstructing, altering, or restoring~~ *New construction or alterations to* any building or structure in the ~~heritage preservation overlay district~~ *historic district overlay*; or

b. Demolishing, or moving any historic landmark, building, or structure located in the ~~heritage preservation district~~ *historic district overlay*.

c. ~~Signs in the heritage preservation overlay district are reviewed pursuant to the applicable procedures in Article XIV, Signs.~~ *The installation of any sign not subject to Section 78-140.5(f).*

(2) Exemptions from COA. The following minor development, which has been determined not to have permanent effects on the character of the *building or sites within the* ~~heritage preservation district~~ *historic district overlay*, is exempted from the requirements of this section. In the event the scope or nature of the development changes during the improvement process, ~~the zoning administrator shall have the authority to order all work to be stopped and that an appropriate application for a certificate of appropriateness be filed.~~ *a violation may be issued pursuant to Article XVII (Enforcement, Violations, and Remedies).*

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c. Landscaping, grading, walks, swimming pools and related mechanical equipment, retaining walls of less than 12 inches in height, or temporary fencing in place for one year or less, when it does not significantly affect the character of the ~~heritage preservation overlay district~~ *historic district overlay* or an historic landmark and its surroundings.

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(3) Relationship of certificate of appropriateness to ~~site~~ administrative plan review.

a. An application for a certificate of appropriateness in the ~~heritage preservation overlay district~~ *historic district overlay* for a development that requires site plan*, subdivision site plan,* single lot development plan*, or building location survey* approval pursuant to ~~s~~*S*ection 78-155.6, ~~site~~ plan *(Site Plans, Subdivision Plans, Single Lot Development Plans, and Building Location Surveys)* shall not be reviewed formally by the ~~heritage preservation~~ *historic district* review board (~~HPRB~~ *HDRB*) until the site plan*, subdivision site plan,* ~~or~~ single lot development plan*, or building location survey* is approved. ~~However, applicants~~ *Applicants* may meet informally with the ~~HPRB~~ *HDRB* prior to ~~site~~ *administrative* plan approval.

b. ~~In instances where development requires site plan or single lot development plan approval (section 78-155.6), upon recommendation of the zoning administrator or the town council, an applicant may present the substance of the plan for~~

~~development for which a certificate of appropriateness is required at a work session of the HPRB prior or concurrent with the review of the site plan or single lot development plan.~~ *On properties zoned and used for single family residential within the historic district overlay, additions that comply with the applicable standards in Section 78-60.3(f), and with a footprint between 750 square feet and 1,250 square feet, and disturb less than 2,500 square feet of land, may not be required to submit a single lot development plan. Relief from the submission of a single lot development plan shall be determined by the concurrence of the zoning administrator and town engineer.*

(4) Certificate of appropriateness review procedure. The approval of a certificate of appropriateness shall be subject to the *Historic District Procedure Guide, Section 78-153.2 (Review Process for Applications Requiring a Public Hearing (Approval by a Decision Making Body)), and the* following:

~~a. Prior to submitting an application for a certificate of appropriateness, applicants are encouraged to seek advice from the HPRB during one or more work sessions. At the work session, the HPRB will review the proposed plan for development and provide the applicant comments about its general conformance with the requirements for a certificate of appropriateness. The comments are advisory and do not confer development rights on the applicant or bind the HPRB, town staff, or any other entity of the town providing comments.~~

~~b. The procedures and requirements for submittal and review of an application, scheduling the public hearing and public notification are established in Section 78-153.2.~~

~~c. All applications for a certificate of appropriateness shall include the items required in section 78-152.2, submittal requirements, as well as the following:~~

~~1. Architectural drawings or renderings drawn to scale (for new construction, rehabilitation or building alterations);~~

~~2. Site plan drawn to scale (including landscaping);~~

~~3. Samples of materials and colors to be used;~~

~~4. Written statements concerning the following:~~

~~(a) Construction methods to be employed;~~

~~(b) A description of proposed materials;~~

~~(c) Any proposed signs, with appropriate details;~~

~~(d) Any proposed exterior lighting arrangements;~~

~~(e) Elevations of all portions of structures and their relationships to public view;~~

~~(f) Design of doors and windows;~~

~~(g) The colors to be utilized and their relationships to adjacent structures;~~

~~(h) All other exhibits and reports deemed necessary by the board for a full review of the application; and~~

~~(i) If an application for demolition is submitted for a building or structure and is defined as a contributing building in the heritage preservation district, the interior and exterior of the building must be thoroughly documented with black and white photographs and measured drawings including floor plans and elevations following the standards of the Historic American Buildings Survey.~~

a. Certain certificates of appropriateness may be reviewed and approved, approved with conditions, or denied administratively. Review of such certificates of appropriateness shall be based upon the Herndon Historic Preservation Guidelines, the standards in Section 78-60.3(f), and the standards listed below:

1. A list of improvements that may receive administrative review of a certificate of appropriateness shall be established by the zoning administrator maintained in the Office of Community Development.

2. Improvements eligible for an administrative review shall be of a common and recurring nature.

3. Improvements eligible for administrative review shall have only a minor impact on the design, character, or historic fabric of building, structure, or site.

4. Applications may be forwarded to the HDRB if the zoning administrator determines the application does not meet the aforementioned criteria.

~~d~~*b*. ~~After~~ *For those applications requiring HDRB review, following* public notification and the scheduling of a public hearing, the ~~HPRB~~ *HDRB* shall conduct a public hearing on the application. At the public hearing, the ~~HPRB~~ *HDRB* shall consider the application, the relevant support materials, the staff report, and the public testimony and evidence given at the hearing. After the close of the public hearing, the ~~HRPB~~ *HDRB* shall either approve or disapprove the application based on the standards in section 78-60.3(~~g~~*f*), development within the ~~heritage preservation~~ *historic district* overlay ~~district as follows~~ *and the following standards*:

1. If the ~~HRPB~~ *HDRB* finds the application complies with the standards in section 78-60.3(~~g~~*f*)~~, development within the heritage preservation overlay district and the applicable guidelines found in the Herndon Heritage Preservation Handbook,~~ *and the Historic District Guidelines* the ~~HRPB~~ *HDRB* shall approve a certificate of appropriateness.
2. If the ~~HRPB~~ *HDRB* determines the application fails to comply with the standards in section 78-60.3(~~g~~*f*), ~~development within the Heritage Preservation Overlay District, and the applicable guidelines found in the Herndon Heritage Preservation Handbook,~~ *and the Historic District Guidelines,* it may either disapprove the application or continue the public hearing. In either case, it shall explain why the application fails to comply with the review standards. It shall recommend revisions to the plans and specifications that would bring the application into conformance with section 78-60.3(~~g~~*f*), ~~development within the heritage preservation overlay district~~ and the ~~applicable guidelines found in the Herndon Heritage Preservation Handbook~~ *Historic District Guidelines*. The applicant may request or agree to a continuation of the public hearing in accordance with section 78-152.6, deferral of application and section 78-153.2(i)(2), continuation of public hearing.

(5) *Certificate of appropriateness for minor improvements.* At its discretion, the ~~HPRB~~ *HDRB* may adopt a certificate of appropriateness providing design guidance for certain minor improvements such as changes in color of materials or fences, dumpster enclosures, and similar screening. The staff may review applications for eligible minor improvements addressed in the certificate of appropriateness for compliance with the certificate of appropriateness. The staff shall then notify the applicant in writing whether or not the application successfully complies with the certificate of appropriateness and the improvements shall be authorized under that certificate of appropriateness, without a public hearing before the ~~HPRB~~ *HDRB*.

(6) *Certificate of appropriateness review standards*. Development located within ~~a preservation district~~ *the historic district overlay* shall be completed in accordance with the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines* and the standards set forth in section 78-60.3(f), development within the ~~heritage preservation overlay district~~ *historic district overlay*.

(7) Appeal of COA administrative decision to the historic district review board. The applicant may appeal the final decision of an administrative COA to the HDRB.

(a) An appeal shall be initiated by filing a written notice of appeal with the zoning administrator specifying the grounds for the appeal within 30 days of the final decision.

(b) If a written notice of appeal on an administrative certificate of appropriateness is received by the zoning administrator then anything on the administrative COA application shall be stayed.

(~~7~~*8*) *Appeal of COA decision to town council*. The applicant or any person aggrieved by the decision with a property interest in land abutting or across the street from property which

is the subject of a final decision of the ~~HPRB~~ *HDRB* on a certificate of appropriateness, may appeal the decision to the town council, as follows.

(a) An appeal shall be initiated by filing a written notice of appeal with the zoning administrator specifying the grounds for the appeal within 14 days of the final decision of the ~~HPRB~~ *HDRB*.

(b) No action shall be taken until 15 days after the final decision of the ~~HPRB~~ *HDRB* on a certificate of appropriateness. If a written notice of appeal on a certificate of appropriateness is initiated pursuant to this section, action on the certificate of appropriateness shall be stayed pending the final decision by town council.

***

(e) After the conclusion of the hearing, the town council may affirm, modify, or reverse the decision of the ~~HPRB~~ *HDRB*, in whole or in part, or may remand the case to the ~~HPRB~~ *HDRB*. The decision shall be based on the standards in section 78-60.*3*(f), development within the ~~Historic Preservation Overlay District~~ *historic district overlay*. The town council decision shall be subject to the following standards:

(1.) A decision shall not be reversed or modified unless there is evidence in the record that the decision of the ~~HPRB~~ *HDRB* is not correct, based on the review standards for a certificate of appropriateness.

(2.) In determining whether or not to remand a case to the ~~HPRB~~ *HDRB*, the town council shall be guided by the following factors: the completeness of the record; the appropriateness of further review by the ~~HPRB~~ *HDRB* of certain points or facts; and any amendments to the application after the decision of the ~~HPRB~~ *HDRB*. Town council recognizes that revisions to an application for the purpose of clarifying issues, or addressing concerns raised during the public hearing are positive and will not necessarily result in a remand, except that significant and substantive revisions to the application may serve as a basis for remand.

(~~8~~*9*) *Appeal of town council decision to circuit court*. The applicant, any person jointly or severally aggrieved with a property interest in land abutting or across the street from property which is the subject of a final decision of the town council pursuant to subsection (~~7~~*8*) above, any person with a property interest in land in the ~~Heritage Preservation District~~ *historic district overlay*, who is aggrieved by a final decision of the town council, pursuant to subsection (~~7~~*8*) above, or the town, may appeal the decision to the Circuit Court of Fairfax County pursuant to Code of Virginia § 15.2-2306. If appealed, a petition at law shall be filed setting forth the alleged illegality of the action by the town council, provided that such petition shall be filed within 30 days after the final decision is rendered by the town council. The filing of the petition shall stay the decision of the town council pending the outcome of the appeal to the court, except that the filing of the petition shall not stay a decision of the town council denying the right to raze or demolish a historic landmark, building or structure.

(~~9~~*10*) *Submittal of new COA application after disapproval*. If the ~~HPRB~~ *HDRB* disapproves a certificate of appropriateness, the applicant may, at any time, submit a new application with new information addressing the written reasons for disapproval.

(~~10~~*11*) *Transfer of certificate of appropriateness*. A certificate of appropriateness shall be transferable to subsequent owners of the property for which the certificate is issued.

(~~11~~*12*) *Expiration of certificate of appropriateness*. Development activity or demolition approved pursuant to a certificate of appropriateness must begin within ~~one~~ *five* years of the issuance of the certificate *of appropriateness, unless a shorter timeframe is included as a condition of approval on the certificate of appropriateness*. Failure to begin the activity within ~~one~~ *five* years*, or the timeframe conditioned on the approval,* shall render the certificate of appropriateness void.

(~~12~~*13*) *Extension of approved certificate of appropriateness*. Upon written application submitted to the zoning administrator by the applicant at least ~~6~~*30* days prior to the expiration of the certificate, ~~the~~ ~~HRPB~~ *staff* shall consider and may grant one extension not to exceed ~~one~~ *five* years upon a showing of good cause. In determining good cause, ~~the~~ ~~HPRB~~ *staff* shall take into consideration the scope of the proposed work and the laws, ordinances, and

regulations in effect at the time of the request for extension. ~~The approval shall be deemed extended until the HRPB has acted upon the request.~~ *An administrative decision to disapprove a certificate of appropriateness may be appealed to the HDRB by the applicant pursuant to section 78-60.3(g)(7).* Failure to apply for an extension within the time limits established by this section shall render the certificate of appropriateness void.

(h) *Demolition, relocation and alteration of structures in the ~~heritage preservation overlay district~~ historic district overlay*. As provided in the Code of Virginia § 15.2-2306, in addition to the right of appeal outlined in this section, the owner of any building or structure shall be permitted to demolish, alter or relocate a building, structure or historic landmark in the ~~heritage preservation overlay district~~ *historic district overlay* provided that:

***

(5) *Hazardous properties*. A contributing landmark, building or structure, or historic landmarks, shall not be razed, demolished or moved until the razing, demolition or moving thereof is approved by the ~~heritage preservation review board (HPRB)~~ *historic district review board (HDRB)* or, on appeal, by the town council after consultation with the ~~HPRB~~ *HDRB*, unless the building official consistent with the Uniform Statewide Building Code, Part III Maintenance, determines that the contributing structure constitutes such a hazard that it shall be razed, demolished or moved.

***

Section 78-60.4 – Chesapeake Bay Preservation Area Overlay ~~district~~ (CBPAO).

***

Section 78-71.13 – Commercial utilities use category.

***

(d) *Commercial utilities category specific use standards*. In addition to the applicable requirements in this chapter, the following standards apply:

***

(3) *Small cell facilities on a new utility distribution or transmission pole less than 50 feet*. Any new utility distribution or transmission pole of less than 50 feet in height above grade and designed to support small cell facilities is an administrative review-eligible project (AREP) as defined by the Code of Virginia § 15.2-2316.3. An AREP is subject to approval by the zoning administrator and shall comply with the following standards:

(a.) ~~*Heritage preservation*~~ *Historic district overlay review*. Small cell facilities in the ~~heritage preservation overlay~~ *historic district overlay* are subject to the following:

(1.) *Certificate of appropriateness*. A certificate of appropriateness must be obtained from the ~~heritage preservation~~ *historic district* review board unless all of the following conditions are met.

***

(b.) *Architectural review*. Small cell facilities outside of the ~~heritage preservation~~ *historic district* overlay must receive approval by the architectural review board unless the following conditions are met:

***

Section 78-80.3 – Accessory structure standards.

***

(b) *Accessory structures in multi-family and nonresidential districts*. Accessory structures in multi-family and nonresidential districts shall meet the following standards:

(1) *General requirements*. Structures accessory to multi-family and nonresidential uses shall be subject to the approval of a site plan and approved through the site plan review process, section 78-155.6. and shall be subject to approval by the architectural review board under Chapter 58 of the Code of Ordinances or the ~~heritage preservation~~ *historic district* review board under section 78-~~155.7~~*60.3*.

***

(c) *Accessory features (such as fences, walls, retaining walls, gate houses, trash enclosures, refuse containers, screening enclosures, storage sheds, and swimming pools) in all zoning districts*. Standards stated elsewhere in this chapter shall govern for specific accessory structures or uses. The following standards shall apply to features such as fences, walls, retaining walls, gate houses, trash enclosures, refuse containers and screening enclosures:

(1) *Within ~~heritage preservation overlay district~~ historic district overlay*. A certificate of appropriateness may be required in the ~~heritage preservation overlay district~~ *historic district overlay*.

(2) *ARB review*. Approval by the architectural review board may be required for multi-family and nonresidential properties outside of the ~~heritage preservation overlay district~~ *historic district overlay*.

***

Section 78-80.4 – Standards for specific accessory uses and structures by type.

***

(c) *Antenna of all kinds, except commercial communication towers, freestanding*. The following standards are adopted to comply with applicable state and federal law, including the Federal Telecommunications Act of 1996 and the "Spectrum Act", and to control the location and screening of antennae to mitigate impact on surrounding properties.

***

(2) *Large satellite dish antennae*. Satellite dish antennae measuring one meter or more are permitted accessory uses in nonresidential districts. Such dishes are subject to the standards set forth below to the maximum extent feasible, but only where there is no impairment of acceptable signal quality. These regulations are not intended to impose unreasonable delays or impose unreasonable costs on the installation, maintenance, or use of satellite dishes, and shall not be interpreted or enforced in any manner contrary to federal or state law.

(a) Within the ~~heritage preservation overlay district~~ *historic district overlay*, satellite dishes shall be screened or located so as to not be visible from any public streets.

***

(3) *Commercial antennae*. Antennae may be located on existing structures provided the following standards are met:

***

(c) Must receive a certificate of appropriateness when located within the ~~heritage preservation overlay~~ *historic district overlay* and visible from a public right-of-way.

***

(d) *Bed and breakfast establishment*. Bed and breakfast establishments are permitted by special exception in accordance with the provisions of section 78-155.3, special exceptions and Article VIII, Accessory Use Regulations, as follows:

(1) *Limited to certain housing types and zoning districts* . Bed and breakfast establishments may be established in owner- or operator-occupied single-family detached homes, including normal residential accessory structures existing as of March 1, 2007, in the R-15 and R-10 zoning districts; and in the ~~heritage preservation overlay district~~ *historic district overlay*.

***

(n) *Outdoor serving areas accessory to an enclosed use providing food or beverage for sale or tasting*. Outdoor serving areas providing or allowing outdoor consumption of food or beverage accessory to an established enclosed use food or beverages for sale or tasting shall comply with the following standards:

***

(10) *Limit on outdoor kitchen/bar equipment*. No exterior kitchen or bar service equipment shall be permitted abutting a public right-of-way unless permitted in association with, and for the duration of, a permitted temporary use permit. If such equipment, when not associated with a permitted temporary use permit, is visible from the adjacent right-of-way, landscaping or other screening as approved by either the ~~HPRB~~ *HDRB* or ARB, shall be installed to screen the equipment from the right-of-way.

***

Section 78-110.3 – Site landscaping (not contained in perimeter buffer strips and vehicular use areas).

***

(c) *Certain exemptions for downtown*. Properties zoned PD-D and PD-TD shall be exempt from section 78-110.4(c) except as follows:

***

(3) *Nonresidential development and mixed-use residential development located in the PD-D and PD-TD.* Nonresidential development and mixed-use residential development located in the PD-D and PD-TD shall provide:

a. Commercial grade planting containers designed to complement (as determined by the ~~heritage preservation review board~~ *historic district review board* using recognized standards) the architecture of the building, or planting beds, planted and maintained with evergreen shrubs or live plants affording seasonal color. Such containers or planting beds shall not extend into the required 12-foot public streetscape.

***

Section 78-114.1 – Additional screening requirements.

***

(b) *Review* . In addition to review as part of a site plan or subdivision plan application, all screening structures shall be subject to review and decision by the architectural review board or ~~heritage review board~~ *historic district review board*, as appropriate.

***

Section 78-115.1 – Retaining walls.

***

(c) *Review and approval of retaining walls*. Retaining walls shall be reviewed and approved, if they are approved, in accordance with the following provisions, as applicable:

(1) *Properties within the ~~heritage preservation overlay district~~ historic district overlay*. The ~~heritage preservation~~ *historic district* review board shall be the reviewing authority for retaining walls on any property within the ~~heritage preservation overlay district~~ *historic district overlay*.

(2) *Townhouse, multifamily or commercial uses outside the ~~heritage preservation overlay district~~ historic district overlay*. The architectural review board shall be the reviewing authority for walls on property developed with townhouses, multi- family uses, or commercial uses outside of the ~~heritage preservation overlay district~~ *historic district overlay*.

***

Section 78-115.2 – Fencing, walls (except retaining walls) and hedges.

***

(c) *Approvals*. A certificate of appropriateness may be required for fencing or walls in ~~the heritage preservation overlay district~~ *historic district overlay.* ~~(see "certificate of appropriateness in the heritage preservation overlay district" in Article II, Administration).~~ Approval may be required from the architectural review board for fencing, walls or hedges associated with all uses under the purview of the architectural review board ~~(see Chapter 58 of the Herndon Town Code, section 58-62, approval of construction, reconstructions and alterations in architectural control districts required)~~.

***

(e) *Fencing, wall and hedge standards*. The following standards shall apply within all zoning districts throughout the town unless otherwise stated.

***

(6) *Fencing and wall materials.* The following provisions shall apply to wall and fence materials:

a. Fences or walls shall be constructed of customary fencing or wall materials, including solid wood, masonry, stone, brick, wrought iron, decorative metal materials, or products designed to resemble these materials. Any fence or wall material may be further restricted in the ~~heritage preservation district~~ *historic district overlay.* ~~by the heritage preservation review board.~~

b. Chain link fencing is permitted only for the following purposes:

1. To surround tennis courts, ball fields, playgrounds, other recreational facilities not located on a lot with a single-family detached or single-family attached dwelling, and schools not associated with a home-based child care business subject to the following:

(a) Chain link fencing used for recreational use within the ~~heritage preservation district~~ *historic district overlay* shall be coated with black or dark green vinyl and shall be screened from public rights-of-way and abutting properties by landscaping with a growth habit adequate to screen the fencing.

(b) Installation of the screening and fencing shall be dependent upon review and approval by the ~~heritage preservation~~ *historic district* review board.

***

Section 78-140.4 – Prohibited Signs.

(a) General prohibitions. In addition to signs prohibited elsewhere in this Code or by applicable state or federal law, the following signs are prohibited:

***

(7) Signs painted directly on a building, except in the ~~Heritage Preservation Districts~~ *historic district overlay* when approved by the ~~HPRB~~ *HDRB*.

***

Section 78-140.5 – Sign license required.

***

(b) *License types and approving authorities*. Sign licenses shall be approved by either the zoning administrator or the appropriate review board as follows:

(1) *Administrative approvals*. Following approval by the ~~HPRB~~ *HDRB* or ARB, the zoning administrator or designee conducts final review of applications for all sign licenses other than those provided for in section 78-140.5(n). The following administratively approvable signs, not requiring review by the ~~HPRB~~ *HDRB* or ARB, are subject to review by the zoning administrator or designee, temporary sign licenses, master sign plan conformance licenses (after approval of a master sign plan license) and any sign which complies with uniform standards adopted by the ~~HPRB~~ *HDRB* and ARB for administratively approved signs. Signs for all arts businesses, as defined in section 7-2 of the Herndon Town Code and licensed to operate as a business in the Herndon Arts District may receive administrative approval of the sign license if the signs comply with the ~~HPRB~~ *HDRB* and ARB approved uniform design standards.

(2) *Review Board Approvals*. The architectural review board or ~~Heritage Preservation Review Board~~ *historic district review board* also conducts final review of sign licenses that do not conform to the adopted uniform standards, as determined by the zoning administrator, within their respective overlay districts. ~~(Architectural Control District for the ARB and Heritage Preservation Overlay District for the HPRB).~~

***

(e) ~~*Heritage District Overlay zoning district regulations*. Herndon overlay zoning districts may require overlay specific sign standards and regulations in addition to the general requirements and district specific standards detailed in this article.~~ *Reserved.*

(f) ~~*Heritage Preservation District*~~ *Historic district overlay*. Permanent signs installed within the ~~Heritage Preservation Districts~~ *historic district overlay* shall comply with the relevant design guidelines, as interpreted by the ~~HPRB~~ *HDRB*, and the uniform standards for administrative approval of signs as approved by the ~~HPRB~~ *HDRB* and interpreted by the zoning administrator, or adopted superseding documents.

(g) ~~*Arts district*. Permanent signs installed within the arts districts shall comply with the relevant design guidelines, as interpreted by the HPRB and ARB, and the uniform standards for administrative approval of signs as approved by the HPRB and ARB and interpreted by the zoning administrator, or adopted superseding documents.~~ *Reserved.*

***

Section 78-141.6 – Sign standards for downtown mixed-use districts.

***

(c) *Compliance with design guidelines*. Signs installed within the central commercial (CC), planned development-downtown (PD-D), planned development-traditional downtown (PD-TD) zoning districts shall comply with the relevant design guidelines of the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines* and Downtown Herndon Pattern Book, or adopted superseding documents.

***

Section 78-150.1 – Town Council

(a) *Powers and duties*. The town council shall have the powers and duties specified in Code of Virginia ~~tit.~~ *Title* 15.2, ~~ch.~~ *Chapter* 22 and the Town Charter, as well as the following powers and duties under this chapter

***

(2) Appeals. The town council shall review and decide appeals from:

***

c. Final decisions of the ~~Heritage Preservation Review Board (HPRB)~~ *historic district review board (HDRB)* on certificates of appropriateness (section 78-60.~~G~~*3(g)*);

***

(3) *Historic designation*. The town council shall review and decide whether or not to designate any site, building or structure as an historic landmark or an area as a ~~heritage preservation overlay district.~~ *historic district overlay.*

(4) *Implementation authority not otherwise delegated*. The town council shall have the authority to take any other action not delegated to the planning commission, board of zoning appeals, architectural review board, ~~heritage preservation review board~~ *historic district review board*, town manager, town attorney, zoning administrator, or heads of town departments, as the town council may deem desirable and necessary to implement the provisions of this chapter.

***

Section 78-150.2 – Planning Commission

(a) *Powers and duties*. The planning commission shall have the powers and duties specified in Code of Virginia ~~tit.~~ *Title* 15.2, ~~ch.~~ *Chapter* 22, as well as the powers and duties under this chapter.

(1) *Application review*. The planning commission shall review and make recommendations to the town council to approve or disapprove applications for:

***

f. Designation of any site, building or structure as an historic landmark or an area as a ~~heritage preservation overlay district~~ *historic district overlay*.

***

Section 78-150.4 – ~~Heritage preservation~~ Historic district review board.

(a) *Establishment*. There hereby is established a ~~heritage preservation~~ *historic district* review board (~~HPRB~~ *HDRB*).

(b) *Powers and duties*. The ~~HPRB~~ *HDRB* shall have the following powers and duties under this chapter:

(1) *Recommendations*. The ~~HPRB~~ *HDRB* shall provide recommendations to the planning commission and the town council on the establishment, expansion, reduction, or elimination of ~~heritage preservation overlay districts~~ *the historic district overlay*.

(2) *Application review*. The ~~HPRB~~ *HDRB* shall review and decide applications for properties within the ~~heritage preservation overlay district~~ *historic district overlay* for:

***

(e) Appeals of administratively approved certificates of appropriateness.

***

(3) *Special knowledge and expertise*. The ~~HPRB~~ *HDRB* shall make its special knowledge and expertise available upon its own initiative or upon request by the town council or any official, department, board, commission or agency of the town.

(c) *Membership*. The membership of the ~~HPRB~~ *HDRB* shall be established as follows*:*

(1) *Number*. The ~~HPRB~~ *HDRB* shall consist of seven members. It shall be comprised of the five members of the town's architectural review board (ARB), along with two additional members.

(2) *Qualifications*. The two additional members of the ~~HPRB~~ *HDRB* who are not on the ARB shall meet the following minimum qualifications:

***

(3) *Residency*. No more than two of the members on the combined ARB/~~HPRB~~ *HDRB* with the required professional qualifications for an architect or an architectural historian may be nonresidents of the town. The other members on the combined ARB/~~HPRB~~ *HDRB* shall be town residents.

(4) *Appointment*. The ARB members serving on the ~~HPRB~~ *HDRB* shall be appointed pursuant to Part I, Charter, of the Code of Ordinances, section 7.4:1(b). The two additional members shall be appointed by a majority of the town council.

(5) *Term*. The term of office of the ARB members serving on the ~~HPRB~~ *HDRB* shall be concurrent with their membership on the ARB. The terms of the two additional ~~HPRB~~ *HDRB* members shall be three years.

(6) *Removal*. Any member of the ~~HPRB~~ *HDRB* may be removed from office by the town council for malfeasance, misfeasance or nonfeasance in office.

***

(9) *Training*. Newly appointed members of the ~~HPRB~~ *HDRB* shall be offered training ~~and certification by the Citizens Planning Education Association of Virginia or similar certification to be completed~~ *by the Virginia Department of Historic Resources* within two years of appointment.

(d) Officers. Officers of the ~~HPRB~~ *HDRB* shall be established as follows:

(1) *Chair and vice-chair*. The ~~HPRB~~ *HDRB* shall elect from its members a chair and a vice-chair.

***

(3) *General duties of officers*. The duties of the chair and vice-chair of the ~~HPRB~~ *HDRB* shall be as follows:

a. The chair shall preside at meetings of the ~~HRPB~~ *HDRB*, decide points of order on procedure, and take such action as shall be necessary to preserve the order and integrity of proceedings before the ~~HPRB~~ *HDRB*.

***

c. In the absence of the chair and vice-chair, the most senior ~~HPRB~~ *HDRB* member shall act as chair and shall have powers of the chair.

(e) *Staff*. The zoning administrator or the zoning administrator's designee shall serve as the professional staff to the ~~HPRB~~ *HDRB* and provide it with administrative support.

(f) *Meetings, hearings and procedures*. Meetings of the ~~HPRB~~ *HDRB* ordinarily shall be held monthly and at such other times as a quorum of the ~~HPRB~~ *HDRB* may determine subject to the following:

(1) *Open meetings*. All meetings of the ~~HPRB~~ *HDRB* shall be open to the public.

(2) *Quorum and necessary vote*. Four members of the ~~HPRB~~ *HDRB* shall constitute a quorum, and no action of the ~~HPRB~~ *HDRB* shall be valid unless authorized by a majority vote of those present and voting.

(3) *Rules and records of proceedings*. The ~~HPRB~~ *HDRB* shall document proceedings as follows:

a. The ~~HPRB~~ *HDRB* shall keep minutes of its proceedings, showing the vote of each member upon each question or, if absent or abstaining from a vote, indicating that fact.

b. The ~~HPRB~~ *HDRB* shall keep records of its official actions, which shall be immediately filed in the office of the zoning administrator and shall be a public record.

c. The ~~HPRB~~ *HDRB* may, by a majority vote of the entire membership, draft and approve such additional bylaws governing its procedure as it may deem necessary or advisable.

Section 78-150.5 – Architectural review board.

***

(b) *Powers and duties*. The ARB shall have the following powers and duties under this chapter:

(1) *Review and approval*. Generally, the ARB is empowered by the Town Charter and the town council to review and approve structures, buildings, signs, major landscape features and other improvements for development excluding: (i) the ~~heritage preservation overlay district~~ *historic district overlay*, (ii) single-family detached residences in the R-15 and R-10 zoning districts, and (iii) single-family detached residences in planned development districts after initial construction.

***

Section 78-150.6 – Zoning Administrator.

***

(b) *Powers and duties*. The zoning administrator or an appropriate designee acting as zoning administrator shall have the following jurisdiction, powers, and duties under this chapter:

(1) *Application review*. The zoning administrator shall review and decide applications for:

***

d. Administrative sign conformance permit for signs that are part of an approved master sign plan or that conform to the adopted requirements of the ARB or ~~HPRB~~ *HDRB*, whichever applies (section 78-140.5(b).

***

j. Administrative certificates of appropriateness pursuant to Section 78-60.3(3)(g).

***

(3) *Application*. The zoning administrator shall establish application requirements and schedules for review of applications and appeals, to review and make recommendations to the town council, planning commission, ~~HPRB~~ *HDRB*, and ARB on applications for development permits and approvals, and take any other action necessary to administer the provisions of this chapter.

***

(6) *Expertise and technical assistance*. The zoning administrator shall provide expertise and technical assistance to the town council, planning commission, BZA, ~~HPRB~~ *HDRB*, and ARB, upon request.

Section 78-151 – Summary table of development review responsibilities.

TABLE 78-151: DEVELOPMENT PERMIT REVIEW PROCEDURES
(S = Staff Review, R = Review and Advise, D = Final Decision, A = Appeal)

PROCESS	ZONING ADMINISTRATOR	ARCHITECTURAL REVIEW BOARD (ARB)	~~HERITAGE PRESERVATION~~ *Historic District* REVIEW BOARD ~~(HPRB)~~ *(HDRB)*	PLANNING COMMISSION	TOWN COUNCIL	BOARD OF ZONING APPEALS (BZA)	CIRCUIT COURT
***							
OUTSIDE THE ~~HERITAGE PRESERVATION OVERLAY DISTRICT~~ *HISTORIC DISTRICT OVERLAY*:							
***							
INSIDE THE ~~HERITAGE PRESERVATION OVERLAY DISTRICT~~ *HISTORIC DISTRICT OVERLAY*:							
ADMINISTRATIVE ELIGIBLE CERTIFICATE OF APPROPRIATENESS	*D*		*A*				
***							

[1] Appeals are limited to technical determinations. Appeals to the uniform standards shall be heard by the ~~HPRB~~*HDRB*/ARB.

Section 78-152.2 – Pre-application procedures.

***

(b) *Neighborhood meeting*. A neighborhood meeting is strongly encouraged prior to filing certain types of development applications, as follows.

***

(3) *Timing of meeting for other applications requiring public hearings*. Neighborhood meetings generally are encouraged prior to, or shortly after, submittal of other applications requiring a public hearing. The town council, planning commission, architectural review board or ~~heritage preservation~~ *historic district* review board may encourage an applicant to conduct a neighborhood meeting on an application if, in the determination of the review board, the proposed development could affect neighboring properties

***

Section 78-152.2 – Application submission, requirements and acceptance.

***

TABLE 78-152.2(b)(3): FEES FOR DEVELOPMENT APPLICATIONS	
TYPE OF FEE	AMOUNT
***	
~~HERITAGE PRESERVATION~~ *HISTORIC DISTRICT* REVIEW BOARD	
***	

***

Section 78-153.2 – Review process for applications requiring a public hearing (approval by decision making body).

***

(f) *Staff report*. The staff shall prepare a report for the reviewing body or bodies as follows:

***

(2) *Staff report availability*. The staff report shall be available to the applicant and the public a minimum of five days before the first scheduled work session for applications to the architectural review board, ~~heritage preservation~~ *historic district* review board, planning commission and town council. For the board of zoning appeals, the staff report shall be available to the applicant and the public a minimum of five days before the first scheduled public hearing.

(g) *Public hearing requirements*. The appropriate decision-making authority shall hold a minimum of one public hearing for a development application as follows:

***

(2) *Certificate of appropriateness*. The ~~heritage preservation~~ *historic district* review board shall conduct at least one public hearing for applications for certificates of appropriateness.

***

(h) *Public hearing notification*. All applications requiring public hearing(s), in addition to major site plans and subdivision plans, shall comply with the Code of Virginia and the other provisions of this section with regard to public notification.

***

(2) *Written/mailed notice*. When the provisions of this chapter (see section 78-153.2(h)(5)) require that written or mailed notice be provided, the preparation and transmittal of the written notice shall comply with this section, unless expressly stated otherwise.

***

b. Notice shall be mailed to:

***

6. The zoning administrator shall be responsible for providing written notice when the public hearing is before the board of zoning appeals, the ~~heritage preservation~~ *historic district* review board, or the architectural review board. The zoning administrator shall prepare a list of property owners and registrants to whom notice was mailed via first class mail and an affidavit affirming that notice meeting the content requirements of section 78-153.2(h)(1) was mailed pursuant to this section. The affidavit shall be conclusive that notice has been given pursuant to the terms of this section. A copy of the mailed notice shall be maintained in the office of the zoning administrator for public inspection during normal business hours.

***

(4) *Posted/placard notice*. When the provisions of section 78-153.2(h)(5), require that notice be posted on the land subject to the application, notice for applications other than those pertaining to the architectural review board or the ~~heritage preservation~~ *historic district* review board (which do not require placard notice) shall comply with the following requirements:

***

(5) *Required notice and timing*. Notice shall be provided as required in the Code of Virginia, § 15.2-2204. Such notice shall not be required for sign permit applications before the architectural review board or ~~heritage preservation~~ *historic district* review board.

***

Section 78-155.1 – Zoning map amendment (ZMA).

***

(h) *Procedures for zoning map amendments.*

***

(2) *Proffer review by ARB or ~~HPRB~~ HDRB prior to planning commission public hearing (if applicable)* . If an application for a zoning map amendment includes a proffer or proffers dealing with a building's exterior appearance or materials, the application and proffers shall be reviewed by the architectural review board, or ~~heritage preservation~~ *historic district* review board if ~~in a heritage preservation overlay district~~ *within the historic district overlay,* as follows:

***

Section 78-155.10 – Certificates of Appropriateness

(a) Intent. The purpose of a certificate of appropriateness is to ensure proposed changes to a building or site within the historic district overlay comply with the Historic District Guidelines and this chapter.

(b) Applicability. A certificate of appropriateness is required for any development within the historic district overlay unless exempted pursuant to Section 78-60.3(g)(2).

Section 78-160.1 – Generally

***

(c) *Adaptive reuse*. The town council intends to allow the adaptive reuse and convenient and efficient utilization of structures in the ~~heritage preservation districts~~ *historic district overlay* and other older areas that may have been developed under different standards, by allowing some flexibility in the treatment of nonconformities where the specific nonconformity is not increased.

***

Section 78-160.3 – Nonconforming Structures.

****

(e) *Specific provisions for changes to nonconforming structures*. Permitted changes to nonconforming structures shall be subject to the following specific provisions:

***

(4) *Restoration of a nonconforming structure damaged by casualty (excluding "Acts of God" or natural disaster).* A nonconforming structure damaged by casualty (as distinguished from ordinary wear and tear) may be restored in accordance with the following provisions:

***

(c) A nonconforming structure that is damaged by any casualty to an extent more than 50 percent of its assessed value (exclusive of foundations) at the time of the casualty according to the records maintained by the county department of tax administration shall not be restored except as follows:

***

2. If the nonconforming structure is within the ~~heritage preservation district~~ *historic district overlay*, or is designed and used as a single-family detached or single-family attached dwelling and such single-family detached or single-family attached use is allowed in the zoning district in which the nonconforming structure exists, restoration of such structures shall be permitted. The restoration shall begin within 12 months of the date of the casualty and shall be completed within 24 months of the casualty. The structure shall occupy the same space that it occupied prior to such casualty. In no instance shall any residential structure covered by this subsection 78-160.3(e)(4) be used to accommodate a greater number of dwelling units than such structure accommodated prior to any such work.

***

Section 170.3 – Types of violations.

(a) *Violations, generally*. The following constitute general violations of this chapter.

***

(2) *Noncompliance with permit*. Permits issued on the basis of plans and applications approved by the town council, planning commission, board of zoning appeals, ~~heritage preservation~~ *historic district* review board, zoning administrator, or other officials or agencies where additional approval is required, authorize the use, arrangement, alteration, location, and construction set forth in such permits and development approvals, and no other use, arrangement, alteration, location, or construction.

***

(b) *Specific violations*. In addition to the offenses listed in Table 78-170.4(a)(5), it shall be a violation of this chapter to do any of the following:

(7) *Failure to comply with terms of approval*. Fail to comply with any terms, conditions, or limitations placed by the town council, planning commission, board of zoning appeals, ~~heritage preservation~~ *historic district* review board, or zoning administrator upon any development approval, including designation of a planned development (PD) zoning district classification and preliminary PD plan, special exception, variance, administrative adjustment, certificate of appropriateness, sign permit, temporary use permit, zoning inspection permit, zoning appropriateness permit, site plan, single lot development plan, building location plan, final PD plan, final plat for minor subdivision, preliminary plat for subdivision, final plat for subdivision, site grading permit, excavation permit, street name or name change, or other form of authorization.

***

Section 78-170.4 – Penalties, fines and remedies for violations.

(a) *Penalties, fines and remedies for civil violations.*

***

(5) Summary table of common violations and fines.

TABLE 78-170.4(a)(5): SUMMARY OF COMMON CIVIL VIOLATIONS AND PENALTIES

OFFENSE	Penalty for Initial Summons (in $)	Penalty for Each Additional Summons (in $)
***		
Erecting, reconstructing, demolishing, altering or restoring a building or structure in a ~~Heritage Preservation District~~ *historic district overlay* without obtaining a current, valid Certificate of Appropriateness	200.00	500.00
***		

***

Section 78-180 – Definitions

***

Board. May refer to the board of zoning appeals, the architectural review board, or the ~~heritage preservation~~ *historic district* review board of the town, where the context so indicates.

***

Certificate of appropriateness. A certificate issued by the ~~heritage preservation~~ *zoning administrator, historic district* review board, or on appeal by the town council, indicating its approval of plans for alterations, *new* construction, removal or demolition of a landmark or of a building or structure within ~~a preservation district~~ *the historic district overlay*.

***

Construction, new.

(1) For ~~Heritage preservation~~ *historic district overlay* purposes: Any construction *of a building or structure* within ~~a preservation district~~ *the historic district overlay* which is independent and exclusive of an existing building or structure, or part thereof, in the ~~preservation district~~ *historic district overlay*.

***

~~*Heritage preservation district*~~ *Historic district overlay*. ~~Preservation districts~~ *the historic district overlay* shall be designated by town council. ~~Preservation district~~ ~~*b*~~*Boundaries* shall encompass and may include areas adjacent to historic landmarks.

***

Sign related terms. The following definitions pertain to signs and signage in all zoning districts:

***

(8) *Design guidelines*. Design guidelines mean the guidelines found in either the ~~Herndon Heritage Preservation Handbook~~ *Historic District Overlay Guidelines*, the Downtown Herndon Pattern Book or the Urban Design & Architectural Guidelines for the Herndon Transit-Oriented Core.

***

(26) *Review board*. Review board means either the ~~*A*~~*architectural* ~~*R*~~*review* ~~*B*~~*board* or the ~~Heritage Preservation~~ *historic district* ~~*R*~~*review* ~~*B*~~*board*.

***

2. This ordinance shall be effective on and after the date of its adoption.

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chair Romeo & Members of the Planning Commission**

From: **Bryce A. Perry, Deputy Director of Community Development**

Date: **October 22, 2020**

Subject: SE#17-03, Special Exception, Fairbrook Development

This memo serves as an addendum to the above referenced case staff report dated October 5, 2020.

Summary:

- A draft Planning Commission Resolution for Commission consideration is provided with this memo. Staff is recommending that the Planning Commission recommend approval to the Town Council. See Attachment #1.

- The recommended development conditions have been revised in coordination between staff and the applicant. The revisions address issues raised at the Planning Commission work session and during staff review. See staff analysis below and Attachment #2.

- The applicant has provided a revised Special Exception Plan addressing issues raised at the Planning Commission work session and during staff review. See staff analysis below and Attachment #4.

Analysis:

Following the October 5th work session, staff and the applicant met to discuss the outstanding issues. The applicant has since revised both the special exception plan and conditions in light of that discussion. Since the Planning Commission work session, the following issues have been addressed.

Engineering Issues:

1. Meter Station. The applicant has revised the plan to update and respond to the staff concerns; in addition clarifications have been incorporated into the conditions. With updates in technology the metering station is becoming obsolete and is planned to be replaced with a much smaller device that can fit underground along the sanitary line and accessed with a manhole. The revised plans show an approximate location of the new equipment and a dedicated space for the parking of maintenance vehicles. The details of these accommodations will be decided during the site plan review.

2. Sight Distance. The applicant has revised the plan to rectify the sight distance issue. The ground floor of building 4 was reconfigured so that required site distance from the pull off area exit could be achieved.

3. Fairbrook Drive Median Breaks. The applicant has revised the plan to show a dedicated left turn lane into the building 4 pull off area instead of two median breaks. This design will prohibit any left turning movements exiting the pull off area which satisfies staff's concerns.

4. Stormwater Management. The applicant has agreed to perpetually maintain the stormwater management facilities within the Herndon Parkway right-of-way and the future Fairbrook Drive right-of-way. This commitment is included in the development conditions. This was a concern of staff given the added resources that would be necessary to effectively provide maintenance of these facilities. Staff supports in concept the use of lower impact stormwater facilities such as those shown on the plan.

5. Fairbrook Drive Retaining Wall. The applicant's engineer has reviewed staff's potential concerns regarding the retaining wall along Fairbrook Drive's southern side facing the stream valley park, and has determined that the wall should not pose unanticipated site issues at later stages in the development process. The applicant was able to clarify that the wall would be no larger than 5' in height in one area but will only one to two feet in height for most of its length.

6. Dry Utilities in Right-of-Way. Staff has made its position clear that private dry utility easements within the future Fairbrook right-of-way won't be acceptable when the road is dedicated to the Town and a condition has been added that addresses this concern.

7. North Entrance. A condition has been added that requires the applicant to request a design waiver for the north entrance into the project off Herndon Parkway prior to approval of the site plan for building 3 and as part of the waiver process the submittal of a traffic management plan to limit traffic exiting the garage via the north entrance. Staff supports this approach to help limit the traffic at an entrance, which exists today, but is close to the entrance of the abutting development.

Planning Issues:

1. Fairbrook Extension. The condition pertaining to the Fairbrook Drive extension has been clarified to ensure that site plans that would result in vehicle trip generation meeting or exceeding vehicle trips associated with by-right development in the underlying zoning district shall not be approved until necessary transportation improvements are in place or fully funded. The applicant is building the portion of Fairbrook Drive that is located on their property. This portion of roadway will be built to public street standards and the proposed conditions require that the applicant dedicate the road and streetscape to the town free of charge. In addition, the applicant has agreed to provide to the town $1.50 per residential building square footage and $8.25 per office building square footage, at time of at occupancy, towards the

construction of the offsite segment of Fairbrook Drive or other capacity improvements. At buildout, the total amount of contribution would be approximately $6,300,000. The current estimate for the extension of Fairbrook Drive is $8,266,134, so the contributions would pay for the majority of the road construction. It should be noted that while the extension is necessary to mitigate the increased traffic from this development at full building out, only approximately 37% of peak hour traffic on the extension would be associated with the Fairbrook development, while the remaining traffic would be background traffic generated from sources elsewhere in town and nearby expected growth.

2. Interchange Modification. While the staff still has questions regarding final disposition of the Fairfax County Parkway interchange modification, staff is reassured that such modification, or an acceptable alternative, is feasible and VDOT approval likely. This view is supported by Fairfax County's inclusion of the Fairbrook Extension and changes to the interchange in their Fairfax Parkway Improvement Project draft proposals. Moreover, VDOT expressed support for the extension and interchange modification in conceptual terms when meeting with staff during the adopted comprehensive plan amendment that incorporated the extension into the Town's comprehensive plan. Given the earlier support and the recent inclusion of the extension and interchange modification in the County's improvement project, staff is confident that the necessary VDOT approvals can be attained when required.

3. RPA Mitigation. Further provisions for exactly how and when the necessary RPA mitigation is to occur were added to the proposed conditions associated with Chesapeake Bay Protection Area, RPA #17-01. To reinforce those provisions, staff has included an updated condition as part of the proposed development conditions for this case, SE#17-03.

4. Interior Public Space/Temporary Nature Center. Within the conditions the applicant is offering the town 2,000 square feet of ground floor area for use as a nature center, or other similar public/community use for a period of 20 years. The first 10 years is rent free, although other charges do apply and the remaining 10 years is at ½ market rate. It is envisioned by staff that this space will be used primarily by the Parks and Recreation Department. Since the development affords direct access to the Sugarland Run stream valley, the site is an excellent location for a temporary nature center. The Town's Capital Improvement Program includes a larger permanent nature center to be built in Runnymede Park. If timing works out, the Fairbrook nature center would provide a temporary start-up location that could generate additional support and perhaps donations for the larger, permanent project. Since this condition is towards a government purpose, the applicant has reduced the amount of cash contribution to Parks and Recreation and towards public safety. The staff believes that the adjustment is reasonable.

5. Garage Treatments. The conditions have been revised to strengthen the necessary commitment to the parking garages' exterior treatments, to appropriately coordinate the garage exterior with the principal building's architecture in the case of buildings 3 and 4, and appropriately fit within a natural area in the case of buildings 1 and 2.

6. Daycare Accommodations. The applicant has revised the project to accommodate a dedicated pick up and drop off area for the building 3 daycare. This revision is referenced in the conditions. A plan exhibit showing this arrangement has been developed and is attached to memo as Attachment #3.

7. Post Covid Considerations. The applicant has agreed that the post covid world will have impacts on certain components of building and site development and expressed the intention of making the necessary adjustments as the market evolves in response to changes in lifestyle and business operations caused by the pandemic. A condition has been added that reinforces the need to undertake these considerations.

Attachments:
1. Proposed Planning Commission Resolution
2. Revised Proffer Statement
3. Daycare Drop-off/Pick-up Detail
4. Revised Special Exception Plan

TOWN OF HERNDON, VIRGINIA

PLANNING COMMISSION

DRAFT RESOLUTION

October 26, 2020

Resolution- to recommend approval with conditions of Special Exception SE #17-03, to the Town Council allowing development under the Landmark Business Alternative Option on property zoned Office and Light Industrial (O&LI) district.

WHEREAS, the applicant, Fairbrook Business Parks Associates and LP and Fairbrook Business Parks Associates II, LP, has submitted for a special exception to permit a mixed-use development consisting of residential, office and retail square footage not to exceed 1,515,000 total square feet or a maximum of 1.25 FAR, with a residential to office percentage not to exceed 60 percent residential at total build out on property located at 100, 150, 200 Fairbrook Drive, Fairbrook Business Park and identified as Fairfax County Tax Map Reference Numbers: 0164-10-0005A, 0164-25-H, 0164-25-O in accordance with the plan dated October 16, 2020; and

WHEREAS, mixed-use development with an FAR not to exceed 1.25, with a residential to office square footage ratio not to exceed 60 percent residential is permitted in this zoning district under the provisions of the Landmark Business Alternative Option subject to the approval of a special exception; and

WHEREAS, the Planning Commission has reviewed this application and has held a public hearing on October 26, 2020 in accordance with the provisions of §15.2-2204 of the State Code; and

WHEREAS, the Planning Commission finds that the proposed development, with the conditions dated October 26, 2020, meets the purpose and intent of the Zoning Ordinance, in particular Section 78-155.3 Special exception and Section 78-40.6(c) Landmark Business Alternative Option (O&LI only) including the allowances and criteria found therein; and

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the Town of Herndon, Virginia, hereby recommends that the Town Council approved Special Exception Application SE #17-03, in accordance with the conditions set forth below to achieve compliance with the standards found in Section 78-155.3 and Section 78-40.6(c);

[INSERT CONDITIONS]

DRAFT Conditions of Approval

Special Exception #17-03, Fairbrook

1. Substantial Conformance. The development of the Special Exception use described in Condition b below shall be in substantial conformance with the plan entitled "Fairbrook Special Exception Plan # 17-13" dated June 19, 2017, and revised through ~~September 28~~ October 16, 2020, prepared by VIKA Virginia, LLC (the "**SE Plan**"), incorporated by reference and the Town of Herndon Zoning Ordinance (the "**Zoning Ordinance**"). Approval of this application for the approximately 4.60-acre parcel identified as Fairfax County Tax Map Reference Number 0164-10-0005A, the 2.52-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-H, and the 20.44-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-O, (the "**Property**") shall not relieve the applicant or the owners of the Property their successors or parties developing, establishing or operating the approved Special Exception use (the "**Applicant**") from the obligation to comply with and conform to an Zoning Ordinance, the Town of Herndon Codified Ordinance or regulatory requirement.

2. Uses Permitted. This Special Exception grants approval to permit a mixed use development under the Landmark Business Alternative Option pursuant to Section 78-40.6(c) of the Zoning Ordinance to allow for the redevelopment of the Property with two office buildings, a residential building, and a mixed use building.

   a) Retail uses on the Property may include eating establishments, which will meet the requirements of Section 78-71.6 (d) of the Zoning Ordinance. Outdoor eating areas are permitted as an accessory use to the eating establishments and will be delineated at the time of final site plan approval. The Applicant will work with Town staff during the site plan review to establish accommodations for designated parking, curbside pickup and delivery services including but not limited to storage and deployment of drone/robots and driverless vehicles.

   b) Daycare Center use on the Property will meet the requirements of Section 78-71.2 (d) (2) of the Zoning Ordinance. The designated parking and child drop-off and pickup areas are shown in concept on Sheet C-07 of the SE plan, and will be further detailed at the time of final site plan approval. The Applicant will work with Town staff during the site plan review to establish any further accommodations necessary to ensure the applicable Zoning Ordinance standards are met.

   c) The Applicant will work with Town staff during site plan review and Architectural Review Board review to ensure that trends in modern ways of living and doing business are identified and incorporated to an extent that is reflective of other development along the Metrorail Silver Line in the Herndon/Reston market, and where such advances, such as the inclusion of adequate spacing, storage and deployment areas for drone/robots and driverless vehicles, may impact public rights-of-way and pedestrian accessibility.

3. Development. Development on the Property will consist of four buildings, identified

as Buildings 1 -4 and referred to as the "New Buildings" on the Plan and the total development will not exceed 1,515,000 square feet of gross floor area. The maximum square footage of residential uses will be 895,000 square feet of gross floor area (up to 900 multi-family dwelling units). A maximum of 600,000 square feet of gross floor area of office use will be constructed. Notwithstanding what is shown on the SE Plan, the specific location of retail and child care uses within Building 3 is flexible to respond to specific retail tenant needs. Retail use on the Property will not be less than 5,000 square feet of gross floor area.

4. Fairbrook Drive.

a) The Applicant will construct Fairbrook Drive from its current terminus to the Property's northern boundary in phases as shown on the SE Plan. The Applicant will dedicate right-of-way to the Town for Fairbrook Drive as shown on the SE Plan.

b) Prior to the issuance of first permanent certificate of occupancy for each building, the Applicant will provide to the Town $1.50 per residential square foot and $8.25 per office square foot towards the eventual construction of an extension of Fairbrook Drive from the Property's northern boundary to Spring Street to mitigate the impacts of site generated trips, and/or other off-site capacity improvements necessitated by the proposed development. In addition, the Applicant will provide to the Town copies of all design work and technical information regarding the extension of Fairbrook Drive, including any correspondence or other material received or sent to the Virginia Department of Transportation (VDOT) or Department of Environmental Quality related to the extension, to include but not limited to the Sugarland Run stream valley pre- and post-condition and interchange modifications.

c) The Applicant will provide right-of-way and all necessary temporary and permanent easements, as determined by the Town, to enable the Town to connect the future Fairbrook Drive extension to the terminus of Fairbrook Drive on the Applicant's Property shown on the SE Plan upon request by the Town.

d) Prior to site plan approval, the Applicant will verify in a manner approved by the Town of Herndon Department of Public Works and Town Attorney that any dry utility easements provided in the future Fairbrook Drive right-of-way will automatically terminate and utilities removed when the right-of-way is dedicated or be replaced by a Town of Herndon instrument of approval that would otherwise permit the utilities to remain.

e) To achieve compliance with Sec. 78-40.6 (c)(1) j., which states: One hundred percent of the net increase in vehicle trips to be generated by the use for which the special exception was granted over the number of vehicle trips associated with the maximum density permitted in the underlying zoning district shall be accommodated through the provision of street capacity additional to improvements shown in the Herndon Metro Station Area Plan adopted February 28, 2012, a trip generation analysis will be submitted at site plan stage shall indicate whether or not the vehicle trip generation associated with the square

footage proposed by that site plan, in conjunction with previously approved site plans meets or exceeds the number of vehicle trips associated with the maximum density permitted in the underlying zoning district, as shown on the Fairbrook Business Park Traffic Impact Statement by Wells & Associates, revised through June 4, 2020. Site plans that would result in a vehicle trip generation meeting or exceeding the number of vehicle trips associated with the maximum density permitted in the underlying zoning district shall not be approved until the necessary improvements are in place or fully funded.

5. Bus Stop. If requested by the Town at the time of site plan review for any New Building, the Applicant will provide a bus stop and bus shelter along Herndon Parkway, north of Fairbrook Drive. The bus stop and shelter will be installed prior to the issuance of a permanent certificate of occupancy for the applicable New Building. If installation of the bus shelter occurs in advance of the construction of Building 3, the bus stop and shelter will be installed in an interim location and will be relocated or replaced by a bus stop and bus shelter in its permanent location with the construction of Building 3. The area of the bus stop and shelter will be dedicated to the Town. The bus shelter will be the standard Town of Herndon bus shelter or a shelter of a different design acceptable to both the Town and the Applicant, along with trash/recycling receptacles and bicycle racks. The Applicant will work with the Town to develop a safe and effective design for the boarding and discharging of passengers in relation to the operability of the adjacent cycle track.

6. Transportation Demand Management. The Applicant will submit a Transportation Demand Management Plan (TDM Plan) for review and approval prior to site plan approval for each building. The Applicant will implement a TDM Plan upon the issuance of a permanent certificate of occupancy for a total of 200,000 square feet of new development on the Property. The purpose of the TDM Plan is to reduce the number of a.m. and p.m. peak hour vehicles generated by New Buildings. The goal will be to reduce a.m. and p.m. peak hour vehicles by ten percent prior to rail transit service availability at the Herndon - Monroe Transit Station, fifteen percent from the opening of the Herndon-Monroe rail station and twenty-five percent following the fourth anniversary of the introduction of rail availability at the Herndon - Monroe Transit Station. The reduction will be measured on the baseline trip generation calculations using ITE Trip Generation Manual, 10th Edition and without further adjustments as outlined in the Fairbrook Business Park Traffic Impact Statement, dated June 5, 2017, as prepared by Wells & Associates, amended June 4, 2020, and incorporated by reference. A TDM Work Plan designed to meet the trip reduction goals will be developed by the Applicant with input and approval by the Town of Herndon Department of Community Development. The TDM Work Plan will be adapted over time to respond to the changing transportation related circumstances of the Property, the surrounding community and the region, as well as to technological and other improvements. At the on-set, the TDM Work Plan for the Property will incorporate of the following elements:

   a) Designating a TDM Coordinator to manage the TDM program for the New Buildings.

   b) Encouraging progressive employee policies such alternative work schedules,

including staggered work hours, variable work hours, flex-time, compressed work weeks, telecommuting, and other programs to spread peak period travel.

c) Maintaining a database in order to facilitate matching employees/residents with car/van pool options.

d) Participating in a guaranteed ride home program.

e) Providing convenient carpool and van pool parking spaces in each garage.

f) Displaying and distributing to individual tenants and residents information regarding available public transportation facilities and services, including Metrobus, Fairfax Connector, Metrorail, and other transit options in the Town and on the Dulles Toll Road Corridor.

g) Providing bike racks for employees/residents and visitors within the proposed parking garages.

h) Providing one-time contributions to partially subsidize Metro fare cards for new residents and new tenants.

7. Transportation.

a) The Applicant will extend the existing left turning lane on southbound Herndon Parkway into the Property to a stacking length of 225 feet prior to the issuance of a permanent certificate of occupancy for the first New Building to be constructed.

b) The Applicant will construct a right turn lane on northbound Herndon Parkway at Fairbrook Drive. The need for the right turn lane will be assessed with each site plan and will be installed prior to the issuance of a permanent certificate of occupancy of the New Building which generates the need for the turn lane.

c) The Applicant will install a traffic signal for the full signalization of the Fairbrook Drive Herndon Parkway intersection. The traffic signal will include accessible pedestrian signals. The need for the traffic signal will be assessed with each site plan and will be installed prior to the issuance of a permanent certificate of occupancy for the New Building which generates the need for the signal.

d) At the time of site plan approval for Buildings 3 or 4, whichever occurs first, the Applicant will record an inter-parcel access easement from the terminus of the Private Road A to the northern property line, to permit a future connection to serve adjacent property identified as Tax Map 16-4 ((2)) 15. The Applicant will provide at no cost, the requisite temporary construction easements to permit construction of the street extension by others.

e) The Applicant will provide streetscape improvements along Herndon Parkway, Fairbrook Drive and Private Road A, as well as bicycle facilities along Herndon Parkway and Fairbrook Drive, in keeping with the sections shown on Sheet C-09 of the SE Plan and the Herndon Streetscape Manual.

f) Prior to site plan approval for Building 3, the Applicant will request a design waiver from the Department of Public for the northern entrance along Herndon Parkway into the Building 3 garage. If required as part of the approval of the design waiver, the Applicant will submit a traffic management plan for the Building 3 garage, to include bollards, wayfinding, and/or other devices that will limit the amount of traffic that can exit the Building 3 garage onto Herndon Parkway.

8. Architecture.

a) The architectural treatment of all New Buildings within the proposed development will create a sense of identity and place, and will create human scale through the use of unifying elements such as materials, textures, color, window treatments, decorative details, lighting, and landscaping. Buildings will be designed with high quality architecture and building materials that, at the time a building plan is approved, are typically used on the exterior of Class A office buildings and residential buildings of a similar quality.

b) The architecture and materials will be subject to approval by the Architectural Review Board and will be in general conformance with the character and quality provided in the *Fairbrook Park - Architectural Review Board Materials for Preliminary Discussion* dated August 5, 2020.

c) In general, the office building materials will consist of a curved curtain wall window system with precast panels with a smooth limestone look. Additional or substitute architectural features will be permitted with approval by the Architectural Review Board.

d) The parking structures for Buildings 1 and 2 will be concrete with landscape planters on the top deck, and a mix of stone, or faux stone, and precast panels to reduce the mass of the garage wall and complement the adjacent natural areas.

e) The parking structures for Buildings 3 and 4 will be architecturally treated to harmonize with the architectural design of the residential buildings as conceptually shown on Sheet A-06 of the SE Plan.

f) All loading, service, and trash areas will be screened with bay doors that remain closed unless in use and designed to complement the architecture of the buildings.

9. Design Guidelines. While the Property is not located within the Herndon Transit Oriented Corridor (HTOC), the Applicant will endeavor to meet the spirit of the HTOC Urban Design and Architectural Guidelines in its architectural and streetscape designs.

10. Green Building Practices. The Applicant will include green building practices as follows:

a) Residential Buildings. The Applicant will design and construct each residential building to meet the standards of either LEED v4 New Construction or Multifamily

Midrise from U.S. Green Building Council, Multifamily Building from Nation Green Building Standard (NGBS), EarthCraft Multifamily, or an equivalent green building program as determined by the Applicant and the Town.

b) Office Buildings. The Applicant will design and construct the office base building to meet the standards of either LEED v4 Core and Shell Development or New Construction Silver from U.S. Green Building Council, or an equivalent green building program as determined by the Applicant and the Town.

c) The Applicant will include, at the time of application for a building permit for each building, a list of specific credits or design elements incorporated into the building

using the then current documentation of the selected green building program for each multifamily building and the office building.

d) The Applicant will meet with the Town following application for each site plan to coordinate green building strategies and priority credits, such priorities will include evaluating green infrastructure for stormwater management and potential bird-friendly design features, and the installation of at least two (2) electric vehicle charging stations per garage.

11. Publically Accessible Parks.

a) The Applicant will construct and maintain publicly accessible park spaces within the Property, identified as Gateway Plaza, The Meander/Central Park, Park A - Sugarland Bridge Park, Park B – Sugarland Meadow Park, and Park C - Sugarland Connector Park, as shown on the SE Plan. Gateway Plaza, to be located at the corner of Herndon Parkway and Fairbrook Drive, will feature special accenting pavement, a focal element, and seating. The Meander/Central Park will include an open green space, seating and interactive elements. Parks A, B and C will include an interconnected multi-use trail, a variety of multi-generational exercise stations and art installations, and will be designed to complement the natural setting. The parks will be constructed in phases as shown on Sheets L-13 through L-15 of the SE Plan. The Applicant will retain the area(s) in fee simple and record public access easement(s) ensuring that the park spaces are open to the public for periods of time consistent with traditional public parks. The public easement(s) will be recorded prior to final approval of each site plan for the New Building(s) which requires the park phase as shown on Sheets L-13 through L-15 of the SE Plan.

b) Trails. As a part of the trail system in Parks A, B, and C, the Applicant will build an eight (8) foot wide pervious paved trail along the western property line of the Property, connecting Buildings 1 and 2 to the Herndon Parkway sidewalk, and an eight (8) foot wide pervious paved trail from the southwest corner of the parking garage to the adjacent property line. The trails will be completed prior to the issuance of a permanent certificate of occupancy for Buildings 1 or 2, whichever occurs first.

12. Nature Center/Public Space.

a) In addition to the publically accessible recreational areas on the Property to be provided in accordance with Condition 13(b), the Applicant will provide to the Town of Herndon (the "Town") an option to lease (with an initial term of 10 years) 2,000 square feet of ground floor space in either Building 3 or Building 4 for a nature center, or other similar public/community use (the "Lease"). This 2,000 square feet of space will be leased to the Town rent free. Following conclusion of the initial 10 year lease, the Applicant will offer the Town two-5 year lease renewal options at fifty percent (50%) of the then prevailing market rate. The form of the Lease will be reviewed by the Town Attorney and will include commercially reasonable terms with the Town responsible for utilities, char and janitorial services, and a pro-rata share of the common area management.

b) The specific use of the space will be agreed upon mutually by the Town and the Applicant. The space may be considered part of the Retail uses set forth in the development tabulations on Sheet C-06 of the SE Plan, or may be in addition to such uses, provided that the overall development does not exceed 1,515,000 square feet of gross floor area.

c) The Applicant will notify the Town in writing within 60 days of final site plan approval for the Building 3 or 4, whichever occurs first, and request confirmation of the Town's intent to lease and occupy the space. The Town will respond to the Applicant in writing within 60 days confirming its intent to lease and occupy the space or not to lease the space. In the event that the Town decides not to lease or occupy the space in the first building offered, the Applicant will notify the Town in writing within 60 days of final site plan approval for the second of Building 3 or 4, and request confirmation of the Town's intent to lease and occupy the space. The Town will respond to the Applicant in writing within 60 days confirming its intent to lease and occupy the space or not to lease the space. In the event that the Town decides not to lease or occupy the space, then this development condition automatically will expire.

d) The Applicant will construct the space as a cold dark shell and the Town will have the responsibility for completing its own betterments and improvements within the shell. The shell will be completed and made available to the Town prior to the issuance of the first permanent occupancy permit for the building in which the public facility is located or as otherwise agreed to as part of the Lease.

e) In the event, the Town fails to continuously operate the intended use for a period of three () consecutive months following initial occupancy, the space will revert to the Applicant, and the development condition automatically will expire.

13. Recreational Contributions.

a) The Applicant will provide on-site recreational facilities for the future residents of the Property within the residential buildings, such as: private and public exterior recreational areas/courtyards with seating areas, walking paths, specialty landscaping, lawn areas, hardscape areas, and swimming pools; media entertainment areas; clubrooms; and fitness/exercise centers. The specific facilities and amenities to be provided for each individual residential building will be determined at the time of site plan approval for each residential building. Prior to the issuance for a permanent certificate of occupancy for each residential phase,

the Applicant will demonstrate that the value of the residential recreational facilities/amenities are equivalent to a minimum of $1900 per residential unit.

b) ~~The applicant will provide an $1,800 contribution per residential unit for off-site recreational facilities to offset the capacity impacts to current Town of Herndon recreational facilities. Proposed publicly accessible recreational areas may be used in lieu of this contribution if the applicant is able to demonstrate prior to occupancy of the each building that the publicly accessible recreational facilities have a value that is equivalent or greater than $1,800 per residential unit~~ Applicant will provide a $900 contribution per residential unit for off-site recreational facilities to offset the capacity impacts to current Town of Herndon recreational facilities. Applicant expenditures toward the proposed publicly accessible recreational areas on the Property will be credited against this contribution, excepting the area set aside for the nature center/public space as provided for by Condition 12. Prior to first permanent occupancy permit for each building, the Applicant will provide evidence of expenditures made for publicly accessible recreational facilities on the Property. In the event that the expenditures are less than $900 per residential unit, the balance of the expected contribution for the applicable building will be contributed to the Town of Herndon

14. Public Safety Contribution. ~~The Applicant will make a contribution of $50,000 to the Town of Herndon for each of the four New Buildings (1-4) constructed on the Property toward public safety needs in the Town. The contribution will be made on a building-by-building basis prior to the issuance of the first permanent certificate of occupancy for each of the four buildings.~~ The Applicant will make a contribution to the Town of Herndon for public safety equipment and facilities needs in the amount of $25,000 for each of Buildings 3 and 4. The contribution will be made on a building-by-building basis prior to the issuance of the first permanent certificate of occupancy for each of the two buildings.

15. Public Schools Contribution. The Applicant will contribute $12,262 per expected student (based on a ratio of 0.112 students per residential unit) to the Fairfax County Board of Supervisors for transfer to the Fairfax County School Board to be utilized for capital improvements to schools that serve the Town of Herndon. Such contribution will be made prior to the issuance of a building permit for each residential building and will be based on the actual number of dwelling units identified on the approved building plans for each building. Should prior to the Applicant's payment of this contribution, Fairfax County modifies the expected ratio of students per subject multi-family unit or the amount of the contribution per student, the amount of the contribution will be modified to reflect the then current ratio and/or contribution. The Applicant will notify the Fairfax County Public Schools whenever a site plan for new residential uses is filed for the Property.

16. Town Sanitary Metering Station. ~~The Applicant will take all necessary measures to maintain continuous operation of the Town of Herndon sanitary sewer meter vault during construction activity. This is anticipated to require relocation of the sewer metering station and access to the station. The Applicant will coordinate with the Public~~

~~Works Department on the relocation and any related improvements. The ultimate relocation of this facility must accommodate all aspects of the facility which includes size, security, and maintenance access at a minimum. If the relocation requires improvements that change environmental impact limits or building layouts, the need to pursue a revised Special Exception may be necessary pursuant to substantial conformity of the SE Plan as determined by the Zoning Administrator.~~ It is anticipated that the proposed development will require relocation of the Town of Herndon sanitary sewer metering station currently located on the Property. At the time of site plan review, the Applicant will coordinate with the Public Works Department on the relocation including the timing, location, size, security, maintenance access, and other related improvements. The Applicant will also take all necessary measures to maintain continuous operation of the meter vault during construction activity. If the relocation requires improvements that change environmental impact limits or building layouts, a revised Special Exception may be necessary as determined by the Zoning Administrator.

17. Trash and Recycling Service. The Property will utilize private trash and recycling services.

18. Invasive Species Mitigation Plan. Concurrent with each site plan submission, the Applicant will submit, and subsequently implement, an Invasive Species Mitigation Plan.

19. Resource Protection Area Enhancement and Revegetation. The Applicant will provide stream restoration or revegetation mitigation on a building per building basis as provided for in Resource Protection Area Exception (RPA) #17-01.

    a) Prior to the approval of any site plan for development on the Property that encroaches into the Chesapeake Bay Resource Protection Area, the Applicant shall provide proof that all stream restoration or mitigation measures are being implemented pursuant to RPA #17-01. If stream restoration or mitigation measures cannot be accommodated on the Property, the Applicant must show that the area on the adjacent property currently identified as Fairfax County Tax Map Reference Number 0173-02-0004A1 has been dedicated to the Town of Herndon pursuant to Proffer Condition Amendment PCA #15-101 and Ordinance 16-O-01, duly adopted by the Town Council of the Town of Herndon on January 12, 2016; and,

        i. Any required mitigation measures are located among the three areas of stream restoration are installed as shown on Sheet 11b of the plan submission sealed on October XX, 2020; and,
        ii. Any required plantings are installed and located in the areas identified as Planting Area 4, 5, 6, and 7, consisting of 62,756 square feet, as shown on Sheet 11b of the plan submission sealed on October XX, 2020.

    b) If Applicant is unable to meet the requirements in 3.a) for off-site stream restoration or mitigation, no further development on the Property that encroaches into the Chesapeake Bay Resource Protection Area can occur until a revised exception for encroachment into the RPA proposing alternate mitigation is submitted to the town and approved.

20. Bio-retention Tree Pits. The Applicant will perpetually maintain the bio-retention tree pits located within the public right-of-way along the Property's Herndon Parkway and Fairbrook Drive frontages. The Applicant will enter into the appropriate agreement, in a form approved by the Town Attorney, to permit the Applicant to perform such maintenance prior to dedication of the right-of-way.

21. Density Credit. Advanced density credit is reserved for all dedications as described ~~herein or as may be required by the Town or VDOT~~ in the Special Exception plan dated October 16, 2020.

22. Transferability. This special exception runs with the land identified as Fairfax County Tax Map 16-4-0010-5A 16-4-0025-H and 16-4-0025-O, and is not transferable to other properties

23. Unified Commercial Subdivision. The development may be re-subdivided as a Unified Commercial Subdivision with specific provisions for shared operations dealing with items such as maintenance and parking and the timing and extent of site improvements and with the establishment of a property owners association.

~~24. Final Engineering. Site design issues that are identified during the Special Exception review or may arise during the site plan review may necessitate a resubmission of the Special Exception if those issues require changes to the project that exceed substantial conformity as determined by the Zoning Administrator. Specific issues identified include but may not be limited to the following:~~

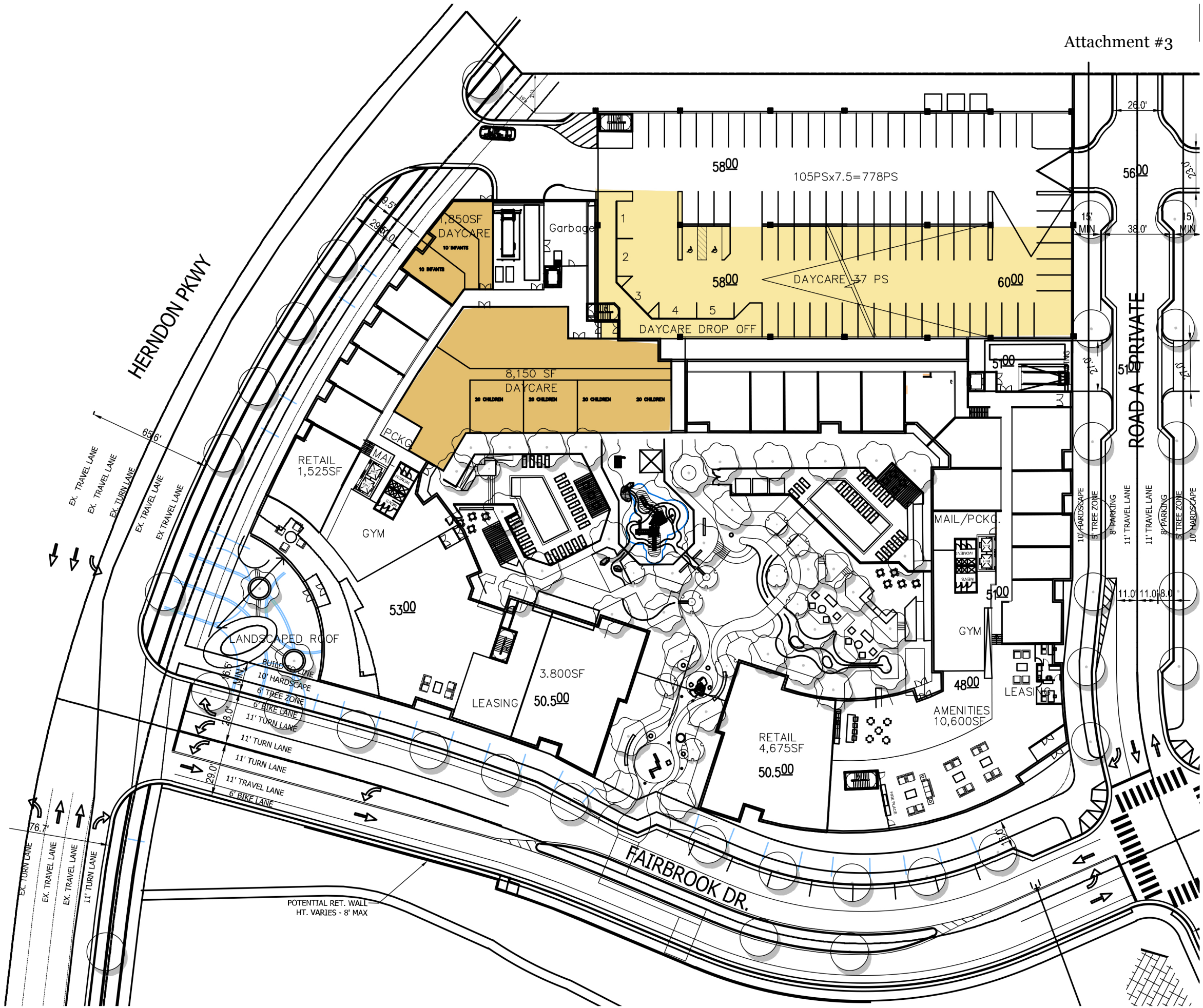
~~a. There are sight distance conflicts with street trees at multiple locations and a more significant sight distance conflict with the exit of the Building 4 drop-off area and the eastern edge of the building. Resolution of this issue may require modification of the ground floor plane of the building or modifications to the design of the drop-off area.~~

~~b. There are two breaks in the Fairbrook Drive median shown as access points for the Building 4 drop-off area. These median breaks cannot be retained when the road converts to a public right-of-way and will need to be removed and median closed. This change is necessary to better manage vehicle movements and improve the safety of the road when it is extended and traffic volumes and speeds increase.~~

~~c. There is uncertainty regarding the possible impacts the retaining wall and storm drain pipes along the south side of Fairbrook Drive may have the Floor Plain and RPA. More information is necessary to ensure those impacts have been considered and reflected in the SE plan.~~

~~d. Bio-retention tree-pits for stormwater management will not be accepted by the Town within the public right-of-ways for maintenance reasons. This would require an alternative solution for managing stormwater within Fairbrook Drive.~~

Attachment #3



DAYCARE DROP OFF

CIVIL

C-01	COVER SHEET
C-02	OVERALL EXISTING CONDITIONS PLAN
C-03	OVERALL EXISTING CONDITIONS PLAN
C-04	EXISTING VEGETATION MAP
C-05	EXISTING VEGETATION NOTES AND NARRATIVES
C-06	DEVELOPMENT NOTES AND TABULATIONS
C-07	GENERAL DEVELOPMENT PLAN
C-08	GENERAL DEVELOPMENT PLAN - FAIRBROOK DRIVE EXTENSION
C-08A	FAIRBROOK DRIVE EXTENSTION - AUTOTURN EXHIBIT
C-09	STREETSCAPE SECTIONS
C-09A	SITE SECTION
C-10	CONCEPTUAL GRADING AND UTILITY PLAN
C-11	STORMWATER MANAGEMENT MAP
C-12	STORMWATER MANAGEMENT COMPUTATIONS
C-13	STORMWATER MANAGEMENT COMPUTATIONS
C-14	STORMWATER MANAGEMENT COMPUTATIONS

ARCHITECTURAL

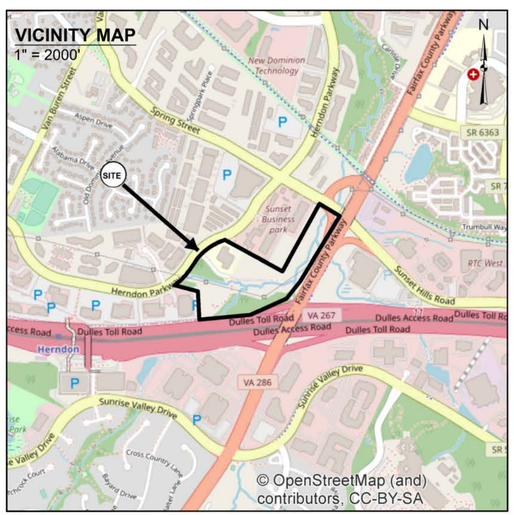
A-01	MASSING DIAGRAMS
A-02	CONCEPTUAL MASSING
A-03	AERIAL VIEWS
A-04	ARCHITECTURAL RENDERINGS
A-05	ARCHITECTURAL RENDERINGS
A-06	ARCHITECTURAL RENDERINGS

LANDSCAPE

L-01	OVERALL ILLUSTRATIVE
L-02	OVERALL LANDSCAPE & PARK PLAN
L-03	ILLUSTRATIVE OVERALL PLAN
L-04	ILLUSTRATIVE LANDSCAPE PLAN - ENLARGEMENT
L-05	LANDSCAPE PLAN - ENLARGEMENT
L-06	PUBLIC SPACE PLAN - ENLARGEMENT
L-07	LANDSCAPE PERSPECTIVES
L-08	LANDSCAPE PERSPECTIVES
L-09	LANDSCAPE PERSPECTIVES
L-10	LANDSCAPE PERSPECTIVES
L-11	STREAM VALLEY PARK PLAN
L-12	STREAM VALLEY PARK CONCEPT IMAGES
L-13	BUILDINGS 1/2 PHASE
L-14	BUILDINGS 3 PHASE
L-15	BUILDINGS 4 PHASE

SUPPLEMENTAL

S-01	FIRE ACCESS EXHIBIT
S-02	FIRE ACCESS EXHIBIT
S-03	TREE INVENTORY MAP
S-04	TREE INVENTORY MAP
S-05	TREE INVENTORY SCHEDULE
S-06	TREE INVENTORY SCHEDULE
S-07	SIMPLIFIED FOREST STAND DELINEATION PLAN
S-08	MODIFIED FOREST DELINEATION NOTES AND NARRATIVES
S-09	PROPOSED PUBLIC EASEMENT EXHIBIT



FAIRBROOK

SPECIAL EXCEPTION PLAN # 17-13

TOWN OF HERNDON
VIRGINIA

JUNE 19, 2017
JUNE 07, 2019
JUNE 04, 2020
SEPTEMBER 28, 2020
OCTOBER 16, 2020



APPLICANT:
FAIRBROOK BUSINESS PARK ASSOCIATES, LP
FAIRBROOK BUSINESS PARK ASSOCIATES II, LP
1001 G STREET NW, SUITE 900
WASHINGTON, DC 20001
BOB KNOPF
202-393-1999

LAND USE ATTORNEY:
WALSH, COLUCCI, LUBELEY, & WALSH, P.C.
2200 CLARENDON BLVD, SUITE 1300
ARLINGTON, VIRGINIA 22201
ELIZABETH D. BAKER
703-528-4700

ARCHITECT:
DCS DESIGN - DAVIS, CARTER, SCOTT LTD
8614 WESTWOOD CENTER DRIVE, SUITE 800
TYSONS, VIRGINIA 22182
DOUG CARTER, AIA
JASNA BIJELIC, LEED AP BC+C
703-556-9275

ENGINEER:
VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE, SUITE 200
TYSONS, VIRGINIA 22102
ROBERT COCHRAN, L.S.
703-442-7800

LANDSCAPE ARCHITECT:
LANDDESIGN, INC.
200 SOUTH PEYTON STREET
ALEXANDRIA, VIRGINIA 22314
STEPHANIE PANKIEWICZ, ASLA, PLA
703-549-7784

TRANSPORTATION:
WELLS + ASSOCIATES, INC.
1420 SPRING HILL ROAD, SUITE 610
TYSONS, VIRGINIA 22102
MICHAEL J. WORKOSKY, PTP, TOPS, TSOS
703-917-6620

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

TOWN PLAN #: _____

TOWN OF HERNDON, VIRGINIA
COVER SHEET

SUBDIVISION OR SITE PLAN NAME	FAIRBROOK: SPECIAL EXCEPTION
OWNER, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	FAIRBROOK BUSINESS PARK ASSOCIATES, LP AND FAIRBROOK BUSINESS PARK ASSOCIATES II: 1001 G STREET NW, SUITE 900 WASHINGTON D.C., 20001 - BOB KNOPF (202)-393-1999
DEVELOPER, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	QUADRANGLE: 1001 G STREET NW, SUITE 900 WASHINGTON D.C., 20001 - BOB KNOPF (202)-393-1999
CERTIFIED ENGINEER, ARCHITECT OR SURVEYOR SUBMITTING PLAN, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	VIKA VIRGINIA, LLC; 8180 GREENSBORO DRIVE SUITE 200, TYSONS, VA 22102 - ROBERT COCHRAN, LS (703)-442-7800
FAIRFAX COUNTY TAX MAP NUMBER	016-4 ((10)) 5A; 016-4 ((25))-O; 016-4 ((25))-H
TOTAL AREA 27.56 AC	PRESENT ZONING O & LI
REVISED: JUNE 13, 2017	C-01

NOTES:

1. THE SUBJECT PROPERTIES SHOWN HEREON ARE IDENTIFIED ON FAIRFAX COUNTY TAX MAP AS #016-4-10-0005A, #016-4-25-H, & #016-4-25-O AND ARE ZONED O AND LI.
2. BOUNDARY INFORMATION IS BASED ON A FIELD RUN SURVEY BY VIKA, INC. DATED OCTOBER, 2000 AND VERIFIED ON JUNE 16, 2006 AND JANUARY 18, 2008 AND UPDATED BY VIKA VIRGINIA, LLC ON DECEMBER 04, 2015.
3. THE HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83) AND THE VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29). THE HORIZONTAL AND VERTICAL DATUMS SHOWN HEREON ARE BASED ON A GPS SURVEY PERFORMED BY VIKA VIRGINIA, LLC ON JUNE 14, 2018 USING THE FOLLOWING CORS STATIONS: LOYB LORTON VA 0 0576 (NGS PID DH7960), VAGV GAINESVILLE VA – 0588. AND LOYK ANNAPOLIS JCT MD – 0370 (NGS PID DL3640). THE ELEVATIONS CONVERSION OF THE VERTICAL DATUM FROM THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) TO (NGVD29), USING A DIFFERENCE OF +0.71', WAS CALCULATED USING ARMY CORPS OF ENGINEERS' CORPSCON 6.0.1 CONVERSION TOOL.
4. CONTOUR INTERVAL SHOWN HEREON IS 2'-0".
5. THE PROPERTIES SHOWN HEREON WERE ACQUIRED BY FAIRBROOK BUSINESS PARK ASSOCIATES, L.P. BY DEED RECORDED ON JULY 23, 1984 AND RECORDED IN DEED BOOK 5993 AT PAGE 372 AND FAIRBROOK BUSINESS PARK ASSOCIATES II, LP BY DEED RECORDED IN DEED BOOK 20742 AT PAGE 1375 ALL AMONG THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA.
6. THE SUBJECT PROPERTIES LIE IN THE FOLLOWING THREE (3) FLOOD ZONE DESIGNATIONS AS SHOWN ON FLOOD INSURANCE RATE MAP (F.I.R.M.) COMMUNITY PANEL NUMBERS 515525 0110 E AND 515525 0130 E, WITH AN EFFECTIVE DATE SEPTEMBER 17, 2010 FOR FAIRFAX COUNTY, VIRGINIA AND INCORPORATED AREAS: ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED): ZONE "X-SHADED" (AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN). ZONE "X-SHADED" AND ZONE "AE" ARE DESIGNATED AS SPECIAL FLOOD AREAS.
7. PORTIONS OF THE SUBJECT PROPERTY DO LIE IN A RESOURCE PROTECTION AREA (RPA) PER THE HERNDON CHESAPEAKE BAY PRESERVATION AREAS MAP DATED MARCH 13, 2008.
8. RPA DELINEATION AND WETLAND INFORMATION FROM REPORT ENTITLED "FAIRBROOK BUSINESS PARK AND OFF-SITE STUDY AREA – WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION AND RESOURCE PROTECTION AREA EVALUATION" PREPARED BY WETLANDS STUDIES AND SOLUTIONS INC. DATED MAY 31, 2016. A JURISDICTIONAL DETERMINATION WAS ISSUED BY THE CORPS OF ENGINEERS ON SEPT. 21, 2016 (#NAO-2016-01643).
9. THE 80' BRL SHOWN HEREON WAS TAKEN FROM A PLAN "PARKWAY TRADE CENTER" PREPARED BY RINKER AND ASSOCIATES, DATED 9-28-1983. THE 80' WAS MEASURED FROM THE ORIGINAL RIGHT-OF-WAY OF THE PARKWAY. ADDITIONAL STREET DEDICATION WAS RECORDED IN DEED BOOK 18956 AT PAGE 1230, WHICH WIDENED THE RIGHT-OF-WAY ANOTHER 12'.
10. THERE IS NO OBSERVED EVIDENCE OF CEMETERIES ON THE SUBJECT PROPERTY.
11. THE EXISTING CONDITIONS SURVEY WAS COMPLETED UNDER THE DIRECT RESPONSIBLE CHARGE OF, FRANKLIN E. JENKINS, LS FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED IN OCTOBER 2000, VERIFIED IN JUNE 2006 AND JANUARY 2008, LAST UPDATED JULY 2018; AND THAT THIS PLAN/PLAT MEETS MINIMUM HORIZONTAL AND VERTICAL ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
12. THE HORIZONTAL AND VERTICAL DATUMS REFERENCED HEREON ARE IN CONFORMANCE WITH FAIRFAX COUNTY REQUIREMENTS 2-0106.1B AND 2-0208.3.

AREA TABLE:

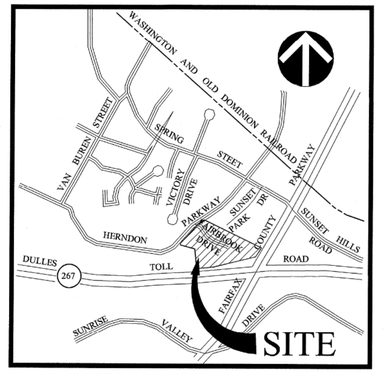
LOT 5A, PARKWAY TRADE CENTER	200,580 SQ. FT. OR	4.60468 ACRES
LAND UNIT "H", FAIRBROOK LAND CONDO	109,771 SQ. FT. OR	2.52000 ACRES **
LAND UNIT "O", FAIRBROOK LAND CONDO	890,390 SQ. FT. OR	20.44054 ACRES
TOTAL LAND AREA	1,200,741 SQ. FT. OR	27.56522 ACRES
AREA OF DENSITY CREDIT (DB 18956 PG 1230)	5,200 SQ. FT. OR	0.11938 ACRES
AREA OF DENSITY CREDIT (DB 18956 PG 1230)	6,356 SQ. FT. OR	0.14591 ACRES
TOTAL AREA INCLUDING DENSITY CREDITS	1,212,297 SQ. FT. OR	27.83051 ACRES

** AREA INCLUDES THE VERTICAL COMPONENT OF LAND UNIT "O", FAIRBROOK LAND CONDO (ABOVE 367.00 FT.) (10,965 SQ. FT. OR 0.25172 ACRES)

PARKING TABULATION

STRIPED PARKING SPACES	293
HANDICAP STRIPED PARKING SPACES	9
TOTAL STRIPED PARKING SPACES	302

* PARKING SPACES SHOWN HEREON ARE BASED ON FIELD LOCATIONS AND VISUAL INSPECTION. VIKA VIRGINIA, LLC DOES NOT CERTIFY THAT SPACES ARE STRIPED IN ACCORDANCE WITH REQUIRED JURISDICTIONAL STANDARDS.



VICINITY MAP SCALE 1" = 500'

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHD BRG	CHORD
C1	281.60'	852.00'	142.10'	18°56'14"	N44°45'40"E	280.32'
C2	79.28'	759.12'	39.68'	5°59'01"	N38°17'04"E	79.24'
C3	12.19'	22.50'	6.25'	31°02'30"	S61°45'31"E	12.04'
C4	393.26'	759.12'	201.15'	29°40'55"	N56°07'02"E	388.88'
C5	36.40'	852.00'	18.20'	02°26'53"	N69°44'06"E	36.40'
C6	49.62'	17,388.73'	24.81'	0°09'49"	S84°46'56"W	49.62'
C7	182.25'	240.05'	95.77'	43°30'00"	N60°21'51"W	177.90'
C8	20.07'	150.50'	10.05'	7°38'22"	N42°26'02"W	20.05'

UTILITY NOTE:

THE UNDERGROUND UTILITY LOCATIONS SPECIFICALLY NOTED IN THE TABLE BELOW AND GRAPHICALLY SHOWN HEREON HAVE BEEN LOCATED FROM A COMBINATION OF FIELD SURVEY INFORMATION, AERIAL SURVEY LOCATIONS, AND/OR EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE INDICATED FROM THE INFORMATION NOTED IN THE TABLE BELOW WHICH COMPRISES THE RECORD INFORMATION OBTAINED BY THE SURVEYOR. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES, UNLESS SPECIFICALLY NOTED ON THE DRAWING.
THE FOLLOWING UTILITY COMPANIES HAVE BEEN SOLICITED FOR THEIR PLANS AND RECORD UTILITY DRAWINGS, LISTED BELOW ARE SPECIFIC PLAN/SHEET NUMBERS OF DRAWINGS PROVIDED BY THE UTILITY COMPANY OR LACK OF RESPONSE IS NOTED.

UTILTY COMPANY		PLAN # / SHEET #
TELEPHONE.....	MCI COMMUNICATIONS	SKETCHES RECEIVED 2015-12-22
	VERIZON COMMUNICATIONS	NO RESPONSE AT THIS TIME
	LEVEL 3 COMMUNICATIONS	NO RESPONSE AT THIS TIME
	AT&T	NO RESPONSE AT THIS TIME
	ZAYO	NO RESPONSE AT THIS TIME
	LEVEL 3	NO RESPONSE AT THIS TIME
GAS.....	WASHINGTON GAS	SKETCH RECEIVED 2015-12-22
	COLUMBIA GAS	NO RESPONSE AT THIS TIME
ELECTRIC.....	DOMINION VIRGINIA POWER	SKETCH RECEIVED 2015-12-17
	NOVEC	NO RESPONSE AT THIS TIME
CABLE TV.....	COMCAST	NO RESPONSE AT THIS TIME
	COX COMMUNICATIONS	NO RESPONSE AT THIS TIME
STORM AND SANITARY...		FAIRFAX COUNTY STORM AND SANITARY MAP #016-4 & 017-3 TOWN OF HERNDON SANITARY SEWER SYSTEM PLAN (MARCH 1989)
WATER.....		TOWN OF HERNDON WATER SYSTEM PLAN (AUGUST 1974)
MISS UTILITY		TICKET #

THE OWNER/DEVELOPER OF THE SUBJECT PROPERTY IS RESPONSIBLE FOR OBTAINING INFORMATION AND COORDINATING WITH ALL OTHER UTILITIES NOT LISTED IN THE TABLE ABOVE. THE OWNER/DEVELOPER IS ALSO RESPONSIBLE FOR CONTACTING "MISS UTILITY" 48 HOURS PRIOR TO CONSTRUCTION.

SURVEYOR'S CERTIFICATE:

THIS BOUNDARY AND TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF FRANKLIN E. JENKINS FROM ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED ON 12-04-2015 AND THAT THIS PLAT AND DATA INCLUDING METADATA MEETS MINIMUM STANDARDS UNLESS OTHERWISE NOTED.

COMMONWEALTH OF VIRGINIA
FRANKLIN E. JENKINS
Lic No. 2061
10/16/2020
LAND SURVEYOR

FRANKLIN E. JENKINS
LICENSED LAND SURVEYOR
VA#2061
EMAIL ADDRESS: JENKINS@VIKA.COM

10/16/2020
DATE OF PLAT OR MAP

VIKA VIRGINIA, LLC
8180 Greensboro Dr., Suite 200
Tysons, VA 22102
703.442.7800 | vika.com

Our Site Set on the Future.

THE INFORMATION, DESIGN, AND CONTENT OF THESE DRAWINGS AND/OR DOCUMENTS HERETO ARE PROPRIETARY TO VIKA VIRGINIA, L.L.C. AND CONSTITUTE ITS PROPRIETARY INTELLECTUAL PROPERTY. THESE DRAWINGS AND/OR DOCUMENTS MUST NOT BE DIGITALLY FORWARDED, SHARED OR COPIED, DIGITALLY CONVERTED, MODIFIED, OR USED FOR ANY PURPOSE, IN ANY FORMAT, WITHOUT PRIOR WRITTEN AUTHORIZATION FROM VIKA VIRGINIA, L.L.C. VIOLATIONS MAY RESULT IN PROSECUTION. ONLY APPROVED, SIGNED AND SEALED PLANS OR DRAWINGS MAY BE UTILIZED FOR CONSTRUCTION PURPOSES.

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V 11.00

PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
FRANKLIN E. JENKINS
Lic No. 2061
10/16/2020
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

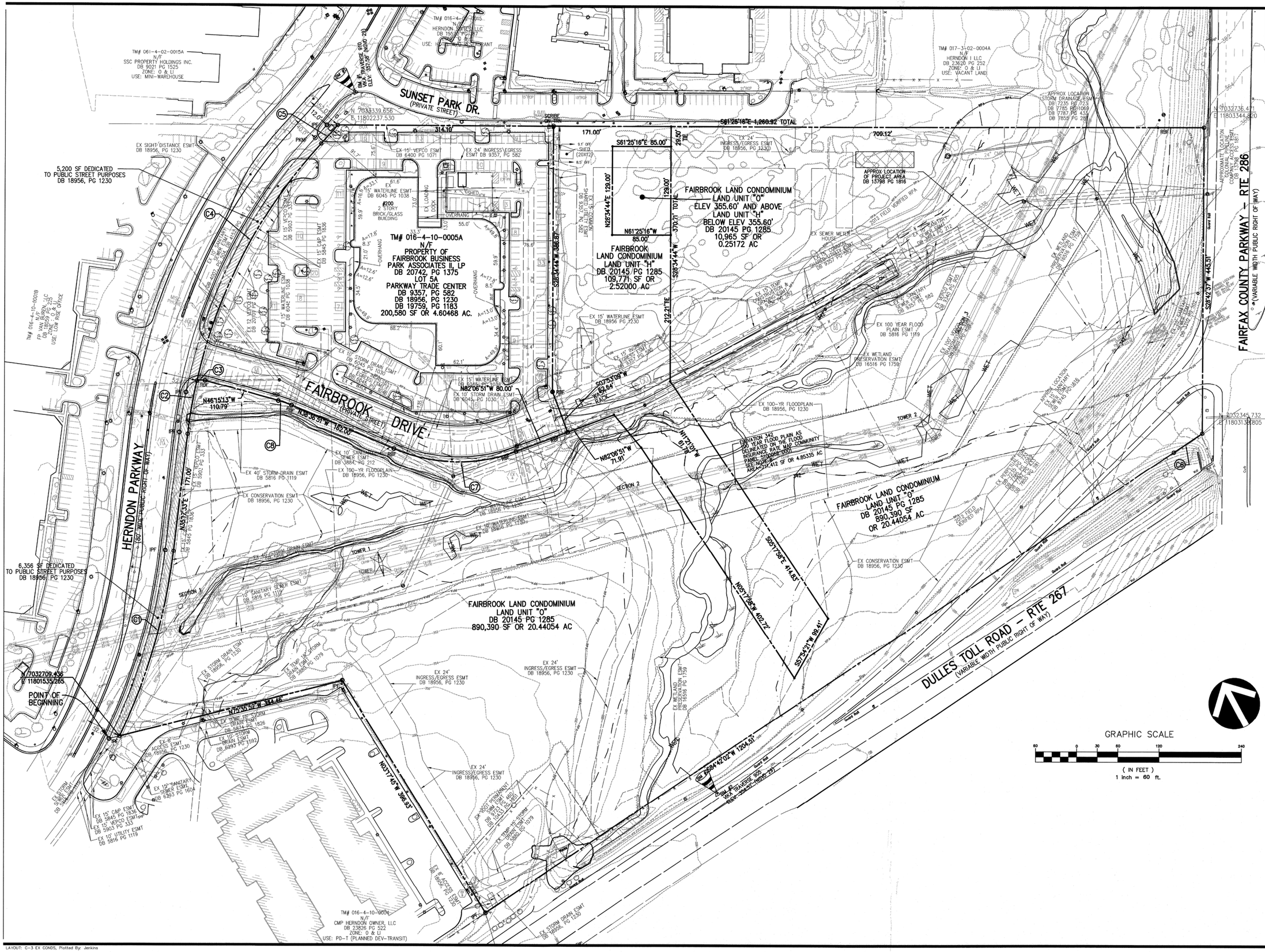
TOWN OF HERNDON,
VIRGINIA

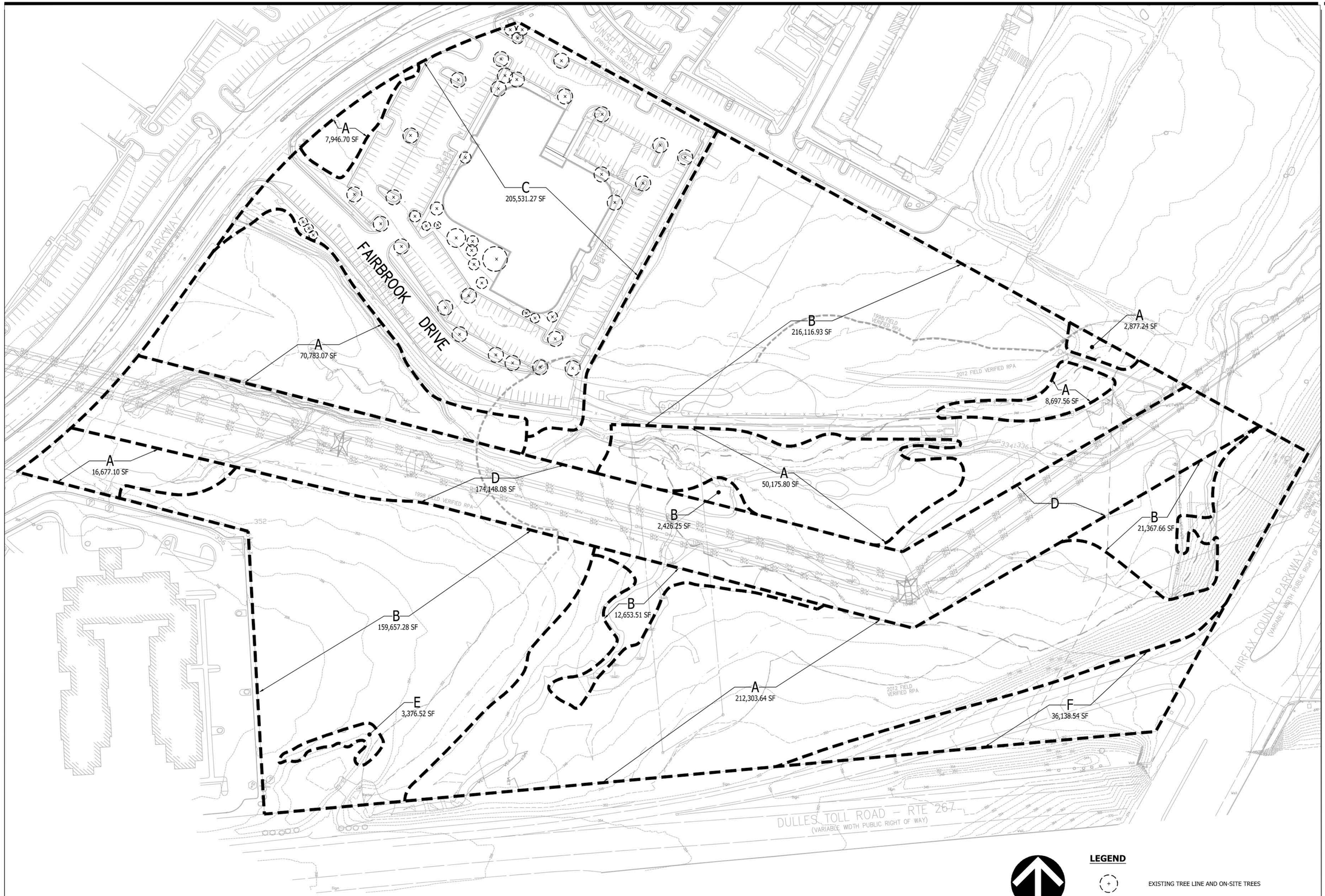
OVERALL EXISTING CONDITIONS PLAN

DRAWN BY:	LMG
DESIGNED BY:	FEJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-02

LAYOUT: C-2 EX CONDS, Plotted By: Jenkins

FILE: P:\projects\6045\6045X\CADD\SURVEYS\BASE DRAWINGS\6045X-SV.dwg USER: Jenkins DATE: October 16, 2020 TIME: 10:37:12 AM LAYOUT: C-2 EX CONDS


SUNSET PARK DR.
(PRIVATE STREET)
FAIRBROOK DRIVE
(PRIVATE STREET)
HERNDON PARKWAY
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)
FAIRFAX COUNTY PARKWAY – RTE 286
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)
DULLES TOLL ROAD – RTE 267
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)
TM# 016-4-10-0005A
N/F
PROPERTY OF
FAIRBROOK BUSINESS
PARK ASSOCIATES II, LP
DB 20742, PG 1375
LOT 5A
PARKWAY TRADE CENTER
DB 9357, PG 582
DB 18956, PG 1230
DB 19759, PG 1183
200,580 SF OR 4.60468 AC.
#200
2 STORY
BRICK/GLASS
BUILDING
FAIRBROOK LAND CONDOMINIUM
LAND UNIT "O"
ELEV 355.60' AND ABOVE
LAND UNIT "H"
BELOW ELEV 355.60'
DB 20145 PG 1285
10,965 SF OR
0.25172 AC
FAIRBROOK
LAND CONDOMINIUM
LAND UNIT "H"
DB 20145/PG 1285
109,771 SF OR
2.52000 AC
FAIRBROOK LAND CONDOMINIUM
LAND UNIT "O"
DB 20145 PG 1285
890,390 SF OR 20.44054 AC
FAIRBROOK LAND CONDOMINIUM
LAND UNIT "O"
DB 20145 PG 1285
890,390 SF OR 20.44054 AC
5,200 SF DEDICATED
TO PUBLIC STREET PURPOSES
DB 18956, PG 1230
6,356 SF DEDICATED
TO PUBLIC STREET PURPOSES
DB 18956, PG 1230
POINT OF
BEGINNING
N 7033339.656
E 11802237.530
N 7032736.471
E 11803344.820
N 7032345.732
E 11803138.805
N 7032709.436
E 11801535.285
S61°25'16"E 1,260.92' TOTAL
S61°25'16"E 85.00'
N28°34'44"E 129.00'
N61°25'16"W 85.00'
S28°34'44"W 498.87'
S28°34'44"W 370.71'
S07°53'06"W 82.64'
N82°06'51"W 80.00'
N82°06'51"W 71.91'
N46°15'13"W 110.79'
N38°38'51"W 182.00'
N53°37'33"E 171.00'
N07°21'01"W 61.79'
S05°17'58"E 414.83'
N05°17'58"W 402.72'
S57°34'21"W 88.41'
N05°17'45"W 396.83'
N75°35'52"W 344.46'
S28°42'57"W 445.31'
S84°42'02"W 1204.51'
171.00'
314.10'
709.12'
212.21' TIE
29.50' TIE
SECTION 1
SECTION 2
SECTION 3
TOWER 1
TOWER 2
EX 15" WATERLINE ESMT
DB 6045 PG 1038
EX 15" YEPCO ESMT
DB 6400 PG 1071
EX 24' INGRESS\EGRESS ESMT
DB 9357, PG 582
EX 24'
INGRESS/EGRESS ESMT
DB 18956, PG 1230
EX 15" WATERLINE ESMT
DB 18956 PG 1230
EX 100 YEAR FLOOD
PLAIN ESMT
DB 5816 PG 1119
EX WETLAND
PRESERVATION ESMT
DB 16516 PG 1759
EX 100-YR FLOODPLAIN
DB 18956, PG 1230
EX CONSERVATION ESMT
DB 18956, PG 1230
EX 40' STORM DRAIN ESMT
DB 5816 PG 1119
EX 10' SANITARY
SEWER ESMT
DB 3884, PG 212
EX 15" SANITARY
SEWER ESMT
DB 6393 PG 1604
EX 10' UTILITY ESMT
DB 5816 PG 1119
EX 15" CMP ESMT
DB 5845 PG 1836
EX 15" YEPCO ESMT
DB 5903 PG 133
EX STORM DRAIN ESMT
DB 18956, PG 1230
EX 15" STORM
DRAIN ESMT
DB 6045 PG 1038
EX 8" STORM
DRAIN ESMT
DB 6093 PG 1592
EX 15" STORM
DRAIN ESMT
DB 6045 PG 1038
EX 8" STORM
DRAIN ESMT
DB 6174 PG 1826
EX TEMP 15" STORM
DRAIN ESMT
DB 6045 PG 1038
EX TEMP 18" STORM
DRAIN ESMT
DB 6045 PG 1038
EX TEMP 15" STORM
DRAIN ESMT
DB 6045 PG 1038
EX 8"
ACCESS ESMT
DB 18956, PG 1230
EX 24'
INGRESS/EGRESS ESMT
DB 9357, PG 582
EX 15" SANITARY
SEWER ESMT
DB 6045 PG 1038
EX 15" SANITARY
SEWER ESMT
DB 6045 PG 1038
EX 15" SANITARY
SEWER ESMT
DB 6045 PG 1038
EX 10" SANITARY
SEWER ESMT
DB 5816 PG 1119



LEGEND

EXISTING TREE LINE AND ON-SITE TREES

EXISTING VEGETATION COVER TYPE COMMUNITY

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

TOTAL SITE / APPLICATION AREA: 1,200,741 SF

TOTAL EXISTING TREE CANOPY: 382,937 SF

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

EXISTING VEGETATION MAP

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-04

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-04 C-05 EVM.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:07:12 AM LAYOUT: C-04 EVM

LAYOUT: C-04 EVM, Plotted By: Richardson

VEGETATION COVER TYPES

AREA-A
UPLAND FOREST
Acer rubrum - Red Maple
Carya tomentosa - Mockernut Hickory
Diospyos virginiana - Common Persimmon
Ilex opaca - Americam Holly
Juniperus virginiana - Eastern Red Cedar
Morus alba - White Mulberry
Pyrus communis - Common Pear
Pinus strobus - Eastern White Pine
Pinus virginiana - Virginia Pine
Plantanus occidentalis - American Sycamore
Quercus alba - White Oak
Quercus rubra - Northern Red Oak
Robinia pseudoacacia - Black Locust
Ulmus americana - American Elm
AREA-B
OPEN OLD FIELD FORB & SHRUBS WITH PINE SEEDLINGS
Pinus strobus - Eastern White Pine
Plantanus occidentalis - American Sycamore
Pinus virginiana - Virginia Pine
Pyrus communis - Common Pear
Robinia pseudoacacia - Black Locust
AREA-C
DEVELOPED AREA LANDSCAPED VEGETATION
Acer rubrum - Red Maple
Cornus florida - Flowering Dogwood
Juniperus virginiana - Eastern Red Cedar
Lilex crenata - Japanese Holl
Lagerstroemia indica - Crape Myrtle
Magnolia grandiflora - Southern Magnolia
Quercus alba - White Oak
Prunus serrulata - Kwanzan Cherry
AREA-E
SEMI-DEVELOPED FENCED AREA DECDUOUS/EVERGREEN SEEDLINGS **CLF**
Carya tomentosa - Mockernut Hickory
Juniperus virginiana - Eastern Red Cedar
Pyrus communis - Common Pear
Quercus alba - White Oak

P:\projects\6045\6045X\DATA\Landscape & Trees\[Ex Vegetation Cover Types (2016.01.22).xlsx]Sheet1

EXISTING VEGETATION COVER TYPE SUMMERY TABLE — January 22, 2016

EX VEG INDEX	COVER TYPE	SUCCESSIONAL STAGE	AREA (SF)	COVER CONDITION	PRIMARY SPECIES	COMMENTS
A	UPLAND FOREST	SUB-CLIMAX	369,393	GENERALLY GOOD	SEE PLAN VEGETATION COVER TYPE	PRESERVED / REMNANT WOODED AREA FROM WHEN THE SUBJECT APPLICATION AREA WAS DEVELOPED
B	OPEN OLD FIELD WITH FORBS & VOLUNTEER SEEDLINGS	PIONEER SUCCESSION	412,154	GENERALLY GOOD	SEE PLAN VEGETATION COVER TYPE	OPEN FIELD WITH FORBE GRASSES AND SHRUBS. SOME VOLUNTEER SEEDLINGS.
C	DEVELOPED AREA	DEVELOPED LANDSCAPE	174,148	GENERALLY GOOD	SEE PLAN VEGETATION COVER TYPE	DEVELOPED AS A OFFICE BUSINESS PARK. THIS INCLUDES OFFICE BUILDING, PARKING COMPOUND & SITE LANDSCAPING.
D	OPEN FIELD FORBS & SHRUB	PIONEER SUCCESSION	205,531	GENERALLY GOOD	SEE PLAN VEGETATION COVER TYPE	DEVELOPED AND MAINTAINED AS A 100-FT DOMINION POWER UTILITY CORRIDOR
E	SEMI-DEVELOPED AREA	PIONEER SUCCESSION	3,377	GENERALLY GOOD	SEE PLAN VEGETATION COVER TYPE	SEMI-DEVELOPED AREA. SECURE AREA WITH 6-FT HT FENCE ENCLOSURE. OPEN FORBE GRASSES / SHRUBS & VOLUNTEER DECIDUOUS SEEDLINGS.
F	DEVELOPED AREA	N/A	36,138	GENERALLY GOOD	DEVELOPED ROAD WITH PERIMETER TURF GRASS	VEHICLE TRAVEL LANE RAMP FROM THE FAIRFAX COUNTY PARKWAY TO DULLES TOLL ROAD.
		TOTAL AREA	**1,200,741**			

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EXITSING VEGETATION NARRATIVE

AREA· A
AREA-A IS THIRTY-ONE (31) PERCENT OF THE APPLICATION AREA. THIS AREA IS UNDISTURBED UPLAND FOREST. PORTIONS OF THIS WOODED AREA ARE WITHIN THE 100 YEAR FLOOD PLAIN AND / OR VERIFIED OR ESTIMATED RPA. GENERALLY, THESE WOODED AREAS ARE FREE OF INVASIVE PLANT MATERIALS. THIS VEGETATION SHOWS GOOD VIGOR, VITALITY AND STRUCTURE.

AREA-B:
AREA-B IS THIRTY FOUR (34) PERCENT OF THE APPLICATION AREA. THIS AREA IS PRIMARLY OPEN FIELD AND FREE OF NOTABLE TREES. HOWEVER, THERE ARE VOLUNTEER PINE SEEDLINGS WITHIN AREA-B THAT HAVE BECOME ESTABLISHED WITHIN THIS FORB/SHRUB AREA.

AREA-C
AREA-C IS FIFTEEN (15) PERCENT OF THE APPLICATION AREA AND HAS BEEN DEVELOPED WITH AN OFFICE BUILDING, LANDSCAPED VEHICLE PARKING COMPOUND AND REMNANT PERIMETER TREE VEGETATION. THE PARKING COMPOUND LANDSCAPING IS PRIMARILY DECIDUIOUS TREES THROUGHOUT THE COMPOUND. THIS EXISTING VEGETATION HAD BEEN INSTALLED WHEN THE SITE WAS DEVELOPED. EXISTING DECIDUIOUS AND EVERGEREEN REMNANT VEGETATION IS LOCATED AT THE NORTHERN, WESTERN AND SOUTHERN SITE BOUNDARIES. BOTH THE LANDSCAPED AND REMNANT VEGETATION SHOW GOOD VIGOR, VITALITY AND STRUCTURE.

AREA·D
AREA-D IS SEVENTEEN (17) PERCENT OF THE APPLICATION AREA. AREA-D HAS BEEN SEMI· DEVELOPED AS AN ELECTRIC POWER TRANSMISSIOM CORRIDOR. TRANSMISSION TOWERS WITH OVERHEAD POWER LINES ARE LOCATED WITHIN THIS CORRIDOR. AREA-D IS FREE OF ANY SAPLING-POLE, YOUNG OR MATURE TREES. THIS AREA IS PRIMARLY FORBS, GRASSES AND SHRUBS AND VOLUNTEER PIONEER SEEDLINGS. SEEDLINGS WOULD BE REMOVED WITH THE PERIODIC MAINTENANCE.

AREA-E
AREA-E IS LESS (1) ONE PERCENT OF THE APPLICATION AREA. AREA-E IS POPULATED WITH SEEDLING CALLARY PEAR, WHITE OAK, VIRGINIA PINE AND HICKORY. THIS AREA HAS BEEN SEMI-DEVELOPED IN-THAT THERE IS AN AREA WHICH HAS BEEN FENCED-OFF WITH CHAIN LINK FENCING. THE VEGETATION SHOWS GOOD VIGOR, VITALITY AND STRUCTURE.

AREA-F
AREA-F IS THREE (3) PERCENT OF THE APPLICATION AREA. THIS AREA IS DEVELOPED AS THE VEHICLE OFF-RAMP FROM THE FAIRFAX COUNTY PARKWAY ON TO THE DULLES TOLL ROAD. THERE ARE NO EXISTING TREES WITHIN TH IS AREA.

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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON,
VIRGINIA

EXISTING VEGETATION NOTES AND NARRATIVES

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	NTS
VIKA NO.	VV6045X
SHEET NO.	C-05

FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_C-04 C-05 EVM.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:08:00 AM LAYOUT: C-05 EVM

BUILDING TABULATIONS

BUILDING	BUILDING HEIGHT (FEET)			NUMBER OF FLOORS	USE	GFA (SQUARE FEET)			DWELLING UNITS		
	MIN.	MAX.	SHOWN	SHOWN		MIN.	MAX.	SHOWN	MIN.	MAX.	SHOWN
1	160	275	275	19	OFFICE	200,000	400,000	360,000			
2	160	275	180	11	OFFICE	200,000	400,000	240,000			
3	65	105	85	8	RESIDENTIAL DAY CARE RETAIL	360,000 0 5,000	535,000 10,000 10,000	470,000 10,000 10,000	360	540	470
4	65	105	85	8	RESIDENTIAL	360,000	540,000	410,000	360	540	410
SUB-TOTALS					OFFICE		600,000	600,000			
					RESIDENTIAL		895,000	880,000			880
					DAY CARE		10,000	10,000			
					RETAIL		10,000	10,000			
TOTAL							1,515,000	1,510,000	720	900	880

TABULATIONS NOTES:

[1] MAXIMUM BUILDING HEIGHTS DO NOT INCLUDE PENTHOUSES OR ARCHITECTRURAL EMBELLISHMENTS.

[2] THE NUMBER OF FLOORS "SHOWN" IS CONCEPTUAL BASED ON THE BUILDING HEIGHT "SHOWN"AND MAY BE ADJUSTED PROVIDED THE MINIMUM AND MAXIMUM BUILDING HEIGHTS ARE MAINTAINED.

[3] RETAIL USE AS INDICATED IN THIS TABULATION MAY INCLUDE A VARIETY OF OTHER COMMERCIAL USES SUCH AS, BUT NOT LIMITED TO, EATING ESTABLISHMENTS AND FAST FOOD RESTAURANTS. OFFICE USE AS INDICATED IN THIS TABULATION MAY INCLUDE OTHER ACCESSORY USES.

[4] FOR THE PURPOSES OF THIS TABULATION, "PARKING PROVIDED" IS BASED ON THE MINIMUM PARKING REQUIRED IN THE ZONING ORDINANCE. RESIDENTIAL PARKING WAS CALCULATED BY ASSUMING AN AVERAGE MIX OF 10% STUDIO UNITS AT A RATE OF 1 SPACE PER UNIT, 60% 1 BEDROOM UNITS AT A RATE OF 1.5 SPACES PER UNIT, AND 30% 2 BEDROOM UNITS AT A RATE OF 2 SPACES PER UNIT. DAYCARE PARKING WAS CALCULATED ASSUMING 100 CHILDREN AND 20 EMPLOYEES. AT THE TIME OF FINAL ENGINEERED SITE PLAN, THE MIX OF USES, NUMBER OF DWELLING UNITS, MIX OF BEDROOM TYPES, AND SPECIFIC PARKING PROVIDED WILL BE DETERMINED. THE APPLICANT ALSO RESERVES THE RIGHT TO PROVIDE MORE THAN THE MINIMUM PARKING FOR EACH BUILDING PROVIDED IT DOES NOT RESULT IN AN INCREASE IN THE HEIGHT OR MASS OF THE ABOVE-GRADE PARKING STRUCTURES OVER WHAT IS SHOWN ON THE DEVELOPMENT PLAN. SHARED PRIVATE PARKING MAY BE PROVIDED AS PERMITTED IN ARTICLE 10 OF THE ZONING ORDINANCE. THE APPLICANT RESERVES THE RIGHT TO REQUEST A PARKING REDUCTION AS MAY BE APPLICABLE AT A FUTURE DATE.

[5] LOADING SPACES WILL BE PROVIDED IN ACCORDANCE WITH 78-500.4. APPLICANT RESERVES THE RIGHT TO REQUEST WAIVERS/MODIFICATIONS OF LOADING SPACE REQUIREMENTS.

OVERALL AREA TABULATIONS

PARCEL AREA

PARCEL		AREA SF	OR	AREA ACRES
5A	=	200,580 SF	OR	4.60468 ACRES
H	=	109,771 SF	OR	2.52000 ACRES
O	=	890,390 SF	OR	20.44054 ACRES
SITE AREA	=	**1,200,741 SF**	**OR**	**27.56522 ACRES**
AREA OF DENSITY CREDITS	=	11,556 SF	OR	0.26529 ACRES
TOTAL AREA FOR FAR CALCULATON		**1,212,297 SF**	**OR**	**27.83051 ACRES**

OVERALL TABULATION

USE	MAXIMUM GFA	FAR
OFFICE	up to 600,000	
RESIDENTIAL	up to 895,000	
DAY CARE	up to 10,000	
RETAIL	up to 10,000	
MAXIMUM TOTAL	**1,515,000**	**1.25**

PRIMARY USE	REQUIRED PARKING	Maximum Development		Development "Shown"	
	MINIMUM RATE	GFA/Units	Parking Provided	GFA/Units	Parking Provided
OFFICE	3.3 spaces per 1000 SF OF GFA	600,000 SF	1,980	600,000 SF	1,980
RESIDENTIAL	1 space/unit for studios 1.5 spaces/unit for 1 bedroom units 2.0 spaces/unit for 2+ bedroom units	895,000 SF 900 Units	1,440	880,000 SF 880 Units	1,408
DAY CARE	1 space per employee and 1 space/5 children,	10,000 SF	40	10,000 SF	40
RETAIL	4 spaces per 1000 SF of GFA	10,000 SF	40	10,000 SF	40
	TOTAL		3,500 [4]		3,468 [4]

PROPOSED DEVELOPMENT SUMMARY

A.) SITE AREA:
- 1,200,741 GROSS LAND AREA 0R 27.56522 ACRES

B.) EXISTING GROSS SQUARE FOOTAGE:
- 80,088 OFFICE

C.) PROPOSED MAXIMUM GROSS SQUARE FOOTAGE:
- 1,500,000 GSF

D.) REQUIRED USE MIX LANDMARK BUSINESS ALTERNATE OPTION:
- GROSS FLOOR AREA OF MULTI-FAMILY USES SHALL COMPRISE NO MORE THAN 60 PERCENT OF THE GROSS FLOOR AREA OF THE LARGER MIXED USE PROJECT OVERALL (EXCLUDING PARKING STRUCTURES).

E.) PROPOSED USE MIX:
- 60% RESIDENTIAL / DAYCARE / RETAIL
- 40% OFFICE

F.) REQUIRED YARDS LANDMARK BUSINESS ALTERNATE OPTION:
- **HERNDON PARKWAY:**
  PER URBAN DESIGN AND ARCHITECTURAL GUIDELINES FOR THE HERNDON TRANSIT-ORIENTED CORE.
- **OTHER STREETS:**
  PER HERNDON GUIDELINES FOR THE PLANNING AND DESIGN OF TOWN STREETSCAPES.

G.) PROPOSED YARDS:

FRONT: STREETSCAPE PER URBAN DESIGN AND ARCHITECTURAL GUIDELINES. BUILDINGS SHALL NOT BE LOCATED FURTHER THAN 15 FEET FROM THE ADJACENT EDGE OF THE PUBLIC STREETSCAPE.

SIDE: STREETSCAPE PER HERNDON GUIDELINES. BUILDINGS SHALL NOT BE LOCATED FURTHER THAN 15 FEET FROM THE ADJACENT EDGE OF THE PUBLIC STREETSCAPE.

REAR: STREETSCAPE PER HERNDON GUIDELINES. BUILDINGS SHALL NOT BE LOCATED FURTHER THAN 15 FEET FROM THE ADJACENT EDGE OF THE PUBLIC STREETSCAPE.

H.) SETBACK OR YARD ABUTTING THE DULLES TOLL ROAD:
- FOR LAND ABUTTING THE FUTURE LOCATION OF THE SUGARLAND RUN TRAIL, NO STRUCTURE SHALL BE WITHIN 40 FEET OF THE DULLES TOLL ROAD RIGHT-OF-WAY. PROPERTIES ABUTTING THE DULLES TOLL ROAD RIGHT-OF-WAY AND THE FUTURE SUGARLAND RUN TRAIL SHALL INCORPORATE PROVISIONS FOUND IN THE TOWN COMPREHENSIVE PLAN AND THE URBAN DESIGN AND ARCHITECTURAL GUIDELINES FOR THE HERNDON TRANSIT-ORIENTED CORE FOR THE SUGARLAND RUN TRAIL. WHERE THE SUGARLAND RUN TRAIL DOES NOT ABUT THE DULLES TOLL ROAD RIGHT-OF-WAY, NO STRUCTURE SHALL BE WITHIN 20 FEET OF THE DULLES TOLL ROAD RIGHT-OF-WAY.

PROPOSED SETBACK:
- CLOSEST STRUCTURE LOCATED 13 FEET TO 20 +/- FEET FROM DULLES TOLL ROAD (VARIANCE PREVIOUSLY APPROVED - SEE BZA#01-05)

I.) MAXIMUM HEIGHT LANDMARK BUSINESS ALTERNATE OPTION:
- UP TO 160 FEET OR
- UP TO 275 FEET IF WITHIN 500' OF THE DULLES TOLL ROAD

PROPOSED MAXIMUM HEIGHT
- 105 FEET OR
- 275 FEET IF WITHIN 500' OF THE DULLES TOLL ROAD

J.) MAXIMUM FAR /LANDMARK BUSINESS ALTERNATE OPTION:
- 1.25 FAR

PROPOSED MAXIMUM FAR
- 1.24 FAR

K.) MINIMUM OPEN SPACE LANDMARK BUSINESS ALTERNATE OPTION:
- 50%

PROPOSED OPEN SPACE
- 50%

L.) BUILDING TOWER SEPARATION LANDMARK BUSINESS ALTERNATE OVERLAY ZONE:
- A MINIMUM HORIZONTAL SEPARATION OF 65 FEET BETWEEN RESIDENTIAL BUILDING TOWERS ABOVE 80 FEET.
- A MINIMUM HORIZONTAL SEPARATION OF 50 FEET BETWEEN NONRESIDENTIAL BUILDING TOWERS ABOVE 80 FEET.

PROPOSED BUILDING TOWER SEPARATION:
- APPLICANT REQUESTS A MODIFICATION OF THE 65 FOOT HORIZONTAL SEPARATION REQUIREMENT FOR BUILDING 3 TO REDUCE THE SEPARATION TO THAT SHOWN.
- FINAL BUILDING PLACEMENT AND RELATIONSHIPS SHALL BE DETERMINED AT FINAL SITE PLAN AND SHALL BE IN CONFORMANCE WITH THE LANDMARK BUSINESS, ALTERNATE GUIDELINES AS PRESCRIBED PER SECTION 78-40.6 (C) OR AS DETERMINED BY INTERPRETATION AND/OR WAIVERS AS MAY BE GRANTED BY THE ZONING ADMINISTRATOR.

M.) PARKING SPACE LOCATION LANDMARK BUSINESS ALTERNATE OVERLAY ZONE:
- AT LEAST 50 PERCENT OF THE PARKING SPACES FOR THE STRUCTURE OR BUILDING ARE LOCATED INSIDE A STRUCTURE OR BUILDING.

PARKING SPACE LOCATION:
- 90% OF PARKING SPACES ARE LOCATED IN STRUCTURES.

NOTES

1. THE PROPERTY THAT IS THE SUBJECT OF THIS SPECIAL EXCEPTION CONSISTS OF THE PARCELS IDENTIFIED ON THE FAIRFAX COUNTY TAX ASSESSMENT MAP AS 16-4-((10)) PARCEL 5A, 16-4-((25)) PARCEL H AND 16-4-((25)) PARCEL O. THE PROPERTY IS CURRENTLY ZONED O&LI AND IS OWNED BY (FAIRBROOK BUSINESS PARK ASSOCIATES, L.P. AND FAIRBROOK BUSINESS PARK ASSOCIATES II, L.P.). THE PURPOSE OF THIS SPECIAL EXCEPTION IS TO PERMIT A MIXED USE DEVELOPMENT UNDER THE LANDMARK BUSINESS ALTERNATIVE OPTION PURSUANT TO SECTION 78-40.6(C) OF THE ZONING ORDINANCE, AND TO PERMIT A DAYCARE CENTER PURSUANT TO SECTION 78-71.2(d)(2), AND ALSO TO PERMIT AN EATING ESTABLISHMENT PURSUANT TO SECTION 78-71.6(d).
2. THE HORIZONTAL DATUM IS VIRGINIA STATE GRID NORTH. (SEE NOT 2 ON SHEET C-03).
3. TOPOGRAPHIC INFORMATION TAKEN FROM FIELD SURVEY, PREPARED BY VIKA VIRGINIA, LLC.
4. PUBLIC WATER AND SANITARY SEWER ARE AVAILABLE AND WILL BE EXTENDED TO SERVE THE DEVELOPMENT.
5. BOUNDARY IS PER FIELD SURVEY SURVEY PREPARED BY VIKA VIRGINIA, LLC. DATED DEC. 4, 2015.
6. ALL SWM/BMP FACILITIES SHOWN ON THIS APPLICATION ARE PRELIMINARY. THESE FACILITIES SHALL BE PROPOSED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS IN PLACE AT THE TIME OF SITE PLAN. ALL STORMWATER QUALITY AND QUANTITY REQUIREMENTS FOR THIS PROJECT (INCLUDING REQUIREMENTS GENERATED BY OFFSITE DISTURBED AREAS AND FRONTAGE IMPROVEMENT AREAS) SHALL BE PROVIDED ON-SITE AND SHALL BE PRIVATELY MAINTAINED. ALL STORMWATER QUANTITY AND QUALITY REQUIREMENTS SHALL BE MET FOR EACH PHASE OF THE PROJECT INDEPENDENTLY.
7. TO THE BEST OF OUR KNOWLEDGE, NO GRAVE SITES OR STRUCTURES MARKING A BURIAL SITE ARE PRESENT ON THE SUBJECT PROPERTY.
8. TO THE BEST OF OUR KNOWLEDGE, NO HAZARDOUS OR TOXIC SUBSTANCES ARE KNOWN TO EXIST ON THE SUBJECT PROPERTY.
9. LIMITS OF CLEARING AND GRADING SHOWN ON THE SPECIAL EXCEPTION PLAN ARE SUBJECT TO MODIFICATION WITH FINAL ENGINEERING. THE DEVELOPMENT OF THE SITE WILL BE IN SUBSTANTIAL CONFORMANCE WITH THESE LIMITS. FINAL LIMITS OF CLEARING AND GRADING WILL TAKE INTO CONSIDERATION FINAL SITE ENGINEERING AND SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE TOWN FORESTER AT TIME OF FINAL SITE REVIEW.
10. THE MAXIMUM HEIGHT OF THE BUILDINGS ARE TO THE ROOF NOT INCLUDING 20' PENTHOUSE OR SCREEN WALL.
11. DEVELOPMENT WILL COMMENCE UPON COMPLETION OF REQUIRED TOWN OF HERNDON PLAN PROCESSING AND APPROVALS.
12. THE DEVELOPMENT CONFORMS TO THE PROVISIONS OF ALL APPLICABLE TOWN STANDARDS, EXCEPT AS NOTED HEREON.
13. LANDSCAPED OPEN SPACE AREAS SHOWN HEREON MAY BE MODIFIED AT THE TIME OF FINAL ENGINEERING AND ARCHITECTURE, AS LONG AS THE AMOUNT OF LANDSCAPED OPEN SPACE AND THE NUMBER OF PLANTS DOES NOT DIMINISH.
14. BUILDING FOOTPRINTS MAY BE INCREASED OR DECREASED AND THE NUMBER OF PARKING SPACES MAY BE MODIFIED, PROVIDED THE MINIMUM OPEN SPACE AND MINIMUM DIMENSIONS TO THE PERIPHERAL LOT LINES ARE MAINTAINED, AND THE DESIGN IS IN SUBSTANTIAL CONFORMANCE WITH THAT SHOWN HEREON.
15. ADDITIONAL SITE FEATURES SUCH AS PLAZA DEVELOPMENT, GAZEBOS, CORNICES, TRELLISES, ENTRANCE SIGNS, LIGHTS AND/OR WALLS NOT REPRESENTED HEREON MAY BE PROVIDED.
16. IMPROVEMENTS TO THE PUBLIC RIGHT(S) OF WAY ON OR THROUGH ADJACENT PROPERTIES ARE SUBJECT TO CONDITIONS, DEVELOPMENT CONDITIONS AND AGREEMENTS/PERMITS AS MAY BE REQUIRED IN CONJUNCTION WITH SEPARATE PUBLIC IMPROVEMENT PLANS FOR THE FAIRBROOK DRIVE EXTENSION TO SPRING STREET.
17. THE PROPOSED DEVELOPMENT ON THE SUBJECT PROPERTY WILL NOT POSE ANY ADVERSE EFFECT ON ADJACENT OR NEIGHBORING PROPERTIES.
18. PARKING WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE X, SECTION 78-100 OF THE ZONING ORDINANCE FOR THE TOWN OF HERNDON. THE NUMBER OF PARKING SPACES PROVIDED MAY BE ADJUSTED BASED ON THE ACTUAL AMOUNT OF GFA CONSTRUCTED. APPLICANT RESERVES THE RIGHT TO SUBMIT A REQUEST FOR A PARKING REDUCTION AT THE TIME OF SITE PLAN SUBMISSION.
19. THE APPLICANT RESERVES THE RIGHT TO PROVIDE MORE THAN THE MINIMUM REQUIRED PARKING AS SPECIFIED BY THE ZONING ORDINANCE. ON SITE PARKING MAY BE LOCATED IN AN ABOVE GRADE PARKING STRUCTURE, AS SURFACE PARKING OR WITHIN A BELOW GROUND PARKING GARAGE, SO LONG AS THE DESIGN AND LOCATION IS IN SUBSTANTIAL CONFORMANCE WITH SUCH PARKING FACILITIES AS SHOWN ON THIS PLAN.
20. RPA DELINEATION AND WETLAND INFORMATION FROM REPORT ENTITLED "FAIRBROOK BUSINESS PARK AND OFF-SITE STUDY AREA - WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION AND RESOURCE PROTECTION AREA EVALUATION" PREPARED BY WETLANDS STUDIES AND SOLUTIONS INC. DATED MAY 31, 2016. A JURISDICTIONAL DETERMINATION WAS ISSUED BY THE CORPS OF ENGINEERS ON SEPT. 21, 2016 (#NAO-2016-01643). THIS PLAN DEPICTS RPA IMPACTS; RPA EXCEPTION WITH SUPPORTING WQIA WILL BE SUBMITTED BY SEPARATELY.
21. THE DEVELOPER HEREBY DECLARES DEVELOPMENT OF THIS SITE AS A UNIFIED COMMERCIAL SUBDIVISION PER ARTICLE IV-SECTION 78-40.5(D).
22. THE PROPERTIES SHOWN HEREON ARE CURRENTLY IN THE NAME OF FAIRBROOK BUSINESS PARK ASSOCIATES, LP AND FAIRBROOK BUSINESS PARK ASSOCIATES II , LP AS RECORDED IN THE LAND RECORDS OF FAIRFAX COUNTY IN DEED BOOK 5993 AT PAGE 372 AND IN DEED BOOK 20742, PAGE 1375. (SEE NOTE #5 ON SHEET C-02).
23. ALL STREET TREES SHALL BE LIMBED UP TO AVOID SIGHT DISTANCE CONFLICTS.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

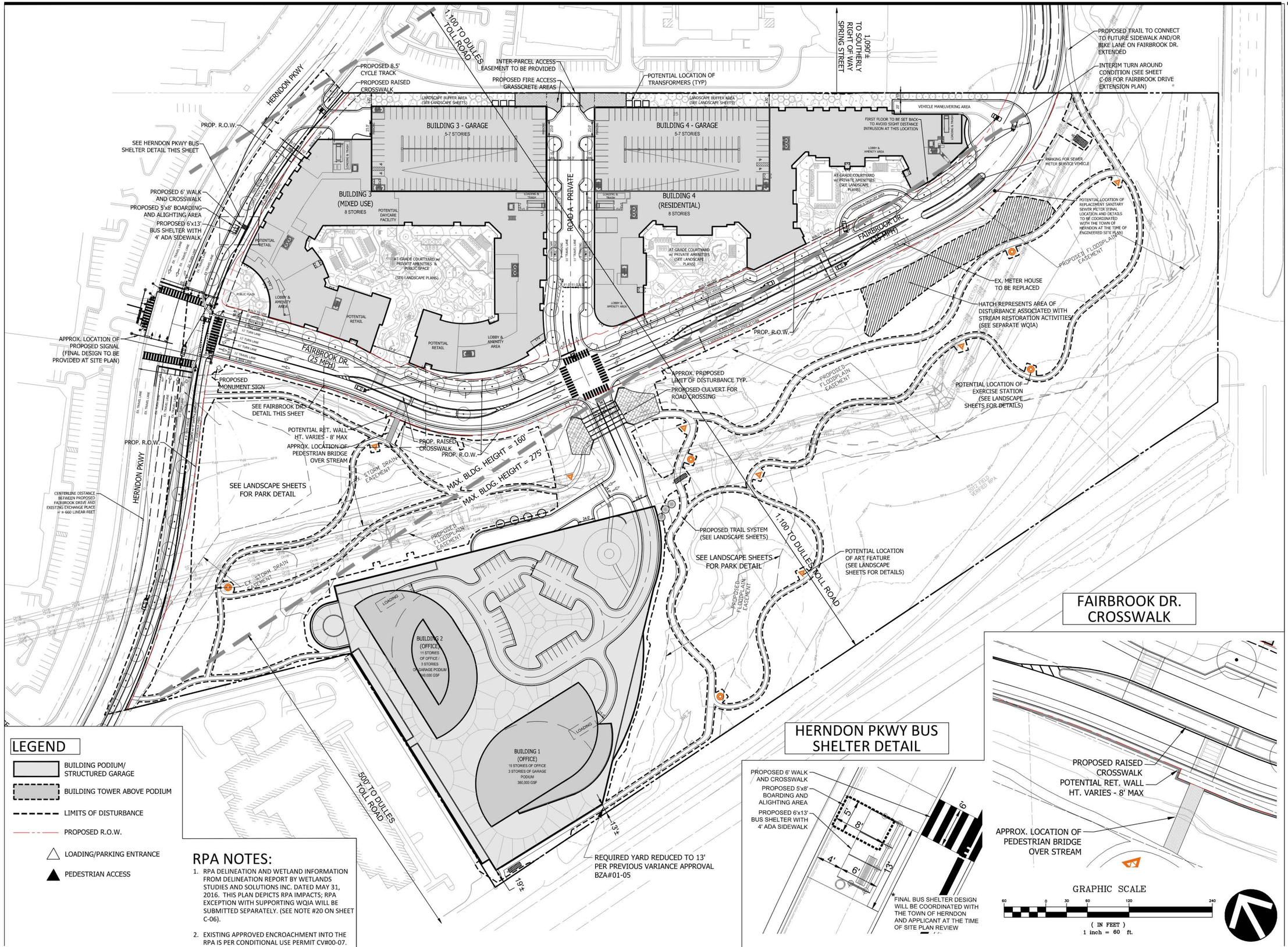
TOWN OF HERNDON,
VIRGINIA

DEVELOPMENT NOTES AND TABULATIONS

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	NTS
VIKA NO.	VV6045X
SHEET NO.	C-06

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-06 NOTES.dwg USER: Richardson DATE: October 16, 2020 TIME: 10:59:16 AM LAYOUT: C-06 NOTES

LAYOUT: C-06 NOTES, Plotted By: Richardson



LEGEND

- BUILDING PODIUM/ STRUCTURED GARAGE
- BUILDING TOWER ABOVE PODIUM
- LIMITS OF DISTURBANCE
- PROPOSED R.O.W.
- LOADING/PARKING ENTRANCE
- PEDESTRIAN ACCESS

RPA NOTES:

1. RPA DELINEATION AND WETLAND INFORMATION FROM DELINEATION REPORT BY WETLANDS STUDIES AND SOLUTIONS INC. DATED MAY 31, 2016. THIS PLAN DEPICTS RPA IMPACTS; RPA EXCEPTION WITH SUPPORTING WQIA WILL BE SUBMITTED SEPARATELY. (SEE NOTE #20 ON SHEET C-06).
2. EXISTING APPROVED ENCROACHMENT INTO THE RPA IS PER CONDITIONAL USE PERMIT CV#00-07.

HERNDON PKWY BUS SHELTER DETAIL

FAIRBROOK DR. CROSSWALK

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

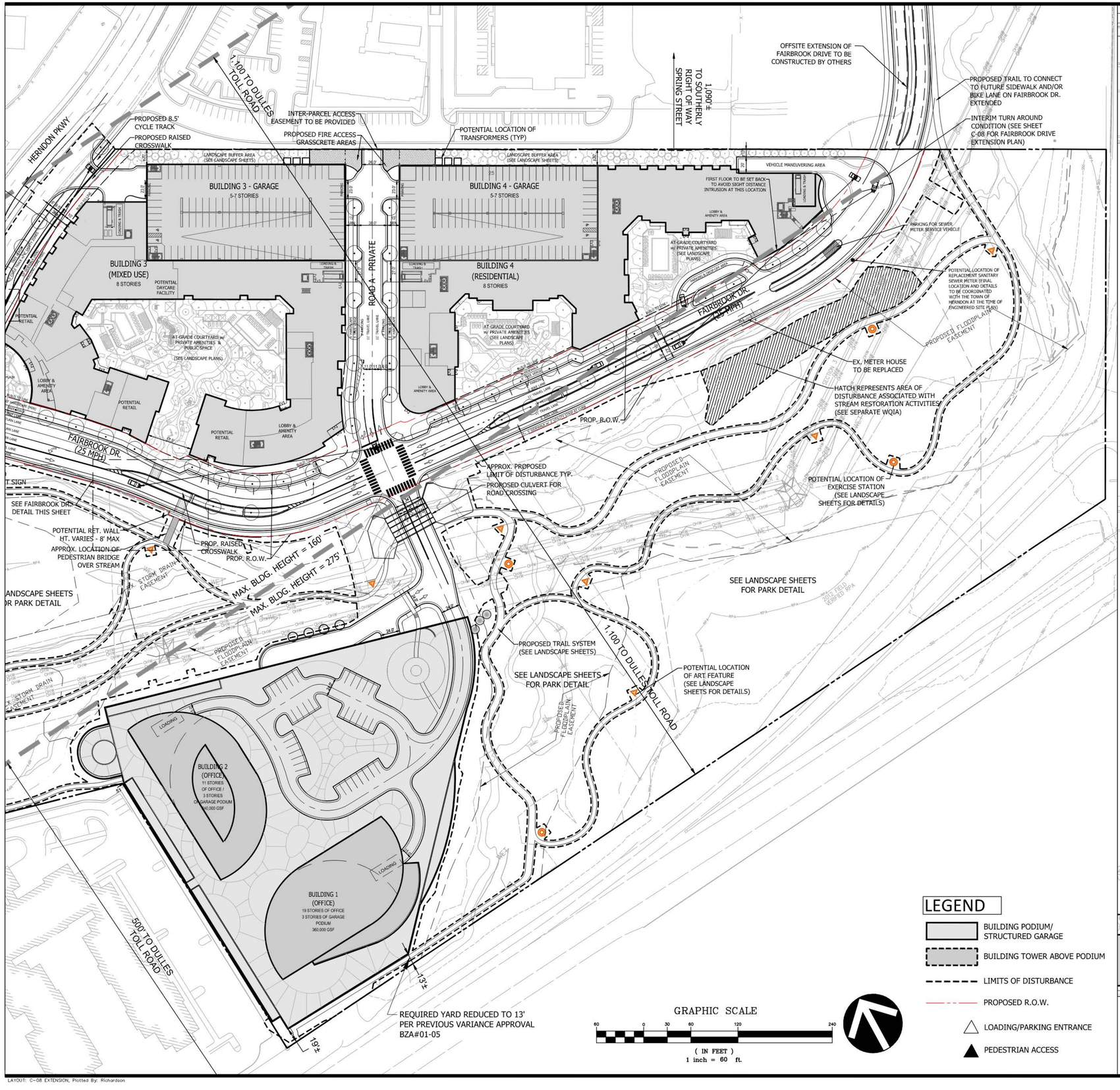
SPECIAL EXCEPTION PLAN

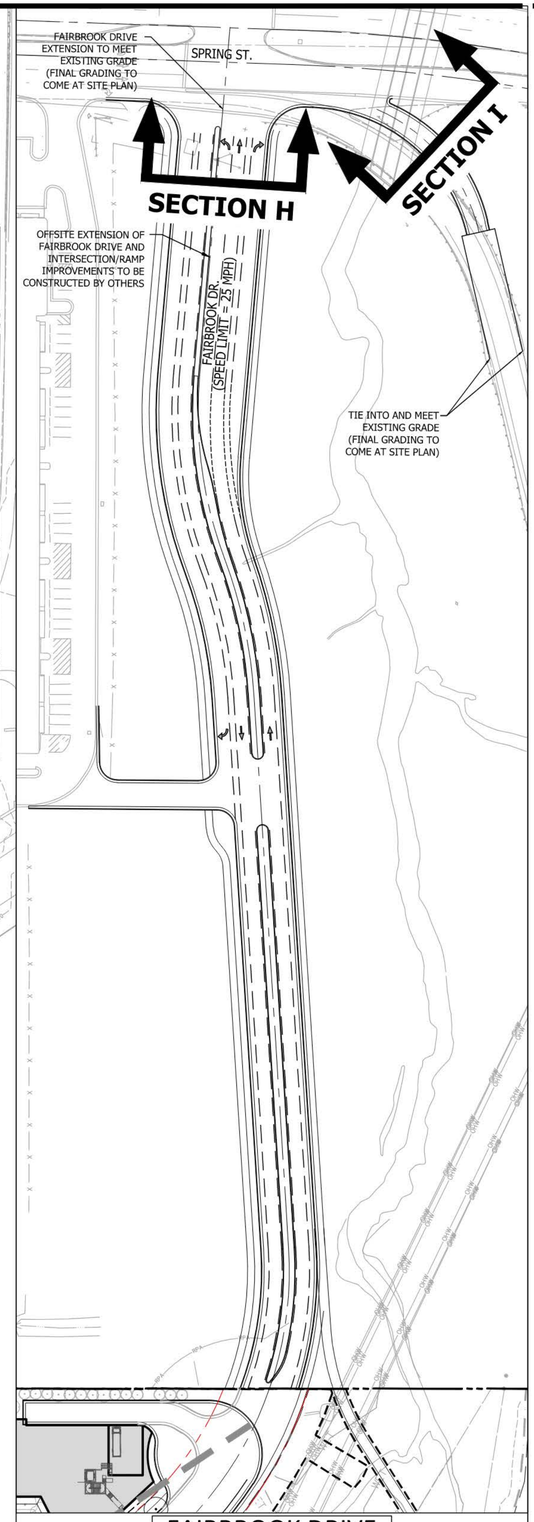
TOWN OF HERNDON, VIRGINIA

GENERAL DEVELOPMENT PLAN

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-07

LAYOUT: C-07 GDP, Plotted By: Richardson
FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_C-07 C-08 OVERALL GDP.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:18:49 AM LAYOUT: C-07 GDP





FAIRBROOK DRIVE EXTENSION DETAIL (SEE SHEET C-09 FOR SECTIONS)

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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

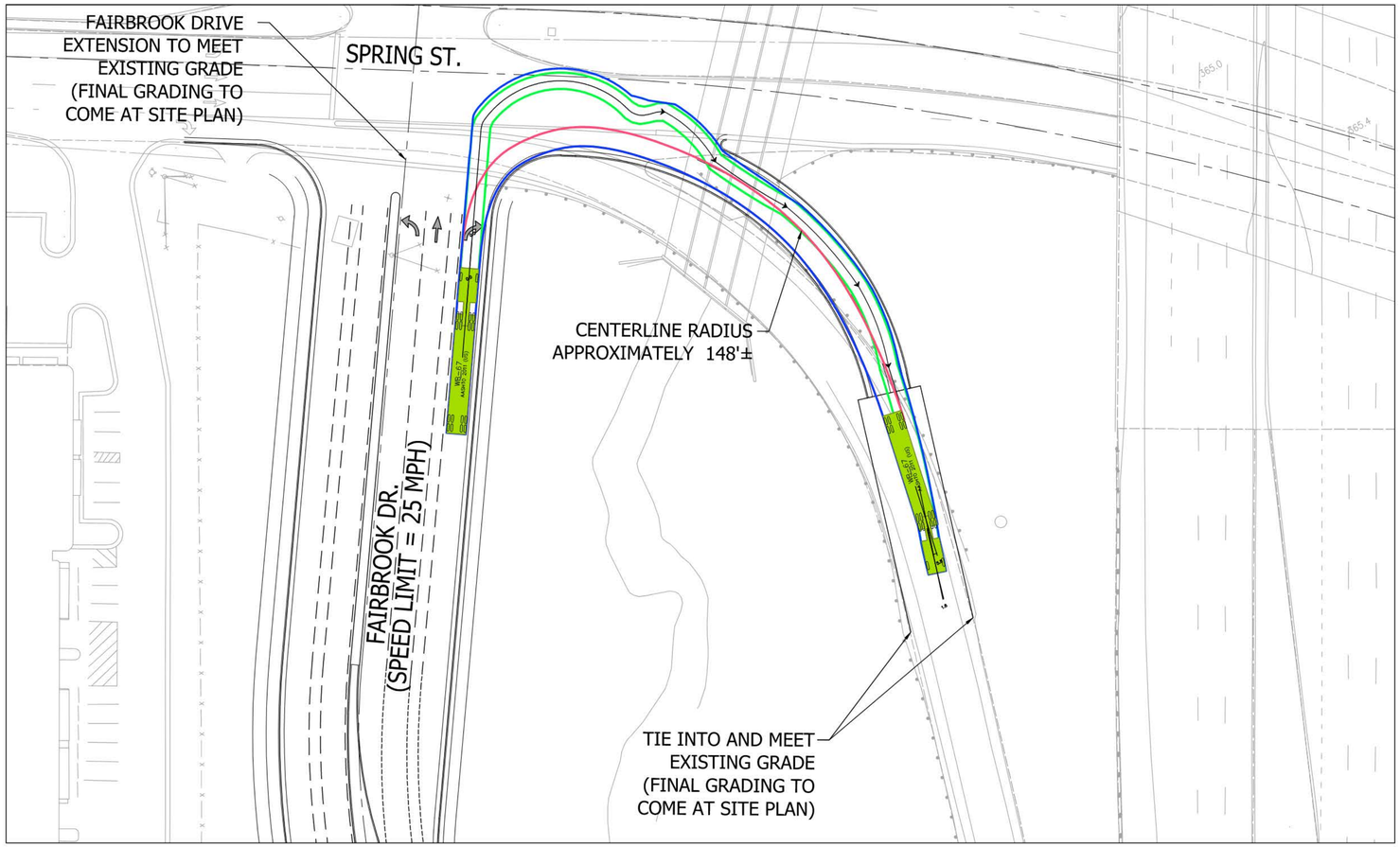
TOWN OF HERNDON, VIRGINIA

GENERAL DEVELOPMENT PLAN - FAIRBROOK DRIVE EXTENSION

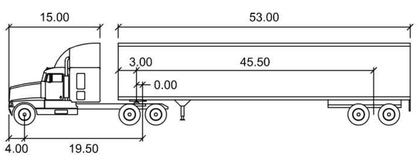
DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-08

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-07 C-08 OVERALL GDP.dwg LISER: Richardson DATE: October 16, 2020 TIME: 8:19:46 AM LAYOUT: C-08 EXTENSION

LAYOUT: C-08 EXTENSION, Plotted By: Richardson



WB-67 AUTOTURN
SCALE: 1" =30'



WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

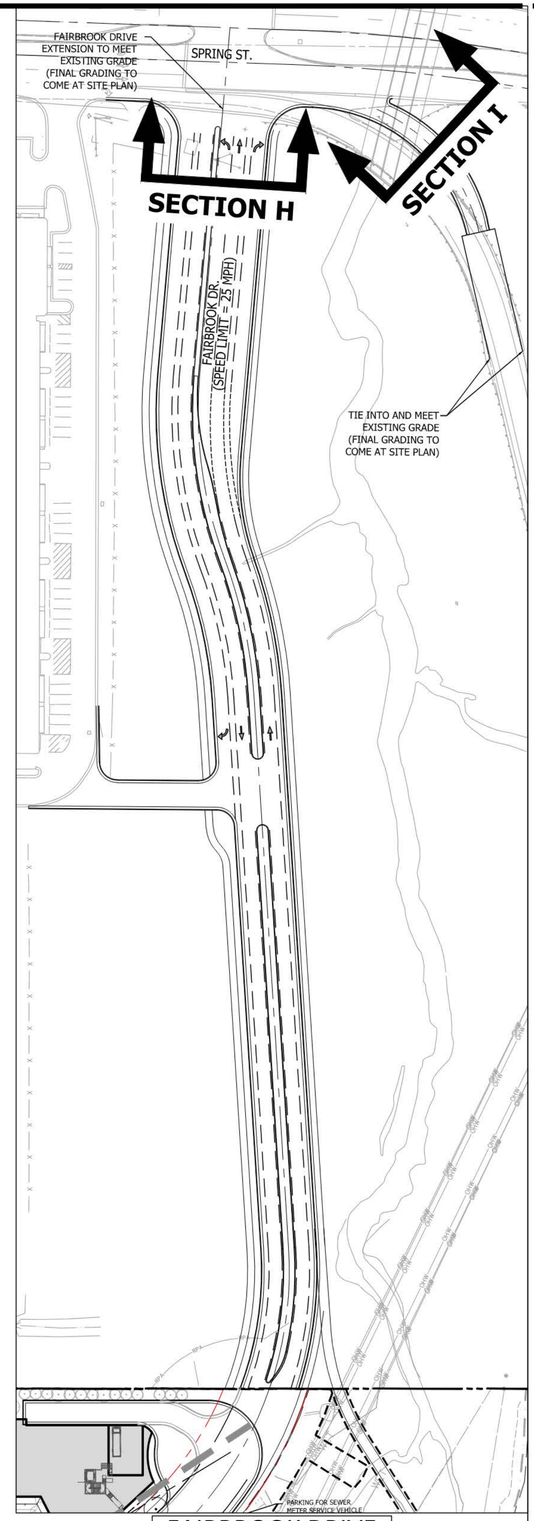
LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.



FAIRBROOK DRIVE EXTENSION DETAIL (SEE SHEET C-09 FOR SECTIONS)

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5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

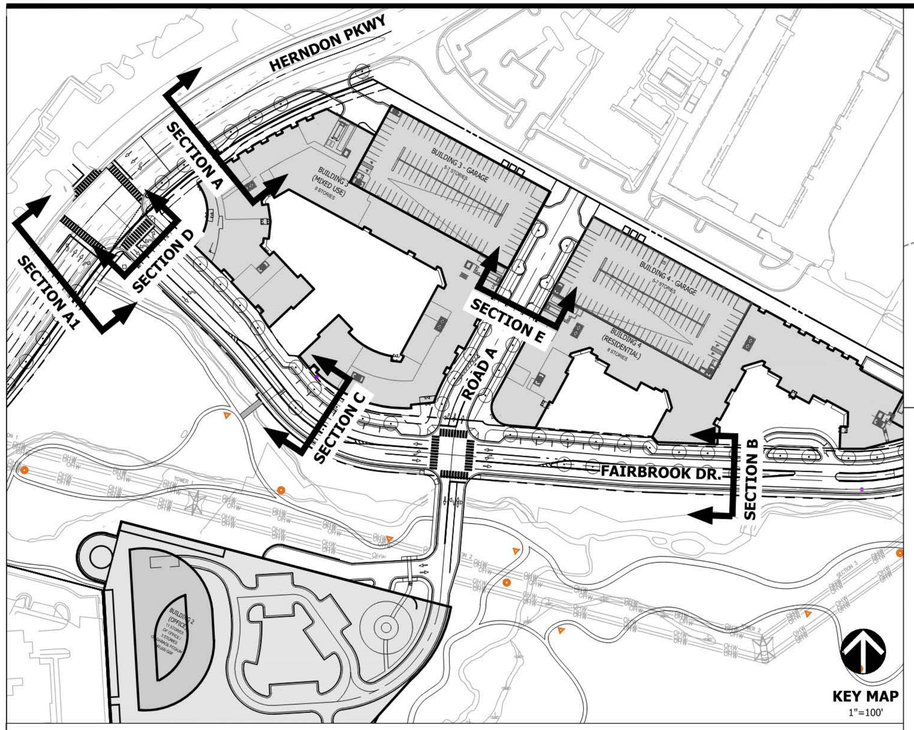
TOWN OF HERNDON,
VIRGINIA

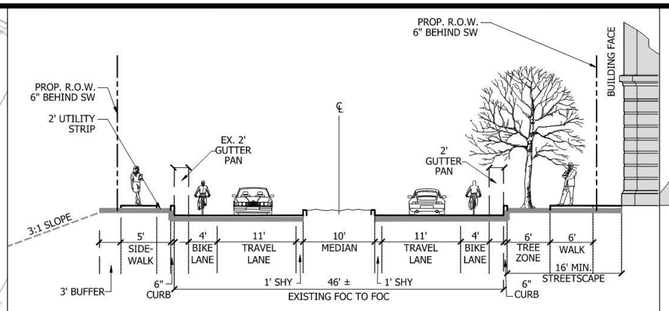
FAIRBROOK DRIVE EXTENSTION - AUTOTURN EXHIBIT

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	AS NOTED
VIKA NO.	VV6045X
SHEET NO.	C-08A

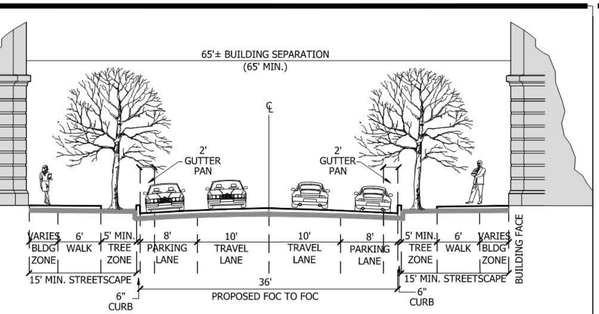
FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_C-07 C-08 OVERALL GDP.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:20:29 AM LAYOUT: C-08A EXTENSION

LAYOUT: C-08A EXTENSION, Plotted By: Richardson

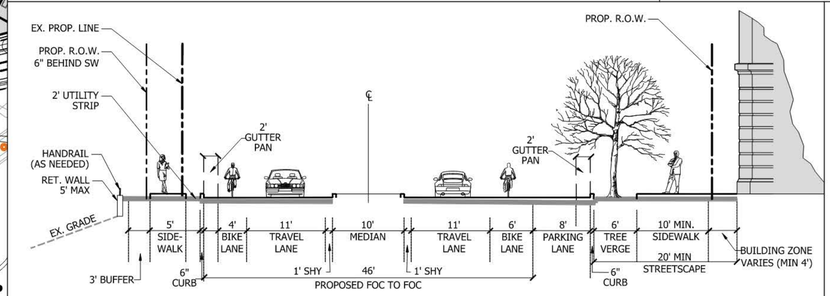




PROPOSED SECTION B
FAIRBROOK DRIVE
FACING WEST
PUBLIC LOCAL STREET
1" = 10'



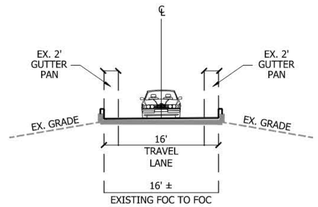
PROPOSED SECTION E
PRIVATE ROAD A
FACING NORTH
PRIVATE STREET
1" = 10'



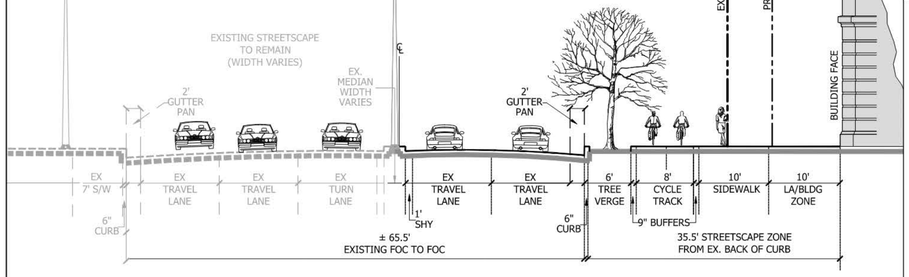
PROPOSED SECTION C
FAIRBROOK DRIVE
FACING WEST
PUBLIC LOCAL STREET
1" = 10'

NOTES:

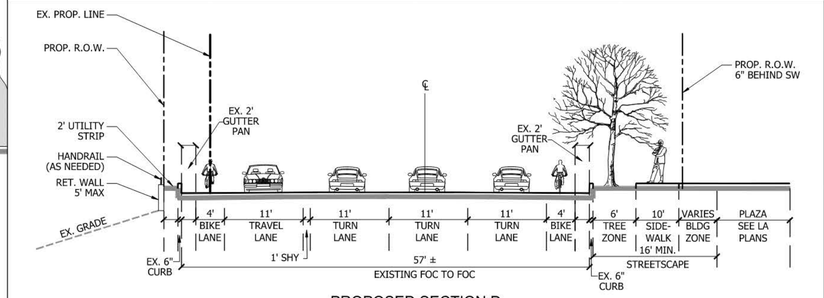
1. TIE CURBS TO EXISTING RAMP CURBS IN-LINE AND ON-GRADE.
2. WIDTH OF PROPOSED ASPHALT TO MATCH EXISTING.



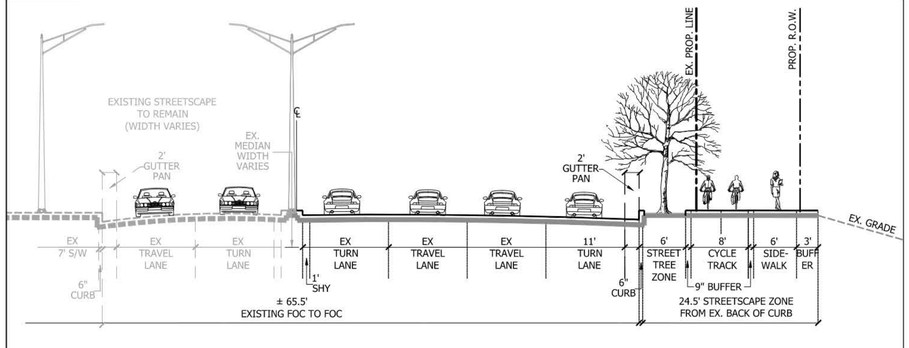
PROPOSED SECTION I
RAMP TO FAIRFAX COUNTY PARKWAY
1" = 10'



PROPOSED SECTION A
PS-2 HERNDON PARKWAY(NORTH OF FAIRBROOK)
FACING NORTHEAST
PUBLIC COLLECTOR STREET
1" = 10'



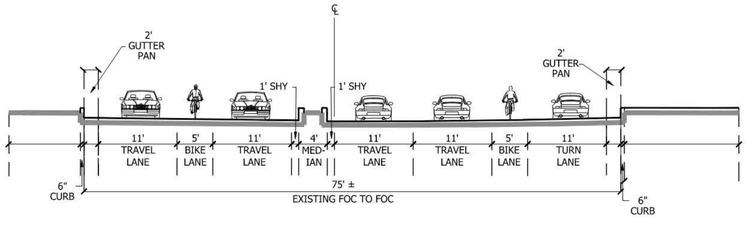
PROPOSED SECTION D
FAIRBROOK DRIVE
FACING WEST
PUBLIC LOCAL STREET
1" = 10'



PROPOSED SECTION A-1
PS-2 HERNDON PARKWAY(SOUTH OF FAIRBROOK)
FACING NORTHEAST
PUBLIC COLLECTOR STREET
1" = 10'

NOTES:

1. SEE FAIRBROOK DRIVE EXTENSION DETAIL ON SHEET C-08.
2. ROADWAY SECTION SHOWN IS PRELIMINARY - FINAL DESIGN IS SUBJECT TO TOWN OF HERNDON AND VDOT APPROVAL.



PROPOSED SECTION H
FAIRBROOK DRIVE EXTENSION
(ON TOWN / COUNTY - OWNED LAND)
PUBLIC LOCAL STREET
1" = 10'

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

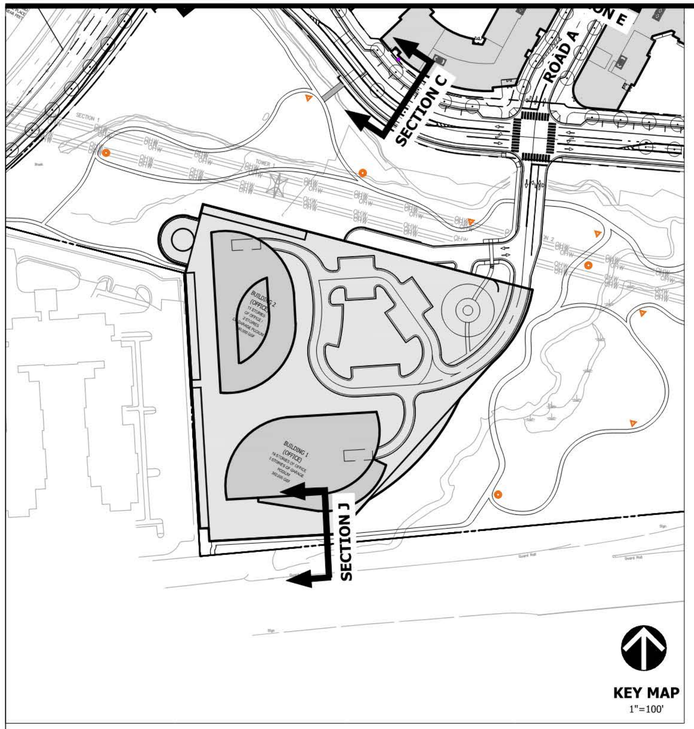
FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON, VIRGINIA

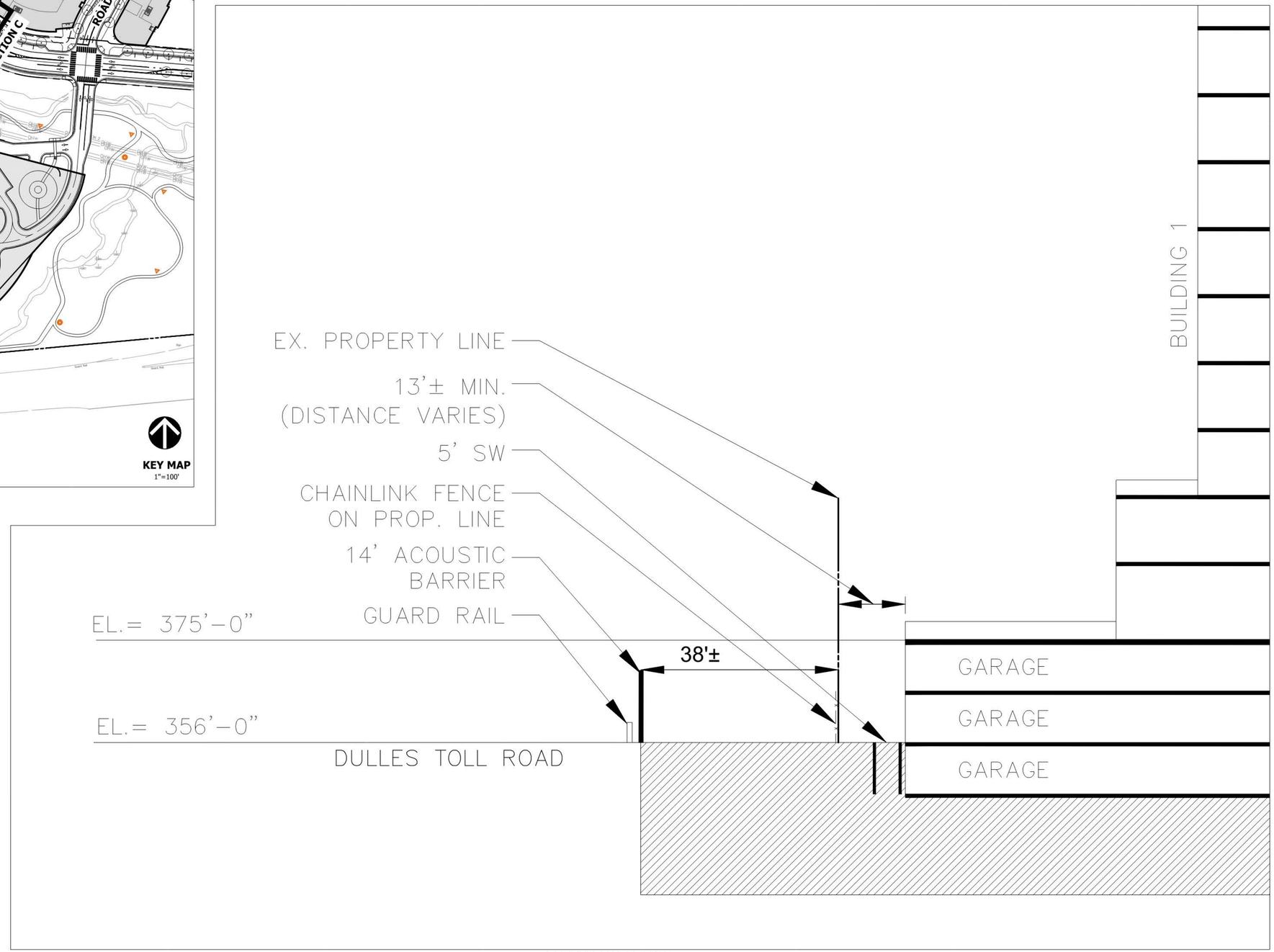
STREETSCAPE SECTIONS

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	AS SHOWN
VIKA NO.	VV6045X
SHEET NO.	C-09

FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_C-09 STREETSCAPE SECTIONS.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:23:30 AM LAYOUT: C-09 SECTIONS



KEY MAP
1"=100'



PROPOSED SECTION J
GARAGE/TRAIL
1" = 10'

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

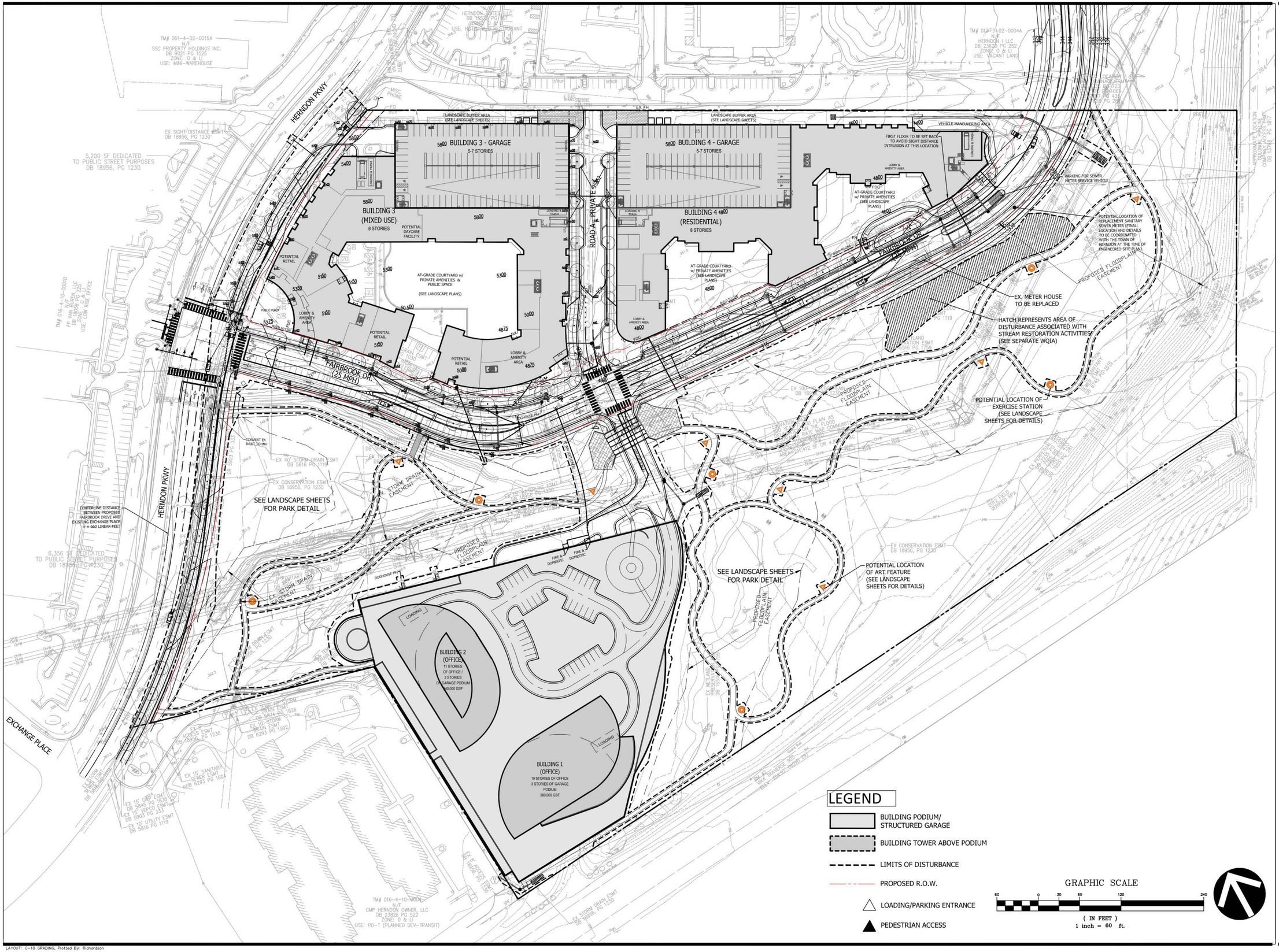
TOWN OF HERNDON,
VIRGINIA

SITE SECTION

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	AS SHOWN
VIKA NO.	VV6045X
SHEET NO.	C-09A

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-09 STREETSCAPE SECTIONS.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:24:29 AM LAYOUT: C-09A BUILDING SECT

LAYOUT: C-09A BUILDING SECT, Plotted By: Richardson



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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
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3RD SUBMISSION	06/04/20
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5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

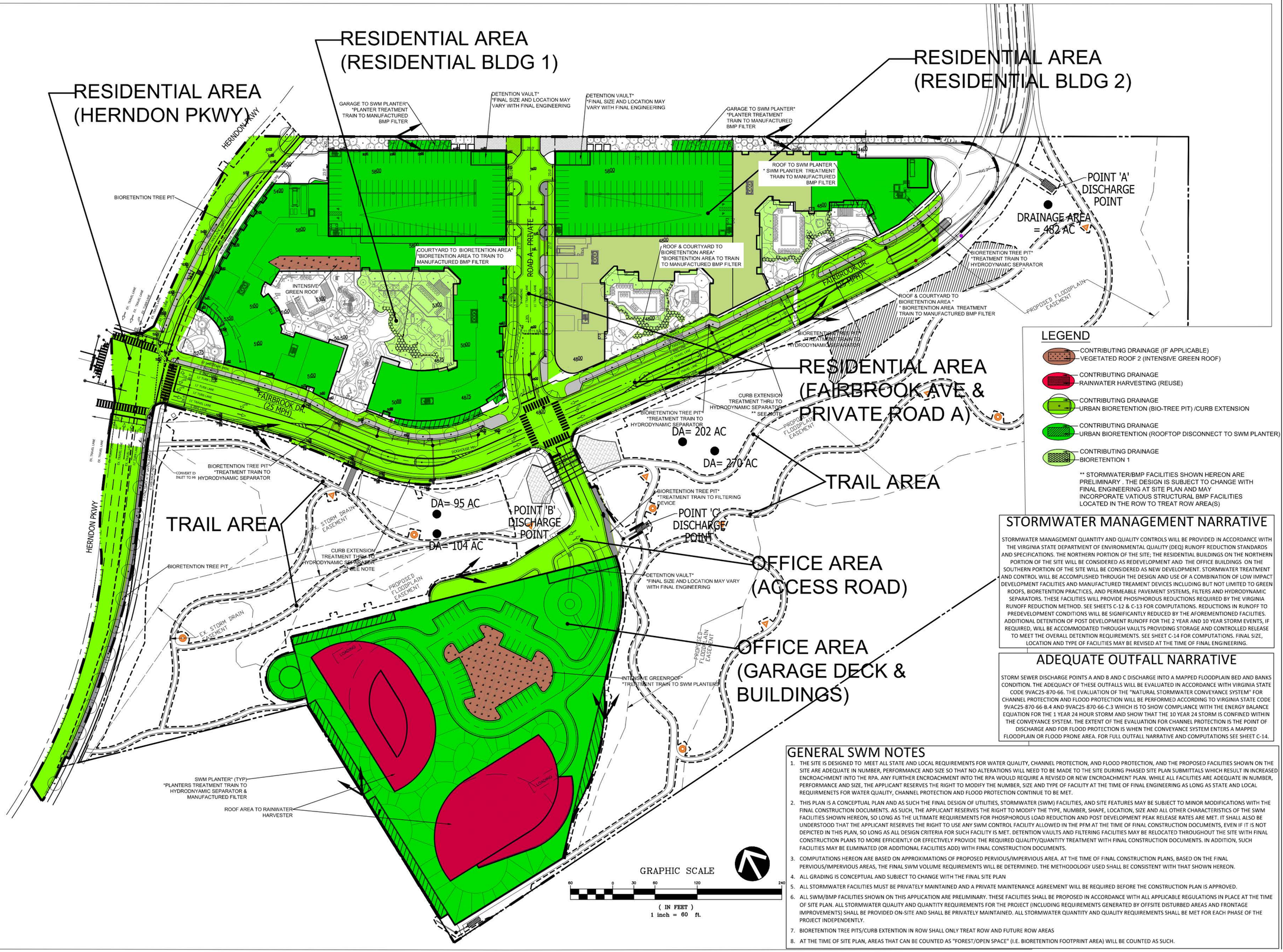
TOWN OF HERNDON, VIRGINIA

CONCEPTUAL GRADING AND UTILITY PLAN

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-10

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-10 GRADING AND UTIL.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:45:45 AM LAYOUT: C-10 GRADING

LAYOUT: C-10 GRADING, Plotted By: Richardson



LEGEND

- CONTRIBUTING DRAINAGE (IF APPLICABLE) VEGETATED ROOF 2 (INTENSIVE GREEN ROOF)
- CONTRIBUTING DRAINAGE RAINWATER HARVESTING (REUSE)
- CONTRIBUTING DRAINAGE URBAN BIORETENTION (BIO-TREE PIT) /CURB EXTENSION
- CONTRIBUTING DRAINAGE URBAN BIORETENTION (ROOFTOP DISCONNECT TO SWM PLANTER)
- CONTRIBUTING DRAINAGE BIORETENTION 1

** STORMWATER/BMP FACILITIES SHOWN HEREON ARE PRELIMINARY . THE DESIGN IS SUBJECT TO CHANGE WITH FINAL ENGINEERING AT SITE PLAN AND MAY INCORPORATE VATIOUS STRUCTURAL BMP FACILITIES LOCATED IN THE ROW TO TREAT ROW AREA(S)

STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT QUANTITY AND QUALITY CONTROLS WILL BE PROVIDED IN ACCORDANCE WITH THE VIRGINIA STATE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) RUNOFF REDUCTION STANDARDS AND SPECIFICATIONS. THE NORTHERN PORTION OF THE SITE; THE RESIDENTIAL BUILDINGS ON THE NORTHERN PORTION OF THE SITE WILL BE CONSIDERED AS REDEVELOPMENT AND THE OFFICE BUILDINGS ON THE SOUTHERN PORTION OF THE SITE WILL BE CONSIDERED AS NEW DEVELOPMENT. STORMWATER TREATMENT AND CONTROL WILL BE ACCOMPLISHED THROUGH THE DESIGN AND USE OF A COMBINATION OF LOW IMPACT DEVELOPMENT FACILITIES AND MANUFACTURED TREAMENT DEVICES INCLUDING BUT NOT LIMITED TO GREEN ROOFS, BIORETENTION PRACTICES, AND PERMEABLE PAVEMENT SYSTEMS, FILTERS AND HYDRODYNAMIC SEPARATORS. THESE FACILITIES WILL PROVIDE PHOSPHOROUS REDUCTIONS REQUIRED BY THE VIRGINIA RUNOFF REDUCTION METHOD. SEE SHEETS C-12 & C-13 FOR COMPUTATIONS. REDUCTIONS IN RUNOFF TO PREDEVELOPMENT CONDITIONS WILL BE SIGNIFICANTLY REDUCED BY THE AFOREMENTIONED FACILITIES. ADDITIONAL DETENTION OF POST DEVELOPMENT RUNOFF FOR THE 2 YEAR AND 10 YEAR STORM EVENTS, IF REQUIRED, WILL BE ACCOMMODATED THROUGH VAULTS PROVIDING STORAGE AND CONTROLLED RELEASE TO MEET THE OVERALL DETENTION REQUIREMENTS. SEE SHEET C-14 FOR COMPUTATIONS. FINAL SIZE, LOCATION AND TYPE OF FACILITIES MAY BE REVISED AT THE TIME OF FINAL ENGINEERING.

ADEQUATE OUTFALL NARRATIVE

STORM SEWER DISCHARGE POINTS A AND B AND C DISCHARGE INTO A MAPPED FLOODPLAIN BED AND BANKS CONDITION. THE ADEQUACY OF THESE OUTFALLS WILL BE EVALUATED IN ACCORDANCE WITH VIRGINIA STATE CODE 9VAC25-870-66. THE EVALUATION OF THE "NATURAL STORMWATER CONVEYANCE SYSTEM" FOR CHANNEL PROTECTION AND FLOOD PROTECTION WILL BE PERFORMED ACCORDING TO VIRGINIA STATE CODE 9VAC25-870-66-B.4 AND 9VAC25-870-66-C.3 WHICH IS TO SHOW COMPLIANCE WITH THE ENERGY BALANCE EQUATION FOR THE 1 YEAR 24 HOUR STORM AND SHOW THAT THE 10 YEAR 24 STORM IS CONFINED WITHIN THE CONVEYANCE SYSTEM. THE EXTENT OF THE EVALUATION FOR CHANNEL PROTECTION IS THE POINT OF DISCHARGE AND FOR FLOOD PROTECTION IS WHEN THE CONVEYANCE SYSTEM ENTERS A MAPPED FLOODPLAIN OR FLOOD PRONE AREA. FOR FULL OUTFALL NARRATIVE AND COMPUTATIONS SEE SHEET C-14.

GENERAL SWM NOTES

1. THE SITE IS DESIGNED TO MEET ALL STATE AND LOCAL REQUIREMENTS FOR WATER QUALITY, CHANNEL PROTECTION, AND FLOOD PROTECTION, AND THE PROPOSED FACILITIES SHOWN ON THE SITE ARE ADEQUATE IN NUMBER, PERFORMANCE AND SIZE SO THAT NO ALTERATIONS WILL NEED TO BE MADE TO THE SITE DURING PHASED SITE PLAN SUBMITTALS WHICH RESULT IN INCREASED ENCROACHMENT INTO THE RPA. ANY FURTHER ENCROACHMENT INTO THE RPA WOULD REQUIRE A REVISED OR NEW ENCROACHMENT PLAN. WHILE ALL FACILITIES ARE ADEQUATE IN NUMBER, PERFORMANCE AND SIZE, THE APPLICANT RESERVES THE RIGHT TO MODIFY THE NUMBER, SIZE AND TYPE OF FACILITY AT THE TIME OF FINAL ENGINEERING AS LONG AS STATE AND LOCAL REQUIRMENETS FOR WATER QUALITY, CHANNEL PROTECTION AND FLOOD PROTECTION CONTINUE TO BE MET.
2. THIS PLAN IS A CONCEPTUAL PLAN AND AS SUCH THE FINAL DESIGN OF UTILITIES, STORMWATER (SWM) FACILITIES, AND SITE FEATURES MAY BE SUBJECT TO MINOR MODIFICATIONS WITH THE FINAL CONSTRUCTION DOCUMENTS. AS SUCH, THE APPLICANT RESERVES THE RIGHT TO MODIFY THE TYPE, NUMBER, SHAPE, LOCATION, SIZE AND ALL OTHER CHARACTERISTICS OF THE SWM FACILITIES SHOWN HEREON, SO LONG AS THE ULTIMATE REQUIREMENTS FOR PHOSPHOROUS LOAD REDUCTION AND POST DEVELOPMENT PEAK RELEASE RATES ARE MET. IT SHALL ALSO BE UNDERSTOOD THAT THE APPLICANT RESERVES THE RIGHT TO USE ANY SWM CONTROL FACILITY ALLOWED IN THE PFM AT THE TIME OF FINAL CONSTRUCTION DOCUMENTS, EVEN IF IT IS NOT DEPICTED IN THIS PLAN, SO LONG AS ALL DESIGN CRITERIA FOR SUCH FACILITY IS MET. DETENTION VAULTS AND FILTERING FACILITIES MAY BE RELOCATED THROUGHOUT THE SITE WITH FINAL CONSTRUCTION PLANS TO MORE EFFICIENTLY OR EFFECTIVELY PROVIDE THE REQUIRED QUALITY/QUANTITY TREATMENT WITH FINAL CONSTRUCTION DOCUMENTS. IN ADDITION, SUCH FACILITIES MAY BE ELIMINATED (OR ADDITIONAL FACILITIES ADD) WITH FINAL CONSTRUCTION DOCUMENTS.
3. COMPUTATIONS HEREON ARE BASED ON APPROXIMATIONS OF PROPOSED PERVIOUS/IMPERVIOUS AREA. AT THE TIME OF FINAL CONSTRUCTION PLANS, BASED ON THE FINAL PERVIOUS/IMPERVIOUS AREAS, THE FINAL SWM VOLUME REQUIREMENTS WILL BE DETERMINED. THE METHODOLOGY USED SHALL BE CONSISTENT WITH THAT SHOWN HEREON.
4. ALL GRADING IS CONCEPTUAL AND SUBJECT TO CHANGE WITH THE FINAL SITE PLAN
5. ALL STORMWATER FACILITIES MUST BE PRIVATELY MAINTAINED AND A PRIVATE MAINTENANCE AGREEMENT WILL BE REQUIRED BEFORE THE CONSTRUCTION PLAN IS APPROVED.
6. ALL SWM/BMP FACILITIES SHOWN ON THIS APPLICATION ARE PRELIMINARY. THESE FACILITIES SHALL BE PROPOSED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS IN PLACE AT THE TIME OF SITE PLAN. ALL STORMWATER QUALITY AND QUANTITY REQUIREMENTS FOR THE PROJECT (INCLUDING REQUIREMENTS GENERATED BY OFFSITE DISTURBED AREAS AND FRONTAGE IMPROVEMENTS) SHALL BE PROVIDED ON-SITE AND SHALL BE PRIVATELY MAINTAINED. ALL STORMWATER QUANTITY AND QUALITY REQUIREMENTS SHALL BE MET FOR EACH PHASE OF THE PROJECT INDEPENDENTLY.
7. BIORETENTION TREE PITS/CURB EXTENTION IN ROW SHALL ONLY TREAT ROW AND FUTURE ROW AREAS
8. AT THE TIME OF SITE PLAN, AREAS THAT CAN BE COUNTED AS "FOREST/OPEN SPACE" (I.E. BIORETENTION FOOTPRINT AREA) WILL BE COUNTED AS SUCH.

VIKA VIRGINIA, LLC
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COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

STORMWATER MANAGEMENT MAP

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-11

FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_C-11 SWM MAP- NARRATIVE.dwg USER: Mekonnen DATE: October 16, 2020 TIME: 10:18:18 AM LAYOUT: C-11 SWM MAP

LAYOUT: C-11 SWM MAP, Plotted By: mekonnen

SWM QUALITY REQUIREMENTS (SEE SHEET C-13 FOR VRRM FOR OFFICE BUILDING)

RESIDENTIAL AREA

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

○ 2011 BMP Standards and Specifications ◉ 2013 Draft BMP Standards and Specifications

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Project Name: Fairbrook Residential
Date: 9/24/2020
Linear Development Project? No

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 10.83

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	5.76
Post-Development TP Load Reduction for Site (lb/yr):	11.66

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ✔
Total disturbed area entered? ✔

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				7.82	7.82
Impervious Cover (acres)				3.01	3.01
					10.83

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				2.06	2.06
Impervious Cover (acres)				8.77	8.77
Area Check	OK.	OK.	OK.	OK.	10.83

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	Listed	Adjusted[1]
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	7.82	2.06
Weighted Rv(turf)	0.25	0.25
% Managed Turf	72%	41%
Impervious Cover (acres)	3.01	3.01
Rv(impervious)	0.95	0.95
% Impervious	28%	59%
Total Site Area (acres)	**10.83**	**5.07**
Site Rv	**0.44**	**0.67**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.4012	0.2812
Pre-ReDevelopment Treatment Volume (cubic feet)	17,477	12,249
Pre-ReDevelopment TP Load (lb/yr)	**10.98**	**7.70**
Pre-ReDevelopment TP load per acre (lb/acre/yr)	1.01	1.52
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*2.08*

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)	
Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.06
Weighted Rv (turf)	0.25
% Managed Turf	19%
Impervious Cover (acres)	8.77
Rv(impervious)	0.95
% Impervious	81%
Final Site Area (acres)	**10.83**
Final Post Dev Site Rv	**0.82**

Land Cover Summary-Post	
Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.06
Weighted Rv (turf)	0.25
% Managed Turf	41%
ReDev. Impervious Cover (acres)	3.01
Rv(impervious)	0.95
% Impervious	59%
Total ReDev. Site Area (acres)	**5.07**
ReDev Site Rv	**0.67**

Land Cover Summary-Post	
Post-Development New Impervious	
New Impervious Cover (acres)	5.76
Rv(impervious)	0.95

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.7372	Post-ReDevelopment Treatment Volume (acre-ft)	0.2812	Post-Development Treatment Volume (acre-ft)	0.4560
Final Post-Development Treatment Volume (cubic feet)	32,113	Post-ReDevelopment Treatment Volume (cubic feet)	12,249	Post-Development Treatment Volume (cubic feet)	19,863
Final Post-Development TP Load (lb/yr)	**20.18**	**Post-ReDevelopment Load (TP) (lb/yr)***	**7.70**	**Post-Development TP Load (lb/yr)**	**12.48**
Final Post-Development TP load per acre (lb/acre/yr)	1.86	Post-ReDevelopment TP load per acre (lb/acre/yr)	1.52		
		Max. Reduction Required (Below Pre-ReDevelopment Load)	20%		
		TP Load Reduction Required for Redeveloped Area (lb/yr)	**1.54**	**TP Load Reduction Required for New Impervious Area (lb/yr)**	**10.12**

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	11.66

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	78.55	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	144.34

TRAIL AREA

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

○ 2011 BMP Standards and Specifications ◉ 2013 Draft BMP Standards and Specifications

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Project Name: Fairbrook Trail
Date: 9/24/2020
Linear Development Project? No

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 1.14

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0.7
Post-Development TP Load Reduction for Site (lb/yr):	1.28

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ✔
Total disturbed area entered? ✔

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				1.14	1.14
Impervious Cover (acres)				0.00	0.00
					1.14

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or re-forested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.44	0.44
Impervious Cover (acres)				0.70	0.70
Area Check	OK.	OK.	OK.	OK.	1.14

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	Listed	Adjusted[1]
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	1.14	0.44
Weighted Rv(turf)	0.25	0.25
% Managed Turf	100%	100%
Impervious Cover (acres)	0.00	0.00
Rv(impervious)	0.95	0.95
% Impervious	0%	0%
Total Site Area (acres)	**1.14**	**0.44**
Site Rv	**0.25**	**0.25**

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.0238	0.0092
Pre-ReDevelopment Treatment Volume (cubic feet)	1,035	399
Pre-ReDevelopment TP Load (lb/yr)	**0.65**	**0.25**
Pre-ReDevelopment TP load per acre (lb/acre/yr)	0.57	0.57
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*0.18*

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)	
Post ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.44
Weighted Rv (turf)	0.25
% Managed Turf	39%
Impervious Cover (acres)	0.70
Rv(impervious)	0.95
% Impervious	61%
Final Site Area (acres)	**1.14**
Final Post Dev Site Rv	**0.68**

Land Cover Summary-Post	
Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.44
Weighted Rv (turf)	0.25
% Managed Turf	100%
ReDev. Impervious Cover (acres)	0.00
Rv(impervious)	0.95
% Impervious	0%
Total ReDev. Site Area (acres)	**0.44**
ReDev Site Rv	**0.25**

Land Cover Summary-Post	
Post-Development New Impervious	
New Impervious Cover (acres)	0.70
Rv(impervious)	0.95

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.0646	Post-ReDevelopment Treatment Volume (acre-ft)	0.0092	Post-Development Treatment Volume (acre-ft)	0.0554
Final Post-Development Treatment Volume (cubic feet)	2,813	Post-ReDevelopment Treatment Volume (cubic feet)	399	Post-Development Treatment Volume (cubic feet)	2,414
Final Post-Development TP Load (lb/yr)	**1.77**	**Post-ReDevelopment Load (TP) (lb/yr)***	**0.25**	**Post-Development TP Load (lb/yr)**	**1.52**
Final Post-Development TP load per acre (lb/acre/yr)	1.55	Post-ReDevelopment TP load per acre (lb/acre/yr)	0.57		
		Max. Reduction Required (Below Pre-ReDevelopment Load)	20%		
		TP Load Reduction Required for Redeveloped Area (lb/yr)	**0.05**	**TP Load Reduction Required for New Impervious Area (lb/yr)**	**1.23**

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	1.28

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	4.65	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	12.64

SWM QUALITY NARRATIVE

SEE SHEET C-12 FOR PRELIMINARY STORMWATER MANAGEMENT PLAN AND SWM/BMP FACILTIES. COMPLIANCE WITH ALL APPLICABLE REGULATIONS WILL BE SHOWN WITH FINAL SITE PLAN, INCLUDING BUT NOT LIMITED TO SIZING COMPUTATIONS FOR INDIVIDUAL SWM/BMP FACILITIES.

PHASING NARRATIVE

THE SUBJECT SITE IS DESIGNED SUCH THAT DEVELOPMENT MAY OCCUR IN PHASES. FOR THE PURPOSES OF THIS NARRATIVE THE PHASE WILL BE CONSIDERED THE RESIDENTIAL PHASE AND THE OFFICE PHASE. ADDITIONALLY, THE CONSTRUCTION OF THE TRAIL SYSTEM SHALL BE CONSIDERED AS A SEPARATE STORMWATER AREA, BUT NOT A SEPARATE PHASE. THE OVERALL WATER QUANTITY AND QUALITY CONTROLS FOR THE PROJECT WILL MEET THE NECESSARY STANDARDS / REQUIREMENTS FOR THE ENTIRE DEVELOPMENT. EACH PHASE ABOVE WILL BE DESIGNED TO CONTROL STORMWATER RUNOFF TO A LEVEL THAT AT A MINIMUM IS SUFFICIENT TO MEET THE STANDARDS / REQUIREMENTS FOR THE WORK PROPOSED WITHIN THAT PHASE. ADDITIONAL CONTROLS ABOVE THOSE NEEDED FOR THE WORK IN THE PHASE WILL BE PROVIDED WITHIN EACH PHASE SUCH THAT THE WATER QUALITY AND WATER QUANTITY GOALS FOR THE OVERALL DEVELOPMENT WILL BE MET AT BUILDOUT. MORE SIMPLY, THE RESIDENTIAL PHASE AND OFFICE PHASE WILL PROVIDE CONTROLS TO ACCOUNT FOR THE WORK WITHIN THE TRAIL SYSTEM - THERE WILL BE NO CONTROLS PROPOSED WITHIN THE TRAIL SYSTEM AREA. THE LEVEL OF CONTROL TO ACCOUNT FOR THE TRAIL SYSTEM WORK WILL BE ALLOCATED BETWEEN THE TWO PHASES AT THE TIME OF FUTURE SITE PLAN PREPARATION. A RUNNING TABULATION WILL BE KEPT ENSURING OVERALL COMPLIANCE AT BUILDOUT. EACH PHASE WILL PROVIDE A MINIMUM CONTROL LEVEL TO "STAND ALONE" WITH ADDITIONAL LEVELS OF CONTROL DOCUMENTED AND TABULATED TO CREDIT TOWARD THE TRAIL SYSTEM, KEEPING A RUNNING TABULATION AS FUTURE PHASES OF DEVELOPMENT OCCUR.

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COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON, VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-12

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-11 SWM MAP- NARRATIVE.dwg USER: Mekonnen DATE: October 16, 2020 TIME: 10:18:47 AM LAYOUT: C-12 SWM COMPUTATIONS QUALITY

SWM QUALITY REQUIREMENTS

OFFICE AREA

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - **Version 3.0**

○ 2011 BMP Standards and Specifications ◉ 2013 Draft BMP Standards and Specifications

Project Name: Fairbrook Office Bldgs
Date: 9/24/2020

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

BMP Design Specifications List: 2013 Draft Stds & Specs

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.07	0.07
Impervious Cover (acres)				3.91	3.91
					3.98

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**6.88**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary	
Forest/Open Space Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.07
Weighted Rv (turf)	0.25
% Managed Turf	2%
Impervious Cover (acres)	3.91
Rv (impervious)	0.95
% Impervious	98%
Site Area (acres)	**3.98**
Site Rv	**0.94**

Treatment Volume and Nutrient Loads	
Treatment Volume (acre-ft)	0.3110
Treatment Volume (cubic feet)	13,547
TP Load (lb/yr)	8.51
TN Load (lb/yr) (Informational Purposes Only)	60.89

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON,
VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-13

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-13 SWM MAP- NARRATIVE.dwg USER: Mekonnen DATE: October 16, 2020 TIME: 10:19:12 AM LAYOUT: C-13 SWM COMPUTATIONS QUALITY

SWM QUANTITY REQUIREMENTS

RESIDENTIAL AREA

THE RESIDENTIAL AREA COMPRISES FOUR (4) SUB DRAINAGE AREAS: HERNDON PARKWAY, RESIDENTIAL BUILDING 1, RESIDENTIAL BUILDING 2, AND FAIRBROOK DRIVE & PRIVATE ROAD A.

IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS FOR SWM QUANTITY, THE PEAK FLOW RATE FOR THE PROPOSED DEVELOPMENT SHALL NOT EXCEED THE EXISTING PEAK DEVELOPMENT.

AT THE TIME OF SITE PLAN, THE EXISTING CN WILL BE CALCULATED BASED ON THE FINAL PROPOSED LIMITS OF DISTURBANCE AND THE POST REDEVELOPED CN WILL BE CALCULATED USING THE RUNOFF REDUCTION METHOD (OR OTHER APPROVED METHOD).

DETENTION VAULTS WILL BE PROPOSED (WITH POTENTIAL LOCATIONS SHOWN ON SHEET C-11) TO DETAIN THE STORMWATER AS NEEDED TO MEET THE REQUIREMENTS. DETENTION VAULT SIZING AND ROUTINGS WILL BE SHOWN WITH FINAL ENGINEERING TO SHOW COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS.

OFFICE AREA

THE OFFICE AREA COMPRISES TWO (2) SUB DRAINAGE AREAS: THE OFFICE BUIDLING & GARAGE DECK AND THE ENTRY ROAD TO THE GARAGE.

IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS FOR SWM QUANTITY, THE PEAK FLOW RATE FOR THE PROPOSED DEVELOPMENT SHALL NOT EXCEED THE EXISTING PEAK DEVELOPMENT.

AT THE TIME OF SITE PLAN, THE EXISTING CN WILL BE CALCULATED BASED ON THE FINAL PROPOSED LIMITS OF DISTURBANCE AND THE POST REDEVELOPED CN WILL BE CALCULATED USING THE RUNOFF REDUCTION METHOD (OR OTHER APPROVED METHOD) AT THE TIME OF SITE PLAN.

DETENTION VAULTS WILL BE PROPOSED (WITH POTENTIAL LOCATIONS SHOWN ON SHEET C-11) TO DETAIN THE STORMWATER AS NEEDED TO MEET THE REQUIREMENTS. DETENTION VAULT SIZING AND ROUTINGS WILL BE SHOWN WITH FINAL ENGINEERING TO SHOW COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS.

ADEQUATE OUTFALL NARRATIVE

THE SUBJECT DEVELOPMENT HAS THREE (3) MAIN OUTFALLS. ALL THREE (3) OUTFALLS DISCHARGE DIRECTLY INTO A NATURAL STORMWATER CONVEYANCE CHANNEL THROUGH EXISTING OR PROPOSED PIPES TO AN OUTFALL STRUCTURE.

CHANNEL PROTECTION
PER 9VAC25-870-66-B.3 WHEN DISCHARGING TO NATURAL STORMWATER CONVEYANCE SYSTEMS, THE MAXIMUM PEAK FLOW RATE FROM THE 1 YR 24 HR STORM POST DEVELOPMENT MUST BE IN ACCORDANCE WITH THE ENERGY BALANCE EQUATION: Q DEVELOPED <= I.F.*(Q PRE DEVELOPED* RV PRE DEVELOPED)/RV DEVELOPED. THIS WILL BE ACHIEVED THROUGH THE USE OF LID TECHNIQUES AND STORMWATER DETENTION VAULTS. COMPLIANCE WILL BE SHOWN AT THE TIME OF FINAL SI TE PLAN. PER 9VAC25-870-66-B-4 THE LIMITS OF ANALYSIS SHALL TERMINATE AT THE POINT OF DISCHARGE. THEREFORE NO FURTHER ANALYSIS FOR CHANNEL PROTECTION WIL BE REQUIRED.

FLOOD PROTECTION
PER 9VAC25-870-66-C, THE POST DEVELOPMENT 10 YEAR 24 HOUR STORM EVENT MUST BE LESS THAN THE PREDVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24 HOUR STORM EVENT. THE 10-YEAR FLOW IS CONFINED WITHIN THE PROPOSED PIPES TO THE DISCHARGE LOCATION INTO THE NATURAL STORMWATER CONVEYANCE SYSTEM. COMPLIANCE WILL BE SHOWN AT THE TIME OF FINAL SITE PLAN. PER 9VAC25-870-66-C.3.C, THE LIMIT OF ANALYSIS IS TO A POINT WHERE THE STORMWATER CONVEYANCE SYSTEM ENTERS A MAPPED FLOODPLIAN OR OTHER FLOO-PRONE AREA. EACH POINT OF DISCHARGE IS LOCATED WITHIN AN EXISTING MAPPED FLOOPLAIN. THEREFORE NO FURTHER ANALYSIS WILL BE REQUIRED.

BASED ON THE ABOVE AND CORRESPONDING COMPUTATIONS, IT IS THE OPINION OF VIKA VA, LLC THAT THIS PROJECT WILL HAVE NO ADVERSE AFFECTS NOR CAUSE FLOODING OF ANY DOWNSTREAM PROPERTY OR STRUCTURE AND THAT THE OUTFALL IS ADEQUATE.

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5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL



FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON,
VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-14

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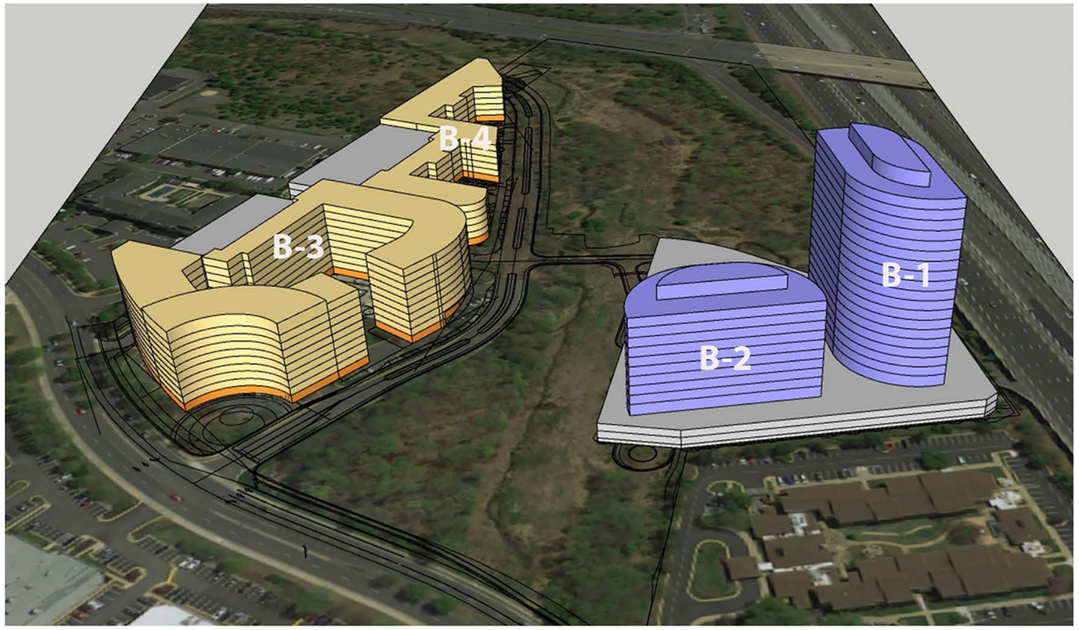
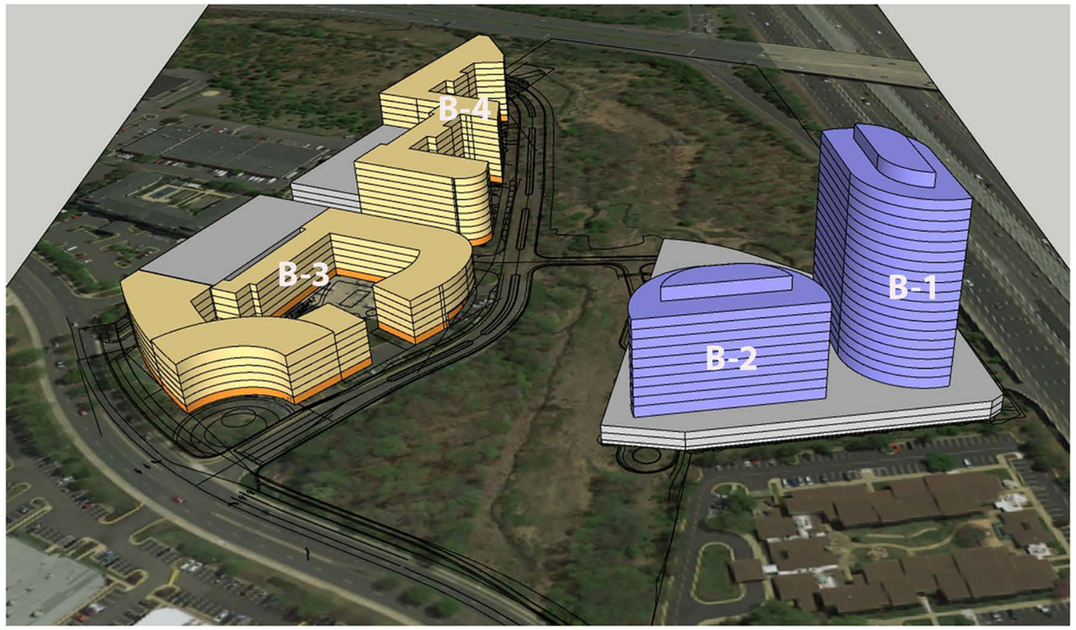


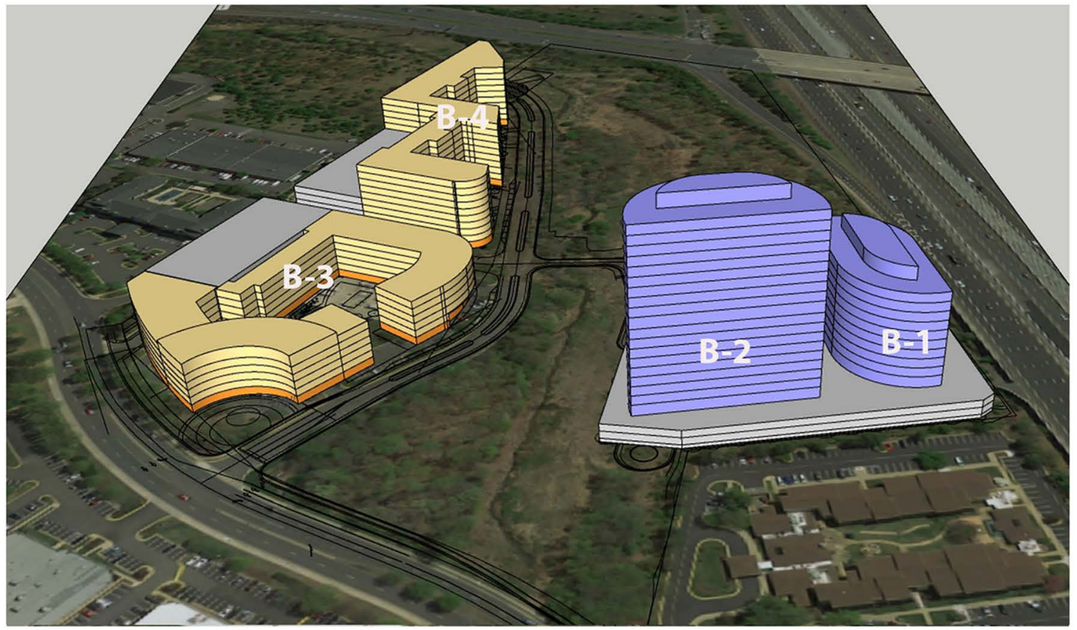
OPTION 1

BUILDING 1	400,000 GFA	275′
BUILDING 2	200,000 GFA	160′
BUILDING 3	540,000 GFA	105′
BUILDING 4	360,000 GFA	65′



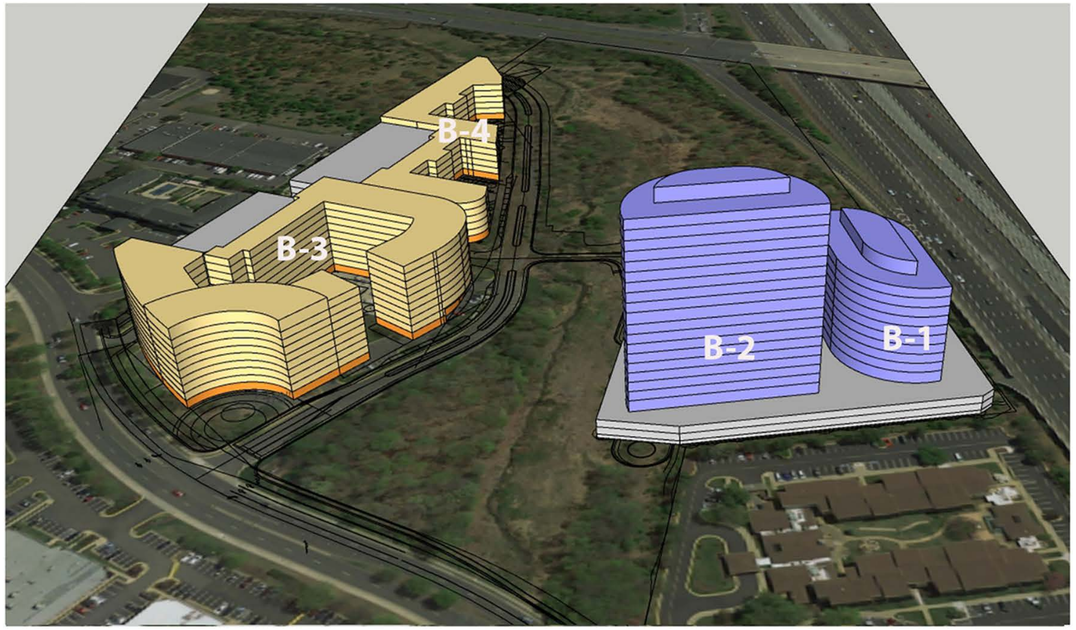
OPTION 2

BUILDING 1	400,000 GFA	275′
BUILDING 2	200,000 GFA	160′
BUILDING 3	360,000 GFA	65′
BUILDING 4	540,000 GFA	105′



OPTION 3

BUILDING 1	200,000 GFA	160′
BUILDING 2	400,000 GFA	275′
BUILDING 3	360,000 GFA	65′
BUILDING 4	540,000 GFA	105′



OPTION 4

BUILDING 1	200,000 GFA	160′
BUILDING 2	400,000 GFA	275′
BUILDING 3	540,000 GFA	105′
BUILDING 4	360,000 GFA	65′

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ARCHITECT

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3RD SUBMISSION	06/04/2020
4TH SUBMISSION	09/28/2020
5TH SUBMISSION	10/22/2020

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

MASSING DIAGRAMS

DRAWN BY: J.B.
DESIGNED BY: J.B.
DATE ISSUED: 06/19/2017

DWG. SCALE
JOB NO. VV6045X
SHEET NO. A-01

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1 VIEW FROM WEST



2 VIEW FROM EAST



3 VIEW FROM SOUTH



4 VIEW FROM NORTH

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3RD SUBMISSION	06/04/2020
4TH SUBMISSION	09/28/2020
5TH SUBMISSION	10/22/2020

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SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

CONCEPTUAL MASSING

DRAWN BY:	J.B.
DESIGNED BY:	J.B.
DATE ISSUED:	06/19/2017
DWG. SCALE	
JOB NO.	VV6045X
SHEET NO.	A-02

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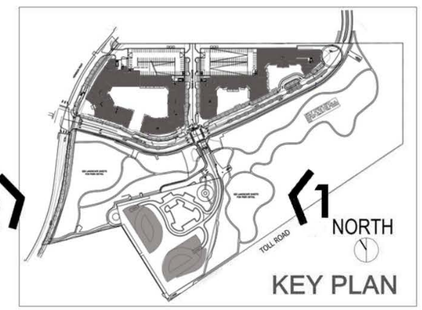
1 VIEW FROM TOLL ROAD



2 VIEW FROM HERNDON PARKWAY



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2ND SUBMISSION	06/07/2019
3RD SUBMISSION	06/04/2020
4TH SUBMISSION	09/28/2020
5TH SUBMISSION	10/22/2020

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SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

AERIAL VIEWS

DRAWN BY:	J.B.
DESIGNED BY:	J.B.
DATE ISSUED:	06/19/2017
DWG. SCALE	
JOB NO.	VV6045X
SHEET NO.	A-03

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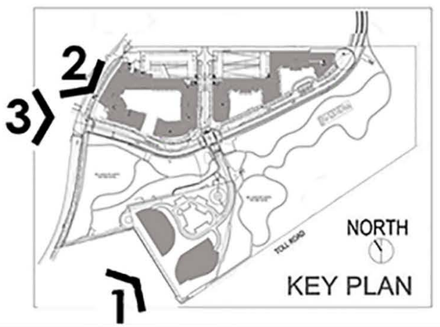
1 OFFICE TOWERS



2 GATEWAY PLAZA



3 VIEW FROM HERNDON PARKWAY



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5TH SUBMISSION	10/22/2020

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SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

ARCHITECTURAL RENDERINGS

DRAWN BY:	J.B.
DESIGNED BY:	J.B.
DATE ISSUED:	06/19/2017
DWG. SCALE	
JOB NO.	W60HSX
SHEET NO.	A-04

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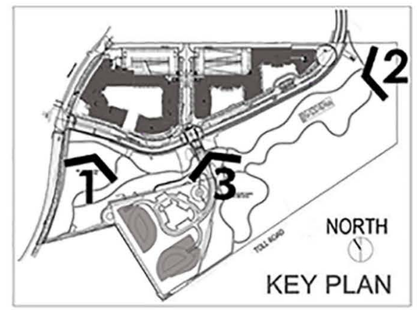
1 VIEW FROM THE PARK



2 VIEW FROM FAIRFAX PARKWAY



3 VIEW FROM FAIRBROOK DRIVE



KEY PLAN

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COMMONWEALTH OF VIRGINIA
DOUGLAS N. CARTER
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ARCHITECT

REVISIONS	DATE
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3RD SUBMISSION	06/04/2020
4TH SUBMISSION	09/28/2020
5TH SUBMISSION	10/22/2020

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

ARCHITECTURAL RENDERINGS

DRAWN BY: J.B.
DESIGNED BY: J.B.
DATE ISSUED: 06/19/2017
DWG. SCALE
JOB NO. VV604SX
SHEET NO. A-05

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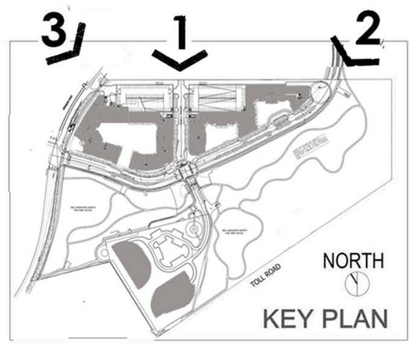
1 VIEW THROUGH PRIVATE ROAD A



2 VIEW FROM NORTH EAST CORNER



3 VIEW FROM NORTH WEST CORNER



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1420 SPRING HILL ROAD, SUITE 610
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MICHAEL J. WORKOSKY
(703) 917-6620

COMMONWEALTH OF VIRGINIA
DOUGLAS N. CARTER
Lic. No. 3435
ARCHITECT

REVISIONS	DATE
2ND SUBMISSION	06/07/2019
3RD SUBMISSION	06/04/2020
4TH SUBMISSION	09/28/2020
5TH SUBMISSION	10/22/2020

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

ARCHITECTURAL RENDERINGS

DRAWN BY:	J.B.
DESIGNED BY:	J.B.
DATE ISSUED:	06/19/2017
DWG. SCALE	
JOB NO.	VV6045X
SHEET NO.	A-06

FILE: C:\Users\Jbijelic\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\OHE4BFUQ\6045X_CDPA_TITLE.dwg USER: Jbijelic DATE: June 5, 2019 TIME: 2:41:18 PM LAYOUT: Model



NOTES

1. LANDSCAPE PLAN IS ILLUSTRATIVE AND PROVIDED TO CONVEY INTENT AND OVERALL QUALITY OF THE PROPOSED FEATURES; FINAL FEATURE AND AMENITY MIX IS SUBJECT TO CHANGE AT TIME OF FINAL CONSTRUCTION DOCUMENTS AND UNLESS WAIVED, SHALL MEET ALL REQUIREMENTS OF SECTION 78-110.3 (SITE LANDSCAPING).
2. PER SECTION 78-40.6(c) (1)(f), A MINIMUM OF 50% OF THE SITE SHALL BE OPEN SPACE. PER SECTION 78-113.2 (OPEN SPACE), DESIGNATED OPEN SPACE AREAS MAY INCLUDE:
   - PRESERVED WETLANDS AREAS
   - AT-GRADE LANDSCAPE AREAS
   - ACTIVE AND PASSIVE ROOF TOP AMENITY AREAS
   - HARDSCAPED COURTYARD AREAS
   - STREETSCAPE ELEMENTS MEETING TOWN OF HERNDON REQUIREMENTS
3. PARKS AREAS WILL BE CONSTRUCTED IN PHASES:
   - PARK A:
     DELIVERED WITH BUILDING 3.
     TO INCLUDE RECREATION OPPORTUNITIES- HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK, AND/OR EXERCISE STATIONS.
   - PARK B:
     DELIVERED WITH BUILDINGS 4.
     TO INCLUDE RECREATION OPPORTUNITIES - HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK, AND/OR EXERCISE STATIONS.
     ALSO INCLUDES STREAM RELOCATION AND RESTORATION.
   - PARK C:
     DELIVERED WITH FINAL BUILDING CONSTRUCTION PHASE OF BUILDINGS 1 AND 2, WHICHEVER OCCURS LAST.
     TO INCLUDE RECREATION OPPORTUNITIES - HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK AND/OR EXERCISE STATIONS.
4. PARK AREAS WILL BE SUPPLEMENTED WITH PLANTINGS TO ENHANCE AND AND RESTORE NATURAL ECOSYSTEMS.
5. INVASIVE SPECIES SHALL BE REMOVED W/ EACH PHASE OF CONSTRUCTION.

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

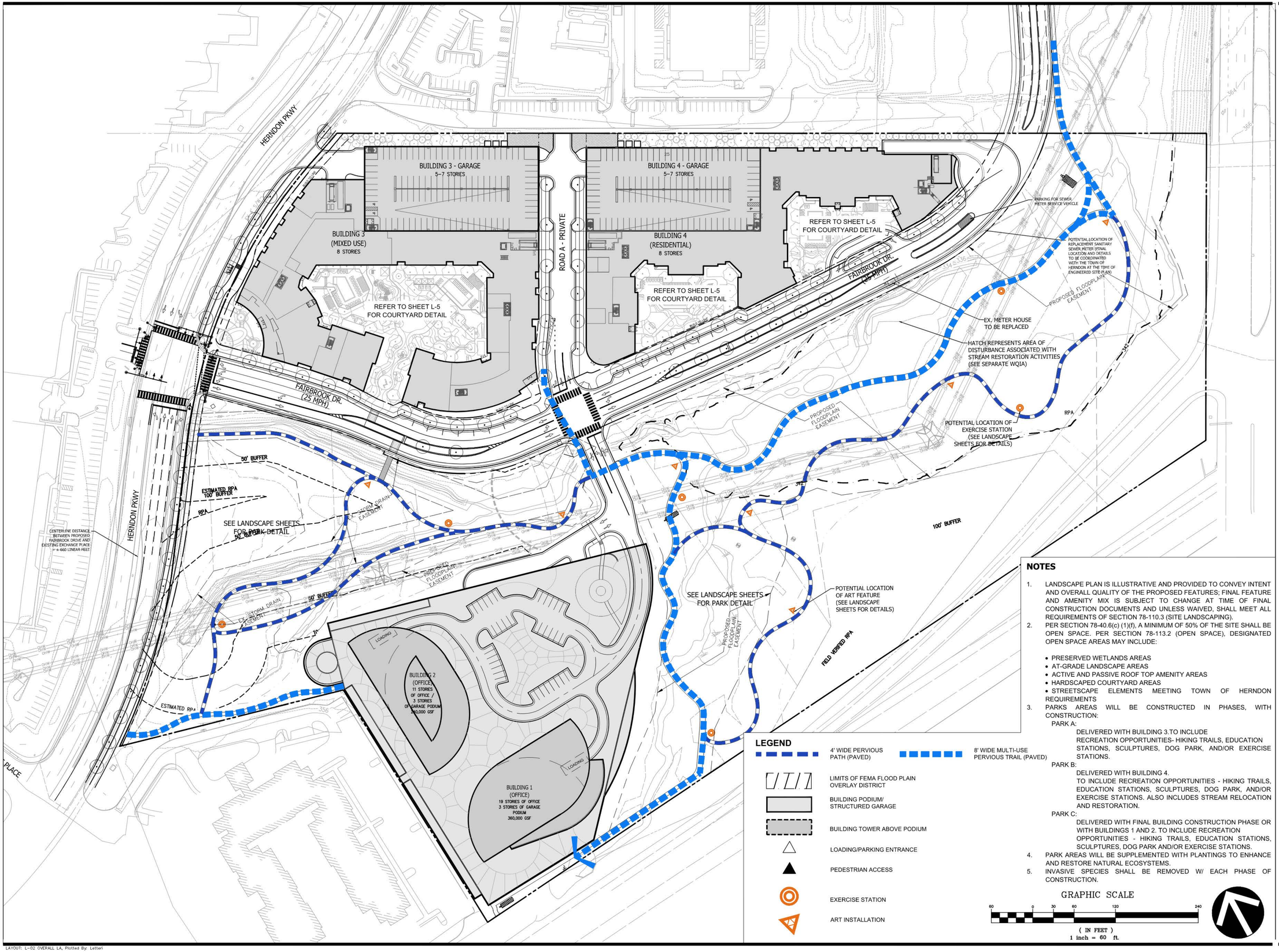
SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

OVERALL ILLUSTRATIVE

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 60'
VIKA NO.	VV6045X
SHEET NO.	L-01

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_L-01 ILLUSTRATIVE.dwg USER: Letterl DATE: October 16, 2020 TIME: 10:03:07 AM LAYOUT: L-01 ILLUSTRATIVE



NOTES

1. LANDSCAPE PLAN IS ILLUSTRATIVE AND PROVIDED TO CONVEY INTENT AND OVERALL QUALITY OF THE PROPOSED FEATURES; FINAL FEATURE AND AMENITY MIX IS SUBJECT TO CHANGE AT TIME OF FINAL CONSTRUCTION DOCUMENTS AND UNLESS WAIVED, SHALL MEET ALL REQUIREMENTS OF SECTION 78-110.3 (SITE LANDSCAPING).
2. PER SECTION 78-40.6(c) (1)(f), A MINIMUM OF 50% OF THE SITE SHALL BE OPEN SPACE. PER SECTION 78-113.2 (OPEN SPACE), DESIGNATED OPEN SPACE AREAS MAY INCLUDE:
   - PRESERVED WETLANDS AREAS
   - AT-GRADE LANDSCAPE AREAS
   - ACTIVE AND PASSIVE ROOF TOP AMENITY AREAS
   - HARDSCAPED COURTYARD AREAS
   - STREETSCAPE ELEMENTS MEETING TOWN OF HERNDON REQUIREMENTS
3. PARKS AREAS WILL BE CONSTRUCTED IN PHASES, WITH CONSTRUCTION:
   - PARK A: DELIVERED WITH BUILDING 3.TO INCLUDE RECREATION OPPORTUNITIES- HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK, AND/OR EXERCISE STATIONS.
   - PARK B: DELIVERED WITH BUILDING 4. TO INCLUDE RECREATION OPPORTUNITIES - HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK, AND/OR EXERCISE STATIONS. ALSO INCLUDES STREAM RELOCATION AND RESTORATION.
   - PARK C: DELIVERED WITH FINAL BUILDING CONSTRUCTION PHASE OR WITH BUILDINGS 1 AND 2. TO INCLUDE RECREATION OPPORTUNITIES - HIKING TRAILS, EDUCATION STATIONS, SCULPTURES, DOG PARK AND/OR EXERCISE STATIONS.
4. PARK AREAS WILL BE SUPPLEMENTED WITH PLANTINGS TO ENHANCE AND RESTORE NATURAL ECOSYSTEMS.
5. INVASIVE SPECIES SHALL BE REMOVED W/ EACH PHASE OF CONSTRUCTION.

LEGEND

- 4' WIDE PERVIOUS PATH (PAVED)
- 8' WIDE MULTI-USE PERVIOUS TRAIL (PAVED)
- LIMITS OF FEMA FLOOD PLAIN OVERLAY DISTRICT
- BUILDING PODIUM/ STRUCTURED GARAGE
- BUILDING TOWER ABOVE PODIUM
- LOADING/PARKING ENTRANCE
- PEDESTRIAN ACCESS
- EXERCISE STATION
- ART INSTALLATION

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

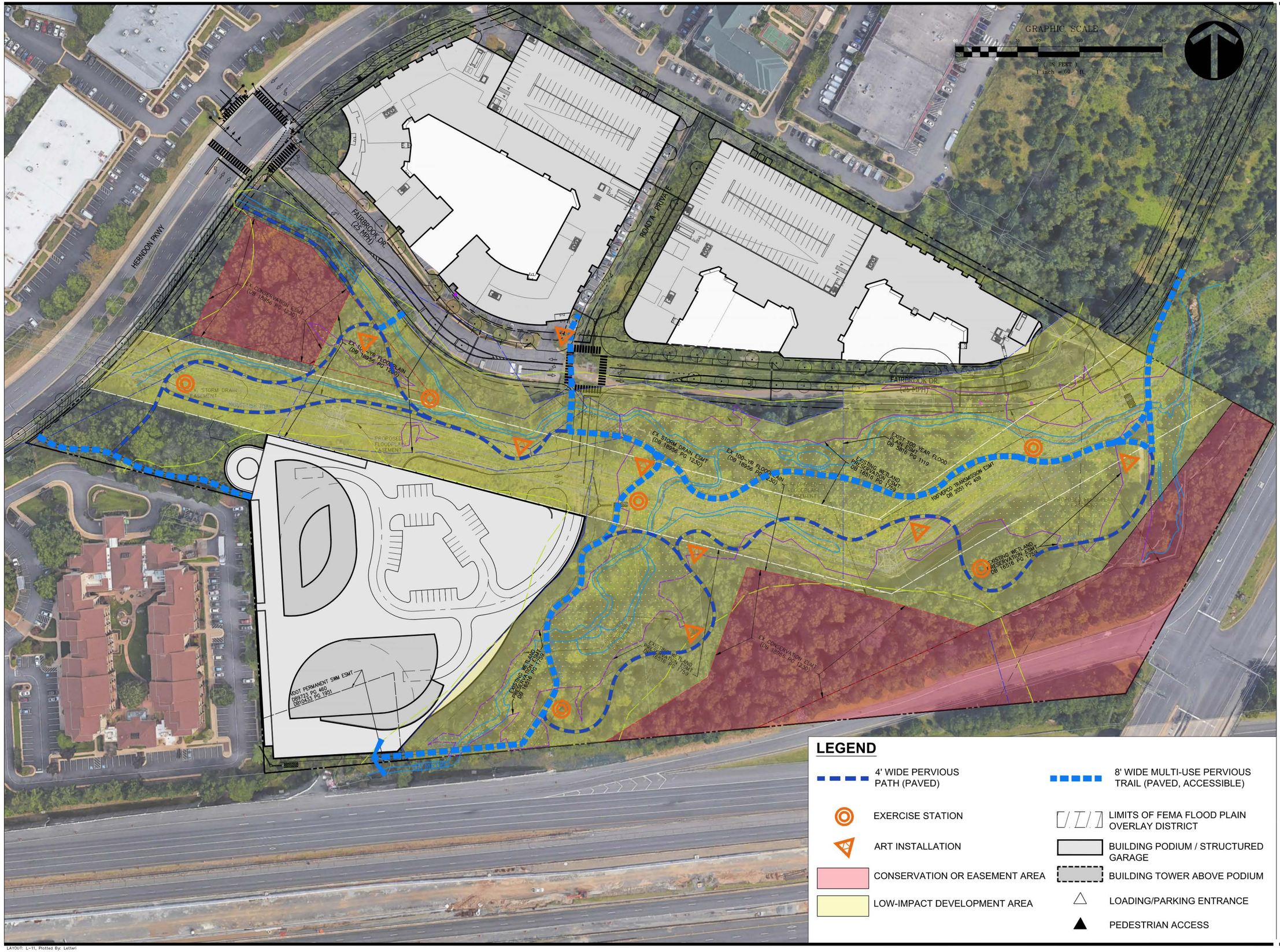
TOWN OF HERNDON, VIRGINIA

OVERALL LANDSCAPE & PARK PLAN

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 60'
VIKA NO.	VV6045X
SHEET NO.	L-02

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_L-02 OVERALL LANDSCAPE.dwg USER: Letteri DATE: October 16, 2020 TIME: 10:13:25 AM LAYOUT: L-02 OVERALL LA

LAYOUT: L-02 OVERALL LA, Plotted By: Letteri



LEGEND

- 4' WIDE PERVIOUS PATH (PAVED)
- 8' WIDE MULTI-USE PERVIOUS TRAIL (PAVED, ACCESSIBLE)
- EXERCISE STATION
- LIMITS OF FEMA FLOOD PLAIN OVERLAY DISTRICT
- ART INSTALLATION
- BUILDING PODIUM / STRUCTURED GARAGE
- CONSERVATION OR EASEMENT AREA
- BUILDING TOWER ABOVE PODIUM
- LOW-IMPACT DEVELOPMENT AREA
- LOADING/PARKING ENTRANCE
- PEDESTRIAN ACCESS

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PLAN STATUS	DATE
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3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

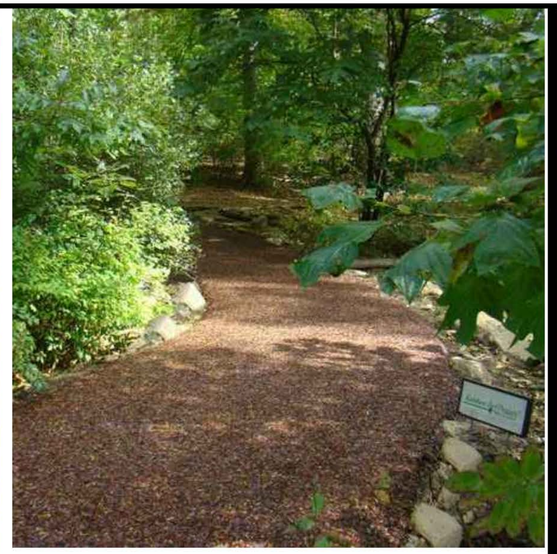
STREAM VALLEY PARK PLAN

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 60'
VIKA NO.	VV6045X
SHEET NO.	L-11

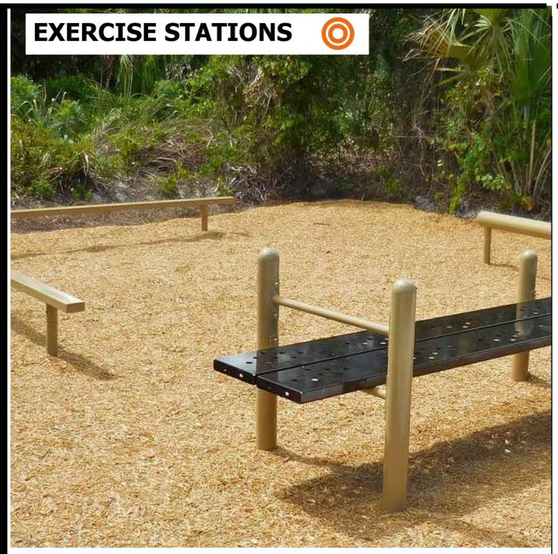
FILE: P:\projects\6045\6045X\CAD\VP\PLANNING\DRAWINGS\6045X_L-03 RECREATION CONCEPTS.dwg USER: Letteri DATE: October 16, 2020 TIME: 10:42:01 AM LAYOUT: L-11

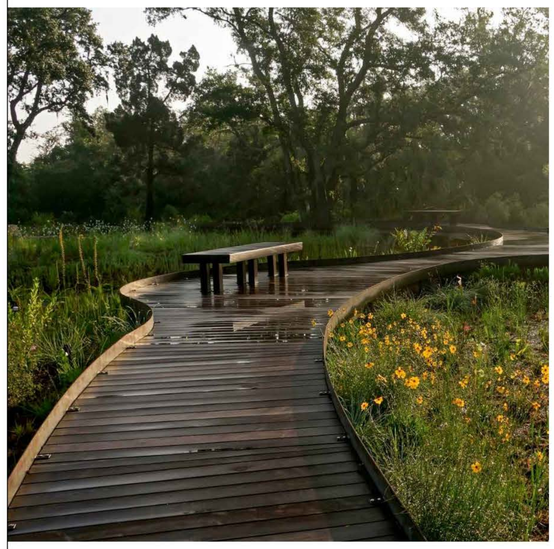
LAYOUT: L-11, Plotted By: Letteri





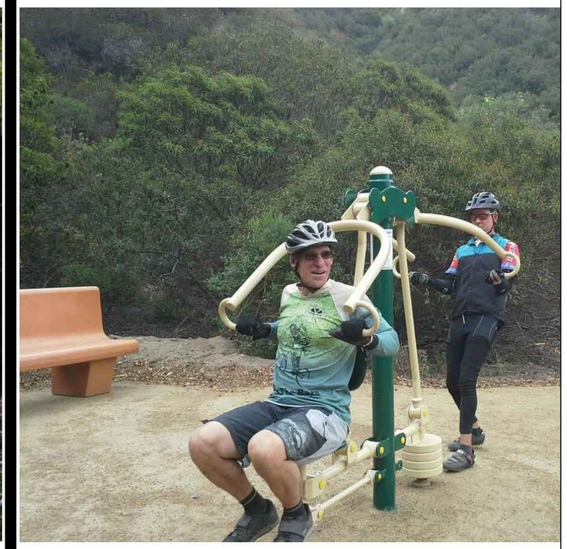


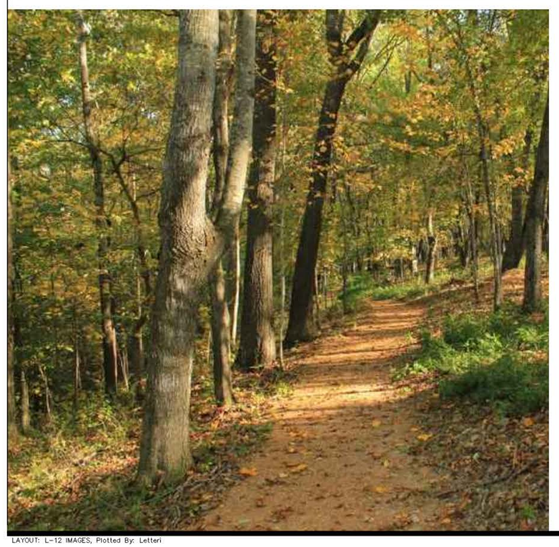


















LAYOUT: L-12 IMAGES, Plotted By: Letteri

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

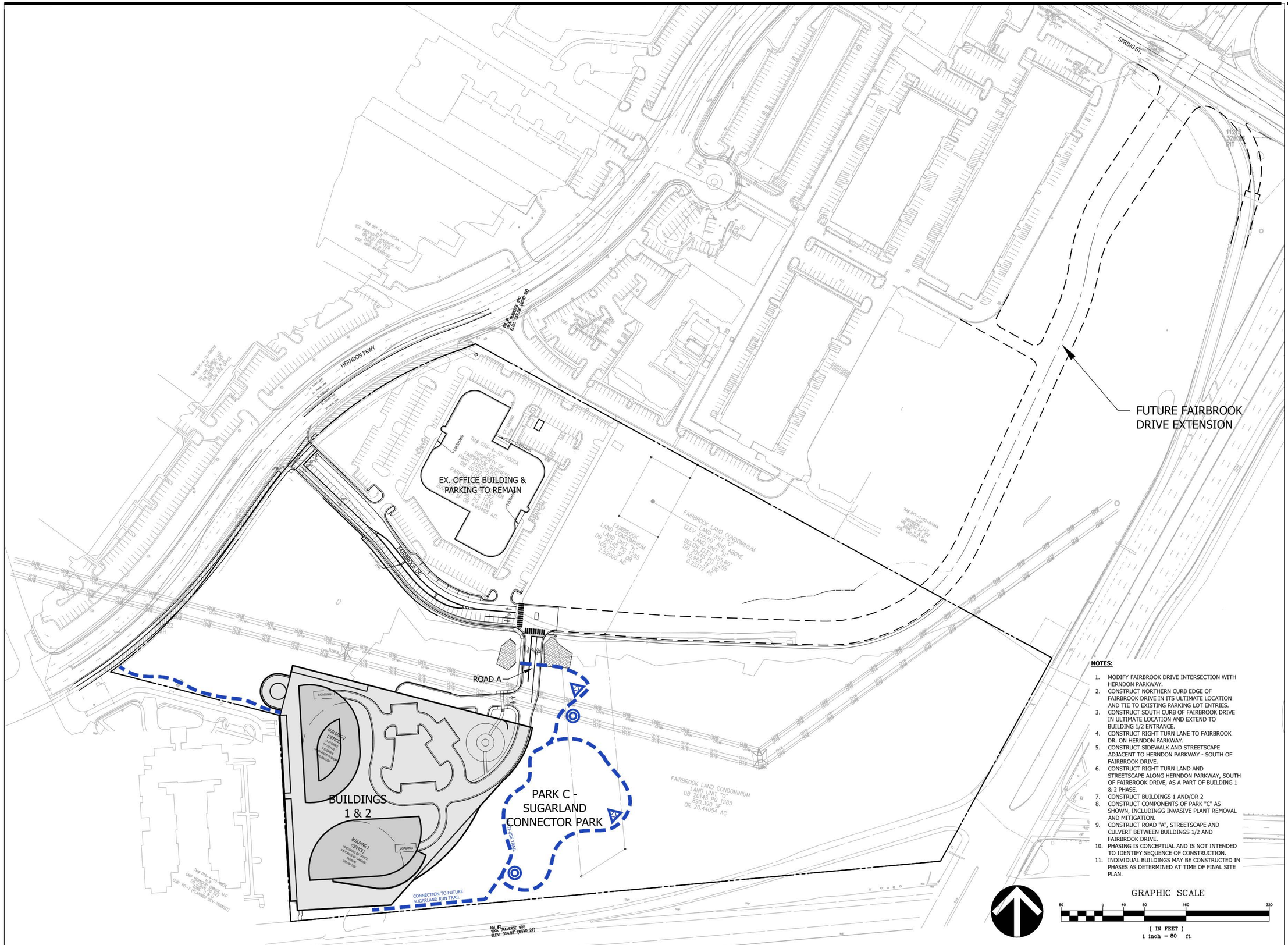
SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

STREAM VALLEY PARK CONCEPT IMAGES

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 60'
VIKA NO.	VV6045X
SHEET NO.	L-12

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_L04 LA PRECEDENT IMAGES.dwg USER: letteri DATE: October 16, 2020 TIME: 10:34:43 AM LAYOUT: L-12 IMAGES



NOTES:

1. MODIFY FAIRBROOK DRIVE INTERSECTION WITH HERNDON PARKWAY.
2. CONSTRUCT NORTHERN CURB EDGE OF FAIRBROOK DRIVE IN ITS ULTIMATE LOCATION AND TIE TO EXISTING PARKING LOT ENTRIES.
3. CONSTRUCT SOUTH CURB OF FAIRBROOK DRIVE IN ULTIMATE LOCATION AND EXTEND TO BUILDING 1/2 ENTRANCE.
4. CONSTRUCT RIGHT TURN LANE TO FAIRBROOK DR. ON HERNDON PARKWAY.
5. CONSTRUCT SIDEWALK AND STREETSCAPE ADJACENT TO HERNDON PARKWAY - SOUTH OF FAIRBROOK DRIVE.
6. CONSTRUCT RIGHT TURN LAND AND STREETSCAPE ALONG HERNDON PARKWAY, SOUTH OF FAIRBROOK DRIVE, AS A PART OF BUILDING 1 & 2 PHASE.
7. CONSTRUCT BUILDINGS 1 AND/OR 2
8. CONSTRUCT COMPONENTS OF PARK "C" AS SHOWN, INCLUDINGG INVASIVE PLANT REMOVAL AND MITIGATION.
9. CONSTRUCT ROAD "A", STREETSCAPE AND CULVERT BETWEEN BUILDINGS 1/2 AND FAIRBROOK DRIVE.
10. PHASING IS CONCEPTUAL AND IS NOT INTENDED TO IDENTIFY SEQUENCE OF CONSTRUCTION.
11. INDIVIDUAL BUILDINGS MAY BE CONSTRUCTED IN PHASES AS DETERMINED AT TIME OF FINAL SITE PLAN.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

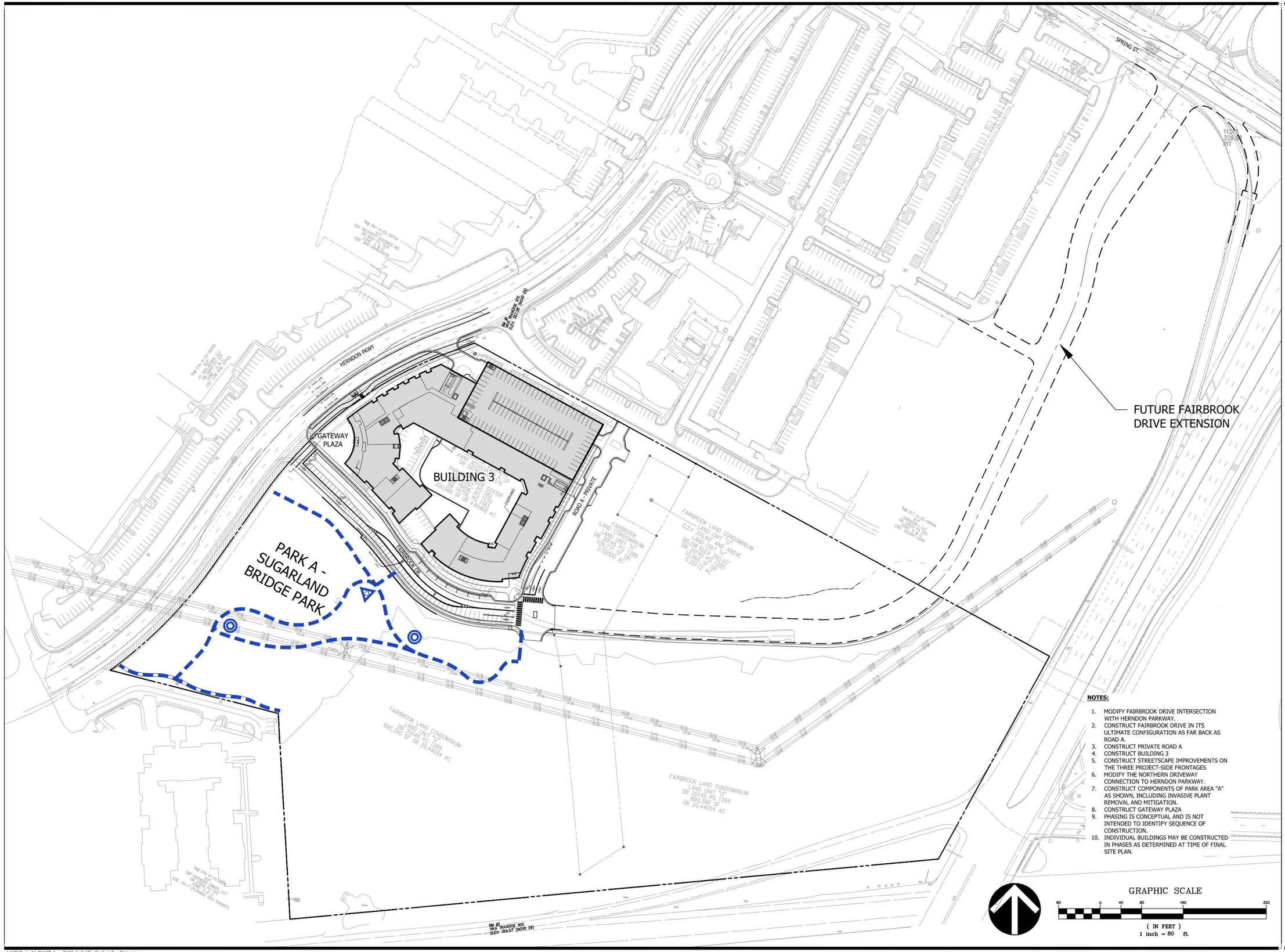
TOWN OF HERNDON,
VIRGINIA

BUILDINGS 1/2 PHASE

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 80'
VIKA NO.	VV6045X
SHEET NO.	L-13

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_ L-13 15 PHASING.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:16:57 AM LAYOUT: L-13 PHASE 1 - BLDG 1-2

LAYOUT: L-13 PHASE 1 - BLDG 1-2, Plotted By: Richardson



NOTES:

1. MODIFY FAIRBROOK DRIVE INTERSECTION WITH HERNDON PARKWAY.
2. CONSTRUCT FAIRBROOK DRIVE IN ITS ULTIMATE CONFIGURATION AS FAR BACK AS ROAD A.
3. CONSTRUCT PRIVATE ROAD A
4. CONSTRUCT BUILDING 3
5. CONSTRUCT STREETSCAPE IMPROVEMENTS ON THE THREE PROJECT-SIDE FRONTAGES
6. MODIFY THE NORTHERN DRIVEWAY CONNECTION TO HERNDON PARKWAY.
7. CONSTRUCT COMPONENTS OF PARK AREA "A" AS SHOWN, INCLUDING INVASIVE PLANT REMOVAL AND MITIGATION.
8. CONSTRUCT GATEWAY PLAZA
9. PHASING IS CONCEPTUAL AND IS NOT INTENDED TO IDENTIFY SEQUENCE OF CONSTRUCTION.
10. INDIVIDUAL BUILDINGS MAY BE CONSTRUCTED IN PHASES AS DETERMINED AT TIME OF FINAL SITE PLAN.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

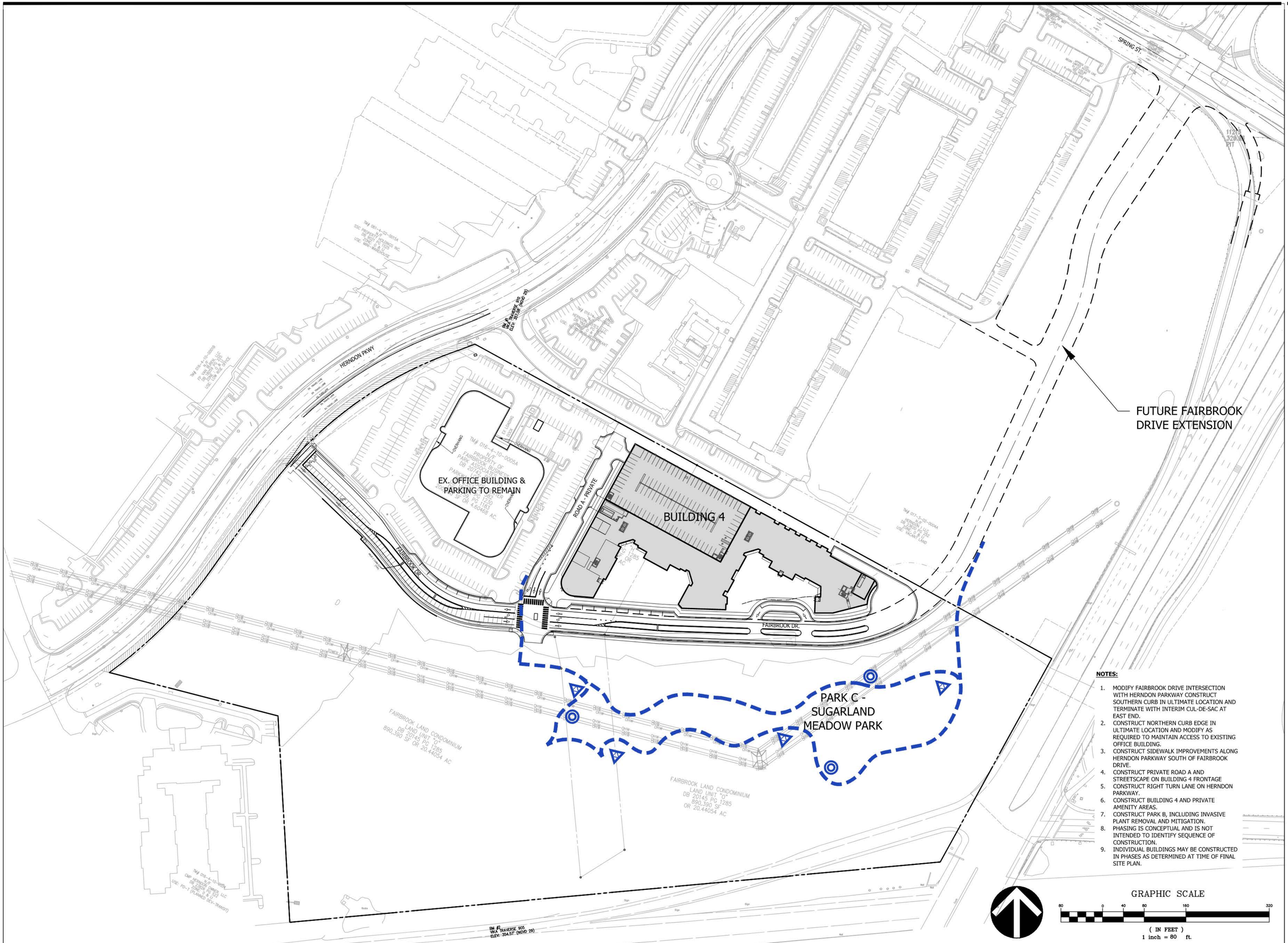
TOWN OF HERNDON,
VIRGINIA

BUILDING 3 PHASE

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 80'
VIKA NO.	VV6045X
SHEET NO.	L-14

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_L-13-15 PHASING.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:17:26 AM LAYOUT: L-14 PHASE 1 - BLDG 1-2 (2)

LAYOUT: L-14 PHASE 1 - BLDG 1-2 (2), Plotted By: Richardson



NOTES:

1. MODIFY FAIRBROOK DRIVE INTERSECTION WITH HERNDON PARKWAY CONSTRUCT SOUTHERN CURB IN ULTIMATE LOCATION AND TERMINATE WITH INTERIM CUL-DE-SAC AT EAST END.
2. CONSTRUCT NORTHERN CURB EDGE IN ULTIMATE LOCATION AND MODIFY AS REQUIRED TO MAINTAIN ACCESS TO EXISTING OFFICE BUILDING.
3. CONSTRUCT SIDEWALK IMPROVEMENTS ALONG HERNDON PARKWAY SOUTH OF FAIRBROOK DRIVE.
4. CONSTRUCT PRIVATE ROAD A AND STREETSCAPE ON BUILDING 4 FRONTAGE
5. CONSTRUCT RIGHT TURN LANE ON HERNDON PARKWAY.
6. CONSTRUCT BUILDING 4 AND PRIVATE AMENITY AREAS.
7. CONSTRUCT PARK B, INCLUDING INVASIVE PLANT REMOVAL AND MITIGATION.
8. PHASING IS CONCEPTUAL AND IS NOT INTENDED TO IDENTIFY SEQUENCE OF CONSTRUCTION.
9. INDIVIDUAL BUILDINGS MAY BE CONSTRUCTED IN PHASES AS DETERMINED AT TIME OF FINAL SITE PLAN.

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

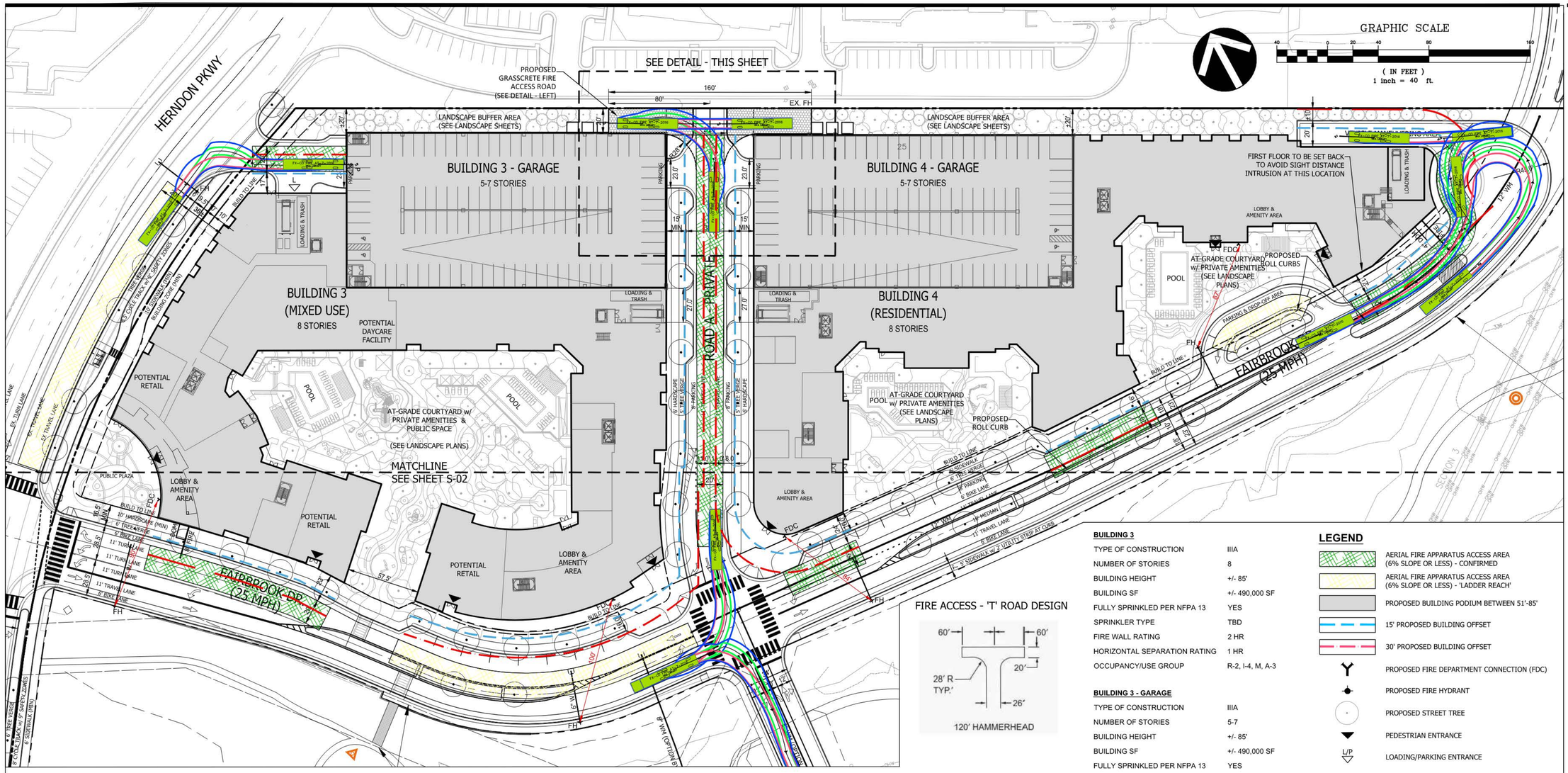
SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

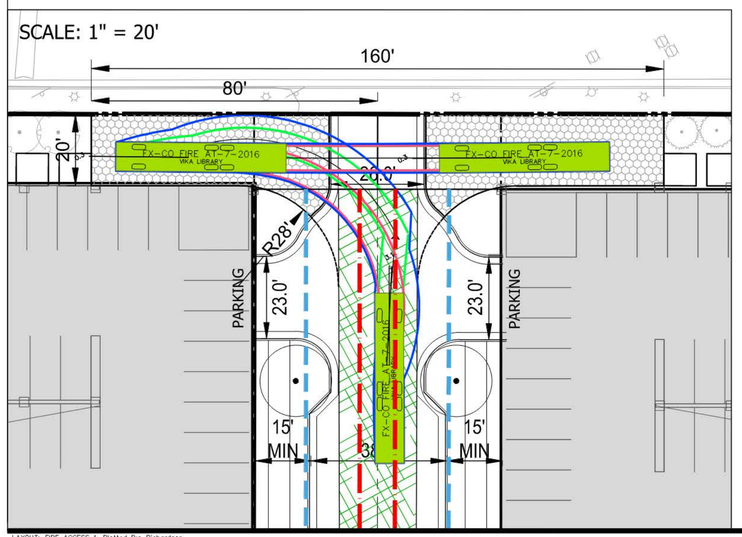
BUILDING 4 PHASE

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1" = 80'
VIKA NO.	VV6045X
SHEET NO.	L-15

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_L-13-15 PHASING.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:18:20 AM LAYOUT: L-15 PHASE 1 - BLDG 1-2 (3)



FIRE ACCESS - 'T' ROAD DESIGN



BUILDING 3

TYPE OF CONSTRUCTION	IIIA
NUMBER OF STORIES	8
BUILDING HEIGHT	+/- 85'
BUILDING SF	+/- 490,000 SF
FULLY SPRINKLED PER NFPA 13	YES
SPRINKLER TYPE	TBD
FIRE WALL RATING	2 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	R-2, I-4, M, A-3

BUILDING 3 - GARAGE

TYPE OF CONSTRUCTION	IIIA
NUMBER OF STORIES	5-7
BUILDING HEIGHT	+/- 85'
BUILDING SF	+/- 490,000 SF
FULLY SPRINKLED PER NFPA 13	YES
SPRINKLER TYPE	TBD
FIRE WALL RATING	2 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	S-2 - OPEN

BUILDING 4

TYPE OF CONSTRUCTION	IIIA
NUMBER OF STORIES	8
BUILDING HEIGHT	+/- 85'
BUILDING SF	+/- 490,000 SF
FULLY SPRINKLED PER NFPA 13	YES
SPRINKLER TYPE	TBD
FIRE WALL RATING	2 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	R-2, A-3

BUILDING 4 - GARAGE

TYPE OF CONSTRUCTION	IIIA
NUMBER OF STORIES	8
BUILDING HEIGHT	+/- 85'
BUILDING SF	+/- 410,000 SF
FULLY SPRINKLED PER NFPA 13	YES
SPRINKLER TYPE	TBD
FIRE WALL RATING	2 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	S-2 - OPEN

BUILDING DATA:

1) ALL ROADS PROPOSED BY THE PROJECT, AS WELL AS ADJOINING ROADS; THE CLASSIFICATIONS OF THE ROADS (I.E. ARTERIAL, COLLECTOR, ETC.) SHOULD BE NOTED. (PROVIDED)

2) LOCATION AND DIMENSIONS OF ALL FIRE ACCESS LANES AND TURNAROUNDS; VEHICLE ACCESS TO THE REAR OF BUILDINGS, INCLUDING INTERIOR COURTYARDS FOR STICK-BUILT DONUT-SHAPED BUILDINGS, NEEDS TO BE SHOWN. (PROVIDED)

3) ARROW DIAGRAMS INDICATING WHERE EMERGENCY VEHICLES CAN ACCESS BUILDINGS. (PROVIDED)

4) DIMENSIONS OF THE DISTANCE BETWEEN THE PORTIONS OF THE ROADWAY THAT ARE ACCESSIBLE TO FIRE TRUCKS AND THE FACADES OF THE BUILDINGS. THE TARGET DISTANCE IS BETWEEN 15 AND 30 FEET SEPARATION. (PROVIDED)

5) IMPROVEMENTS PLANNED FOR THE AREA BETWEEN THE PORTIONS OF THE ROADWAY THAT ARE ACCESSIBLE TO FIRE TRUCKS AND THE FACADES OF THE BUILDINGS, INCLUDING PARKING LANES, GARAGE PODIUMS, LANDSCAPED AREAS, STEEP SLOPES, SIDEWALKS, PLAZAS, YARDS, OUTDOOR SEATING AREAS, STEPS, PLANTERS, SCULPTURES, ETC. (PROVIDED)

6) CLEAR IDENTIFICATION OF BUILDING FOOTPRINTS, CANTILEVERED EXTENSIONS, PENTHOUSES, BALCONIES, PATIOS, ETC. (PROVIDED)

7) HEIGHTS OF THE PROPOSED BUILDINGS; FOR BUILDINGS WITH MULTIPLE HEIGHTS DUE TO STEP BACKS, THE HEIGHT AND NUMBER OF STORIES OF EACH BUILDING SEGMENT SHOULD BE CLEARLY NOTED. (PROVIDED)

8) LOCATION OF OVERHEAD UTILITY LINES. -UTILITIES SHALL BE UNDERGROUNDED UPON COMPLETION OF EACH PHASE/BLOCK. (PROVIDED)

9) IDENTIFICATION OF CONSTRUCTION TYPE FOR EACH BUILDING; FOR MULTIPLE BUILDINGS LOCATED ON A SINGLE GARAGE PODIUM, THE CONSTRUCTION TYPE FOR EACH BUILDING MUST BE IDENTIFIED - THE GARAGE PODIUM CAN BE IDENTIFIED AS A BLOCK, WITH EACH BUILDING IDENTIFIED SEPARATELY. EACH PORTION OF STRUCTURE WITH A DIFFERENT CONSTRUCTION TYPE IS CONSIDERED A SEPARATE BUILDING. STRUCTURES THAT ARE SEPARATED BY A FIRE WALL ARE ALSO CONSIDERED SEPARATE BUILDINGS. (PROVIDED)

10) TYPE OF BUILDING SKIN MATERIAL (COMBUSTIBLE/NON-COMBUSTIBLE), TYPE OF SPRINKLERS (TYPE 13; IF 13R PLEASE EXPLAIN), AND ROOF TYPE (CLASS A PREFERRED). (TO BE PROVIDED AT SITE PLAN)

11) LOCATION OF PROPOSED BUILDING ENTRANCES, BOTH PEDESTRIAN AND VEHICULAR; ACCESS DOORS AND ELEVATORS, INCLUDING MEDEVAC ELEVATORS, SHOULD BE SHOWN ON THE FDP. ALSO, ANY INTERIOR ROUTES AVAILABLE FOR EMERGENCY VEHICLE USE, SUCH AS SUITABLY SIZED DRIVEWAYS THROUGH PARKING GARAGES AND COURTYARDS, SHOULD BE DELINEATED. (PROVIDED)

12) LOADING AREAS AND WHETHER THEY ARE ACCESSIBLE TO EMERGENCY VEHICLES. (PROVIDED)

13) ACCESS TO ACTIVE COURTYARDS (ESPECIALLY WITH POOLS, TENNIS COURTS, ETC.) NEEDS TO BE SHOWN - HOW WILL THE MEDICAL STAFF GET THERE, WITH THEIR EQUIPMENT, QUICKLY? (PROVIDED)

LEGEND

- AERIAL FIRE APPARATUS ACCESS AREA (6% SLOPE OR LESS) - CONFIRMED
- AERIAL FIRE APPARATUS ACCESS AREA (6% SLOPE OR LESS) - 'LADDER REACH'
- PROPOSED BUILDING PODIUM BETWEEN 51'-85'
- 15' PROPOSED BUILDING OFFSET
- 30' PROPOSED BUILDING OFFSET
- PROPOSED FIRE DEPARTMENT CONNECTION (FDC)
- PROPOSED FIRE HYDRANT
- PROPOSED STREET TREE
- PEDESTRIAN ENTRANCE
- L/P LOADING/PARKING ENTRANCE
- PROPOSED WATER LINE

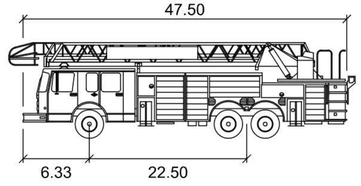
LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY

COVERAGE CALCULATION:

BUILDING 3: 37.7%

BUILDING 4: 42.8%



FX-CO FIRE AT-7-2016

	feet
Width	: 8.00
Track	: 6.91
Lock to Lock Time	: 3.0
Steering Angle	: 45.0

VIKA VIRGINIA, LLC
8180 Greensboro Dr., Suite 200
Tysons, VA 22102
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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

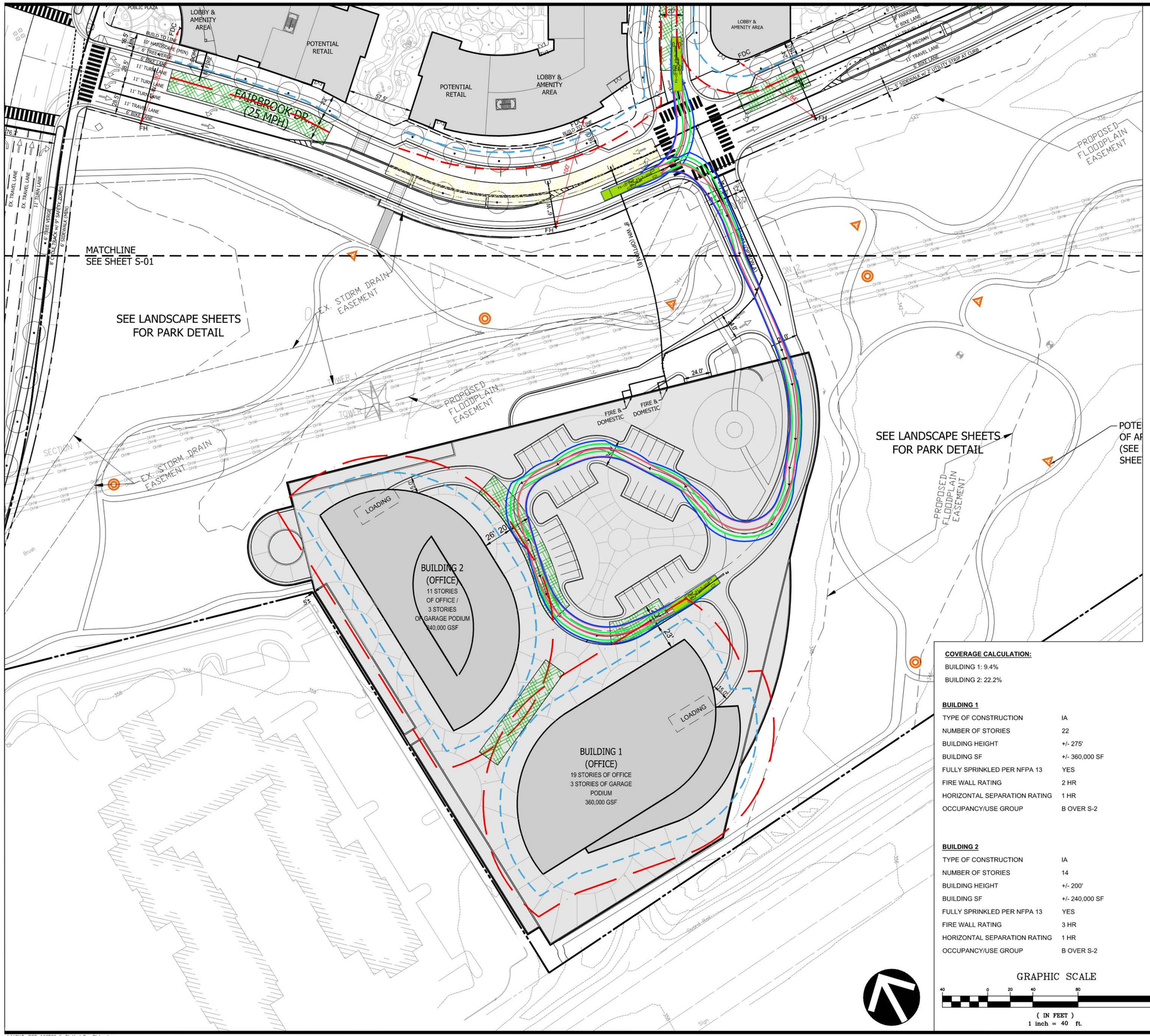
TOWN OF HERNDON, VIRGINIA

FIRE ACCESS EXHIBIT

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=40'
VIKA NO.	VV6045X
SHEET NO.	S-01

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_S-01 S-02 FIRE ACCESS PLAN.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:52:08 AM LAYOUT: FIRE ACCESS 1

LAYOUT: FIRE ACCESS 1, Plotted By: Richardson



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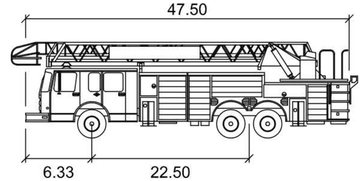
- PROPOSED STREET TREE
- PEDESTRIAN ENTRANCE
- L/P LOADING/PARKING ENTRANCE
- PROPOSED WATER LINE

LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY



COVERAGE CALCULATION:

BUILDING 1: 9.4%

BUILDING 2: 22.2%

BUILDING 1

TYPE OF CONSTRUCTION	IA
NUMBER OF STORIES	22
BUILDING HEIGHT	+/- 275'
BUILDING SF	+/- 360,000 SF
FULLY SPRINKLED PER NFPA 13	YES
FIRE WALL RATING	2 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	B OVER S-2

BUILDING 2

TYPE OF CONSTRUCTION	IA
NUMBER OF STORIES	14
BUILDING HEIGHT	+/- 200'
BUILDING SF	+/- 240,000 SF
FULLY SPRINKLED PER NFPA 13	YES
FIRE WALL RATING	3 HR
HORIZONTAL SEPARATION RATING	1 HR
OCCUPANCY/USE GROUP	B OVER S-2

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

FX-CO FIRE AT-7-2016

feet

Width	: 8.00
Track	: 6.91
Lock to Lock Time	: 3.0
Steering Angle	: 45.0

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5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

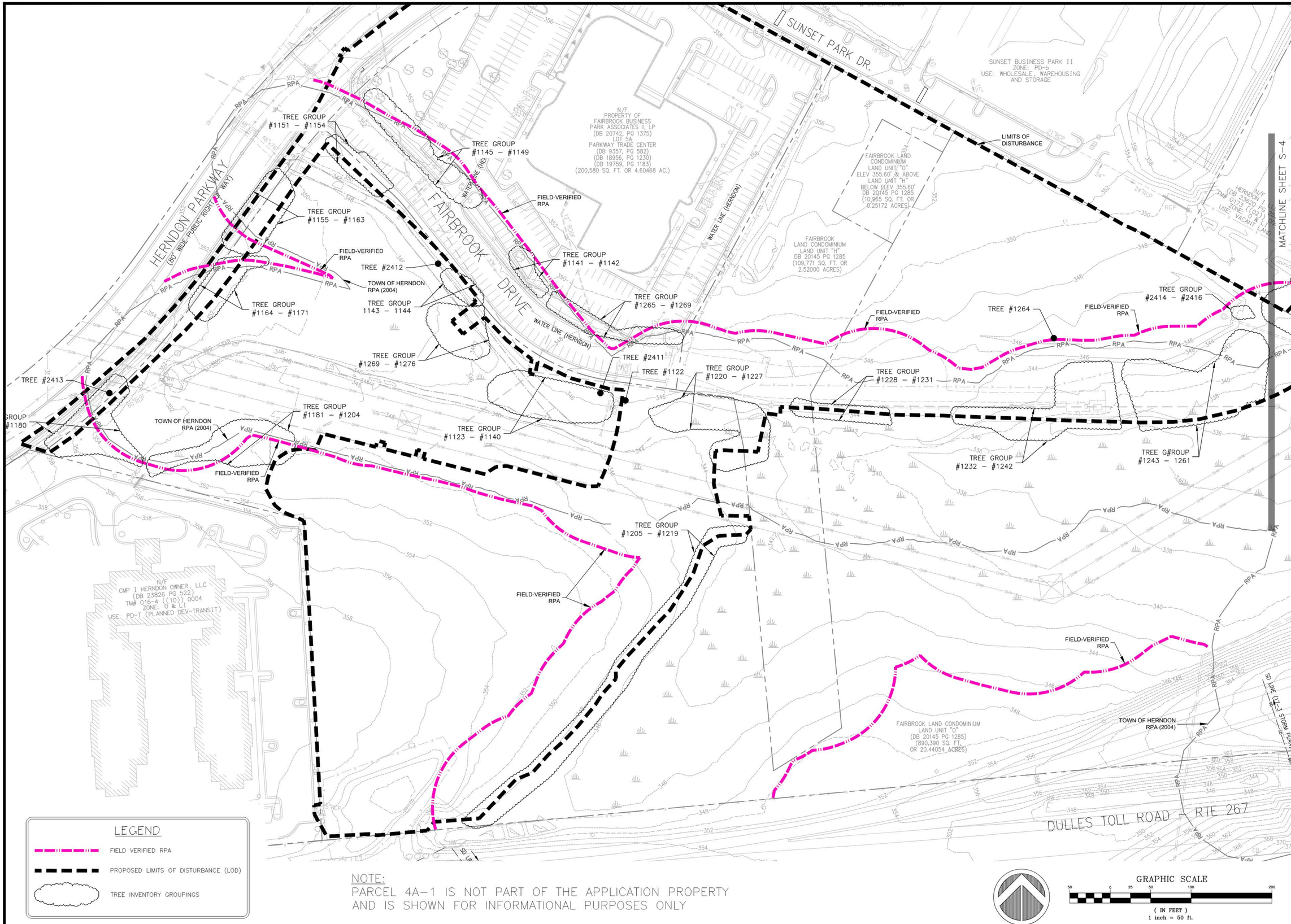
TOWN OF HERNDON, VIRGINIA

FIRE ACCESS EXHIBIT

DRAWN BY:	ARC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=40'
VIKA NO.	VV6045X
SHEET NO.	S-02

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_S-01 S-02 FIRE ACCESS PLAN.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:53:28 AM LAYOUT: FIRE ACCESS 2

LAYOUT: FIRE ACCESS 2, Plotted By: Richardson



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TREE INVENTORY MAP

FAIRBROOK BUSINESS PARK

TOWN OF HERNDON, VA

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By
1	10/16/20	NOTE ADDED RE: OFFSITE AREA	CH	

DATE: JUNE 4, 2020

SCALE: 1" = 50' C.I.:2'

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

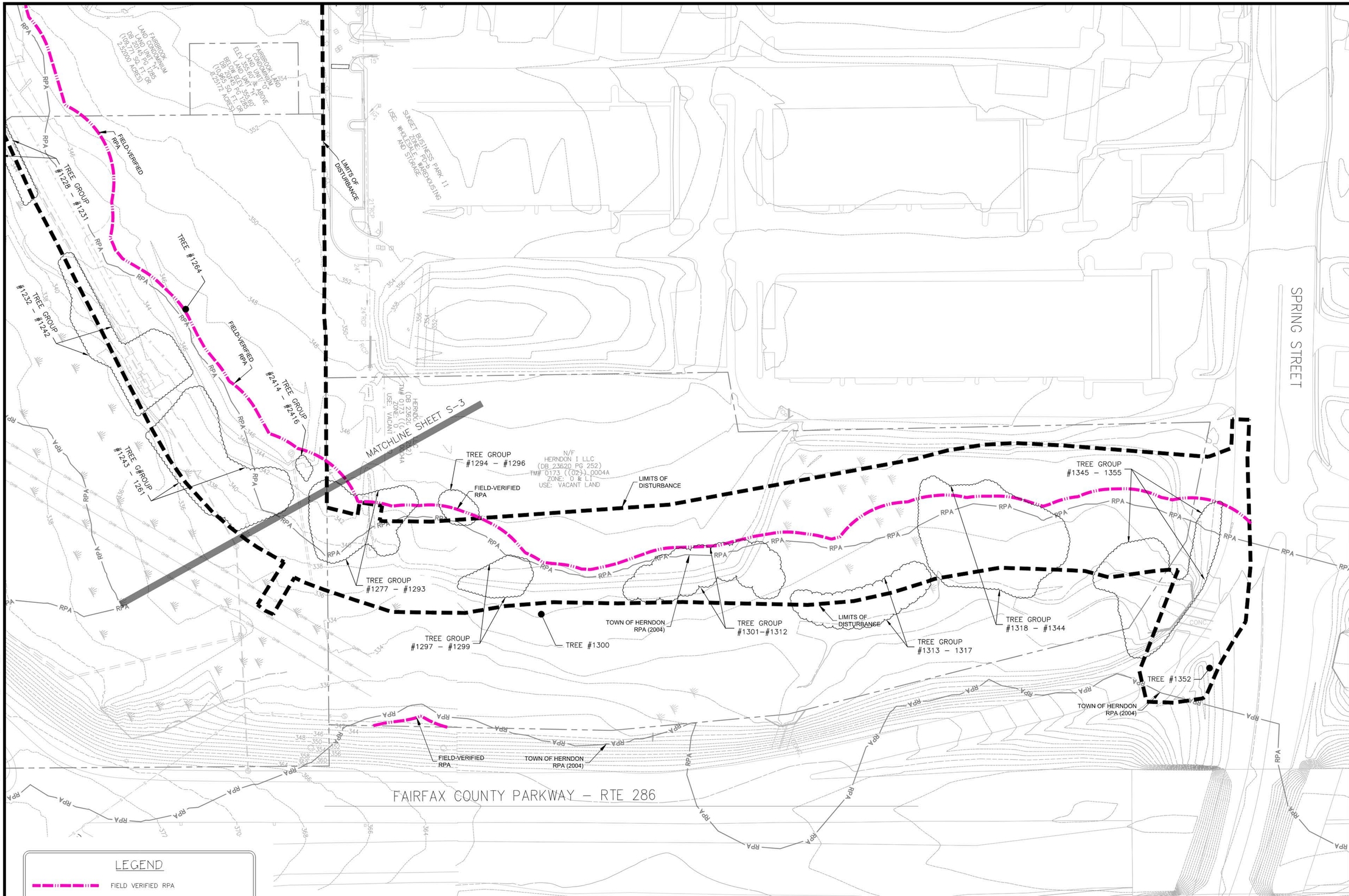
Boundary and Topo Source: VIKA

Design	Draft	Approved
CH	CH	----

Sheet #
S-3

WSSI Project Number:
4674.06

L:\04000s\4674.06\CADD\05-ENVR\TREES\4764.06_FAIRBROOK_TREES_rev_2020.10.16.dwg S-3 Plotted By: Hulse, Cary, 10/16/2020 12:48 PM



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TREE INVENTORY MAP

FAIRBROOK BUSINESS PARK

TOWN OF HERNDON, VA

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By
1	10/16/20	NOTE ADDED RE: OFFSITE AREA	CH	

DATE: JUNE 4, 2020 SCALE: 1" = 50' C.I.: 2'

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source: VIKA ----

Design	Draft	Approved
CH	CH	----

Sheet #
S-4

WSSI Project Number: 4674.06

L:\04000s\4674.06\CADD\05-ENVR\TREES\4764.06_FAIRBROOK_TREES_rev_2020.10.16.dwg S-4 Plotted By: Hulse, Cary, 10/16/2020 12:48 PM

Date: MAY 2020

Tree Inventory

Project: FAIRBROOK

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Condition Rating %	Condition Rating	Dead Tree	Stems	SRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Additional Notes	Condition Notes
1122	24	oak, northern red	Quercus rubra	45%	Fair	NO	1	11	36		One Sided, Suppressed, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Branch Decay, Overhead Utilities
1123	9	hickory, mockernut	Carya tomentosa	50%	Fair	NO	1	4	14		Excessive Lean, Vines
1124	20	oak, northern red	Quercus rubra	50%	Fair	NO	1	9	30		Excessive Lean, Vines
1125	9	hickory, pignut	Carya glabra	65%	Good	NO	1	4	14		Suppressed. Overhead Utilities
1126	11	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	5	17		
1127	11	blackgum	Nyssa sylvatica	60%	Fair	NO	1	5	17		One Sided, Vines
1128	12	oak, white	Quercus alba	65%	Good	NO	1	5	18		One Sided
1129	25	oak, white	Quercus alba	70%	Good	NO	1	11	38		One Sided
1130	18	oak, northern red	Quercus rubra	60%	Fair	NO	1	8	27		One Sided, Suppressed, Large DW (3"+), Small DW (1-2")
1131	14	pine, shortleaf	Pinus echinata	60%	Fair	NO	1	6	21		Large DW (3"+), Small DW (1-2"), Vines
1132	9	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	4	14		
1133	9	oak, pin	Quercus palustris	65%	Good	NO	1	4	14		One Sided, Small DW (1-2"), Vines
1134	17	oak, pin	Quercus palustris	65%	Good	NO	1	8	26		One Sided, Suppressed, Large DW (3"+), Small DW (1-2"), Vines, Stream Erosion
1135	17	oak, northern red	Quercus rubra	65%	Good	NO	1	8	26		One Sided, Suppressed, Large DW (3"+), Small DW (1-2"), Vines
1136	14,7,6	mulberry, white	Morus alba	50%	Fair	NO	3	8	25		One Sided, Suppressed, Small DW (1-2"), Vines
1137	26	maple, red	Acer rubrum	65%	Good	NO	1	12	39		One Sided, Small DW (1-2")
1138	19	maple, red	Acer rubrum	65%	Good	NO	1	9	29		One Sided, Small DW (1-2")
1139	17	maple, red	Acer rubrum	60%	Fair	NO	1	8	26		One Sided, Co-Dominant Stems, Small DW (1-2"), Vines
1140	9	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	4	14		
1141	9	maple, Freeman	Acer x freemanii	60%	Fair	NO	1	4	14		
1142	10	maple, Freeman	Acer x freemanii	60%	Fair	NO	1	5	15		
1143	16	elm, slippery	Ulmus rubra	60%	Fair	NO	1	7	24		One Sided, Small DW (1-2")
1144	17	elm, slippery	Ulmus rubra	65%	Good	NO	1	8	26		One Sided, Small DW (1-2")
1145	11	maple, Freeman	Acer x freemanii	60%	Fair	NO	1	5	17		Buried Root Collar, Root Damage/Decay, Trunk Decay, Mechanical Damage
1146	12	maple, Freeman	Acer x freemanii	60%	Fair	NO	1	5	18	3" girdling root.	Buried Root Collar, Girdling Roots, Root Damage/Decay, Trunk Decay, Co-Dominant Stems, Mechanical Damage
1147	12	maple, Freeman	Acer x freemanii	60%	Fair	NO	1	5	18	3" girdling root.	Buried Root Collar, Girdling Roots, Root Damage/Decay, Trunk Decay, Co-Dominant Stems, Mechanical Damage
1148	25	oak, willow	Quercus phellos	65%	Good	NO	1	11	38		Large DW (3"+), Small DW (1-2")
1149	12	oak, white	Quercus alba	60%	Fair	NO	1	5	18		Small DW (1-2")
1150	11,6	cherry, Japanese flowering	Prunus serrulata	50%	Fair	NO	2	6	19		One Sided, Suppressed, Basal Decay, Trunk Decay, Low Vigor, Branch Decay
1151	12	cherry, Japanese flowering	Prunus serrulata	55%	Fair	NO	1	5	18		One Sided, Suppressed
1152	11	pine, Austrian	Pinus nigra	50%	Fair	NO	1	5	17	3" girdling root.	One Sided, Girdling Roots, Small DW (1-2"), Low Vigor
1153	8	pine, Austrian	Pinus nigra	35%	Poor	NO	1	4	12	3" girdling root.	One Sided, Buried Root Collar, Mechanical Damage, Small DW (1-2"), Low Vigor, Branch Decay
1154	8	pine, Austrian	Pinus nigra	35%	Poor	NO	1	4	12		One Sided, Buried Root Collar, Basal Decay, Trunk Decay, Mechanical Damage, Small DW (1-2"), Low Vigor, Branch Decay
1155	10	oak, white	Quercus alba	55%	Fair	NO	1	5	15		Suppressed. Trunk Decay, Broken Limbs, Branch Decay
1156	13	oak, white	Quercus alba	60%	Fair	NO	1	6	20		One Sided, Suppressed
1157	14,12,11	oak, white	Quercus alba	60%	Fair	NO	3	10	32		One Sided, Suppressed, Co-Dominant Stems
1158	9	oak, white	Quercus alba	60%	Fair	NO	1	4	14		One Sided, Suppressed
1159	12,13	oak, white	Quercus alba	60%	Fair	NO	2	8	27		Suppressed, Co-Dominant Stems, Small DW (1-2"), Broken Limbs
1160	10,9,11	oak, white	Quercus alba	5%	Dead	YES	3	8	26		
1161	9	oak, white	Quercus alba	55%	Fair	NO	1	4	14		Small DW (1-2"), Branch Decay
1162	17	oak, northern red	Quercus rubra	65%	Good	NO	1	8	26		One Sided, Large DW (3"+), Small DW (1-2")
1163	12	oak, white	Quercus alba	60%	Fair	NO	1	5	18		One Sided, Suppressed, Large DW (3"+), Small DW (1-2")
1164	24	oak, white	Quercus alba	60%	Fair	NO	1	11	36		One Sided, Suppressed, Co-Dominant Stems, Large DW (3"+), Small DW (1-2")
1165	11,12	oak, white	Quercus alba	55%	Fair	NO	2	7	24	11" is in decline	One Sided, Suppressed, Co-Dominant Stems, Large DW (3"+), Small DW (1-2")
1166	9	hickory, mockernut	Carya tomentosa	65%	Good	NO	1	4	14		One Sided, Suppressed, Co-Dominant Stems
1167	17	elm, slippery	Ulmus rubra	40%	Poor	NO	1	8	26	50% dead	One Sided, Trunk Decay, Co-Dominant Stems, Large DW (3"+), Small DW (1-2"), Low Vigor, Serious Decline, Broken Limbs, Branch Decay, Insect/Disease Problem
1168	11	oak, white	Quercus alba	60%	Fair	NO	1	5	17	1" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2")
1169	18	pine, shortleaf	Pinus echinata	60%	Fair	NO	1	8	27		One Sided, Small DW (1-2")
1170	12	oak, pin	Quercus palustris	55%	Fair	NO	1	5	18		One Sided, Suppressed, Small DW (1-2")
1171	12	oak, pin	Quercus palustris	55%	Fair	NO	1	5	18		One Sided, Suppressed, Trunk Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Stressed, Serious Decline, Branch Decay, Vines, Overhead Utilities
1172	11	oak, pin	Quercus palustris	55%	Fair	NO	1	5	17		One Sided, Suppressed, Small DW (1-2"), Vines
1173	8,4	oak, pin	Quercus palustris	55%	Fair	NO	2	4	13		One Sided, Suppressed, Co-Dominant Stems, Small DW (1-2"), Vines
1174	8	pear, Callery	Pyrus calleryana	50%	Fair	NO	1	4	12		Small DW (1-2"), Vines
1175	13	elm, slippery	Ulmus rubra	65%	Good	NO	1	6	20	2" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2"), Vines
1176	15,11	ZZ Unknown dead tree	ZZ Unknown dead tree	5%	Dead	YES	2	8	28		
1177	9	elm, slippery	Ulmus rubra	55%	Fair	NO	1	4	14		Suppressed, Small DW (1-2")
1178	11	blackgum	Nyssa sylvatica	60%	Fair	NO	1	5	17	1" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2")
1179	14,12	elm, slippery	Ulmus rubra	60%	Fair	NO	2	8	28	1",2" girdling root.	Girdling Roots, Large DW (3"+), Small DW (1-2")
1180	13	elm, slippery	Ulmus rubra	60%	Fair	NO	1	6	20	1",2" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2")
1181	8	maple, red	Acer rubrum	60%	Fair	NO	1	4	12		Co-Dominant Stems, Small DW (1-2")
1182	16	elm, slippery	Ulmus rubra	60%	Fair	NO	1	7	24	2" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2")
1183	17	oak, swamp white	Quercus bicolor	60%	Fair	NO	1	8	26	2" girdling root.	One Sided, Suppressed, Girdling Roots, Small DW (1-2")
1184	9	maple, red	Acer rubrum	65%	Good	NO	1	4	14		One Sided, Suppressed
1185	8	maple, red	Acer rubrum	60%	Fair	NO	1	4	12		One Sided, Suppressed, Small DW (1-2")
1186	9	willow, black	Salix nigra	50%	Fair	NO	1	4	14	Root plate heave	One Sided, Excessive Lean
1187	19	ZZ Unknown dead tree	ZZ Unknown dead tree	5%	Dead	YES	1	9	29		
1188	27	elm, slippery	Ulmus rubra	75%	Good	NO	1	12	41	2" girdling root.	Girdling Roots, Vines
1189	13	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	6	20		
1190	9	elm, slippery	Ulmus rubra	65%	Good	NO	1	4	14		One Sided, Suppressed, Broken Limbs
1191	12	oak, pin	Quercus palustris	55%	Fair	NO	1	5	18		One Sided, Suppressed, Large DW (3"+), Small DW (1-2"), Broken Limbs
1192	21	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	9	32		
1193	11	elm, slippery	Ulmus rubra	45%	Fair	NO	1	5	17		One Sided, Suppressed, Large DW (3"+), Small DW (1-2"), Broken Limbs
1194	9	hickory, mockernut	Carya tomentosa	50%	Fair	NO	1	4	14		Suppressed. Mechanical Damage, Broken Limbs, Overhead Utilities
1195	11	elm, slippery	Ulmus rubra	5%	Dead	YES	1	5	17		
1196	19	oak, white	Quercus alba	60%	Fair	NO	1	9	29		Suppressed. Mechanical Damage, Large DW (3"+), Small DW (1-2"), Overhead Utilities
1197	12	oak, pin	Quercus palustris	60%	Fair	NO	1	5	18		One Sided, Suppressed, Mechanical Damage, Small DW (1-2"), Broken Limbs, Overhead Utilities
1198	21	oak, swamp chestnut	Quercus michauxii	65%	Good	NO	1	9	32		Mechanical Damage, Large DW (3"+), Small DW (1-2"), Broken Limbs, Overhead Utilities
1199	11	elm, slippery	Ulmus rubra	40%	Poor	NO	1	5	17		One Sided, Suppressed, Low Vigor, Stressed
1200	12	oak, pin	Quercus palustris	5%	Dead	YES	1	5	18		
1201	17	oak, swamp chestnut	Quercus michauxii	60%	Fair	NO	1	8	26		Mechanical Damage, Large DW (3"+), Small DW (1-2"), Broken Limbs, Branch Decay
1202	9,7	oak, white	Quercus alba	65%	Good	NO	2	5	17		One Sided, Suppressed
1203	15	blackgum	Nyssa sylvatica	65%	Good	NO	1	7	23		Mechanical Damage, Overhead Utilities
1204	10	hickory, mockernut	Carya tomentosa	65%	Good	NO	1	5	15		Mechanical Damage, Overhead Utilities
1205	10	hickory, mockernut	Carya tomentosa	65%	Good	NO	1	5	15		Suppressed, Small DW (1-2")
1206	12	oak, white	Quercus alba	65%	Good	NO	1	5	18		
1207	17	oak, white	Quercus alba	65%	Good	NO	1	8	26	1" girdling root.	Girdling Roots, Co-Dominant Stems
1208	11	oak, northern red	Quercus rubra	65%	Good	NO	1	5	17		Excessive Lean
1209	13	hickory, mockernut	Carya tomentosa	50%	Fair	NO	1	6	20		Basal Decay, Trunk Decay, Mechanical Damage, Large DW (3"+), Broken Limbs
1210	11	oak, white	Quercus alba	60%	Fair	NO	1	5	17		Small DW (1-2")
1211	12	oak, northern red	Quercus rubra	40%	Poor	NO	1	5	18		Basal Decay, Trunk Decay, Branch Decay
1212	16,10	oak, northern red	Quercus rubra	60%	Fair	NO	2	8	28		Co-Dominant Stems, Small DW (1-2"), Insect/Disease Problem

Date: MAY 2020

Tree Inventory

Project: FAIRBROOK

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Condition Rating %	Condition Rating	Dead Tree	Stems	SRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Additional Notes	Condition Notes
1213	12,8	oak, white	Quercus alba	50%	Fair	NO	2	6	22		Trunk Decay, Co-Dominant Stems, Large DW (3"+), Small DW (1-2"), Branch Decay
1214	14	oak, northern red	Quercus rubra	60%	Fair	NO	1	6	21		Large DW (3"+), Small DW (1-2"), Branch Decay
1215	13	oak, white	Quercus alba	70%	Good	NO	1	6	20		Co-Dominant Stems
1216	13	oak, white	Quercus alba	70%	Good	NO	1	6	20		
1217	9	hickory, mockernut	Carya tomentosa	65%	Good	NO	1	4	14		Co-Dominant Stems
1218	18,14	oak, white	Quercus alba	55%	Fair	NO	2	10	34		One Sided, Suppressed, Co-Dominant Stems, Mechanical Damage, Low Vigor, Overhead Utilities
1219	13	oak, white	Quercus alba	55%	Fair	NO	1	6	20		Suppressed. Co-Dominant Stems, Mechanical Damage, Small DW (1-2"), Low Vigor, Branch Decay, Overhead Utilities
1220	9	oak, white	Quercus alba	55%	Fair	NO	1	4	14		Suppressed. Co-Dominant Stems, Mechanical Damage, Small DW (1-2"), Low Vigor, Branch Decay, Overhead Utilities
1221	14	maple, red	Acer rubrum	55%	Fair	NO	1	6	21		Co-Dominant Stems, Mechanical Damage, Overhead Utilities
1222	16	maple, red	Acer rubrum	55%	Fair	NO	1	7	24		Mechanical Damage, Small DW (1-2"), Vines, Overhead Utilities
1223	10	sycamore, American	Platanus occidentalis	65%	Good	NO	1	5	15		One Sided, Small DW (1-2"), Vines, Stream Erosion
1224	11	willow, black	Salix nigra	60%	Fair	NO	1	5	17		One Sided, Suppressed, Small DW (1-2"), Vines
1225	12	oak, pin	Quercus palustris	65%	Good	NO	1	5	18		One Sided, Suppressed, Small DW (1-2"), Vines
1226	9	maple, red	Acer rubrum	65%	Good	NO	1	4	14		One Sided, Suppressed, Small DW (1-2"), Vines
1227	9,4	maple, red	Acer rubrum	65%	Good	NO	2	4	15		One Sided, Suppressed, Co-Dominant Stems, Small DW (1-2"), Vines
1228	8	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	4	12		
1229	8,8	sycamore, American	Platanus occidentalis	60%	Fair	NO	2	5	17		One Sided, Root Damage/Decay
1230	11	oak, willow	Quercus phellos	65%	Good	NO	1	5	17		One Sided
1231	8	elm, slippery	Ulmus rubra	65%	Good	NO	1	4	12		One Sided
1232	8	locust, black	Robinia pseudoacacia	65%	Good	NO	1	4	12		One Sided
1233	9	oak, white	Quercus alba	50%	Fair	NO	1	4	14		Trunk Decay, Broken Limbs
1234	16	oak, white	Quercus alba	75%	Good	NO	1	7	24		Large DW (3"+), Small DW (1-2")
1235	15	oak, white	Quercus alba	60%	Fair	NO	1	7	23		Suppressed. Excessive Lean, Large DW (3"+), Small DW (1-2")
1236	13	sycamore, American	Platanus occidentalis	60%	Fair	NO	1	6	20		Suppressed. Excessive Lean, Large DW (3"+), Small DW (1-2")
1237	14	sycamore, American	Platanus occidentalis	60%	Fair	NO	1	6	21		Suppressed. Excessive Lean, Large DW (3"+), Small DW (1-2"), Stream Erosion
1238	9	oak, southern red	Quercus falcata	60%	Fair	NO	1	4	14		Suppressed. Small DW (1-2")
1239	10	sycamore, American	Platanus occidentalis	50%	Fair	NO	1	5	15		Suppressed. Large DW (3"+), Small DW (1-2"), Stream Erosion
1240	11,10,9	maple, red	Acer rubrum	70%	Good	NO	3	8	26		Suppressed. Co-Dominant Stems, Small DW (1-2"), Stream Erosion
1241	10	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	1	5	15		
1242	9,10	oak, white	Quercus alba	50%	Fair	NO	2	6	20		Suppressed. Basal Decay, Trunk Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Broken Limbs, Branch Decay
1243	9	pine, shortleaf	Pinus echinata	50%	Fair	NO	1	4	14	Tag #40. #703-331-3731	Basal Decay, Trunk Decay, Mechanical Damage, Small DW (1-2"), Low Vigor, Stressed
1244	16	oak, white	Quercus alba	65%	Good	NO	1	7	24		Suppressed. Large DW (3"+), Small DW (1-2")
1245	8	hickory, mockernut	Carya tomentosa	70%	Good	NO	1	4	12		One Sided, Suppressed, Small DW (1-2")
1246	9	hickory, mockernut	Carya tomentosa	70%	Good	NO	1	4	14		One Sided, Suppressed, Compacted Soils, Small DW (1-2")
1247	13	sycamore, American	Platanus occidentalis	55%	Fair	NO	1	6	20		One Sided, Suppressed, Compacted Soils, Large DW (3"+), Small DW (1-2"), Branch Decay, Stream Erosion
1248	9	sycamore, American	Platanus occidentalis	5%	Dead	YES	1	4	14		
1249	8	sycamore, American	Platanus occidentalis	45%	Fair	NO	1	4	12		Compacted Soils, Basal Decay, Co-Dominant Stems, Large DW (3"+), Small DW (1-2"), Stream Erosion
1250	8	maple, red	Acer rubrum	60%	Fair	NO	1	4	12		Compacted Soils, Co-Dominant Stems, Small DW (1-2")
1251	12	sycamore, American	Platanus occidentalis	65%	Good	NO	1	5	18		Compacted Soils, Small DW (1-2")
1252	9	hickory, mockernut	Carya tomentosa	65%	Good	NO	1	4	14		Compacted Soils, Root Damage/Decay, Co-Dominant Stems, Small DW (1-2")
1253	14	sycamore, American	Platanus occidentalis	65%	Good	NO	1	6	21		Compacted Soils, Root Damage/Decay, Small DW (1-2"), Broken Limbs, Branch Decay, Vines, Stream Erosion
1254	15	sycamore, American	Platanus occidentalis	50%	Fair	NO	1	7	23		Compacted Soils, Root Damage/Decay, Mechanical Damage, Small DW (1-2"), Broken Limbs, Branch Decay, Vines, Overhead Utilities
1255	8	hickory, pignut	Carya glabra	60%	Fair	NO	1	4	12		Compacted Soils, Root Damage/Decay, Small DW (1-2")
1256	19	oak, white	Quercus alba	75%	Good	NO	1	9	29		Compacted Soils, Root Damage/Decay, Small DW (1-2")
1257	18	oak, northern red	Quercus rubra	60%	Fair	NO	1	8	27		Compacted Soils, Root Damage/Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Overhead Utilities
1258	9	hickory, bitternut	Carya cordiformis	45%	Fair	NO	1	4	14		Suppressed. Compacted Soils, Root Damage/Decay, Mechanical Damage, Overhead Utilities
1259	10	oak, white	Quercus alba	65%	Good	NO	1	5	15		Suppressed. Compacted Soils, Root Damage/Decay
1260	11	oak, southern red	Quercus falcata	50%	Fair	NO	1	5	17		Suppressed. Compacted Soils, Root Damage/Decay, Trunk Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Overhead Utilities
1261	13	oak, white	Quercus alba	55%	Fair	NO	1	6	20		Suppressed. Compacted Soils, Root Damage/Decay, Trunk Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2"), Overhead Utilities
1262	13	ash, spp.	Fraxinus spp.	5%	Dead	YES	1	6	20		
1263	9	oak, white	Quercus alba	70%	Good	NO	1	4	14		Root Damage/Decay, Small DW (1-2")
1264	8	sycamore, American	Platanus occidentalis	70%	Good	NO	1	4	12		Small DW (1-2")
1265	12	maple, Freeman	Acer x freemanii	55%	Fair	NO	1	5	18		Compacted Soils, Root Damage/Decay, Mechanical Damage, Small DW (1-2")
1266	11	maple, Freeman	Acer x freemanii	45%	Fair	NO	1	5	17		Compacted Soils, Root Damage/Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2")
1267	14	maple, Freeman	Acer x freemanii	45%	Fair	NO	1	6	21		Compacted Soils, Root Damage/Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2")
1268	14	maple, Freeman	Acer x freemanii	55%	Fair	NO	1	6	21		Compacted Soils, Root Damage/Decay, Trunk Decay, Mechanical Damage, Large DW (3"+), Small DW (1-2")
1269	9,8,6	ash, green	Fraxinus pennsylvanica	5%	Dead	YES	3	6	20		
1270	8,4	maple, red	Acer rubrum	65%	Good	NO	2	4	13		One Sided, Co-Dominant Stems, Small DW (1-2"), Stream Erosion
1271	9,6,3	mulberry, white	Morus alba	50%	Fair	NO	3	5	17		One Sided, Suppressed, Trunk Decay, Co-Dominant Stems, Small DW (1-2"), Branch Decay, Stream Erosion
1272	26	oak, white	Quercus alba	80%	Good	NO	1	12	39		Small DW (1-2")
1273	15	linden, American	Tilia americana	65%	Good	NO	1	7	23		One Sided, Suppressed, Large DW (3"+), Small DW (1-2")
1274	15	oak, white	Quercus alba	70%	Good	NO	1	7	23		Large DW (3"+), Small DW (1-2")
1275	17,18	oak, white	Quercus alba	40%	Poor	NO	2	11	37	18" severe dieback, Both declining	Co-Dominant Stems, Large DW (3"+), Small DW (1-2"), Low Vigor, Stressed, Serious Decline, Branch Decay
1276	9	hickory, mockernut	Carya tomentosa	75%	Good	NO	1	4	14		One Sided, Small DW (1-2")
1277	18	oak, northern red	Quercus rubra	5%	Dead	YES	1	8	27	Herndon Tag #26	
1278	9	oak, white	Quercus alba	60%	Fair	NO	1	4	14		Large DW (3"+), Small DW (1-2"), Broken Limbs
1279	32,14	oak, white	Quercus alba	5%	Dead	YES	2	16	52	Herndon Tag #25	
1280	15	oak, white	Quercus alba	70%	Good	NO	1	7	23		One Sided, Mechanical Damage, Small DW (1-2")
1281	15,14	oak, white	Quercus alba	70%	Good	NO	2	9	31		One Sided, Co-Dominant Stems, Small DW (1-2")
1282	9,13	oak, white	Quercus alba	60%	Fair	NO	2	7	24		Co-Dominant Stems, Large DW (3"+), Small DW (1-2")
1283	11	oak, white	Quercus alba	65%	Good	NO	1	5	17		One Sided, Small DW (1-2")
1284	9,9	hickory, pignut	Carya glabra	70%	Good	NO	2	6	19		Co-Dominant Stems, Small DW (1-2")
1285	8	oak, willow	Quercus phellos	70%	Good	NO	1	4	12		One Sided, Suppressed
1286	22	oak, white	Quercus alba	70%	Good	NO	1	10	33		One Sided, Suppressed, Large DW (3"+), Small DW (1-2")
1287	17	oak, white	Quercus alba	70%	Good	NO	1	8	26		One Sided, Suppressed, Small DW (1-2")
1288	14	hickory, pignut	Carya glabra	75%	Good	NO	1	6	21		One Sided, Suppressed
1289	26	oak, white	Quercus alba	70%	Good	NO	1	12	39		Co-Dominant Stems
1290	16	oak, white	Quercus alba	5%	Dead	YES	1	7	24		
1291	13	oak, white	Quercus alba	60%	Fair	NO	1	6	20		One Sided, Large DW (3"+), Small DW (1-2")
1292	22	oak, northern red	Quercus rubra	70%	Good	NO	1	10	33		
1293	10	oak, white	Quercus alba	70%	Good	NO	1	5	15		One Sided
1294	8	baldcypress, common	Taxodium distichum	50%	Fair	NO	1	4	12		One Sided, Small DW (1-2")
1295	10,8	oak, sawtooth	Quercus acutissima	65%	Good	NO	2	6	19		Co-Dominant Stems, Small DW (1-2"), Vines
1296	8,6	oak, sawtooth	Quercus acutissima	65%	Good	NO	2	5	15		One Sided, Co-Dominant Stems, Small DW (1-2"), Vines
1297	8	locust, black	Robinia pseudoacacia	50%	Fair	NO	1	4	12	Beaver damage	One Sided, Mechanical Damage, Small DW (1-2")

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TREE INVENTORY SCHEDULE

FAIRBROOK BUSINESS PARK
TOWN OF HERNDON, VA

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INTERNATIONAL SOCIETY OF ARBORICULTURE
CARY HULSE
ISA# PD-1080A
CERTIFIED ARBORIST

REVISIONS

No.	Date	Description	Rev. By	App. By
1	10/16/20	NOTE ADDED RE: OFFSITE AREA	CH	

SCALE:AS NOTED(C.L.:2'

DATE: JUNE 4, 2020

Horizontal Datum: VCS NAD 83

Vertical Datum: NAVD 88

Boundary and Topo Source: VIKA

Design	Draft	Approved
CH	CH	----

Sheet #
S-5

WSSI Project Number:
4674.06

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Date: MAY 2020

Tree Inventory

Project: FAIRBROOK

Tree #	DBH (Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Condition Rating %	Condition Rating	Dead Tree	Stems	SRZ Structural Critical Root Zone (radius) in Feet	CRZ Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Additional Notes	Condition Notes
1298	8	redcedar, eastern	Juniperus virginiana	70%	Good	NO	1	4	12		Large DW (3"+), Vines
1299	9	redcedar, eastern	Juniperus virginiana	70%	Good	NO	1	4	14		Vines
1300	11	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	17		Small DW (1-2")
1301	8	redcedar, eastern	Juniperus virginiana	70%	Good	NO	1	4	12		Small DW (1-2")
1302	10	oak, southern red	Quercus falcata	70%	Good	NO	1	5	15		Large DW (3"+), Small DW (1-2")
1303	9	oak, sawtooth	Quercus acutissima	70%	Good	NO	1	4	14		Small DW (1-2")
1304	10	oak, sawtooth	Quercus acutissima	70%	Good	NO	1	5	15		One Sided, Small DW (1-2")
1305	9	oak, sawtooth	Quercus acutissima	70%	Good	NO	1	4	14		Small DW (1-2")
1306	10	oak, sawtooth	Quercus acutissima	70%	Good	NO	1	5	15		Small DW (1-2")
1307	8,7	pear, Callery	Pyrus calleryana	65%	Good	NO	2	5	16		One Sided, Co-Dominant Stems, Small DW (1-2"), Vines
1308	8	oak, sawtooth	Quercus acutissima	65%	Good	NO	1	4	12		Small DW (1-2")
1309	9	oak, sawtooth	Quercus acutissima	65%	Good	NO	1	4	14		Small DW (1-2")
1310	8,9	oak, sawtooth,	Quercus acutissima	70%	Good	NO	2	5	18		Small DW (1-2")
1311	13	sycamore, American	Platanus occidentalis	65%	Good	NO	1	6	20		Small DW (1-2"), Vines
1312	9	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	14		Small DW (1-2"), Vines
1313	13	baldcypress, common	Taxodium distichum	70%	Good	NO	1	6	20		Small DW (1-2"), Vines
1314	11	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	17		Small DW (1-2"), Vines
1315	8,7	baldcypress, common	Taxodium distichum	70%	Good	NO	2	5	16		Co-Dominant Stems, Small DW (1-2"), Vines
1316	11	sycamore, American	Platanus occidentalis	70%	Good	NO	1	5	17		Small DW (1-2"), Vines
1317	8,7	willow, black	Salix nigra	55%	Fair	NO	2	5	16		Large DW (3"+), Small DW (1-2"), Vines
1318	11	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	17		Small DW (1-2")
1319	13	baldcypress, common	Taxodium distichum	70%	Good	NO	1	6	20		Small DW (1-2"), Vines
1320	13	baldcypress, common	Taxodium distichum	70%	Good	NO	1	6	20		Small DW (1-2"), Vines
1321	10	sycamore, American	Platanus occidentalis	70%	Good	NO	1	5	15		Small DW (1-2")
1322	10	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	15		Small DW (1-2")
1323	8,5	baldcypress, common	Taxodium distichum	70%	Good	NO	2	4	14		Co-Dominant Stems, Small DW (1-2")
1324	12	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	18		Small DW (1-2")
1325	8	oak, water	Quercus nigra	70%	Good	NO	1	4	12		Small DW (1-2")
1326	12	pine, loblolly	Pinus taeda	55%	Fair	NO	1	5	18	Beaver damage	Mechanical Damage, Large DW (3"+), Small DW (1-2")
1327	8	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	12		Small DW (1-2")
1328	9	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	14	Beaver damage	Small DW (1-2")
1329	8	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	12		Small DW (1-2")
1330	9	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	14		Small DW (1-2")
1331	12	baldcypress, common	Taxodium distichum	70%	Good	NO	1	5	18		Small DW (1-2")
1332	11	pine, loblolly	Pinus taeda	50%	Fair	NO	1	5	17	Beaver damage	Mechanical Damage, Small DW (1-2")
1333	8,8	birch, river	Betula nigra	70%	Good	NO	2	5	17		One Sided, Small DW (1-2")
1334	8	sycamore, American	Platanus occidentalis	65%	Good	NO	1	4	12		One Sided, Small DW (1-2")
1335	8,8,6,4	birch, river	Betula nigra	70%	Good	NO	4	6	20		One Sided, Small DW (1-2")
1336	11,9,8,4,4	birch, river	Betula nigra	70%	Good	NO	5	8	26		Small DW (1-2"), Vines
1337	9	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	14		One Sided, Small DW (1-2")
1338	9	pine, loblolly	Pinus taeda	45%	Fair	NO	1	4	14	Beaver damage	One Sided, Mechanical Damage, Small DW (1-2")
1339	12	pine, loblolly	Pinus taeda	5%	Dead	YES	1	5	18	Beaver damage	
1340	13	baldcypress, common	Taxodium distichum	70%	Good	NO	1	6	20		Co-Dominant Stems, Small DW (1-2")
1341	17	baldcypress, common	Taxodium distichum	70%	Good	NO	1	8	26		Small DW (1-2")
1342	8	baldcypress, common	Taxodium distichum	70%	Good	NO	1	4	12		One Sided, Small DW (1-2"), Vines
1343	10	sycamore, American	Platanus occidentalis	70%	Good	NO	1	5	15		Small DW (1-2"), Vines
1344	18	sycamore, American	Platanus occidentalis	70%	Good	NO	1	8	27		Small DW (1-2"), Vines
1345	11	sycamore, American	Platanus occidentalis	70%	Good	NO	1	5	17		Small DW (1-2"), Vines
1346	9	elm, slippery	Ulmus rubra	70%	Good	NO	1	4	14		Small DW (1-2"), Vines
1347	10	sycamore, American	Platanus occidentalis	70%	Good	NO	1	5	15		Small DW (1-2")
1348	12,9	sycamore, American	Platanus occidentalis	70%	Good	NO	2	7	23		Co-Dominant Stems, Small DW (1-2"), Vines
1349	10	pear, common	Pyrus communis	30%	Poor	NO	1	5	15		Mechanical Damage, Small DW (1-2")
1350	11	elm, slippery	Ulmus rubra	70%	Good	NO	1	5	17		One Sided
1351	9	pear, common	Pyrus communis	5%	Dead	YES	1	4	14		
1352	8	boxelder	Acer negundo	60%	Fair	NO	1	4	12		
1353	10	pear, Callery	Pyrus calleryana	55%	Fair	NO	1	5	15		
1354	9	willow, black	Salix nigra	50%	Fair	NO	1	4	14		Small DW (1-2")
1355	8	pear, Callery	Pyrus calleryana	40%	Poor	NO	1	4	12		Trunk Decay, Small DW (1-2")
2411	7,8	hickory, pignut	Carya glabra	65%	Good	NO	2	5	16		Suppressed, Co-Dominant Stems
2412	8	maple, red	Acer rubrum	50%	Fair	NO	1	4	12		Suppressed, Small DW (1-2"), Stream Erosion
2413	8	pear, Callery	Pyrus calleryana	50%	Fair	NO	1	4	12		Suppressed, Small DW (1-2")
2414	10,12	oak, white	Quercus alba	50%	Fair	NO	2	7	23	Herndon Tag #23	One Sided, Root Damage/Decay, Basal Decay, Trunk Decay, Co-Dominant Stems, Large DW (3"+), Small DW (1-2"), Stressed, Branch Decay
2415	13	oak, white	Quercus alba	45%	Fair	NO	1	6	20	Herndon Tag #24	One Sided, Root Damage/Decay, Trunk Decay, Large DW (3"+), Small DW (1-2"), Stressed, Branch Decay
2416	14	oak, white	Quercus alba	65%	Good	NO	1	6	21		One Sided, Small DW (1-2")

TREE INVENTORY NOTES:

1. TREE INVENTORY FIELDWORK PERFORMED BY DAVID MEANS, ISA CERTIFIED ARBORIST IL-0110A, OF WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) BETWEEN MAY 18 AND MAY 27, 2020
2. TREE LOCATIONS ARE BASED ON VISUAL FIELD ESTIMATIONS ONLY, AND ARE APPROXIMATE. OWNER AND CONTRACT ARBORIST SHALL VERIFY ALL TREE LOCATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND/OR TREATMENT OR REMOVAL.
3. THE INSPECTION OF THESE TREES CONSISTED SOLELY OF A VISUAL INSPECTION FROM THE GROUND. WHILE MORE THOROUGH TECHNIQUES ARE AVAILABLE FOR INSPECTION AND EVALUATION, THEY WERE NEITHER REQUESTED NOR CONSIDERED NECESSARY OR APPROPRIATE AT THIS TIME.

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlands.com

TREE INVENTORY SCHEDULE

FAIRBROOK BUSINESS PARK
TOWN OF HERNDON, VA

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NATIONAL ARBORIST ASSOCIATION CERTIFIED ARBORIST
CARY HULSE
ISA# PD-1080A

REVISIONS				
No.	Date	Description	Rev. By	App. By
1	10/16/20	NOTE ADDED RE: OFFSITE AREA	CH	

SCALE:AS NOTED
DATE: JUNE 4, 2020

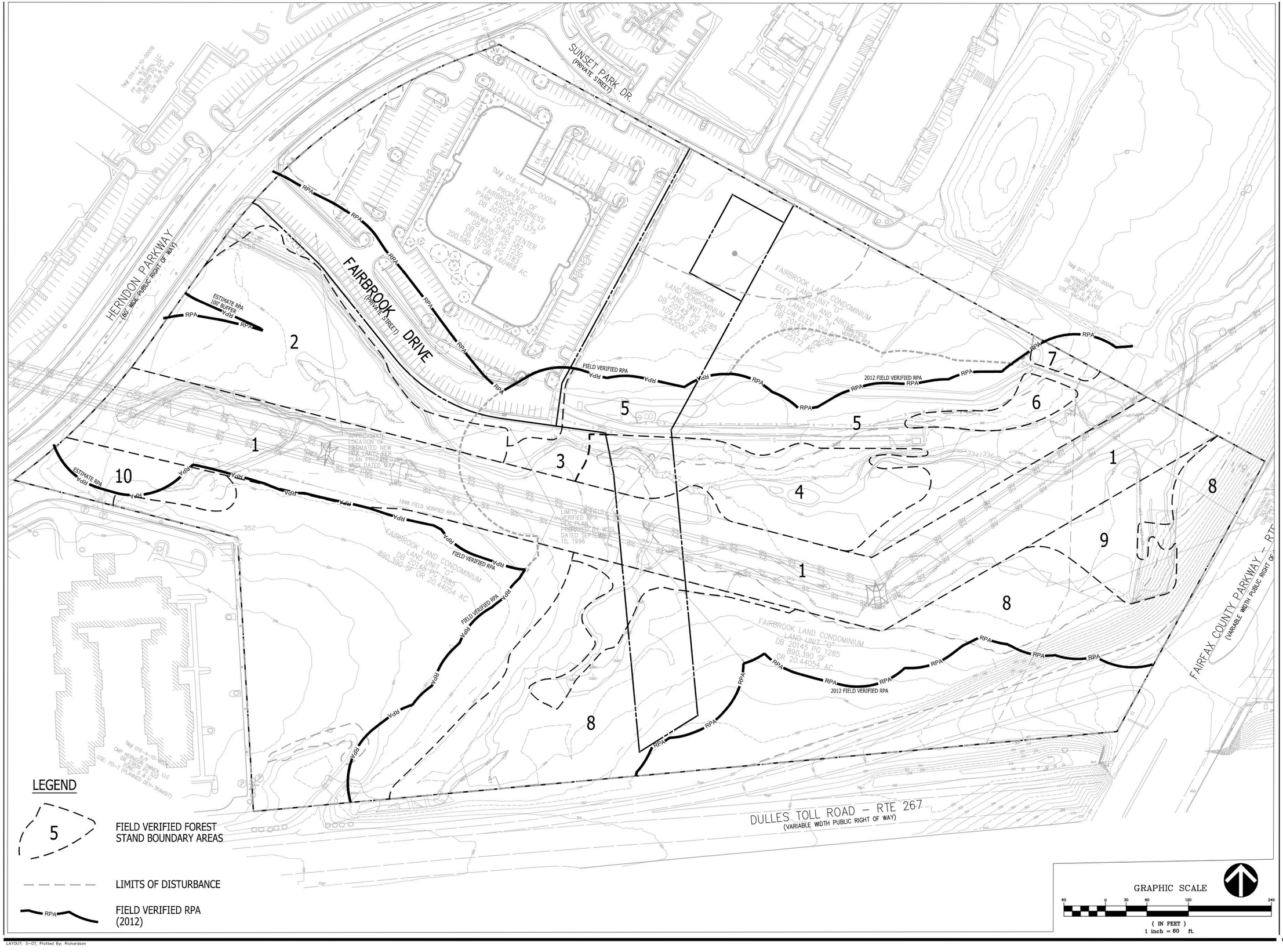
Horizontal Datum: VCS NAD 83
Vertical Datum: NAVD 88
Boundary and Topo Source: VIKA

Design	Draft	Approved
CH	CH	----

Sheet #
S-6

WSSI Project Number:
4674.06

L:\04000s\4674.06\CADD\05-ENVR\TREES\4764.06_FAIRBROOK_TREES_rev_2020.10.16.dwg S-6 Plotted By: Hulse, Cary, 10/16/2020 12:48 PM



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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

SIMPLIFIED FOREST STAND DELINEATION PLAN

DRAWN BY:	PN
DESIGNED BY:	NPK
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	S-07

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_S-10-S-11 MODOFIED FOREST STAND DELINEATION PLAN.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:55:45 AM LAYOUT: S-07

LAYOUT: S-07, Plotted By: Richardson

SIMPLIFIED FOREST STAND ANALYSIS NARRATIVE

THIS NARRATIVE PRESENTS A SIMPLIFIED FOREST STAND DELINEATION FOR THOSE AREAS AT THE FAIRBROOK SITE THAT ARE WITHIN THE FIELD-VERIFIED RESOURCE PROTECTION AREA (RPA). SHEET S-07 DEPICTS THE EXTENT OF EACH VEGETATION AREA AS CHARACTERIZED IN THIS NARRATIVE.
THE EXISTING AREA WITHIN THE RPA SITE IS UNDEVELOPED. HOWEVER, THERE IS A PRIMARY ELECTRIC POWER CORRIDOR WHICH SEGMENTS THE COVER TYPES OF THE RESOURCE PROTECTION AREA (RPA). THE GENERAL COVER TYPES VARY FROM OPEN MEADOW TO UPLAND HARDWOOD FOREST, TO BOTTOMLAND UN-MAINTAINED GRASSLAND AND TO AN UNIMPROVED ROAD (GRAVEL) PROVIDING VEHICLE MAINTENANCE ACCESS TO THE TRANSMISSION CORRIDOR.
THE SUCCESSIONAL STAGE COMPOSITION OF THE SUBJECT AREAS INVENTORIED VARIES FROM GRASS, FORBS AND SHRUBS (TRANSMISSION CORRIDOR), TO PIONEER SUCCESSION, TO EARLY SUCCESSIONAL WOODLAND, TO A SUB-CLIMAX FOREST. OVERALL, AND IN GENERAL, THE INVENTORIED AREAS REVEAL WOODLANDS AND MEADOWS WITH VEGETATION, AND HABITAT OF GOOD HEALTH, VIGOR AND VITALITY.

OVERALL AREA(S) DESCRIPTION

AREA-1
THE PRIMARY USE OF THIS AREA IS AS A HIGH-TENSION POWER TRANSMISSION CORRIDOR. THERE ARE NO CANOPY TREES IN THIS AREA. THOSE EXISTING TREES AT THE PERIMETER OF THE TRANSMISSION CORRIDOR REVEAL THAT THE EDGE CANOPY TREES ARE ROUTINELY "UTILITY PRUNED" TO MAINTAIN ALL BRANCHING WELL OFFSET FROM THE OVERHEAD WIRES AND TRANSMISSION TOWERS.

AREA-2
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-2 ARE AS FOLLOWS:
- Cercis candensis - EASTERN REDBUD
- Morus alba - WHITE MULBERRY
- Quercus rubra - NORTHERN RED OAK
- Quercus alba - WHITE OAK
- Quercus palustris - PIN OAK
- Acer rubrum - RED MAPLE
- Cornus florida - FLOWERING DOGWOOD
- Juniperus virginiana - REDCEDAR

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-2 SUCH AS:
- Vitis spp -WILD GRAPE
- Cleastrus orbiclatus - ORIENTAL BITTERSWEET
- Lonicera japonica - JAPANESE HONEYSUCKLE

THE INTERNAL WOODED AREA OF AREA-2 WAS FOUND TO BE PREDOMINANTLY CLEAR OF INVASIVE VEGETATION.

AREA-3
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-3 ARE AS FOLLOWS:
- Pyrus calleryana - Callery Pear
- Acer rubrum - red Maple
- Quercus rubra - Red Oak
- Salis nigra - Black Willow

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-3 SUCH AS:
- Vitis spp -WILD GRAPE

AREA-4
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-4 ARE AS FOLLOWS:
- Acer rubrum - RED MAPLE
- Quercus rubra - RED OAK
- Quercus phellos - WILLOW OAK
- Ulmus rubra - SLIPPERY ELM
- Platanus occidentalis - AMERICAN SYCAMORE
- Paulownia tomentosa - ROYAL PAULOWNIA
- Pinus virginiana - VIRGINIA PINE
- Prunus serotina - Black Cherry

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-4 SUCH AS:
- Vitis spp -WILD GRAPE
- Microstegium vimineum - JAPANESE STILTGRASS
- Elaeagnus umbellata - AUTUMN OLIVE
- Celastrus orbiculatus - ORIENTAL BITTERSWEET

AREA-5
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-5 ARE AS FOLLOWS:
- Quercus phellos - WILLOW OAK
- Juniperus virginiana - REDCEDAR
- Ulmus rubra - SLIPPERY ELM
- Carya glabra - PIGNUT HICKORY
- Cercis candensis - EASTERN REDBUD
- Paulownia tomentosa - ROYAL PAULOWNIA
- Pyrus calleryana - Callery Pear

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-5 SUCH AS:
- Rosa multiflora - MULTIFLORA ROSE

AREA-6
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-6 ARE AS FOLLOWS:
- Platanus occidentalis - AMERICAN SYCAMORE
- Ulmus rubra - SLIPPERY ELM
- Pyrus calleryana - CALLERY PEAR
- Juniperus virginiana - REDCEDAR
- Robinia pseudoacacia - BLACK LOCUST
- Carya glabra - PIGNUT HICKORY
- Taxodium distichum - BALDCYPRESS

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-6 SUCH AS:
- Elaeagnus umbellata - AUTUMN OLIVE

AREA-7
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-7 ARE AS FOLLOWS:
- Quercus acutissima - SAWTOOTH OAK
- Diospyros virginiana - COMMOM PERSIMMON
- Pyrus calleryana - CALLERY PEAR

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-7 SUCH AS:
- Rosa multiflora - MULTIFLORA ROSE

AREA-8
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-8 ARE AS FOLLOWS:
- Robinia pseudoacacia - BLACK LOCUST
- Ulmus rubra - SLIPPERY ELM
- Pinus virginiana - VIRGINIA PINE

AREA-9
THE PREDOMINANT SPECIES IDENTIFIED IN AREA-9 ARE AS FOLLOWS:
- OPEN, TALL UN-MAINTAINED GRASS

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-9 SUCH AS:
- Elaeagnus umbellata - AUTUMN OLIVE

AREA-10
THE PREDOMINANT TREE SPECIES IDENTIFIED IN AREA-10 ARE AS FOLLOWS:
- Acer rubrum - RED MAPLE
- Ulmus rubra - SLIPPERY ELM
- Quercus rubra - RED OAK
- Pinus virginiana - VIRGINIA PINE
- Carya glabra - PIGNUT HICKORY
- Platanus occidentalis - AMERICAN SYCAMORE
- Quercus alba - WHITE OAK
- Cercis canadensis - EASTERN REDBUD
- Ilex opaca - AMERICAN HOLLY

AREAS OF INVASIVE VEGETATION WERE OBSERVED AT THE PERIMETER OF AREA-10 SUCH AS:
- Vitis spp -WILD GRAPE
- Celastrus orbiculatus - ORIENTAL BITTERSWEET
- Toxicodendron radicans - POISON IVY

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INVASIVE PLANT SPECIES REMOVAL

ALL EXISTING INVASIVE SPECIES WILL BE REMOVED FROM WITHIN THE LIMIT OF DISTURBANCE FOR A PARTICULAR PHASE PRIOR TO ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY FOR THE ASSOCIATED PHASE OF DEVELOPMENT. FURTHER, INVASIVE PLANT REMOVAL / MITIGATION SHALL OCCUR ONLY ON THE APPLICANT'S PROPERTY, AND SHALL NOT INCLUDE ANY OF THE IMPROVEMENTS ASSOCIATED WITH THE CONSTRUCTION OF FAIRBROOK DRIVE, EXTENDED, NORTH TO SPRING STREET.

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3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

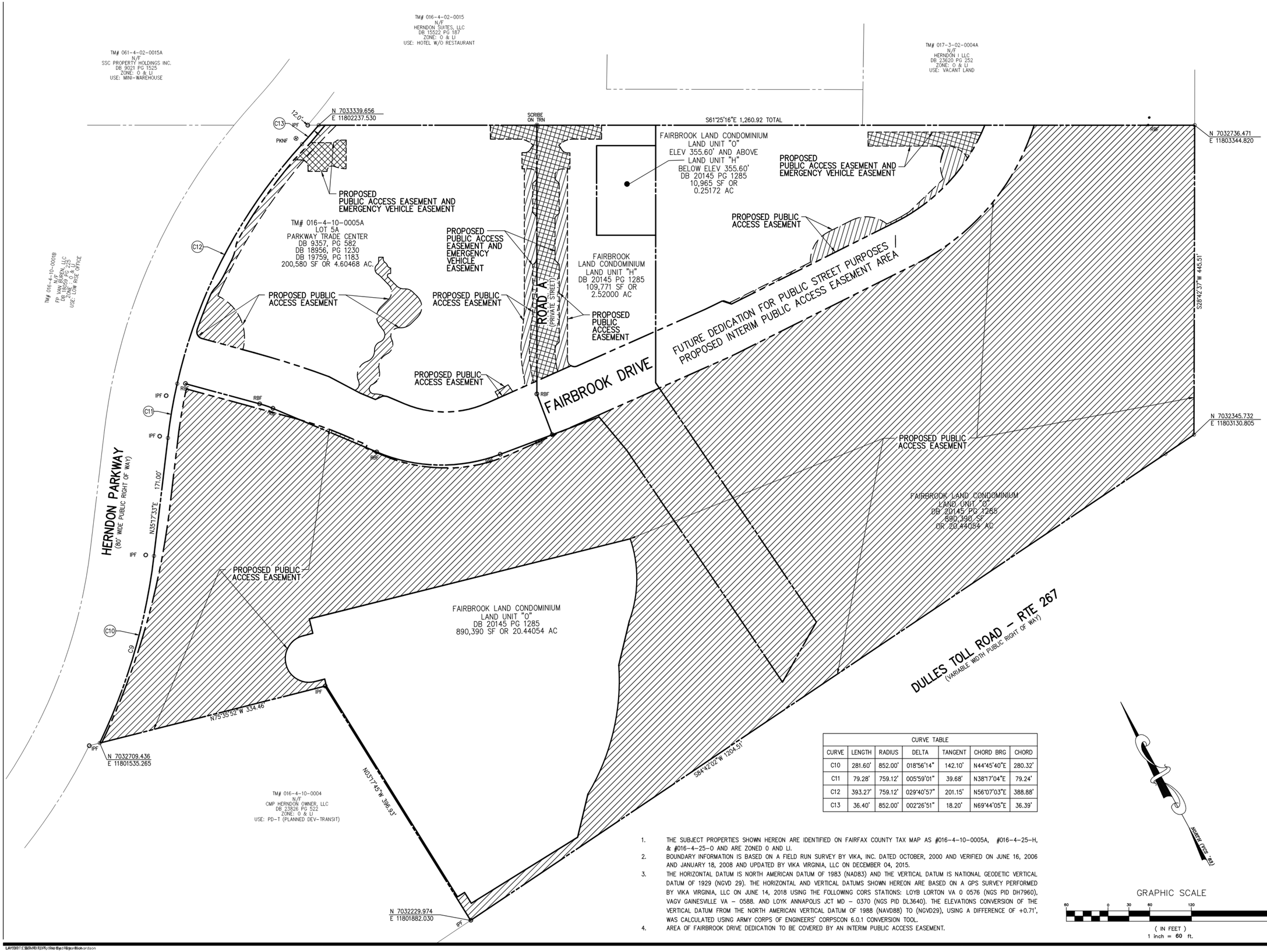
SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

MODIFIED FOREST DELINEATION NOTES AND NARRATIVES

DRAWN BY:	PN
DESIGNED BY:	NPK
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	NA
VIKA NO.	VV6045X
SHEET NO.	S-08

FILE: P:\projects\6045\6045X\CADD\PLANNING DRAWINGS\6045X_S-10-S-11 MODIFIED FOREST STAND DELINEATION PLAN.dwg USER: Richardson DATE: October 16, 2020 TIME: 9:56:15 AM LAYOUT: S-08



CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD BRG	CHORD
C10	281.60'	852.00'	018°56'14"	142.10'	N44°45'40"E	280.32'
C11	79.28'	759.12'	005°59'01"	39.68'	N38°17'04"E	79.24'
C12	393.27'	759.12'	029°40'57"	201.15'	N56°07'03"E	388.88'
C13	36.40'	852.00'	002°26'51"	18.20'	N69°44'05"E	36.39'

1. THE SUBJECT PROPERTIES SHOWN HEREON ARE IDENTIFIED ON FAIRFAX COUNTY TAX MAP AS #016-4-10-0005A, #016-4-25-H, & #016-4-25-O AND ARE ZONED O AND LI.
2. BOUNDARY INFORMATION IS BASED ON A FIELD RUN SURVEY BY VIKA, INC. DATED OCTOBER, 2000 AND VERIFIED ON JUNE 16, 2006 AND JANUARY 18, 2008 AND UPDATED BY VIKA VIRGINIA, LLC ON DECEMBER 04, 2015.
3. THE HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83) AND THE VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29). THE HORIZONTAL AND VERTICAL DATUMS SHOWN HEREON ARE BASED ON A GPS SURVEY PERFORMED BY VIKA VIRGINIA, LLC ON JUNE 14, 2018 USING THE FOLLOWING CORS STATIONS: LOYB LORTON VA 0 0576 (NGS PID DH7960), VAGV GAINESVILLE VA – 0588. AND LOYK ANNAPOLIS JCT MD – 0370 (NGS PID DL3640). THE ELEVATIONS CONVERSION OF THE VERTICAL DATUM FROM THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) TO (NGVD29), USING A DIFFERENCE OF +0.71', WAS CALCULATED USING ARMY CORPS OF ENGINEERS' CORPSCON 6.0.1 CONVERSION TOOL.
4. AREA OF FAIRBROOK DRIVE DEDICATION TO BE COVERED BY AN INTERIM PUBLIC ACCESS EASEMENT.

NORTH (VCS - 83)

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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POST-APPROVAL SHEET STATUS	DATE

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COMMONWEALTH OF VIRGINIA
10/16/20
ROBERT R. COCHRAN
Lic. No. 2012
LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON,
VIRGINIA

PROPOSED PUBLIC EASEMENT EXHIBIT

DRAWN BY:	RMC
DESIGNED BY:	ARC
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	S-09

FILE: P:\projects\6045\6045X\CAD\SURVEY\BASE DRAWINGS\6045X - EASEMENT EXHIBIT.dwg USER: Richardson DATE: October 16, 2020 TIME: 8:02:08 AM LAYOUT: ESMT XBIT

Layout: ESMT XBIT Plotted By: Richardson

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chairman Romeo and Members of the Planning Commission**

From: **David Stromberg, AICP, Zoning Administrator** DS

Date: **October 22, 2020**

Subject: **Special Exception SE #19-05 for development in the floodplain - Fairbrook Development**

This memo serves as an addendum to the staff report dated October 5, 2020 and provided for the work session.

A revised plan set (sealed October 16, 2020) was submitted to incorporate site layout changes made to the primary application. The changes to the primary application do not impact the evaluation of this application.

The only changes to the conditions are to reflect the updated plan set.

A resolution for a recommendation of approval has been added.

Attachments:

1. Proposed Planning Commission Resolution
2. Revised SE 19-05 Conditions
3. Revised Plan Set dated October 19, 2020 (hard copy physical dispatch)

TOWN OF HERNDON, VIRGINIA

PLANNING COMMISSION

DRAFT RESOLUTION

October 26, 2020

Resolution- to recommend approval with conditions of Special Exception SE #19-05 to the Town Council allowing development in the Floodplain Overlay District to allow a mixed-use development.

WHEREAS, the applicant, Fairbrook Business Parks Associates and LP and Fairbrook Business Parks Associates II, LP, has submitted an associated application, special exception SE #17-03, to permit a mixed-use development consisting of residential, office and retail square footage not to exceed 1,515,000 total square feet or a maximum of 1.25 FAR, with a residential to office percentage not to exceed 60 percent residential at total build out on property located at 100, 150, 200 Fairbrook Drive, Fairbrook Business Park and identified as Fairfax County Tax Map Reference Numbers: 0164-10-0005A, 0164-25-H, 0164-25-O in accordance with the plan dated October 16, 2020; and

WHEREAS, any development within the floodplain requires a special exception to be approved by the town council; and

WHEREAS, the applicant is proposing certain improvements and alterations to the grade within the floodplain; and

WHEREAS, the applicant has demonstrated through hydraulic and hydrologic modeling analysis that the proposed improvements and grade changes will not result in an increase in flood heights or an increase in the extent of the floodplain; and

WHEREAS the applicant will incorporate the most recently issued FEMA flood maps available and rerun the modeling analysis at the time of site plan final engineering; and

WHEREAS, the Planning Commission has reviewed this application and has held a public hearing on October 26, 2020 in accordance with the provisions of §15.2-2204 of the State Code; and

WHEREAS, the Planning Commission finds that the proposed development, with the conditions dated October 26, 2020, meets the purpose and intent of the Zoning Ordinance, in particular Section 78-155.3 Special exception and

Section 78-60.2 Floodplain Overlay district, including the allowances and criteria found therein; and

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the Town of Herndon, Virginia, hereby recommends that the Town Council approved Resource Protection Area Exception RPA #17-01, in accordance with the conditions set forth below to achieve compliance with the standards found in Section 78-155.3 and Section 78-60.4.

INSERT CONDITIONS

Conditions of Approval

Special Exception #19-05, 100, 150, 200 Fairbrook Drive, Fairbrook Business Park

~~September 29~~October 26, 2020

1. Substantial Conformance. The development of the Special Exception use described in Condition 2 below shall be in substantial conformance with Sheets 01.01 through 12.02 of the plan entitled "Fairbrook Business Park Floodplain Study" sealed ~~September 28~~October 16, 2020 by Kyle M. O'Connor, prepared by VIKA Virginia, LLC (the "**Plan**"), incorporated by reference and the Town of Herndon Zoning Ordinance (the "**Zoning Ordinance**"). Approval of this application for the approximately 4.60-acre parcel identified as Fairfax County Tax Map Reference Number 0164-10-0005A, the 2.52-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-H, and the 20.44-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-O and the 5.14-acre parcel identified as Fairfax County Tax Map Reference Number 0173-02-0004A1, (the "**Property**") shall not relieve the applicant or the owners of the Property their successors or parties developing, establishing or operating the approved Special Exception use (the "**Applican**t") from the obligation to comply with and conform to an Zoning Ordinance, the Town of Herndon Codified Ordinance or regulatory Requirement.

2. Use Permitted. This Special Exception grants approval to permit development within the FPO, Floodplain Overlay district pursuant to Section 78-60.2 of the Zoning Ordinance.

3. Development. Development within the Floodplain on the Property includes constructing a portion of Fairbrook Drive, outdoor recreation facilities, and associated grading within the Floodplain Overlay district.

4. Sanitary Sewer Metering Station. The relocation of the town sanitary sewer meter station, and all support appurtenances and access to the meter for maintenance, as determined by the Department of Public Works, shall be incorporated into the modeling calculations and shall not result in an adverse impact to the extent or elevations of the floodplain.

5. Floodplain Easement. The Applicant shall dedicate to the Town from the Property, at no public cost, a restrictive floodplain easement. Said easement shall be submitted to the Town for review and approval, and the approved easement shall be recorded in the Fairfax County land records prior to the approval of a site plan for the Property.

6. Revised Flood Insurance Rate Maps (FIRMs). The applicant shall perform new hydraulic and hydrodynamic analysis using the most recent flood insurance rate map

issued by FEMA. In the event the draft FIRM maps have not yet been finalized by FEMA and adopted by the town, the applicant shall use the draft FIRM maps.

PERFORMANCE BOND ESTIMATE

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE	COST
		CLEARING & GRUBBING		ACRES		
		EXCAVATION		CU. YDS.		
		EMBANKMENT		CU. YDS.		
		OVERLOT GRADING		LOTS		
	DRAINAGE STRUCTURES					
		CONCRETE PIPE		LIN. FT.		
		CONCRETE PIPE		LIN. FT.		
		CONCRETE PIPE		LIN. FT.		
		CONCRETE PIPE		LIN. FT.		
		CONCRETE PIPE		LIN. FT.		
		CONCRETE PIPE		LIN. FT.		
		PAVED DITCH		LIN. FT.		
		RIP RAP		SQ. FT.		
		CONCRETE ENDWALL		EACH		
		CONCRETE ENDWALL		EACH		
		CONCRETE ENDWALL		EACH		
		CONCRETE END SECTION		EACH		
		DRIVEWAY ENTRANCE		EACH		
		SIDEWALK		LIN. FT.		
		HEADER CURB		LIN. FT.		
		CURB & GUTTER		LIN. FT.		
		SURFACE TREATMENT		SQ. YDS.		
		BITUMINOUS CONCRETE SURFACE		SQ. YDS.		
		BASE COURSE		SQ. YDS.		
		SUBBASE MATERIALS		SQ. YDS.		
		STREET SIGNS		EACH		
		STREET LIGHTS		EACH		
		ROADSIDE DELINEATORS		EACH		
		TRAFFIC BARRICADE		EACH		
		PIPES OR MONUMENTS AS SHOWN ON PLAT		EACH		
		WATER LINE		LIN. FT.		
		FIRE HYDRANTS		EACH		
		SANITARY SEWER		LIN. FT.		
		AS-BUILT PLAN		LUMP SUM		
		PLUS 10% ENGINEERING FEE & MISC.				
		TOTAL:				

CASH ESCROW BOND ESTIMATE

ITEM NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1	EROSION/SEDIMENTATION CONTROL (SEE ZONING ORD. FOR APPROPRIATE FEE, MIN. $1000)				
2	TREE REPLACEMENT				
3	ARBORIST FEE				
4	DAMAGE TO EXISTING PUBLIC UTILITIES (TO BE COMPUTED BY THE TOWN OF HERNDON)	_____	L.S.	_____	
5	LANDSCAPING	_____	L.S.	_____	
				TOTAL:	

APPLICATION FEES

(SEE SECTION 78-201.2 OF THE TOWN CODE FOR FEES)

TYPE OF APPLICATION: FLOODPLAIN STUDY

CALCULATION OF APPLICATION FEE: $1,000

APPLICATION FEE PAID (Official Use Only): DATE: XX/XX/2019 AMOUNT: $1,000

REVIEW AND INSPECTION FEE SCHEDULE

(SEE SECTION 78-201.2 AND SECTION 26-335 OF THE TOWN CODE FOR FEES)

ITEM	QUANTITY	UNIT	FEE PER UNIT FOR SUBDS.	FEE PER UNIT FOR SITE PLANS	FEE
BITUMINOUS SURFACE		SQ. YDS.	.51	.51	
CURB & GUTTER OR HEADER CURB		LIN. FT.	.92	.92	
SIDEWALK		LIN. FT.	1.35	1.35	
SANITARY SEWER		LIN. FT.	2.34	2.34	
T.V. INSPECTION		LIN. FT.	2.32	2.32	
WATERLINE		LIN. FT.	1.75	1.75	
STORM DRAINAGE		LIN. FT.	4.39	4.39	
VSMP STORMWATER MANAGEMENT FEE (See Town Code Section 26-335)		LUMP SUM			
BIORETENTION FACILITIES (RAIN GARDENS)		EACH	250.00	250.00	
STORMWATER DETENTION/BMP MEASURES (other than rain gardens)		EACH	1000.00	1000.00	
OVERLOT GRADING AND SURFACE DRAINAGE PLAN (per division of land or per disturbed acre, whichever is greater)		LOT/ACRE	200.00	200.00	
STREETLIGHTS		PER LIGHT	50.00	50.00	
MISCELLANY		ACRE	675.00(min.)	675.00(min.)	
SCREENING		LIN. FT.	2.34	4.34	
@ LINEAR FEET OF STREET		LIN. FT.	1.20		
ESTIMATED FEE – TOTAL					
INITIAL FEE PAYMENT (50% OF ESTIMATED FEE)	(RECEIPT #		DATE	)	
BALANCE OF FEE (COMPUTED BY TOWN)	(RECEIPT #		DATE	)	

NOTES

1. THE METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS HEREIN SHALL CONFORM TO THE CURRENT TOWN OF HERNDON STANDARD SPECIFICATIONS, CURRENT FAIRFAX COUNTY DESIGN AND CONSTRUCTION STANDARDS, AND THE CURRENT VDOT ROAD AND BRIDGE SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THE STANDARDS AND SPECIFICATIONS, PREVAILING GUIDELINES SHALL BE SELECTED BY THE TOWN OF HERNDON.
2. A PERMIT MUST BE OBTAINED FROM THE TOWN OF HERNDON BEFORE ANY CONSTRUCTION IS STARTED IN CONFORMITY WITH THESE PLANS.
3. A PERMIT MUST BE OBTAINED FROM THE OFFICE OF THE RESIDENT ENGINEER, VDOT, FAIRFAX, VIRGINIA, BEFORE ANY CONSTRUCTION IS STARTED ON ANY EXISTING STATE HIGHWAY.
4. THE DEVELOPER IS REQUIRED TO NOTIFY THE TOWN OF HERNDON, PRIOR TO THE BEGINNING OF CONSTRUCTION. THE DEVELOPER SHALL REQUIRE THAT ALL OF HIS CONTRACTORS SPECIFICALLY REQUEST INSPECTION AT LEAST TWENTY FOUR (24) HOURS BEFORE BEGINNING:
   (A) CLEARING AND GRUBBING
   (B) INSTALLATION OF SILTATION AND EROSION CONTROL MEASURES
   (C) EARTHWORK
   (D) INSTALLATION OF ANY UNDERGROUND UTILITY
   (E) INSTALLATION OF ANY FORMS
   (F) PLACING ANY CONCRETE
   (G) BEFORE PLACING SUBBASE, BASE, OR PAVING SURFACE

   FAILURE TO DO SO FOR ANY REASON SHALL CONSTITUTE REJECTION OF SAID WORK.
5. ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY THE DEVELOPER OR HIS ENGINEER PRIOR TO THE BEGINNING OF ANY CONSTRUCTION IN THE VICINITY OF THESE UTILITIES.
6. ALL UTILITIES INSTALLED AS A PART OF THIS DEVELOPMENT SHALL BE PLACED UNDERGROUND.
7. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT OF WAY AND ALL SERVICE CONNECTIONS SHALL BE INSTALLED TO THE REQUIRED DISTANCE BEYOND THE RIGHT OF WAY LINE PRIOR TO THE INSTALLATION OF ANY SUBBASE MATERIAL, CURB AND GUTTER, OR SIDEWALK.
8. ALL UTILITIES TO BE TAKEN OVER BY THE TOWN FOR MAINTENANCE PURPOSES, MUST BE INSPECTED, TESTED AND APPROVED BY THE TOWN BEFORE BEING ACCEPTED INTO THE TOWN'S SYSTEM.
9. CUT SHEETS SHALL BE SUBMITTED TO AND APPROVED BY THE TOWN OF HERNDON PRIOR TO THE START OF CONSTRUCTION OF ANY UNDERGROUND UTILITIES, STREETS, OR CURBS AND GUTTERS.
10. SANITARY SEWERS: ALL SANITARY SEWER MATERIALS AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE CURRENT TOWN OF HERNDON STANDARDS AND SPECIFICATIONS.
11. STORM SEWERS:
   (A) STORM SEWER AND CULVERT PIPE SHALL BE REINFORCED CONCRETE PIPE TO CONFORM TO THE CURRENT A.A.S.H.T.O. DESIGNATION M 170, UNLESS OTHERWISE DESIGNATED ON THE PLANS. CLASS II PIPE WILL BE PERMITTED BEYOND THE LIMITS OF THE STREET RIGHT OF WAY. CLASS III PIPE WILL BE REQUIRED WITHIN THE LIMITS OF THE RIGHT OF WAY.
   (B) UNDERDRAINS AND/OR CROSSDRAINS SHALL BE INSTALLED BY THE DEVELOPER WHERE DEEMED NECESSARY BY THE TOWN OF HERNDON.
12. STREETS:
   (A) ALL BASE AND SUBBASE MATERIAL SHALL BE COMPACTED TO 95% OF THEORETICAL MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O. T-99 METHOD A, WITHIN PLUS OR MINUS 20% OF OPTIMUM MOISTURE FOR THE FULL WIDTH OF ANY DEDICATED RIGHT OF WAY AND ALL TOWNHOUSE STREETS, COMMERCIAL AND INDUSTRIAL PARKING LOTS, PRIVATE STREETS, PARKING BAYS, CURB AND GUTTER, AND SIDEWALKS ADJACENT TO STREETS AND PARKING LOTS (NOT INTENDED TO INCLUDE LEAD SIDEWALKS).
   (B) SOIL REPORTS AND SUBGRADE SPECIFICATIONS SHALL BE SUBMITTED TO THE TOWN OF HERNDON FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION OF ANY SIDEWALKS, CURB AND GUTTER, STREETS OR PARKING AREAS.
   (C) ROADWAY DESIGN IS BASED ON A CBR OF 10. CBR TESTS OF SUBGRADE SOILS MUST BE CONDUCTED FOR ACTUAL DETERMINATION OF ROADWAY DESIGN. ROADWAY DESIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT VDOT PAVEMENT DESIGN GUIDE FOR SUBDIVISION AND SECONDARY ROADS, AND SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND APPROVAL.
   (D) STANDARD STREET NAME SIGNS SHALL BE APPROVED BY FAIRFAX COUNTY SIGN SHOP AND SHALL BE INSTALLED AT EACH INTERSECTION BY THE DEVELOPER, AS WELL AS REQUIRED TRAFFIC CONTROL SIGNS IN THE DEVELOPMENT. SIGN FASTENERS SHALL BE 5/16" #18 STAINLESS STEEL HEX BOLTS AND NUTS USS-NO RIVETS PERMITTED.
   (E) WHERE INSTALLATION OF ROADWAY SIGN IS ANYTHING OTHER THAN IN SOIL AREA, A PVC SLEEVE SHALL BE INSTALLED. SLEEVE SHALL BE MINIMUM 18" DEEP. SIZE OF PVC SLEEVE SHALL BE APPROPRIATE TO SIZE OF POST BEING INSTALLED, AND SHALL ALLOW FOR WEDGING TO STABILIZE SIGN POST.
   (F) WHERE SIGN IS DESIGNED TO BE INSTALLED IN CONCRETE MEDIAN, A 12" X 12" AREA SHALL BE LEFT VOID OF CONCRETE. PVC SLEEVE SHALL BE INSTALLED AS INDICATED ABOVE.
   (G) SIGN MATERIAL SHALL BE MINIMUM HIGH INTENSITY SHEETING, AND NO ENGINEER GRADE MATERIAL SHALL BE ALLOWED.
   (H) A MINIMUM OF ONE DRIVEWAY ENTRANCE SHALL BE PROVIDED PER LOT. DRIVEWAY ENTRANCES_____, SHALL BE INSTALLED IN CONFORMITY WITH THE STANDARDS. PIPESTEM LOT DRIVEWAYS ARE SUBJECT TO APPROVAL BY THE TOWN OF HERNDON.
   (I) SURFACED STREETS SHALL BE MAINTAINED IN A CLEAN CONDITION, MUD AND DUST FREE AT ALL TIMES, AND ADEQUATE MEANS SHALL BE PROVIDED TO CLEAN TRUCKS AND OTHER EQUIPMENT USING THE COMPLETED STREETS.
   (J) PRIOR TO COMMENCING NEW WORK, THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING ADJACENT AREAS. A PRE-CONSTRUCTION SURVEY SHALL OCCUR WITH CONSTRUCTION AND INSPECTION STAFF TO DOCUMENT EXISTING CONDITIONS. IF TOWN'S EXISTING PUBLIC INFRASTRUCTURE IS DAMAGED DURING CONSTRUCTION, THE APPLICANT SHALL REPAIR THE SAME TO THE SATISFACTION OF THE TOWN.
   (K) ALL STREET CUT AND PATCH WORK LOCATED IN PUBLIC RIGHTS OF WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF HERNDON STANDARDS AND SPECIFICATIONS. LIMITS OF ASPHALT OVERLAY TO BE DETERMINED BY TOWN INSPECTOR.
   (L) STREET LIGHTS SHALL BE INSTALLED ACCORDING TO TOWN OF HERNDON STANDARDS.
   (M) ALL WORK IN THE RIGHT-OF-WAY SHALL BE CONDUCTED BETWEEN 9AM AND 3PM, MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS.
   (N) DEVELOPER SHALL COMPLY WITH STREET CUT PERMIT REQUIREMENTS. COPY OF APPROVED STREET CUT PERMIT MUST BE KEPT ON SITE AT ALL TIMES.
   (O) DEVELOPER SHALL COORDINATE ALL TRAFFIC CONTROL ACTIVITIES WITH THE STREET CUT PERMIT INSPECTION SECTION (703-435-6860).
13. WATER DISTRIBUTION:
   (A) ALL WATER MAIN MATERIALS AND CONSTRUCTION SHALL COMPLY WITH THE REGULATIONS OF THE STANDARD SPECIFICATIONS AND PLANS OF THE TOWN OF HERNDON AND THE CURRENT WATERWORKS REGULATIONS OF THE VIRGINIA STATE BOARD OF HEALTH.
   (B) ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF 4.0 FEET. WATER MAINS SHALL BE INSTALLED EIGHT (8) FEET NORTH OR EAST OF THE CENTERLINE OF THE STREET UNLESS OTHERWISE DESIGNATED ON THE PLANS.
   (C) WORKING PRESSURE SHALL BE >20.0 PSI.
14. LAND CONSERVATION NOTES:
   (A) MEASURES TO CONTROL EROSION AND SILTATION SHALL BE PROVIDED PURSUANT TO AND IN COMPLIANCE WITH CURRENT STATE AND LOCAL REGULATIONS. HOWEVER, THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE TOWN OF HERNDON.
   (B) NO DISTURBED AREA WILL BE DENUDED FOR MORE THAN 14 CALENDAR DAYS.
   (C) ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
   (D) ALL STORM AND SANITARY SEWER TRENCHES NOT IN STREETS ARE TO BE MULCHED AND SEEDED WITHIN 7 DAYS AFTER BACKFILL. NO MORE THAN 500 FEET ARE TO BE OPEN AT ANY ONE TIME.
   (E) ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES ARE TO BE COMPACTED, SEEDED AND MULCHED, WITHIN 7 DAYS AFTER BACKFILL.
   (F) ALL TEMPORARY EARTH BERM DIVERSIONS AND SILT DAMS ARE TO BE MULCHED AND SEEDED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY AFTER GRADING. STRAW OR HAY MULCH IS REQUIRED. THE SAME APPLIES FOR ALL STOCKPILES.
   (G) DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY SILT TRAPS, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.
   (H) ALL DISTURBED AREAS NOT PAVED, SODDED, OR BUILT UPON BY NOVEMBER 1, OR DISTURBED AFTER THAT DATE, IS TO BE SEEDED WITHIN 7 DAYS WITH OATS, ABRUZZI RYE, OR EQUIVALENT AND MULCHED WITH HAY OR STRAW AT THE RATE OF 2 TONS PER ACRE.
   (I) PRIOR TO BEGINNING OF ANY WORK ON THIS SITE, THE CONTRACTOR MUST READ AND ADHERE TO THE "VEGETATION PRESERVATION AND PLANTING" GUIDELINES OF FAIRFAX COUNTY PUBLIC FACILITIES MANUAL, AND SECTION 26, ARTICLE II OF THE TOWN CODE.
   (J) PRIOR TO ANY LAND DISTURBANCE OF THE SITE THAT IS GREATER THAN, OR EQUAL TO ONE ACRE , THE CONTRACTOR MUST SUBMIT A CONSTRUCTION GENERAL PERMIT TO THE TOWN OF HERNDON.
   (K) IF REQUIRED BY LAW, THE OWNER/DEVELOPER SHALL PROVIDE STATEMENT CERTIFYING THAT ALL WETLANDS PERMITS WILL BE OBTAINED PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES.
15. THESE PLANS AND SPECIFICATIONS ARE BASED ON THE MINIMUM REQUIREMENTS FOR ___NA___ ZONING. THIS PLAN CONTAINS ___NA___ DWELLING UNITS.
16. ALL ELEVATIONS MUST BE BASED ON THE U.S.G.S. & OR THE N.G.S. MEAN SEA LEVEL DATUM.
17. PRIOR TO ANY APPROVED CLEARING AND GRADING ON A SITE, TREE PROTECTION FENCE SHALL BE ERECTED IN ACCORDANCE WITH FENCE DETAIL ON THE APPROVED LANDSCAPE PLAN, AND BE INSPECTED AND APPROVED BY THE URBAN FORESTER.

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ENVIRONMENTAL SITE ASSESSMENT

NA

WAIVER REQUESTS

(DESIGNATE EACH SECTION OF THE ZONING ORDINANCE, PUBLIC FACILITIES MANUAL OR SUBDIVISION ORDINANCE FROM WHICH A WAIVER IS REQUESTED. PLEASE NOTE THAT A LETTER OF JUSTIFICATION FOR EACH WAIVER MUST ACCOMPANY THE INITIAL PLAN SUBMISSION)

FEE = $200.00 PER REQUEST

WAIVER FROM SECTION: _____ OF _____ = $200.00

WAIVER FROM SECTION: _____ OF _____ = $200.00

NUMBER OF REQUESTS: _____ X $200.00 = _____

DATE FEE COLLECTED (Official Use Only): _____

EXISTING CONDITION SURVEY NOTES

1. HORIZONTAL DATUM VIRGINIA COORDINATE SYSTEM OF 1983 (VCS 83)
   VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29)
2. UTILITY INFORMATION, AS SHOWN ON THIS PLAN, IS TAKEN FROM THE RECORDS AND/OR FIELD SURVEY COMPLETED BY VIKA VIRGINIA, LLC DATED JULY, 2018; AND CANNOT BE GUARANTEED. FOR EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES, NOTIFY "MISS UTILITY" AT 1-800-552-7001, 72 HOURS BEFORE THE START OF ANY EXCAVATION OR CONSTRUCTION.
3. LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR/ENGINEER SHOULD DIG TEST PITS BY HAND AT ALL UTILITY CROSSINGS TO VERIFY EXACT LOCATION.

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

vv

PROFESSIONAL SEAL AND SIGNATURE

VICINITY MAP

SCALE: 1" = 200'



LOCATION OF BENCHMARKS

TRAV	NORTHING	EASTING	ELEV
905	7032221.2791	11802261.6337	354.57
910	7033369.2464	11802283.0149	357.58

SEE SHEET 03.01 FOR LOCATIONS

APPROVED

FOR SITE CONSTRUCTION UNDER THIS PLAN.
BUILDING PERMITS TO BE ISSUED SEPARATELY.

DATE _____ FAIRFAX COUNTY FIRE MARSHAL

DATE _____ DIRECTOR OF PUBLIC WORKS

DATE _____ DIRECTOR OF COMMUNITY DEVELOPMENT

DATE _____ ZONING ADMINISTRATOR

SECTION 70-203(2)(1): SUBDIVISION APPROVAL VOID IF FINAL SUBDIVISION PLAT IS NOT SUBMITTED WITHIN ONE YEAR OF APPROVAL OF A PRELIMINARY SUBDIVISION PLAN.

SECTION 78-202.6(h): SITE PLAN AND SINGLE LOT DEVELOPMENT PLAN APPROVAL SHALL AUTOMATICALLY EXPIRE AT THE END OF A FIVE-YEAR PERIOD FOLLOWING THE DATE OF ITS APPROVAL BY THE ZONING ADMINISTRATOR FOR ANY PHASE OR PART OF AN APPROVED SITE PLAN FOR WHICH A BUILDING PERMIT HAS NOT BEEN APPROVED.

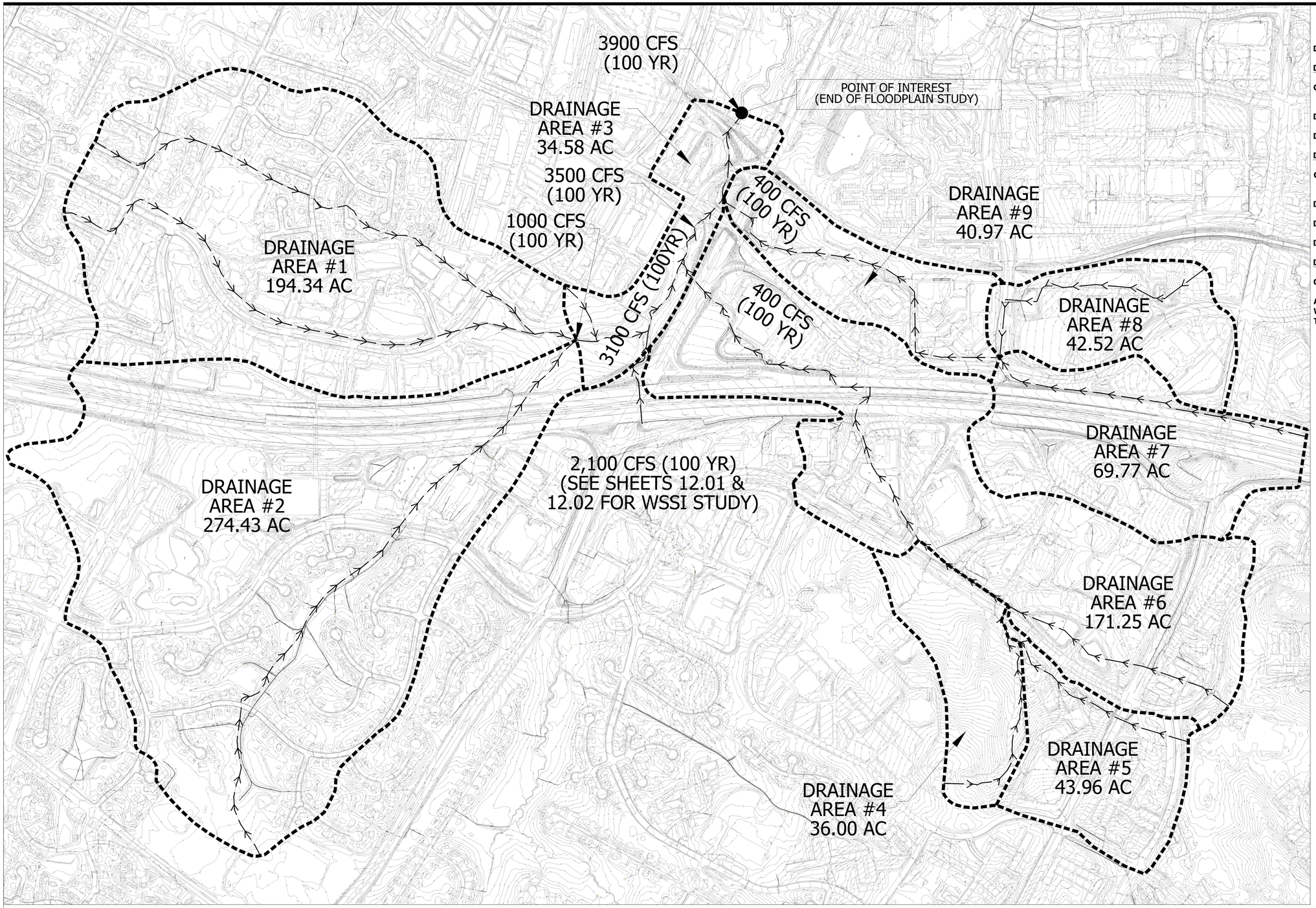
BEFORE YOU DIG
CALL "MISS UTILITY" 811
OR 1-800-552-7001
visit online at va811.com

TOWN PLAN #: SE-1905 FLOODPLAIN STUDY

TOWN OF HERNDON, VIRGINIA
COVER SHEET

SUBDIVISION OR SITE PLAN NAME	FAIRBROOK BUSINESS PARK FLOODPLAIN STUDY
OWNER, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	BOB KNOPF: FAIRBROOK BUSINESS PARK ASSOCIATES, LP AND FAIRBROOK BUSINESS PARK ASSOCIATES II 1001 G STREET NW SUITE 900, WASHINGTON, DC 20001 PHONE: (202) 393-1999
DEVELOPER, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	BOB KNOPF: QUADRANGLE 1001 G STREET NW SUITE 900, WASHINGTON, DC 20001 PHONE: (202) 393-1999
CERTIFIED ENGINEER, ARCHITECT OR SURVEYOR SUBMITTING PLAN, ADDRESS, INCLUDE ZIP CODE AND TELEPHONE NUMBER	KYLE O'CONNOR, P.E.: VIKA VIRGINIA, LLC 8180 GREENSBORO DRIVE SUITE 200 TYSONS, VIRGINIA 22102 PHONE: (703) 442-7800
FAIRFAX COUNTY TAX MAP NUMBER	016-4 ((10)) 5A, 016-4 ((25))-O, 016-4 ((25))-H
TOTAL AREA 27.56 AC	PRESENT ZONING O & LI
REVISED: JULY 2014	PAGE 1 OF 12.02 PAGES

FILE: P:\projects\60455\60455X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\60455X - 01.01 - COVER.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:36:43 AM LAYOUT: 01.01 COVER



DRAINAGE AREA SUMMARY

DRAINAGE AREA 1: 194.34 ACRES

DRAINAGE AREA 2: 274.43 ACRES

COMBINED FLOW = 1000 CFS (100YR)

DRAINAGE AREA 4: 36.00 ACRES

DRAINAGE AREA 5: 43.96 ACRES

DRAINAGE AREA 6: 171.25 ACRES

COMBINED FLOW = 400 CFS (100YR)

DRAINAGE AREA 3: 34.58 ACRES

DRAINAGE AREA 7: 69.77 ACRES

DRAINAGE AREA 8: 42.52 ACRES

DRAINAGE AREA 9: 40.97 ACRES

COMBINED FLOW = 400 CFS (100YR)

AREA PIPED UNDER TOLL ROAD. SEE WSSI REPORT ON SHEETS 12.01 & 12.02. TOTAL FLOW = 2100 CFS (100YR)

SEE SHEET 02.02 FOR HYDROLOGY NARRATIVES

VIRGINIA
STATE GRID
NORTH (VCS 83)
GRAPHIC SCALE

400 0 200 400 800 1600

(IN FEET)
1 inch = 400 ft.

V 10.01

REVISIONS			
R E V I S I O N S	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK
BUSINESS PARK
FLOOD PLAIN
STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

SUGARLAND
RUN DRAINAGE
AREA MAP &
HYDROLOGY

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	
DWG. SCALE:	1" = 400'
VIKA NO.	
SHEET NO.	02.01

FILE: P:\projects\60455\60455X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\60455X - 02.01 DRAINAGE AREA MAP.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:35:30 AM LAYOUT: 02.01

XREF: 60455 Hidden By Default

SUGARLAND RUN FLOODPLAIN STUDY NARRATIVE

ONE HYDRAULIC MODEL HAS BEEN DEVELOPED WITH THIS STUDY:

THIS EXISTING CONDITIONS FLOODPLAIN STUDY ESTABLISHED A FLOODPLAIN ELEVATION AND FLOODPLAIN DELINEATION FOR THE FRONTAGE OF THE SITE ALONG SUGARLAND RUN IN HERNDON, VA. THIS SITE IS APPROXIMATELY LOCATED BETWEEN STREAM BASE LINE STATIONS 394+22 AND 399+78 FROM THE USGS FLOOD-PLAIN DELINEATION STUDY FOR THE SUGARLAND RUN BASIN (OPEN-FILE REPORT 78-1028) .

THE WATERSHED OF SUGARLAND RUN IN THE AFOREMENTIONED STUDY IS ONE OF A FULLY DEVELOPED URBAN WATERSHED. THE CHANNEL OF THE PORTION OF SUGARLAND RUN BEING INVESTIGATED IS A NATURAL CHANNEL WITH CULVERT CROSSINGS UNDER ROADS.

HYDROLOGIC ANALYSES

THIS IS A PREVIOUSLY UNMODELED STREAM IN THE LOCATION OF THIS STUDY. A HYDROLOGIC ANALYSIS WAS OBTAINED FROM THE USGS OPEN-FILE REPORT 78-1028 WHICH WAS PERFORMED BY USE OF THE ANDERSON FORMULA Q=230 (K) (R) (A) (T) (PUBLISHED IN 1970 ENTITLED "EFFECTS OF URBAN DEVELOPMENTS ON FLOODS IN NORTHERN VIRGINIA" - ANDERSON, 1970). AND WAS BASED ON ULTIMATE-DEVELOPMENT (ASSUMING 75% IMPERVIOUSNESS) AND RESULTED IN A FLOW OF 3,900 CFS AT THE W&OD TRAIL CROSSING. PER TECHNICAL BULLETIN 16-02 THIS HYDROLOGIC STUDY IS STILL VALID AS IT USED THE ANDERSON METHOD.

DISCHARGE NARRATIVE FROM THE USGS OPEN-FILE REPORT HAS BEEN PROVIDED ON THIS SHEET.

IT SHOULD BE NOTED THAT THE USGS MODEL DID NOT INCLUDE THE QUAD BOX CULVERT UNDER THE FAIRFAX COUNTY PARKWAY AS IT WAS NOT YET CONSTRUCTED AT THE TIME OF THE STUDY. AN UPDATED EXISTING CONDITIONS MODEL SHALL BE PROVIDED WITH THIS STUDY TO ANALYSIS THE IMPACTS OF THIS CULVERT ON THE DUPLICATE EFFECTIVE MODEL.

PER MAP NUMBERS 51059C0110E AND 51059C0110E DATED SEPTEMBER 17, 2010, THE FEDERAL EMERGENCY MANAGEMENT AGENCY CURRENTLY HAS AN EFFECTIVE FLOOD INSURANCE RATE MAP ESTABLISHING A FLOOD HAZARD ZONE 'AE' ADJACENT TO THE SITE. THIS ZONE AE IS BASED ON THE U.S. DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY, OPEN-FILE REPORT 78-1028 FOR HORSEPEN RUN, SUGARLAND RUN, NICHOLS RUN, AND POND BRANCH BASINS. SEE SHEET 8.01 FOR TOPOGRAPHIC MAP FROM THIS STUDY AND WATER SURFACE PROFILE DATA.

HYDRAULIC ANALYSES

1. **REACHES:**
   SUGARLAND RUN MAIN CHANNEL (CENTERLINE STATION 0+00 TO 29+02)
   SUGARLAND RUN REACH 1 (CENTERLINE STATION 30+15 TO 38+21)
   SUGARLAND RUN REACH 2 (CENTERLINE STATION 8+01 TO 13+01)

2. **CROSS SECTIONS:**
   CROSS SECTION INFORMATION WAS COLLECTED THROUGH FIELD SHOT TOPOGRAPHIC INFORMATION. THE STARTING WATER SURFACE ELEVATION WAS BASED ON THE NORMAL DEPTH CALCULATION METHOD IN HEC-RAS.

3. **MANNING'S N VALUES:**
   TO DUPLICATE THE FEMA EFFECTIVE MODEL, A MANNING'S N VALUE OF 0.05 WAS USED IN THE CHANNEL AND A MANNING'S N VALUE OF 0.07 WAS USED FOR THE CHANNEL BANKS THROUGHOUT THE FULL EXTENT OF THE REACH (USGS OPEN-FILE REPORT UTILIZES 'N' VALUES BASED ON SUMMER CONDITIONS).

5. **SLOPE**
   THE SLOPE USED FOR THE NORMAL DEPTH CALCULATION WITHIN HEC-RAS TO DEVELOP THE STARTING WATER SURFACE ELEVATION AT THE FURTHEST DOWNSTREAM CROSS SECTION WAS THE SLOPE THROUGH THE FURTHEST DOWNSTREAM CROSS-SECTION. THIS VALUE WAS 0.80%.

4. **HYDRAULIC MODELS:**
   VIKA USED THE HEC-RAS PROGRAM AS MENTIONED EARLIER TO DEVELOP THE WATER-SURFACE ELEVATIONS FOR THE STUDIED REACH. THE SUBCRITICAL FLOW REGIME WAS USED. THE STARTING WATER SURFACE ELEVATION AT THE FURTHEST DOWNSTREAM CROSS-SECTION (0+00) WAS BASED ON A NORMAL DEPTH CALCULATION PERFORMED BY HEC-RAS BASED ON AN AVERAGE REACH SLOPE. THE CONARCH SPAN UNDER THE W&OD TRAIL, QUAD BOX CULVERT UNDER THE FAIRFAX COUNTY PARKWAY ON RAMP, AND THE QUAD BOX CULVERT UNDER SPRING STREET WERE ALL MODELED USING THE HEC-RAS MODEL. THE HEC-RAS REPORT AND DATA FOR THE CROSS-SECTIONS AND BOX CULVERT HAVE BEEN PROVIDED ON SHEETS 06.01 THROUGH 7.10. THE 100-YEAR FLOODPLAIN BOUNDARIES FOR SCOTT RUN WERE DELINEATED ON SHEETS 4.01 THROUGH 5.05.

PROPOSED WORK NARRATIVE

THE PROPOSED REDEVELOPMENT PROPOSES A MULTI-PHASE OFFICE AND RESIDENTIAL DEVELOPMENT AND EXTENSION OF FAIRBROOK DRIVE TO SPRING STREET. THIS PLAN PROPOSES A ROAD CROSSING OF SUGARLAND RUN REACH 1 AND AN EXTENSION OF FAIRBROOK DRIVE WITHIN THE SUGARLAND FLOODPLAIN. THE PROPOSED CONDITIONS MODEL WILL INCLUDE THE PROPOSED CULVERT CROSSING UNDER THIS ROAD AND THE IMPACTS OF THE GRADING WITH THE ASSOCIATED FAIRBROOK DRIVE EXTENSION.

THE EXISTING CONDITIONS (BASELINE) MODEL INCLUDING THE FAIRFAX COUNTY PARKWAY ON-RAMP CROSSING WILL BE UPDATED WITH THIS PROPOSED INFORMATION AND A COMPLETE ANALYSIS WILL BE PROVIDED TO DETERMINE THE IMPACTS OF THE PROPOSED ROAD IMPROVEMENTS ON THE EXISTING FLOODPLAIN ELEVATIONS. THIS WILL BECOME OUR PROPOSED CONDITIONS FLOODPLAIN MODEL.

PROPOSED MANNING'S N VALUES:
TO MAINTAIN CONSISTENCY BETWEEN MODEL, A MANNING'S N VALUE OF 0.05 WAS USED IN THE CHANNEL AND A MANNING'S N VALUE OF 0.07 WAS USED FOR THE EXISTING CHANNEL BANKS TO REMAIN. PORTIONS OF THE PROPOSED FAIRBROOK DRIVE EXTENSION AND ASSOCIATED FILL SLOPES HAVE BEEN SHOWN IN THE PROPOSED CROSS-SECTIONS. AN N VALUE OF 0.13 WAS USED FOR THE ROAD AND AN N VALUE OF 0.025 WAS USED FOR THE FILL SLOPES.

IT SHOULD BE NOTED THAT A STREAM RESTORATION PLAN SHALL BE PROVIDED AT TIME OF FINAL SITE PLAN TO RE-ALIGN THE STREAM AND PROVIDE IMPROVEMENTS TO THE CHANNEL AND BANKS OF SUGARLAND RUN. POTENTIAL LOCATIONS OF STREAM RESTORATION HAVE BEEN SHOWN ON SHEET 07.01 OF THIS PLAN. ONCE THE STREAM RESTORATION PLAN HAS BEEN FINALIZED, THE PROPOSED HEC-RAS MODEL WILL BE UPDATED TO REFLECT THESE STREAM RESTORATION IMPROVEMENTS AND CENTERLINE ADJUSTMENTS.

IT IS ANTICIPATED THAT THE ASSOCIATED ROADWAY IMPROVEMENTS AND ASSOCIATED REDEVELOPMENT ON THE ADJACENT PROPERTY WILL HAVE LITTLE TO NO IMPACT ON THE EXISTING MINOR FLOODPLAIN ESTABLISHED WITH THIS PLAN.

USGS OPEN-FILE REPORT 78-1028: DESCRIPTION OF DISCHARGE AND MAPPING

DISCHARGE:

THE FLOOD AREAS DELINEATED ARE THOSE PROJECTED FROM ULTIMATE-DEVELOPMENT DISCHARGES. HIGHLY DEVELOPED BASINS DIFFER FROM NATURAL BASINS IN THAT, FOR A GIVEN STORM (1), RUNOFF IS GREATER (2) DISCHARGE TIME IS MUCH SHORTER AND (3) FLOODS OF COMPARABLE MAGNITUDE HAVE A GREATER FREQUENCY OF OCCURRENCE. THESE FACTORS WERE ANALYZED THROUGH A STUDY OF STREAM FLOW AND PRECIPITATION RECORDS, MOST OF WHICH WERE COLLECTED IN THE VICINITY OF WASHINGTON, DC. THE REPORT, "EFFECTS OF URBAN DEVELOPMENT ON FLOODS IN NORTHERN VIRGINIA", (ANDERSON 1970) DESCRIBES THE ANALYSIS USED AND SUMMARIZES THE CONCLUSIONS OF THAT ANALYSIS. THE EFFECT OF IMPERVIOUSNESS WITH RESPECT TO RUNOFF VOLUMES WAS EVALUATED BY COMPARING TYPICAL RUNOFF COEFFICIENTS FOR NATURAL AND HIGHLY DEVELOPED BASINS. REGRESSION ANALYSIS WAS USED; FIRST TO DERIVE THE RELATION OF LAG TIME (THE TIME LAPSE FROM CENTROID OF PRECIPITATION EXCESS TO THE CENTROID OF THE RUNOFF) AS A FUNCTION OF THE LENGTH-SLOPE PARAMETER; AND SECOND, TO DERIVE THE RELATION OF MEAN ANNUAL FLOOD (2.33 YEAR RECURRENCE INTERVAL), ADJUSTED FOR EFFECTS OF IMPERVIOUSNESS, AS A FUNCTION OF DRAINAGE-BASIN AREA AND LAG TIME. AN ANALYSIS OF FLOOD AND RAINFALL FREQUENCIES WAS MADE TO DERIVE THE RATIOS OF 25, 50, AND 100 YEAR FLOODS TO THE MEAN ANNUAL FLOOD FOR ANY PERCENTAGE OF IMPERVIOUSNESS. USING THE AVAILABLE INFORMATION FOR A BASIN IN THE PROJECT AREA, THE MAGNITUDE OF THE 2.33, 25, 50, AND 100 YEAR FLOOD PEAKS CAN BE COMPUTED FROM MEASURABLE BASIN PARAMETERS FOR ANY PERCENTAGE OF IMPERVIOUSNESS IN THE ULTIMATE DEVELOPMENT PLAN.

THE TERM "RECURRENCE INTERVAL", AS USED HERE, IS THE AVERAGE INTERVAL OF TIME WITHIN A GIVEN FLOOD DISCHARGE WILL BE EQUALED OR EXCEEDED ONCE. THE RECURRENCE INTERVAL IS INVERSELY RELATED TO THE CHANCE OF A GIVEN FLOOD BEING EQUALED OR EXCEEDED IN ANY ONE YEAR. THUS, THE 100-YEAR FLOOD HAS A 1 PERCENT CHANCE OF BEING EQUALED OR EXCEEDED IN ANY ONE YEAR. NO PERIODICITY IS IMPLIED.

PROFILE COMPUTATION

HAVING COMPUTED THE 25, 50, AND 100 YEAR FLOODS AT SELECTED POINTS BY THE METHOD SET FORTH BY ANDERSON (1970), THE CORRESPONDING WATER-SURFACE PROFILES WERE COMPUTED WITH THE STANDARD STEP METHOD OF BACKWATER ANALYSIS. THE METHOD IS BASED ON A BALANCE OF ENERGY BETWEEN SUCCESSIVE PAIRS OF STREAM CROSS-SECTIONS. FOR TRANQUIL FLOW, THE COMPUTATIONS START AT THE FARTHEST DOWNSTREAM SECTIONS, OR AT A CONTROL SECTION, AND PROCEED UPSTREAM; BUT FOR SUPERCRITICAL FLOW, THE COMPUTATIONS START AT THE MOST UPSTREAM SECTION, OR CRITICAL SECTION, AND PROCEED DOWNSTREAM UNTIL FLOW AGAIN BECOMES TRANQUIL. PEAK-DISCHARGE MAGNITUDES VARIED WITH SIZE OF DRAINAGE AREA AND WERE CHANGED AT SELECTED POINTS, SUCH AS ABOVE THE CONFLUENCE OF A MAJOR TRIBUTARY. THE WATER-SURFACE PROFILE ELEVATIONS AREA AVAILABLE FOR EACH CROSS-SECTION. THE CROSS-SECTIONS AREA REFERENCED TO AN ARBITRARY BASE LINE, DRAWN TO AN APPROXIMATE CENTROID OF FLOW AND MEASURED IN AN UPSTREAM DIRECTION FROM AN ARBITRARY STARTING POINT. PROFILES WERE COMPUTED IN ACCORDANCE WITH ACCEPTED METHOD OF THE USGS.

FOLLOWING ARE SEVERAL GENERAL ITEMS PERTAINING TO THE PROFILE COMPUTATIONS:

1. DISCHARGE MAGNITUDE GREATER THAN THAT OF THE 100-YEAR FLOOD MAY OCCUR. HOWEVER, THE RATE OF CHANGE OF STAGE PER UNIT DISCHARGE GENERALLY BECOMES COMPARATIVELY LESS AS THE DISCHARGE INCREASES.
2. NO FACTORS OF SAFETY WERE USED IN THE COMPUTATIONS. BRIDGES AND CULVERTS WERE ASSUMED TO BE FREE OF DEBRIS. ROUGHNESS COEFFICIENTS (MANNING'S 'N') WERE SELECTED BASED ON SUMMER VEGETATION.
3. NEW CONSTRUCTION AND CHANNELIZATION WORK MAY MODIFY HYDRAULIC PROPERTIES, THUS CHANGING THE FLOOD PROFILES IN THE FUTURE.

DELINEATION OF FLOOD BOUNDARIES

THE FIRST STEP IN THE DELINEATION OF FLOOD AREAS WAS TO TRANSPOSE THE FLOOD-PROFILE ELEVATION, COMPUTED AT EACH CROSS-SECTION, ONTO THE BASE MAPS ON WHICH CHANNEL CROSS-SECTION HAD INITIALLY BEEN LOCATED. DELINEATION WAS THEN COMPLETED BY INTERPRETING ELEVATION BETWEEN THESE CROSS-SECTIONS AND BETWEEN MAP CONTOURS ON A STRAIGHT LINE BASIS.

THE MAPS SHOW THE 25 AND 100 YEAR FLOOD BOUNDARIES GENERALLY AND INCLUDE THE 50 YEAR FLOOD BOUNDARY IN SOME PLACES. IN STEEP AREAS, THERE WAS INSUFFICIENT SPACE TO SHOW BOTH THE 25 AND 100 YEAR FLOOD BOUNDARIES, AND ONLY THE 100 YEAR FLOOD WAS DELINEATED.

THE DELINEATION REPRESENTS THE AVERAGE WATER-SURFACE ELEVATION. DURING ACTUAL FLOODS, THE WATER-SURFACE MAY NOT BE LEVEL ACROSS THE STREAM.

SPECIAL HYDRAULIC CONDITIONS

SPECIAL HYDRAULIC CONDITIONS WILL BE DISCUSSED IN ORDER, BEGINNING WITH SUGARLAND RUN.

1. SUGARLAND RUN PROFILE COMPUTATIONS WERE BEGUN THREE FOURTHS OF A MILE BELOW FAIRFAX COUNTY BOUNDARY. TO ASSURE CORRECT DETERMINATION OF PROFILE ELEVATIONS AT THE COUNTY BOUNDARY.
2. THE PROFILES FOR 25, 50, AND 100 YEAR PEAK DISCHARGES WERE DETERMINED FOR THE APPROACH TO LEESBURG PIKE PRIOR TO PLACEMENT OF FILL ON UPSTREAM RIGHT BANK.
3. FLOOD PROFILES FOR THE REACH OF SUGARLAND RUN CONTAINING THE MOUTH OF MUDDY BRANCH AND LOWER REACH OF MUDDY RUN WERE COMPUTED USING DESIGN DETAILS FOR PROPOSED ROAD RELOCATION TAKEN FROM PLANS OF VIRGINIA DEPARTMENT OF HIGHWAYS.
4. THE EFFECTS OF STORAGE IN A SMALL PRIVATE LAKE, AND THE AREAS UPSTREAM FROM WASHINGTON AND OLD DOMINION R.R. GRADE AND ABOVE DULLES AIRPORT ACCESS ROAD WERE CONSIDERED NEGLIGIBLE IN RELATION TO THE TOTAL FLOW OF SUGARLAND RUN.

UPDATED FEMA FLOODPLAIN MAPS NOTE:

UPDATED FEMA FLOODPLAIN MAPS ARE FOR THIS AREA IS SCHEDULED TO BE RELEASE LATER THIS YEAR. THE ENGINEER HAS REVIEWED WHAT LIMITED INFORMATION IS AVAILABLE AT THIS TIME FOR THE UPDATED FLOODPLAIN MAPS AND DID NOT FIND ANY AREAS THAT WOULD IMPACT THE LAYOUT AS PROPOSED WITH THIS APPLICATION. THIS FLOODPLAIN ANALYSIS MUST BE UPDATED AT THE TIME OF SITE PLAN TO FULLY INCORPORATE THE REVISED FLOODPLAIN INFORMATION THAT IS MADE AVAILABLE BY FEMA. THIS INCLUDES, BUT IS NOT LIMITED TO THE REVISED VERTICAL DATUM, MAPPED AREAS, AND COMPUTATIONS

V 10.01

REVISIONS	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

VIKA
ENGINEERS PLANNERS SURVEYORS
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FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

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COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

SUGARLAND RUN DRAINAGE AREA MAP & HYDROLOGY

DRAWN BY: KMO
DESIGNED BY: KMO
DATE ISSUED:
DWG. SCALE: NA
VIKA NO.
SHEET NO. 02.02

FILE: P:\projects\60945\60945X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\60945X - 02.01 DRAINAGE AREA MAP.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:35:47 AM LAYOUT: 02.02

LAYOUT: 02.02, Plotted By: oconnor

SOURCE NOTES:

1. THE SUBJECT PROPERTIES SHOWN HEREON ARE IDENTIFIED ON FAIRFAX COUNTY TAX MAP AS #016-4-10-0005A, #016-4-25-H, &# 016-4-25-O AND ARE ZONED O AND LI.
2. BOUNDARY INFORMATION IS BASED ON A FIELD RUN SURVEY BY VIKA, INC. DATED OCTOBER, 2000 AND VERIFIED ON JUNE 16, 2006 AND JANUARY 18, 2008 AND UPDATED BY VIKA VIRGINIA, LLC ON DECEMBER 04, 2015.
3. THE HORIZONTAL DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83) AND THE VERTICAL DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29). THE HORIZONTAL AND VERTICAL DATUMS SHOWN HEREON ARE BASED ON A GPS SURVEY PERFORMED BY VIKA VIRGINIA, LLC ON JUNE 14, 2018 USING THE FOLLOWING CORS STATIONS: LOYB LORTON VA 0 0576 (NGS PID DH7960), VAGV GAINESVILLE VA – 0588. AND LOYK ANNAPOLIS JCT MD – 0370 (NGS PID DL3640). THE ELEVATIONS CONVERSION OF THE VERTICAL DATUM FROM THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) TO (NGVD29), USING A DIFFERENCE OF +0.71', WAS CALCULATED USING ARMY CORPS OF ENGINEERS' CORPSCON 6.0.1 CONVERSION TOOL.
4. CONTOUR INTERVAL SHOWN HEREON IS 2'-0".
5. THE PROPERTIES SHOWN HEREON WERE ACQUIRED BY FAIRBROOK BUSINESS PARK ASSOCIATES, L.P. BY DEED RECORDED ON JULY 23, 1984 AND RECORDED IN DEED BOOK 5993 AT PAGE 372 AND FAIRBROOK BUSINESS PARK ASSOCIATES II, LP BY DEED RECORDED IN DEED BOOK 20742 AT PAGE 1375 ALL AMONG THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA.
6. THE SUBJECT PROPERTIES LIE IN THE FOLLOWING THREE (3) FLOOD ZONE DESIGNATIONS AS SHOWN ON FLOOD INSURANCE RATE MAP (F.I.R.M.) COMMUNITY PANEL NUMBERS 515525 0110 E AND 515525 0130 E, WITH AN EFFECTIVE DATE SEPTEMBER 17, 2010 FOR FAIRFAX COUNTY, VIRGINIA AND INCORPORATED AREAS: ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED): ZONE "X-SHADED" (AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN). ZONE "X-SHADED" AND ZONE "AE" ARE DESIGNATED AS SPECIAL FLOOD AREAS.
7. PORTIONS OF THE SUBJECT PROPERTY DO LIE IN A RESOURCE PROTECTION AREA (RPA) PER THE HERNDON CHESAPEAKE BAY PRESERVATION AREAS MAP DATED MARCH 13, 2008.
8. RPA DELINEATION AND WETLAND INFORMATION FROM REPORT ENTITLED "FAIRBROOK BUSINESS PARK AND OFF-SITE STUDY AREA – WATERS OF THE U.S. (INCLUDING WETLANDS) DELINEATION AND RESOURCE PROTECTION AREA EVALUATION" PREPARED BY WETLANDS STUDIES AND SOLUTIONS INC. DATED MAY 31, 2016. A JURISDICTIONAL DETERMINATION WAS ISSUED BY THE CORPS OF ENGINEERS ON SEPT. 21, 2016 (#NAO-2016-01643).
9. THE 80' BRL SHOWN HEREON WAS TAKEN FROM A PLAN "PARKWAY TRADE CENTER" PREPARED BY RINKER AND ASSOCIATES, DATED 9-28-1983. THE 80' WAS MEASURED FROM THE ORIGINAL RIGHT-OF-WAY OF THE PARKWAY. ADDITIONAL STREET DEDICATION WAS RECORDED IN DEED BOOK 18956 AT PAGE 1230, WHICH WIDENED THE RIGHT-OF-WAY ANOTHER 12'.
10. THERE IS NO OBSERVED EVIDENCE OF CEMETERIES ON THE SUBJECT PROPERTY.
11. THE EXISTING CONDITIONS SURVEY WAS COMPLETED UNDER THE DIRECT RESPONSIBLE CHARGE OF, FRANKLIN E. JENKINS, LS FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE ORIGINAL DATA WAS OBTAINED IN OCTOBER 2000, VERIFIED IN JUNE 2006 AND JANUARY 2008, LAST UPDATED JULY 2018; AND THAT THIS PLAN/PLAT MEETS MINIMUM HORIZONTAL AND VERTICAL ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
12. THE HORIZONTAL AND VERTICAL DATUMS REFERENCED HEREON ARE IN CONFORMANCE WITH FAIRFAX COUNTY REQUIREMENTS 2-0106.1B AND 2-0208.3.

LEGEND:

- EXISTING 100-YEAR FEMA FLOODPLAIN DELINEATION
- EXISTING 100-YEAR 'MINOR FLOODPLAIN' DELINEATION (SEE FLOODPLAIN NOTE BELOW)
- SUBJECT SITE AREA
- INEFFECTIVE FLOW AREA

FLOODPLAIN NOTE:
THE EXISTING FLOODPLAIN DELINEATION SHOWN HEREON INCLUDES BOTH THE EXISTING FEMA FLOODPLAIN AS WELL AS THE EXISTING UPSTREAM 'MINOR FLOODPLAIN' ON SITE. BOTH THE 100-YEAR FEMA AND MINOR FLOODPLAIN ELEVATIONS HAVE BEEN PROVIDED TO SHOW THAT THE IMPROVEMENTS WITH THE PROPOSED REDEVELOPMENT DO NOT NEGATIVELY IMPACT THE 100-YEAR WATER SURFACE ELEVATIONS FOR BOTH THE FEMA FLOODPLAIN AND 'MINOR FLOODPLAIN'. SEE SHEET 07.01 FOR PROPOSED CONDITION FLOODPLAIN DELINEATION. AS SHOWN ON THAT SHEET THERE IS NO INCREASE IN THE LIMITS OF EITHER FLOODPLAIN.

NORTH (VCS 83)
GRAPHIC SCALE
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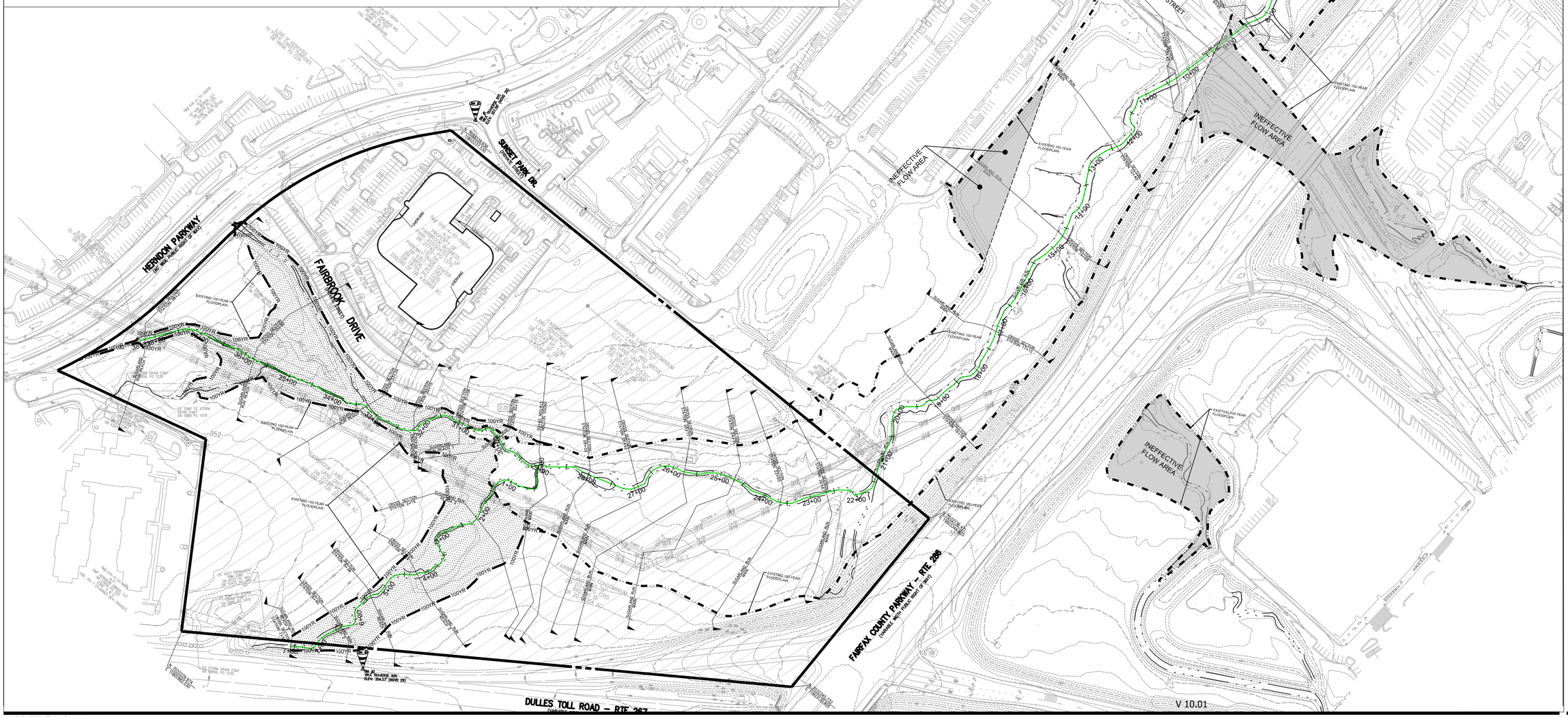
(IN FEET)
1 inch = 100 ft.



V 10.01

VIKA
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REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

vv

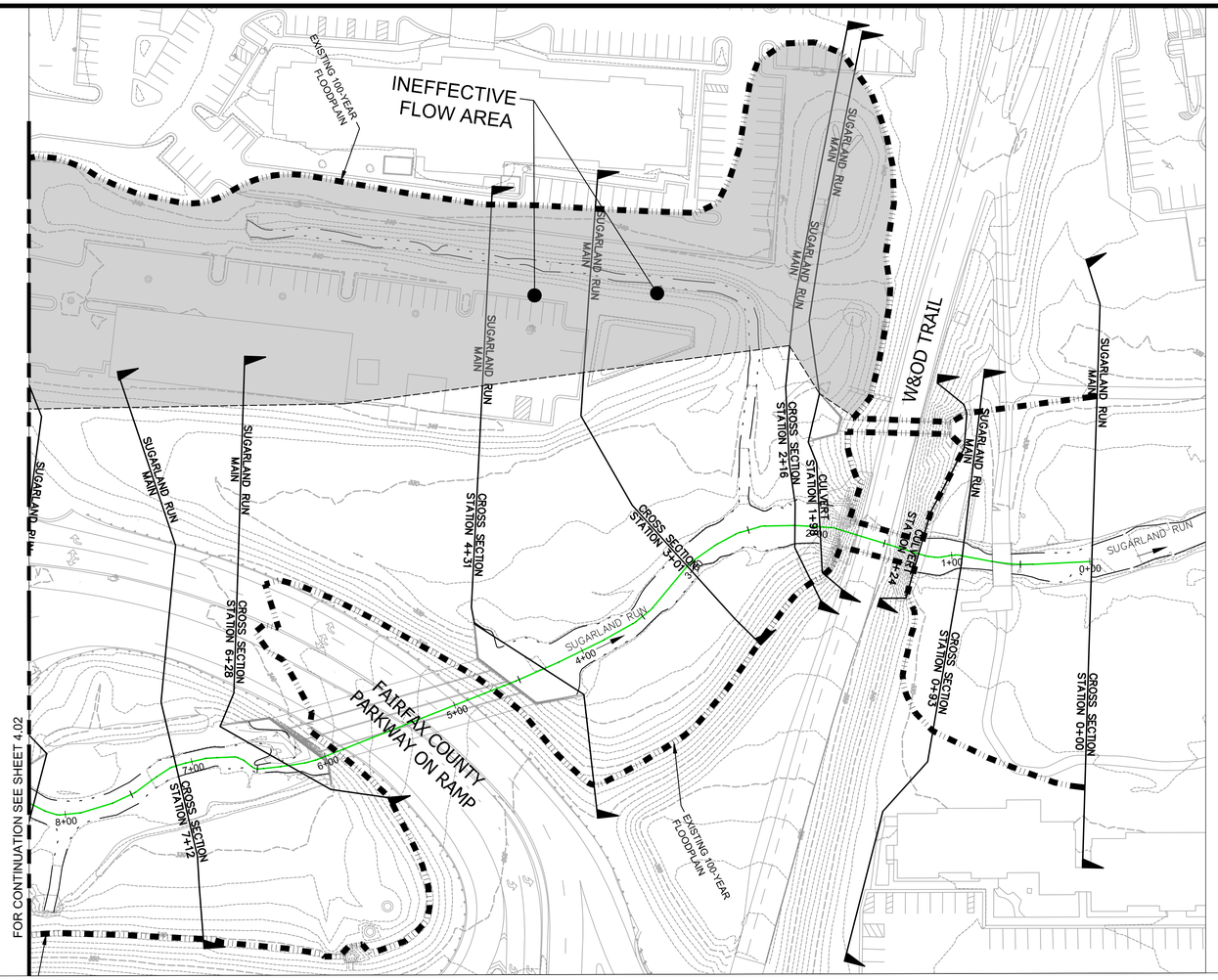
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

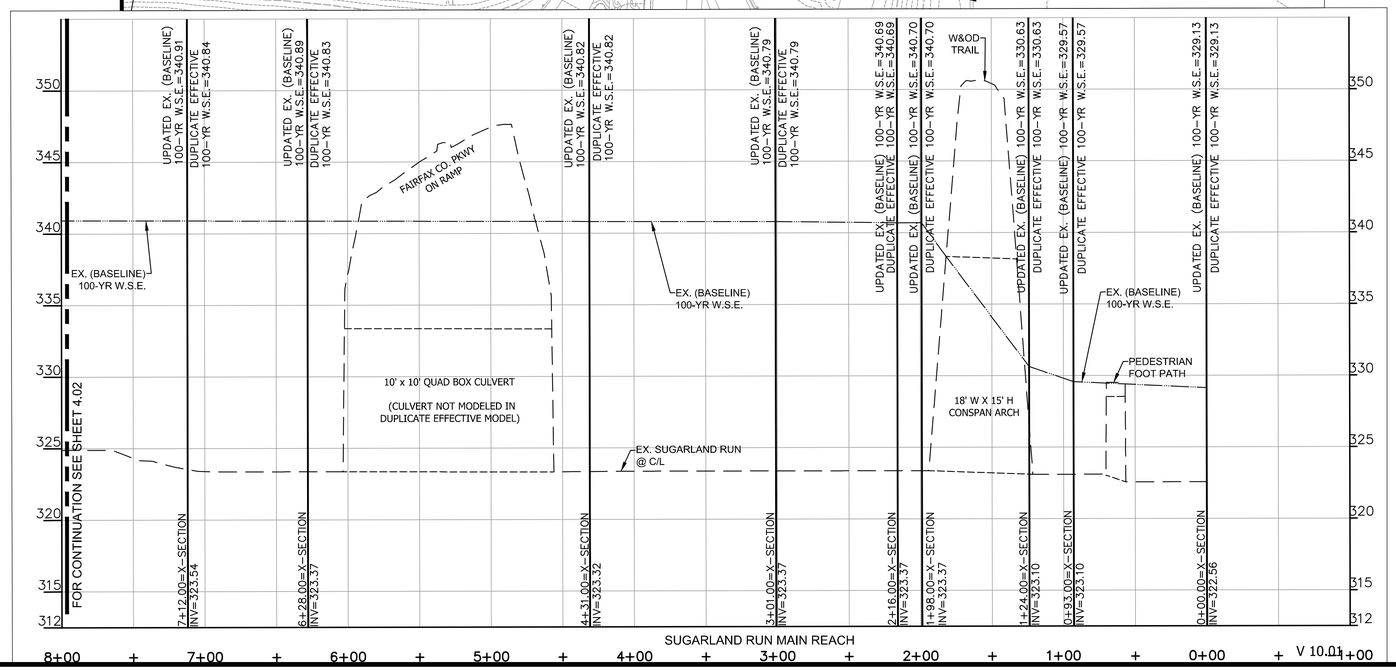
DISTRICT
TOWN OF HERNDON, VIRGINIA

OVERALL STUDY AREA

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 100'
VIKA NO.	6045X
SHEET NO.	03.01

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 03.01 OVERALL EXISTING CONDITIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:37:16 AM LAYOUT: 03.01





NORTH (VCS 83)
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

UPDATED EXISTING (BASELINE) 100-YEAR FLOODPLAIN DELINEATION

ENGINEERS PLANNERS SURVEYORS
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REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
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10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

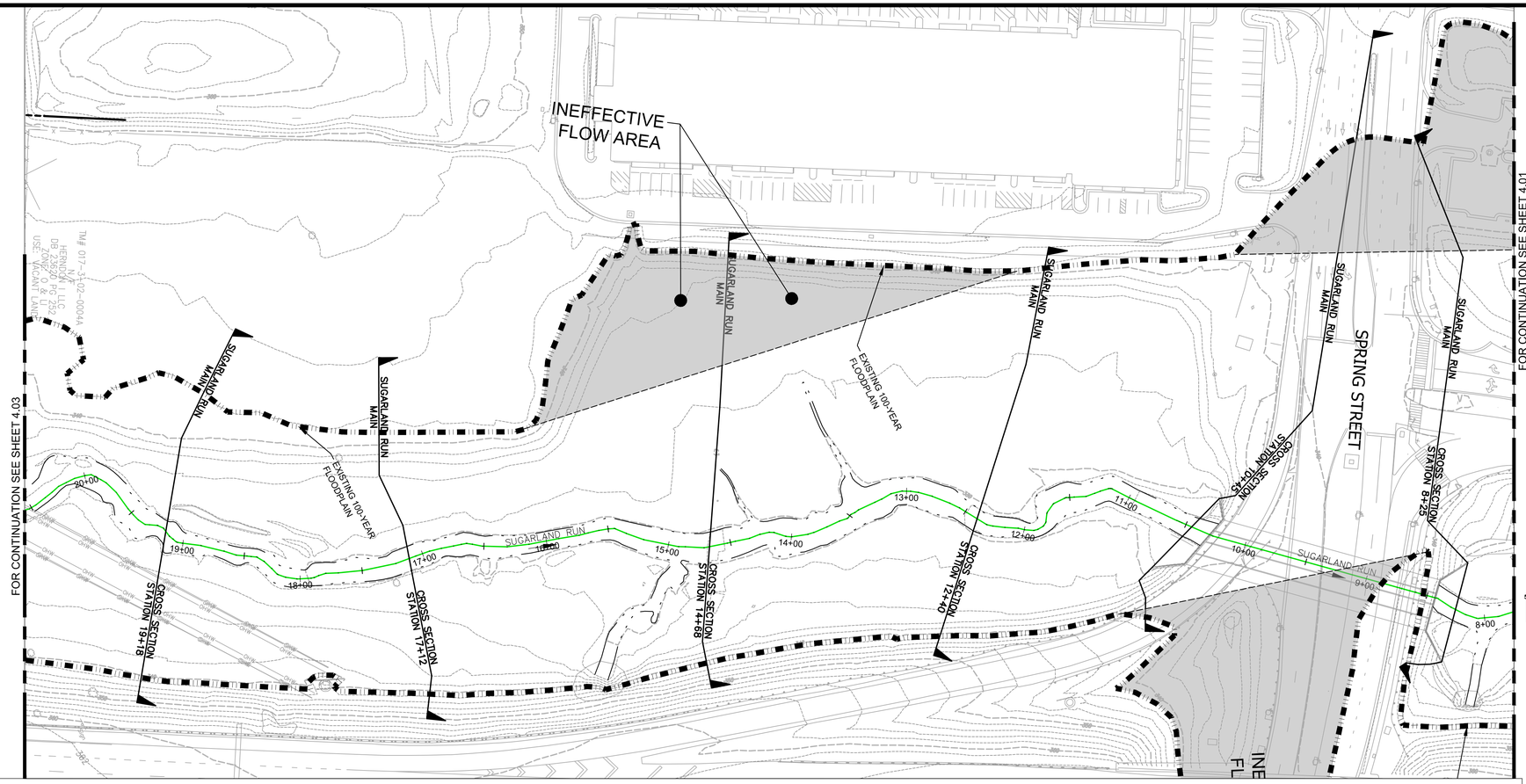
DISTRICT
TOWN OF HERNDON, VIRGINIA

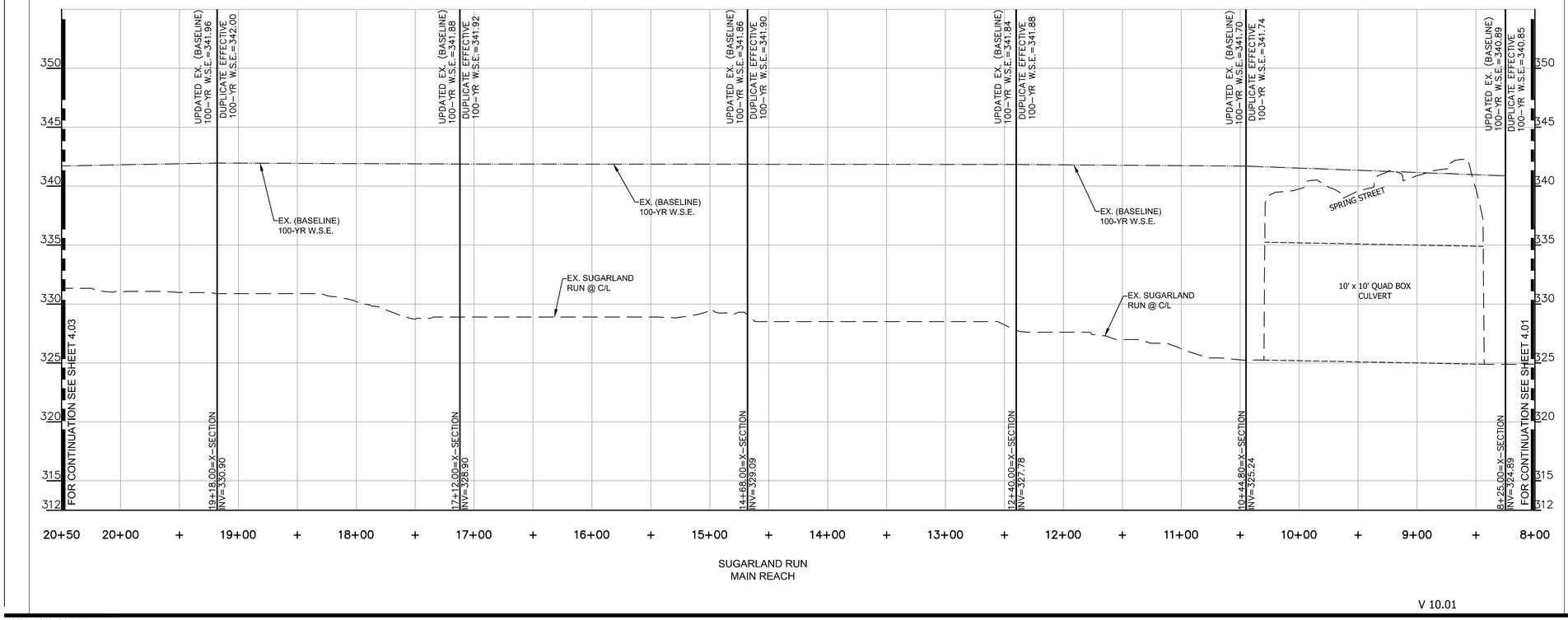
EXISTING CONDITIONS (BASELINE) SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	04.01

FILE: P:\projects\6045\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 04.01 EXISTING PLAN & PROF.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:38:32 AM LAYOUT: 04.01

LAYOUT: 04.01, Plotted By: vv





SUGARLAND RUN
MAIN REACH

V 10.01

NORTH (VCS 83)
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

UPDATED EXISTING (BASELINE) 100-YEAR FLOODPLAIN DELINEATION

VIKA

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

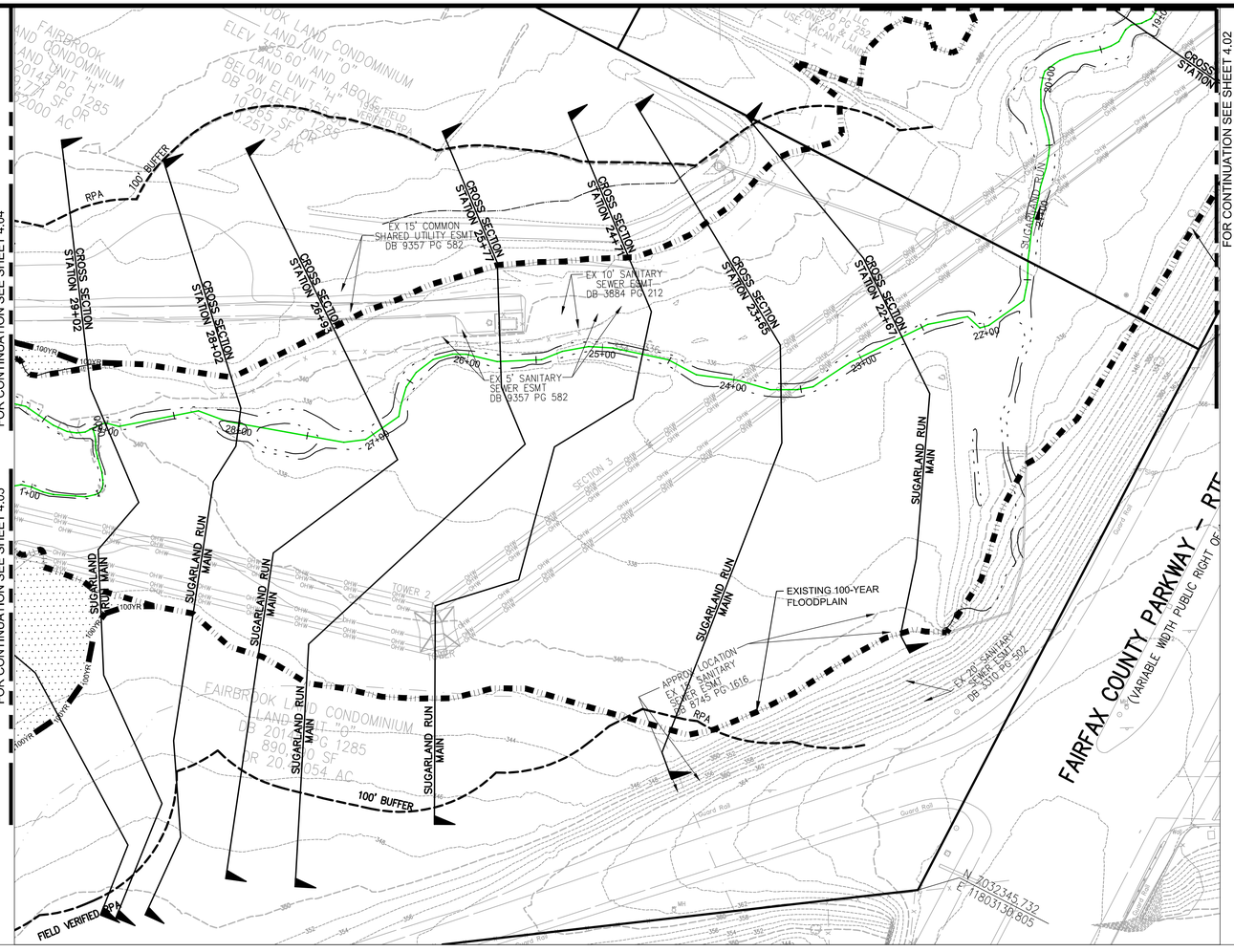
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

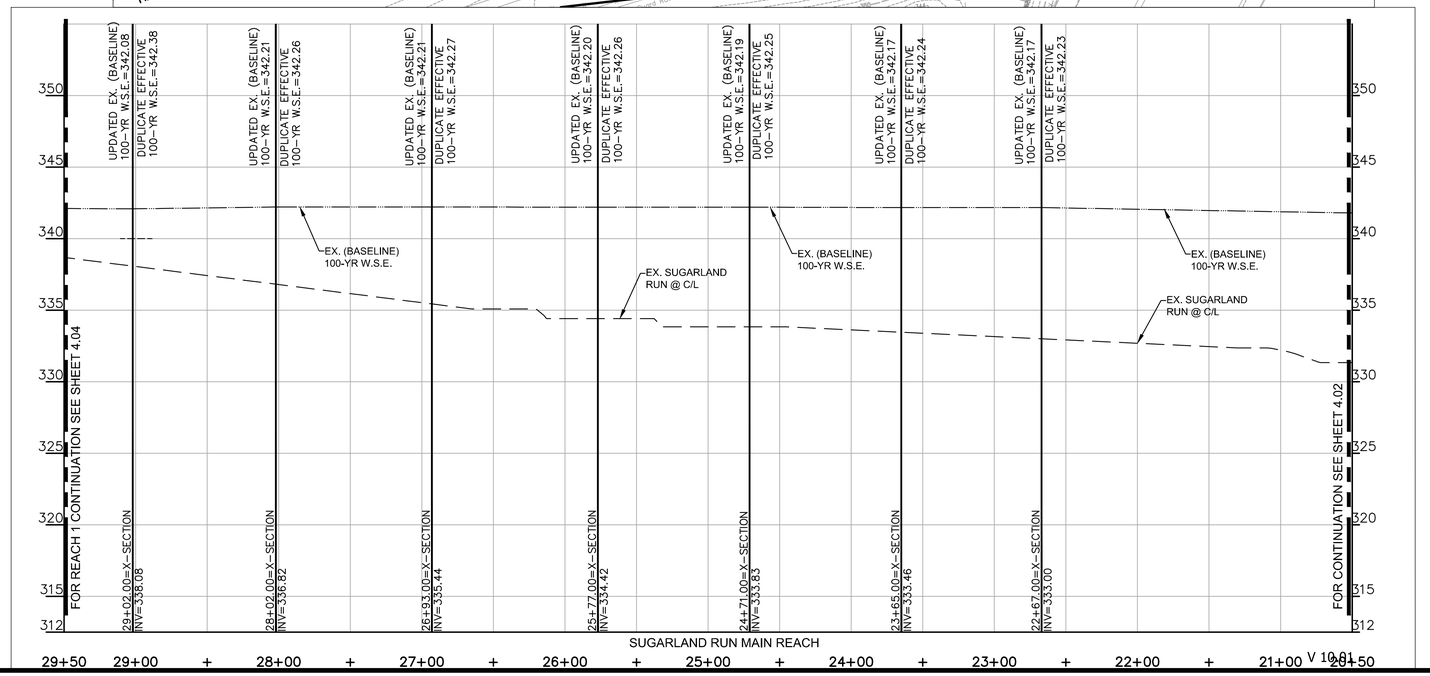
DISTRICT
TOWN OF HERNDON, VIRGINIA

EXISTING CONDITIONS (BASELINE) SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	04.02

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 04.01 EXISTING PLAN & PROF.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:39:19 AM LAYOUT: 04.02





NORTH (VCS 83)
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

UPDATED EXISTING FEMA (BASELINE) 100-YEAR FLOODPLAIN DELINEATION

EXISTING 100-YEAR 'MINOR FLOODPLAIN' DELINEATION

VIKA
ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
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REVISIONS	DATE
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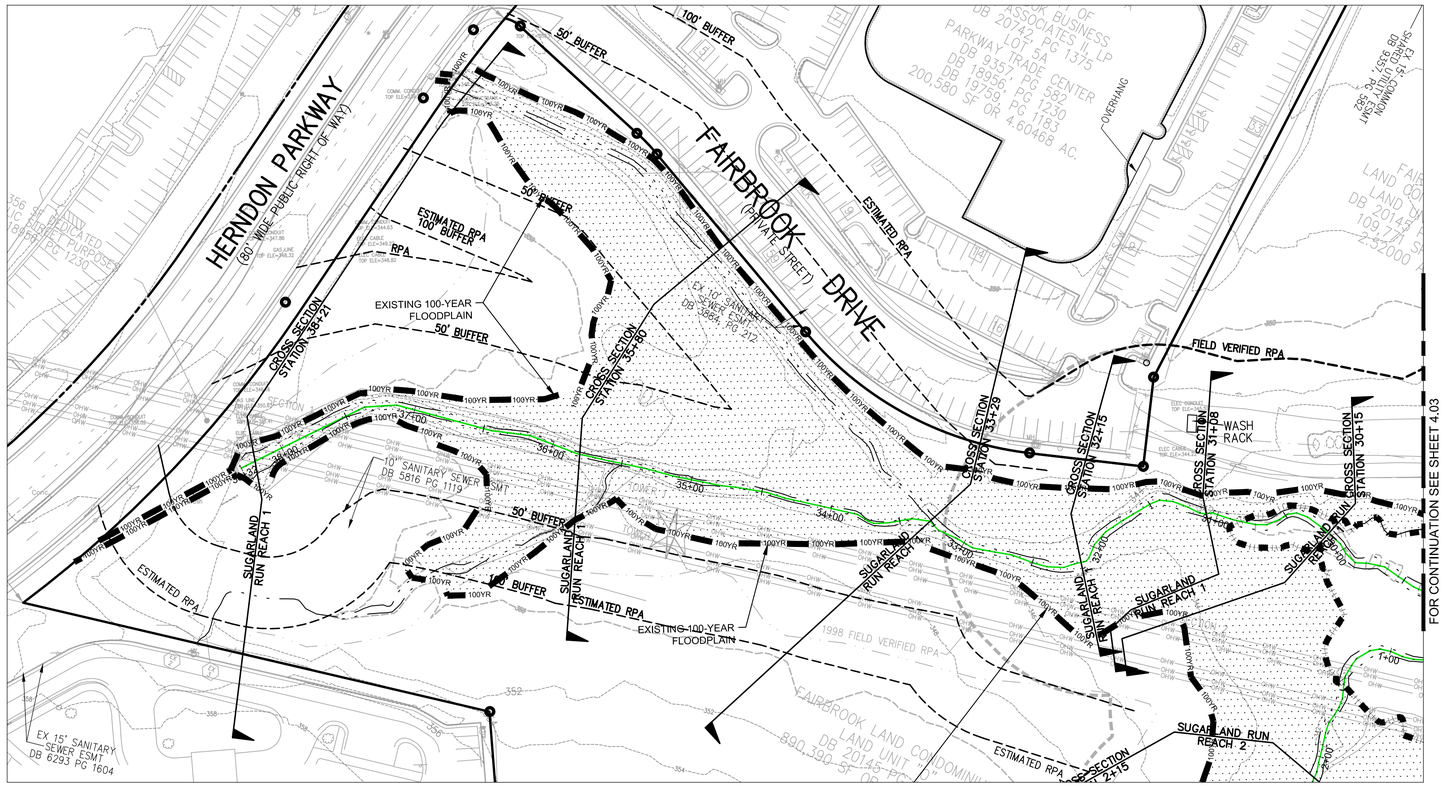
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

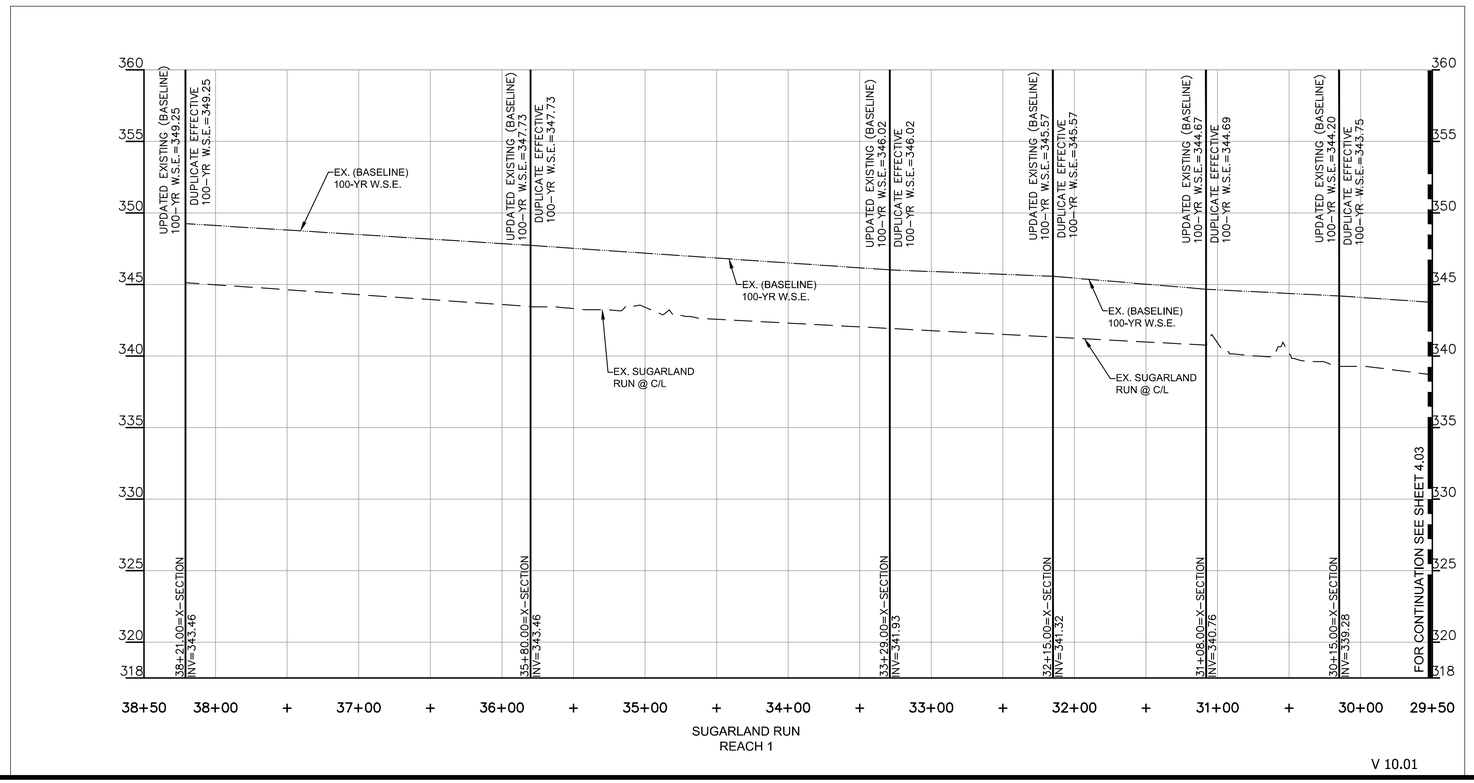
EXISTING CONDITIONS (BASELINE) SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	04.03

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 04.01 EXISTING PLAN & PROF.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:40:03 AM LAYOUT: 04.03



REACH 1 PLAN & PROFILE



NORTH (VCS 83)
GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

LEGEND:

UPDATED EXISTING FEMA (BASELINE) 100-YEAR FLOODPLAIN DELINEATION

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REVISIONS	DATE
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FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

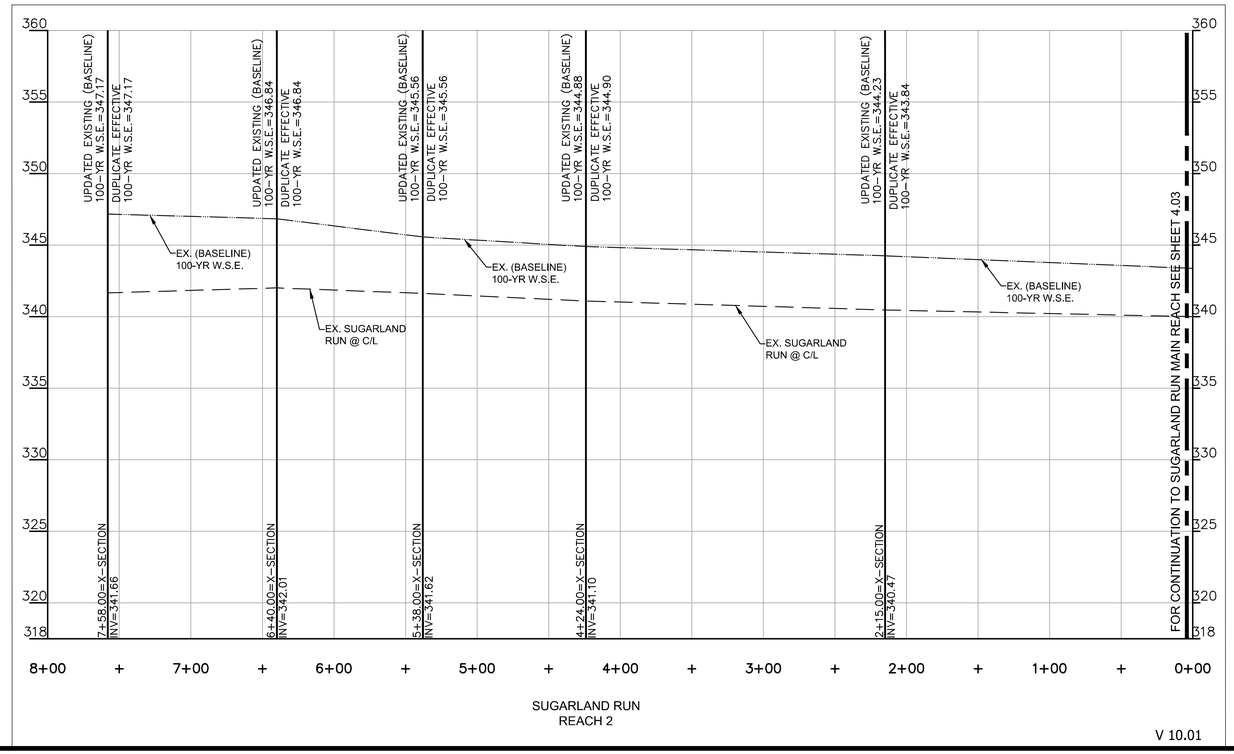
EXISTING CONDITIONS (BASELINE) SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	04.04

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 04.01 EXISTING PLAN & PROF.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:40:34 AM LAYOUT: 04.04



REACH 2 PLAN & PROFILE



NORTH (VCS 83)

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

UPDATED EXISTING FEMA (BASELINE) 100-YEAR FLOODPLAIN DELINEATION

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10/16/2020
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FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

EXISTING CONDITIONS (BASELINE) SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	04.05

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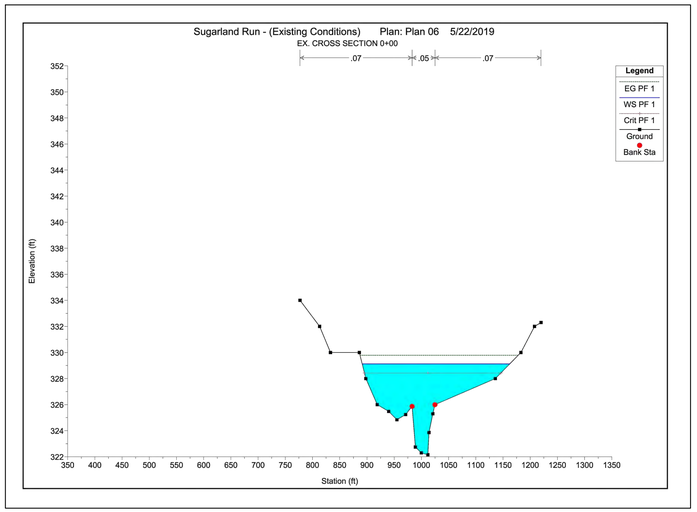

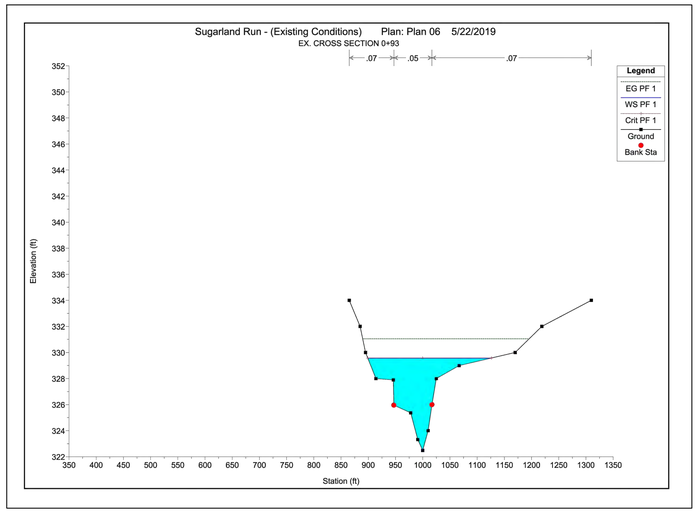

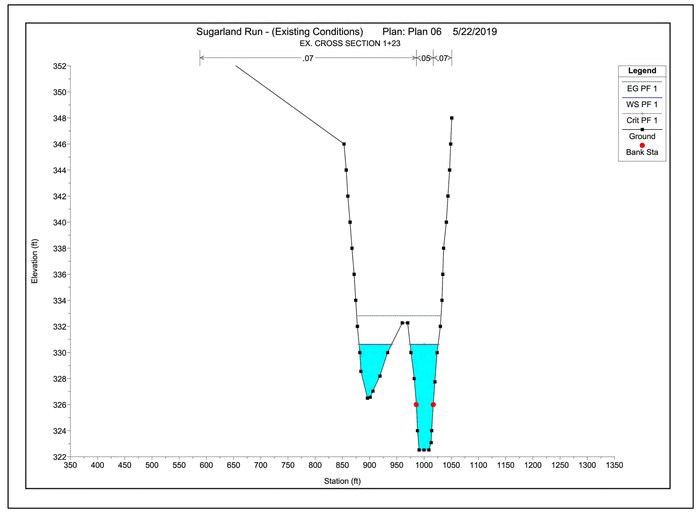

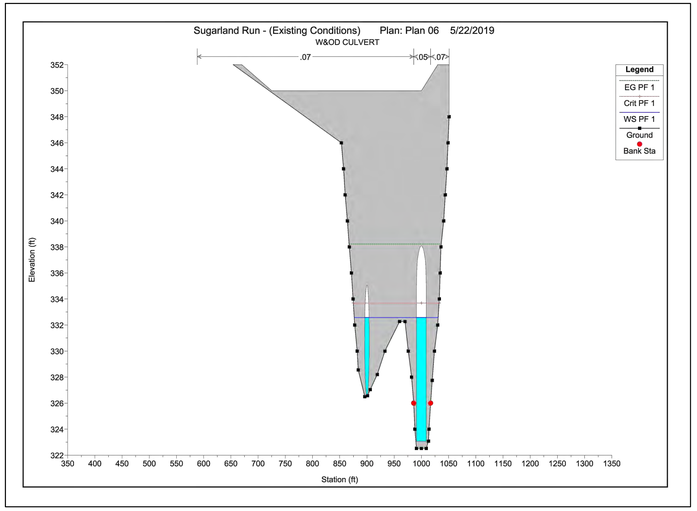

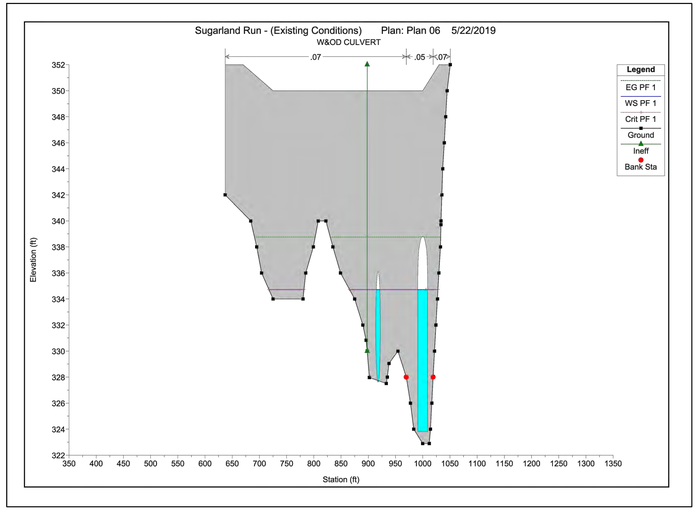

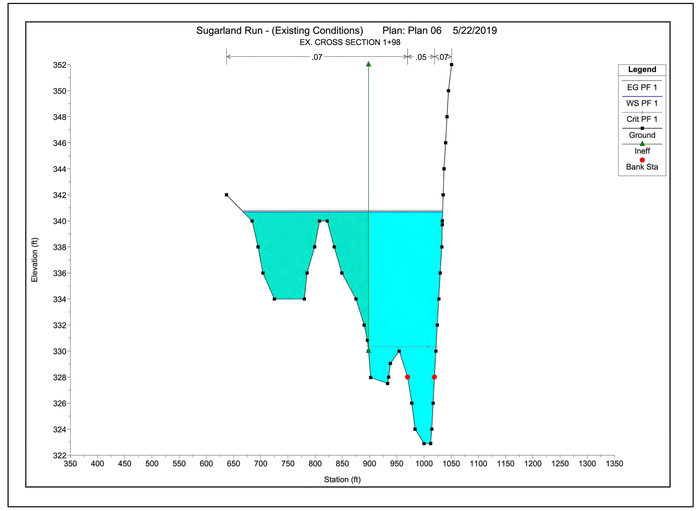

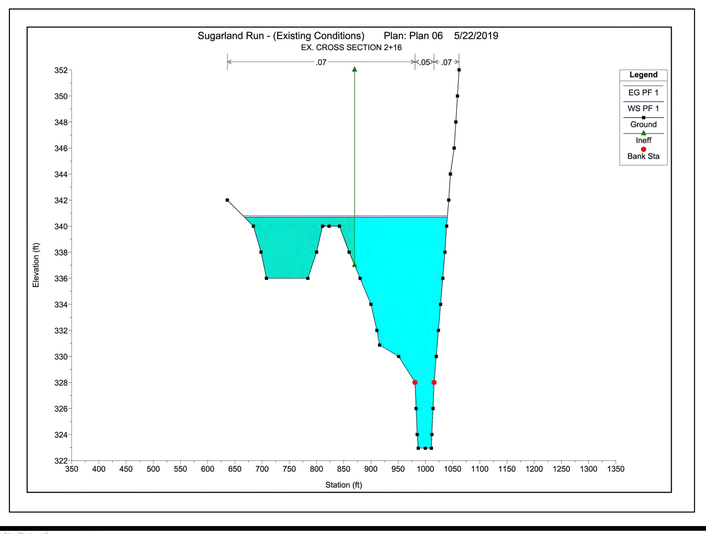

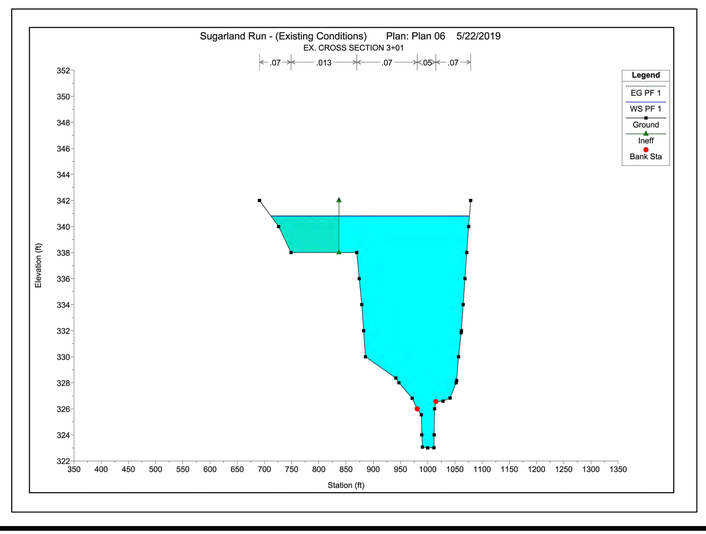

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
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REVISIONS	DATE
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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

UPDATED EX. CONDITIONS (BASELINE) MODEL CROSS-SECTIONS

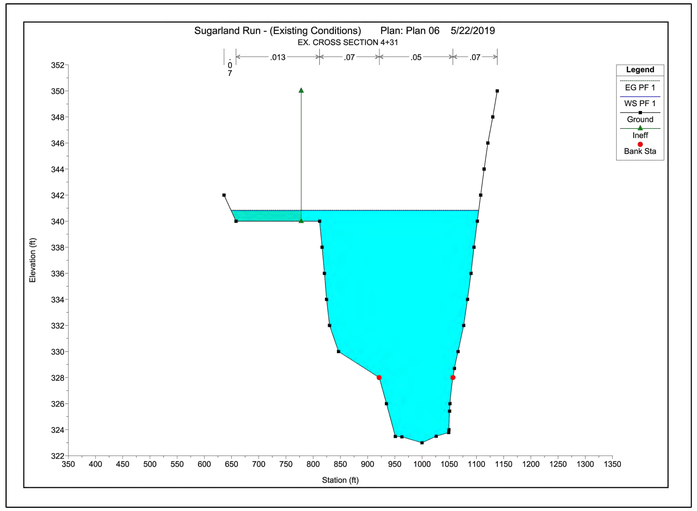
REVISIONS	#	DESCRIPTION	BY	APPROVED

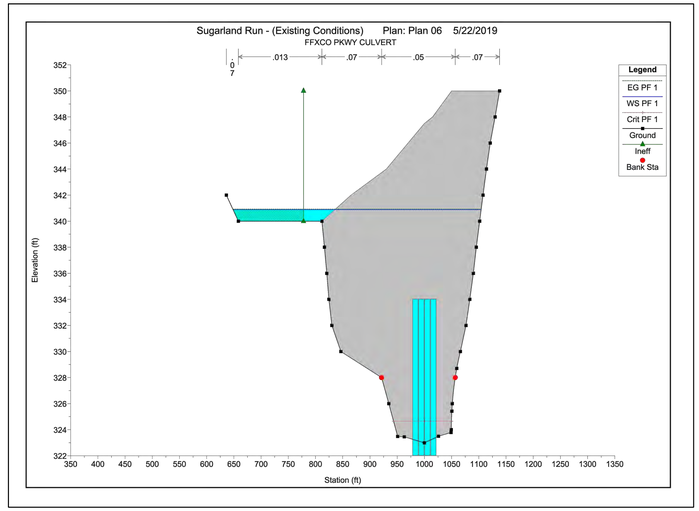
V 10.01

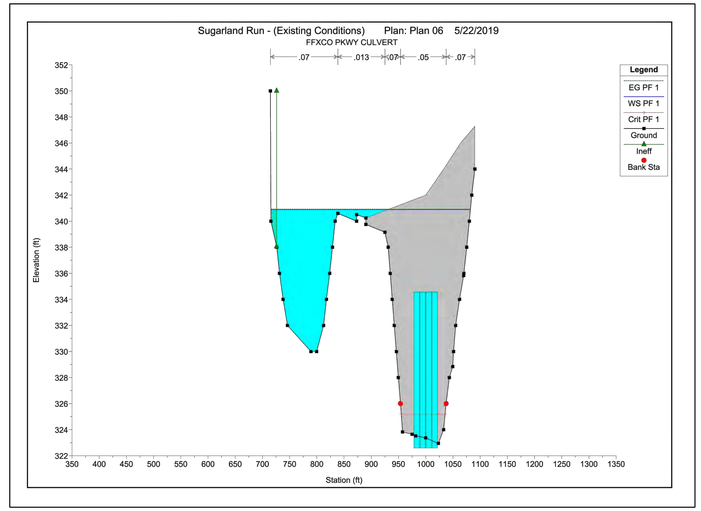
APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

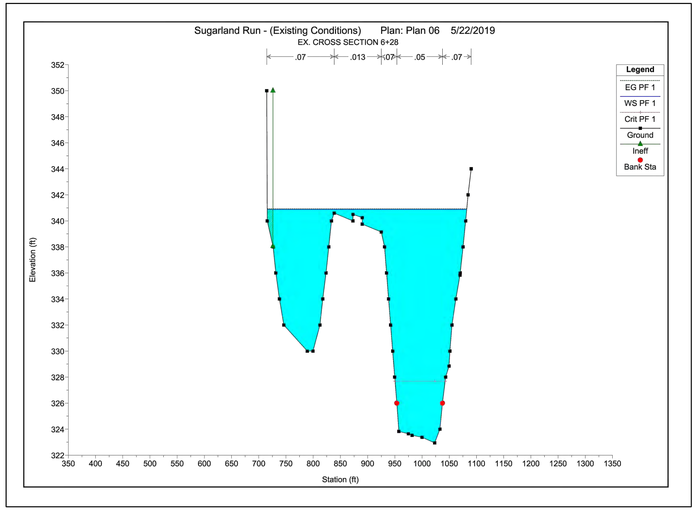
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	05.01

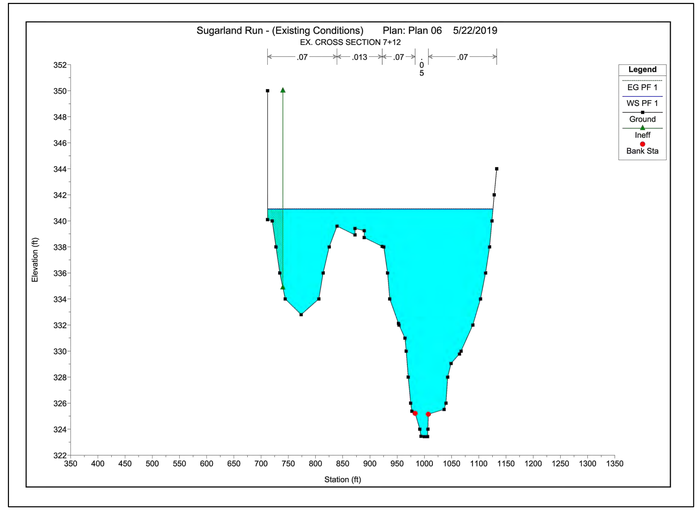
FILE: P:\projects\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 05.01 EXISTING (BASELINE) CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:45:34 AM LAYOUT: 05.01

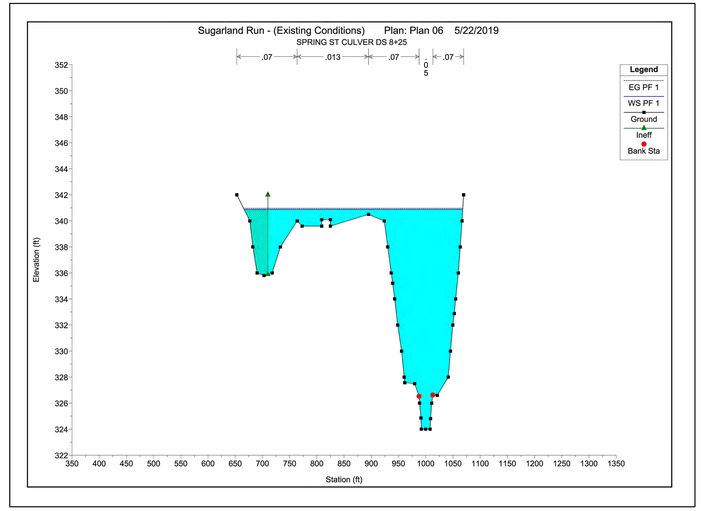


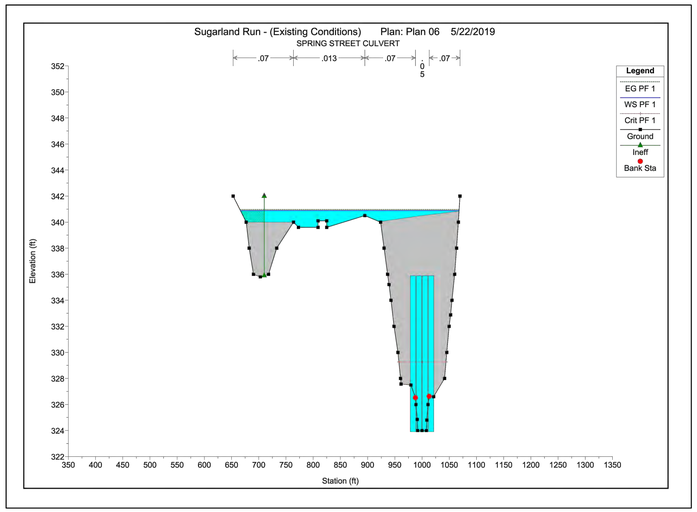


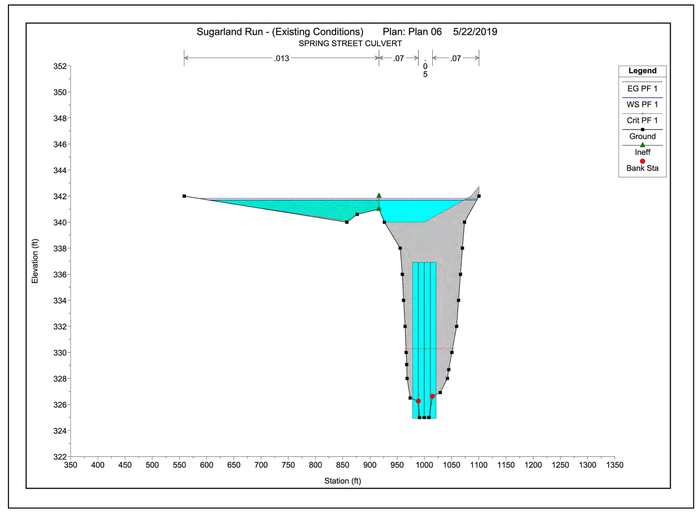












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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

UPDATED EX. CONDITIONS (BASELINE) MODEL CROSS-SECTIONS

REVISIONS	#	DESCRIPTION	BY	APPROVED

V 10.01

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	05.02

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 05.01 EXISTING (BASELINE) CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:45:58 AM LAYOUT: 05.02

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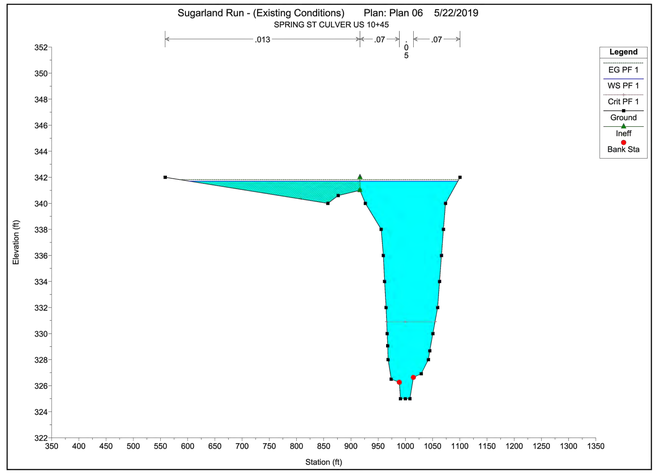

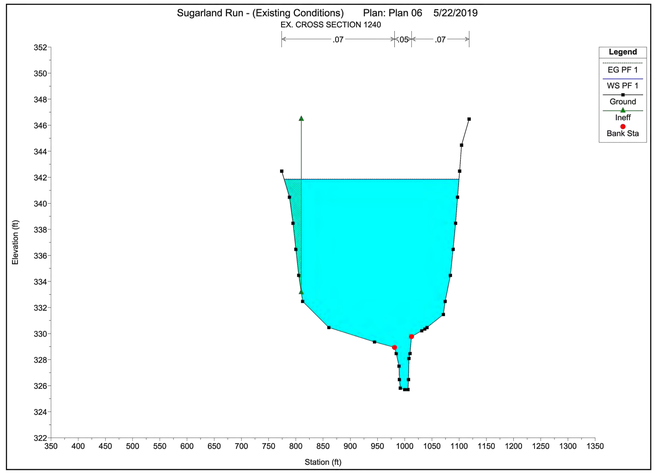

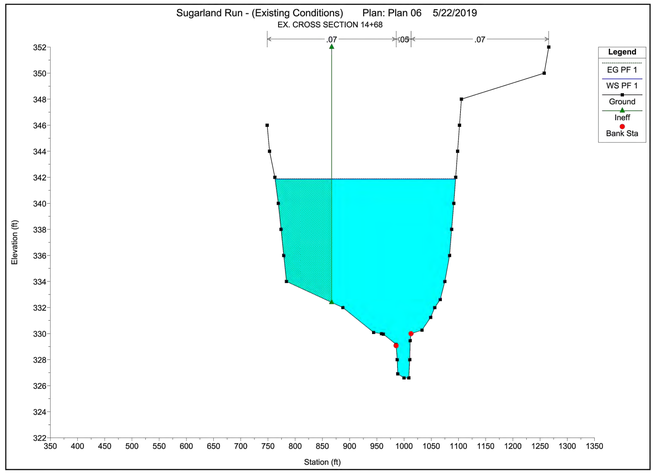

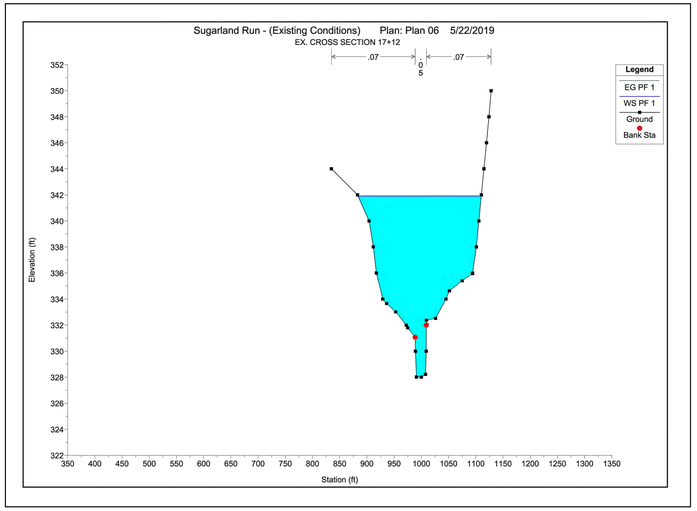

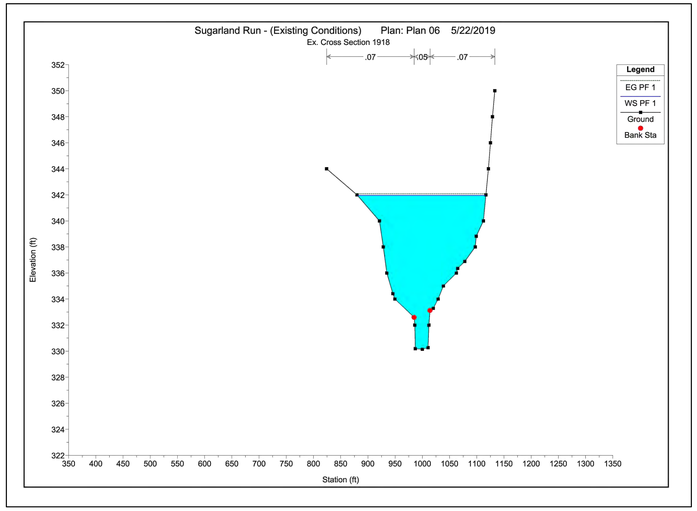

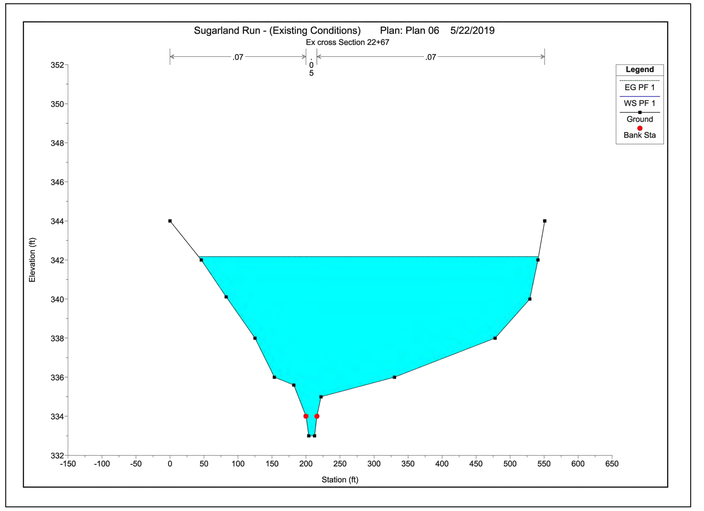

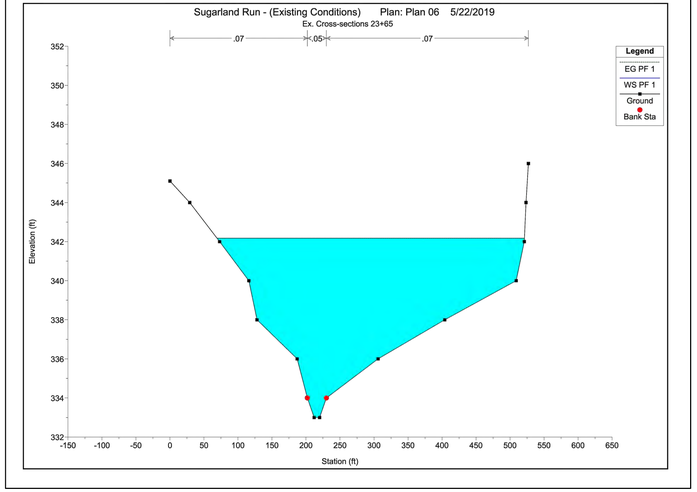

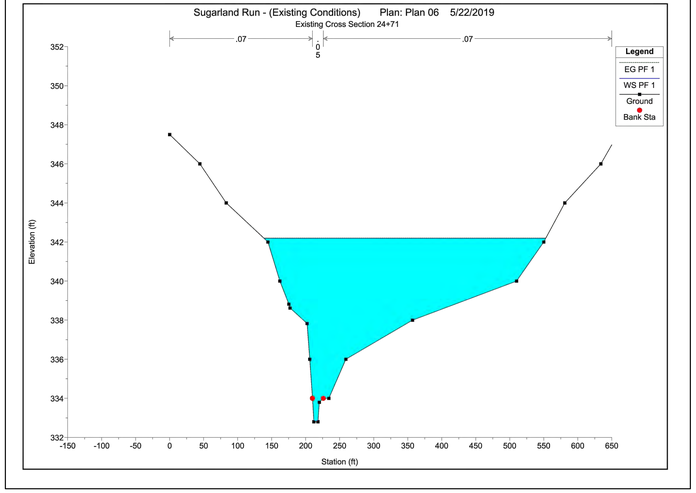

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PROFESSIONAL SEAL



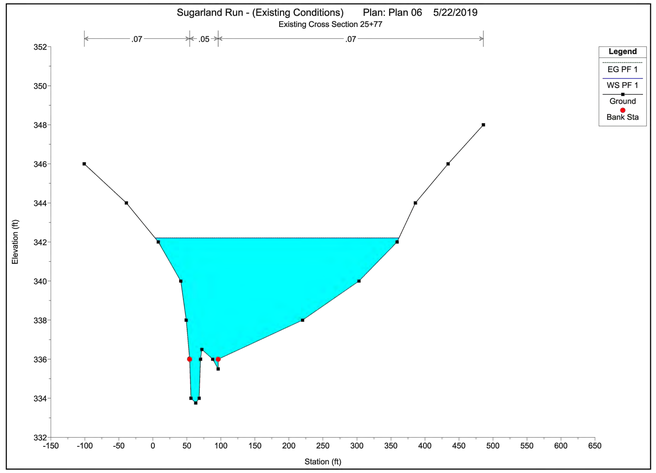
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

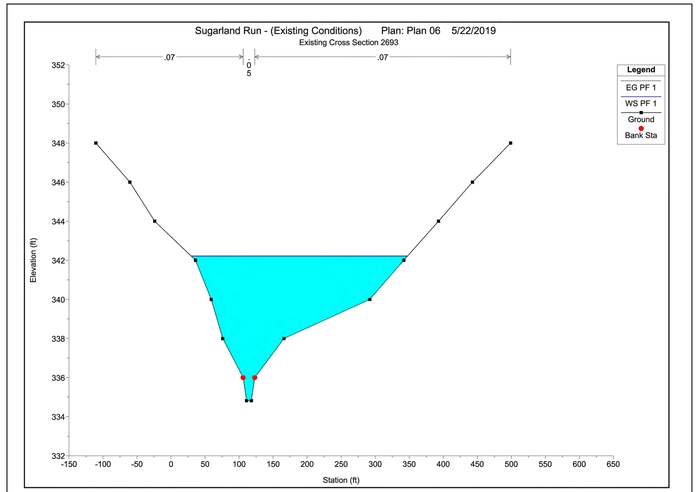
DISTRICT
TOWN OF HERNDON, VIRGINIA

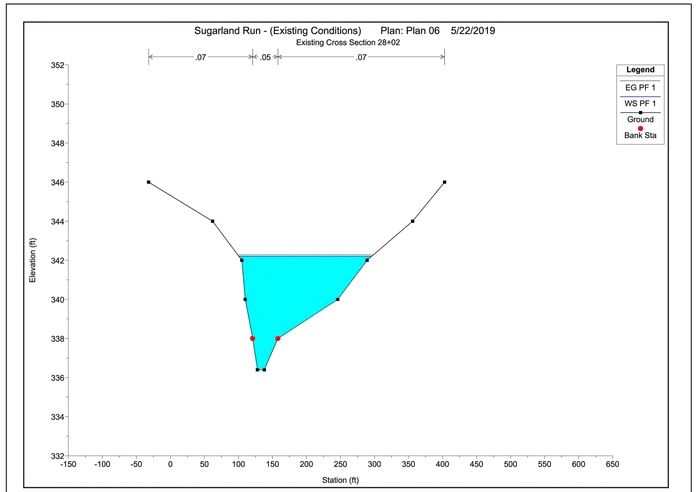
UPDATED EX. CONDITIONS (BASELINE) MODEL CROSS-SECTIONS

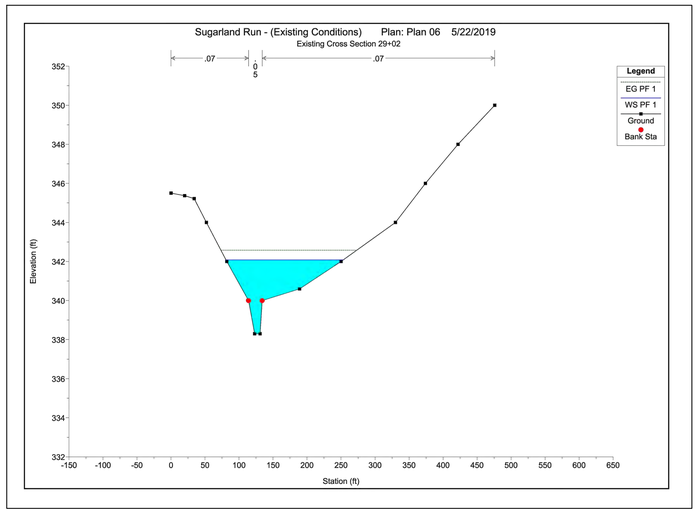
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	05.03

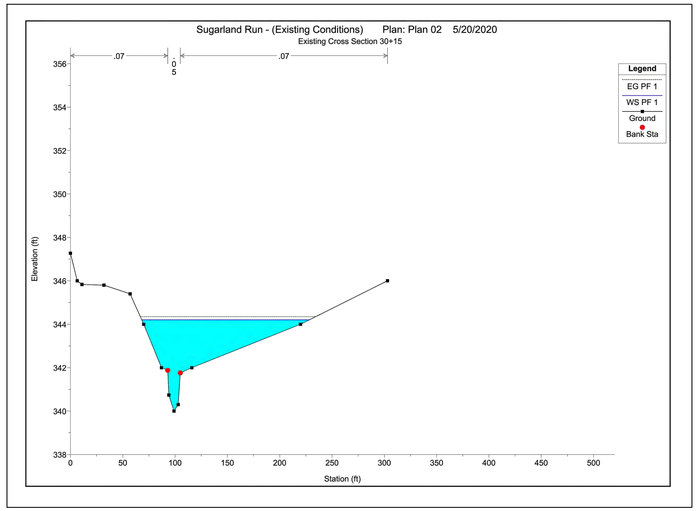
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 05.01 EXISTING (BASELINE) CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:46:21 AM LAYOUT: 05.03

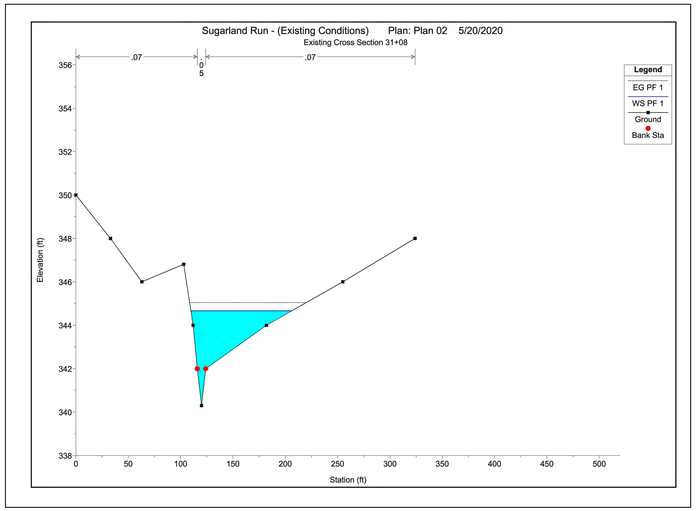


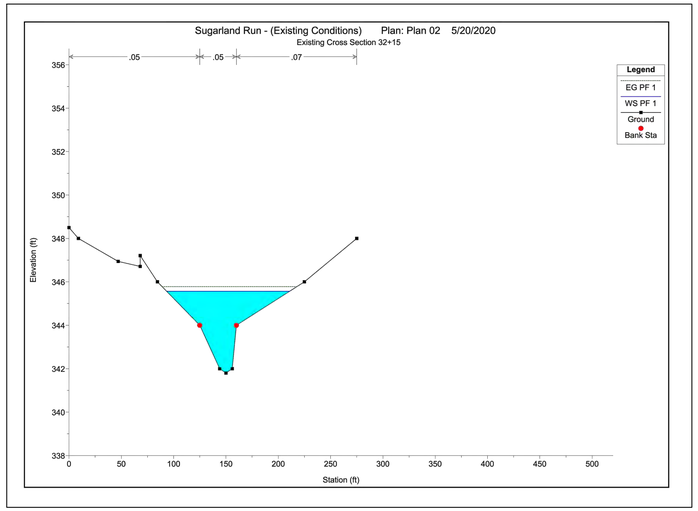


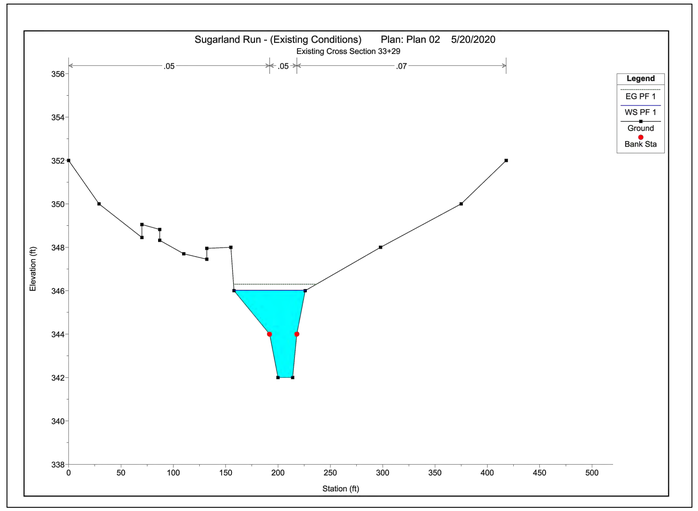












V 10.01

REVISIONS	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL



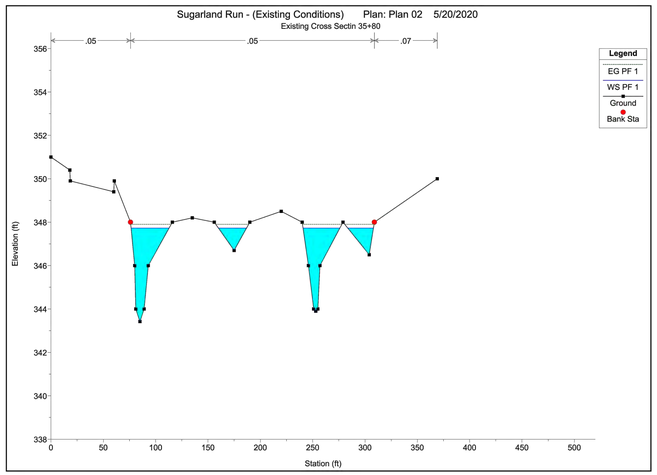
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

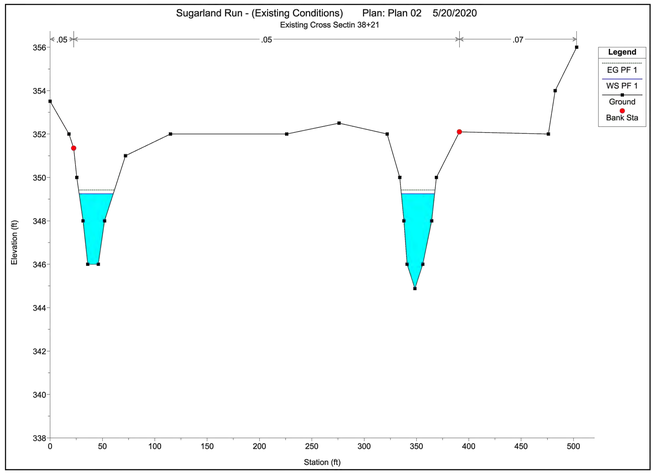
DISTRICT
TOWN OF HERNDON, VIRGINIA

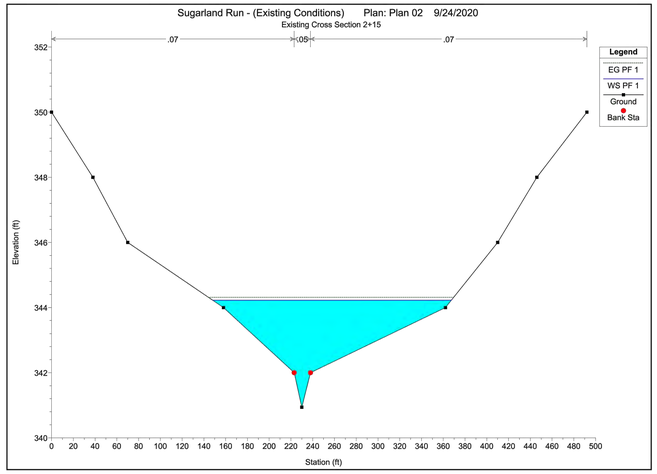
UPDATED EX. CONDITIONS (BASELINE) MODEL CROSS-SECTIONS

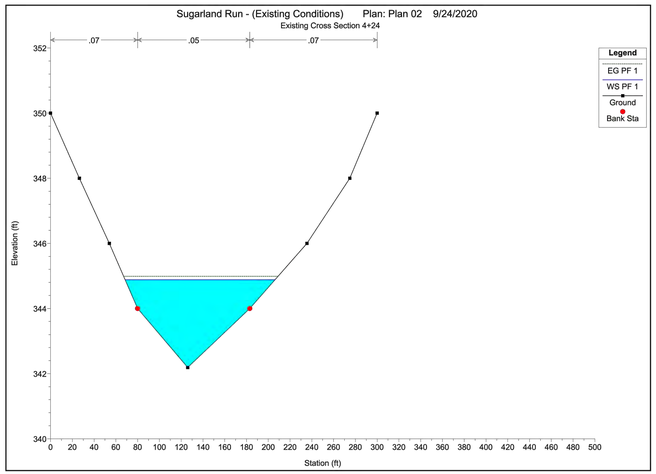
DRAWN BY: KMO
DESIGNED BY: KMO
DATE ISSUED: 04-10-2019
DWG. SCALE: N/A
VIKA NO. 6045X
SHEET NO. 05.04

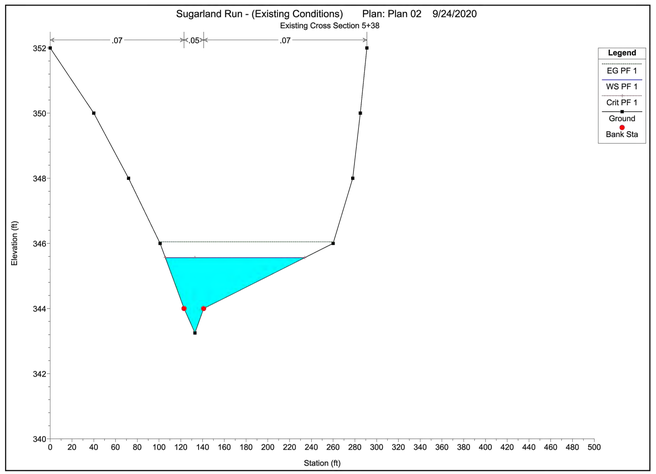
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 05.01 EXISTING (BASELINE) CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:46:46 AM LAYOUT: 05.04

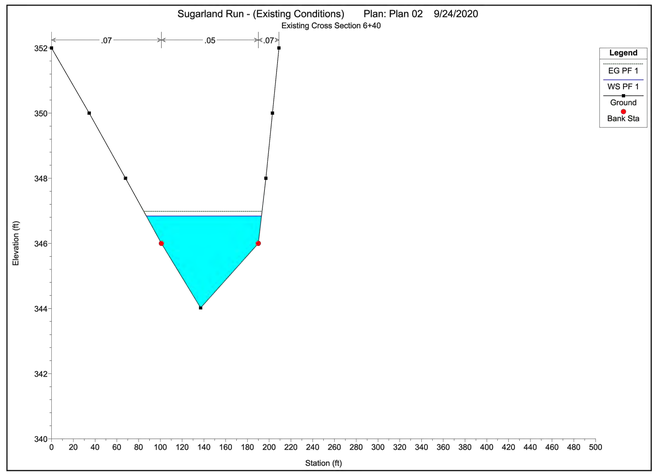


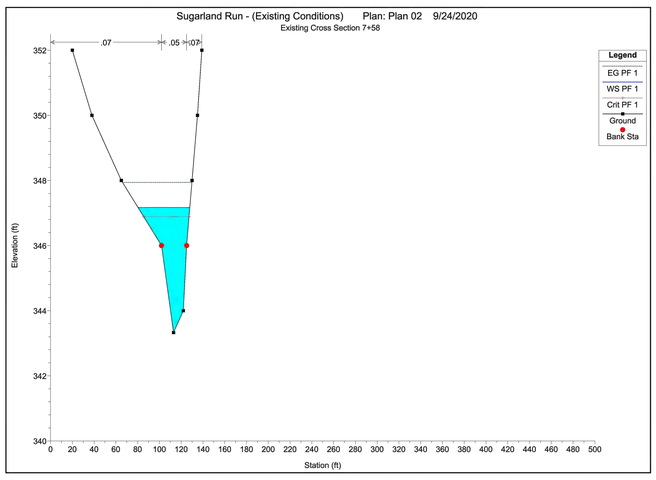












V 10.01

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

R E V I S I O N S	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER
vv

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

UPDATED EX. CONDITIONS (BASELINE) MODEL CROSS-SECTIONS

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	05.05

FILE: P:\projects\6045\6045X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 05.01 EXISTING (BASELINE) CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:47:07 AM LAYOUT: 05.05

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

X X XXXXXX XXXX XXXX XX XXXX
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X X X X X X X
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X X X X X X X
X X X X X X X
X X XXXXXX XXXX X X X X XXXXX

PROJECT DATA
Project Title: Sugarland Run - (Existing Conditions)
Project File : SugarlandRun-(E).prj
Run Date and Time: 9/24/2020 3:00:39 PM

Project in English units

Project Description:

PLAN DATA

Plan Title: Plan 02
Plan File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Existing Model 2019.04.08\SugarlandRun-(E).p02

Geometry Title: Sugarland Run - Existing 2019
Geometry File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Existing Model 2019.04.08\SugarlandRun-(E).g02

Flow Title : Sug Run Ex Flow
Flow File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Existing Model 2019.04.08\SugarlandRun-(E).f02

GEOMETRY DATA

Geometry Title: Sugarland Run - Existing 2019
Geometry File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Existing Model 2019.04.08\SugarlandRun-(E).g02

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
sugarland run	2		1-2
sugarland run	1		1-2
sugarland run	main	1-2	

JUNCTION INFORMATION

Name: 1-2
Description:
Energy computation Method

Length across Junction		Tributary			
River	Reach	River	Reach	Length	Angle
sugarland run	1	to sugarland run	main	200	135
sugarland run	2	to sugarland run	main	200	150

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 758

INPUT
Description: Existing Cross Section 7+58
Station Elevation Data num= 12

Plan Summary Information:
Number of: Cross Sections = 33 Multiple Openings = 0
Culverts = 3 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Sug Run Ex Flow
Flow File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Existing Model 2019.04.08\SugarlandRun-(E).f02

Flow Data (cfs)

River	Reach	RS	PF 1
sugarland run	2	758	500
sugarland run	1	3821	500
sugarland run	1	3580	500
sugarland run	main	2902	1000
sugarland run	main	1918	3100
sugarland run	main	1240	3500
sugarland run	main	1045	3500
sugarland run	main	628	3900
sugarland run	main	216	3900

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
sugarland run	2	PF 1	Normal S = 0.01	
sugarland run	1	PF 1	Normal S = 0.01	
sugarland run	main	PF 1		Normal S = 0.008

Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 355.7 15 354 20 352 38 350 65 348
102 346 113 343.33 122 344 125 346 130 348
135 350 139 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 102 .05 125 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
102 125 70 100 110 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	347.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	347.17	Reach Len. (ft)	70.00	100.00	110.00
Crit W.S. (ft)	346.89	Flow Area (sq ft)	12.67	65.61	1.71
E.G. Slope (ft/ft)	0.015394	Area (sq ft)	12.67	65.61	1.71
Q Total (cfs)	500.00	Flow (cfs)	23.31	473.69	3.00
Top Width (ft)	47.57	Top Width (ft)	21.65	23.00	2.93
Vel Total (ft/s)	6.25	Avg. Vel. (ft/s)	1.84	7.22	1.75
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	0.59	2.85	0.59
Conv. Total (cfs)	4029.8	Conv. (cfs)	187.9	3817.8	24.2
Length Wtd. (ft)	99.20	Wetted Per. (ft)	21.68	23.95	3.15
Min Ch El (ft)	343.33	Shear (lb/sq ft)	0.56	2.63	0.52
Alpha	1.27	Stream Power (lb/ft s)	1.03	19.01	0.92
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	0.40	1.50	1.16
C & E Loss (ft)	0.19	Cum SA (acres)	0.17	0.66	0.54

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 640

INPUT

Description: Existing Cross Section 6+40
Station Elevation Data num= 9
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 352 34.6 350 68 348 101 346 137 344.02
190 346 197 348 203 350 209 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 101 .05 190 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
101 190 95 100 95 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	346.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	346.84	Reach Len. (ft)	95.00	100.00	95.00
Crit W.S. (ft)		Flow Area (sq ft)	5.85	163.07	1.24
E.G. Slope (ft/ft)	0.004646	Area (sq ft)	5.85	163.07	1.24
Q Total (cfs)	500.00	Flow (cfs)	4.75	494.27	0.98
Top Width (ft)	105.84	Top Width (ft)	13.90	89.00	2.95
Vel Total (ft/s)	2.94	Avg. Vel. (ft/s)	0.81	3.03	0.79
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)	0.42	1.83	0.42
Conv. Total (cfs)	7335.5	Conv. (cfs)	69.7	7251.3	14.4
Length Wtd. (ft)	98.74	Wetted Per. (ft)	13.92	89.09	3.07
Min Ch El (ft)	344.02	Shear (lb/sq ft)	0.12	0.53	0.12
Alpha	1.05	Stream Power (lb/ft s)	0.10	1.61	0.09
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.38	1.24	1.16
C & E Loss (ft)	0.03	Cum SA (acres)	0.14	0.53	0.53

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 538

INPUT
Description: Existing Cross Section 5+38
Station Elevation Data num= 11

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 424

INPUT
Description: Existing Cross Section 4+24
Station Elevation Data num= 9
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 350 26.5 348 54 346 80 344 126 342.19
183 344 235.5 346 274.9 348 300 350

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 80 .05 183 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
80 183 80 200 145 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	344.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	344.88	Reach Len. (ft)	80.00	200.00	145.00
Crit W.S. (ft)		Flow Area (sq ft)	5.06	184.10	10.22
E.G. Slope (ft/ft)	0.003680	Area (sq ft)	5.06	184.10	10.22
Q Total (cfs)	500.00	Flow (cfs)	3.77	488.61	7.62
Top Width (ft)	137.63	Top Width (ft)	11.47	103.00	23.16
Vel Total (ft/s)	2.51	Avg. Vel. (ft/s)	0.74	2.65	0.75
Max Chl Dpth (ft)	2.69	Hydr. Depth (ft)	0.44	1.79	0.44
Conv. Total (cfs)	8242.2	Conv. (cfs)	62.1	8054.4	125.6
Length Wtd. (ft)	172.57	Wetted Per. (ft)	11.50	103.06	23.18
Min Ch El (ft)	342.19	Shear (lb/sq ft)	0.10	0.41	0.10
Alpha	1.10	Stream Power (lb/ft s)	0.08	1.09	0.08
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	0.34	0.76	0.96
C & E Loss (ft)	0.01	Cum SA (acres)	0.08	0.27	0.25

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 215

INPUT
Description: Existing Cross Section 2+15
Station Elevation Data num= 11
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 350 38 348 70 346 158 344 223 342
230 340.94 238 342 362 344 410 346 446 348
492 350

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 223 .05 238 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
223 238 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	344.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	344.23	Reach Len. (ft)	200.00	200.00	200.00
Crit W.S. (ft)		Flow Area (sq ft)	80.76	41.33	152.54
E.G. Slope (ft/ft)	0.004096	Area (sq ft)	80.76	41.33	152.54
Q Total (cfs)	500.00	Flow (cfs)	115.31	153.47	231.22
Top Width (ft)	219.31	Top Width (ft)	74.91	15.00	129.41
Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)	1.43	3.71	1.52
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)	1.08	2.76	1.18
Conv. Total (cfs)	7812.4	Conv. (cfs)	1801.7	2397.9	3612.7
Length Wtd. (ft)	200.00	Wetted Per. (ft)	74.94	15.15	129.43
Min Ch El (ft)	340.94	Shear (lb/sq ft)	0.28	0.70	0.30
Alpha	1.74	Stream Power (lb/ft s)	0.39	2.59	0.46
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	0.27	0.25	0.69
C & E Loss (ft)	0.04	Cum SA (acres)			

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3821

RIVER: sugarland run
REACH: 1 RS: 3580

INPUT
Description: Existing Cross Sectin 35+80
Station Elevation Data num= 27
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 351 18 350.4 18.5 349.9 60 349.4 60.5 349.9
76 348 80 346 81 344 85 343.42 89 344
93 346 116 348 135 348.2 156 348 175 346.7
190 348 220 348.5 240 348 246 346 251 344
253 343.9 255 344 257 346 279 348 304 346.5
309 348 369 350

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 76 .05 309 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
76 309 205 251 240 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	347.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.050		
W.S. Elev (ft)	347.73	Reach Len. (ft)	205.00	251.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	150.14		
E.G. Slope (ft/ft)	0.010071	Area (sq ft)	150.14		
Q Total (cfs)	500.00	Flow (cfs)	500.00		
Top Width (ft)	123.08	Top Width (ft)	123.08		
Vel Total (ft/s)	3.33	Avg. Vel. (ft/s)	3.33		
Max Chl Dpth (ft)	4.31	Hydr. Depth (ft)	1.22		
Conv. Total (cfs)	4982.5	Conv. (cfs)	4982.5		
Length Wtd. (ft)	247.68	Wetted Per. (ft)	127.23		
Min Ch El (ft)	343.42	Shear (lb/sq ft)	0.74		
Alpha	1.00	Stream Power (lb/ft s)	2.47		
Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	0.40	1.45	1.22
C & E Loss (ft)	0.01	Cum SA (acres)	0.25	0.58	0.49

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3329

INPUT
Description: Existing Cross Section 33+29
Station Elevation Data num= 19
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 352 29 350 70 348.45 70.01 349.05 87 348.82
87.01 348.32 110 347.7 132 347.45 132.01 347.95 155 348
158 346 192 344 200 342 214 342 218 344
226 346 298 348 375 350 418 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 192 .05 218 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
192 218 114 114 114 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	346.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.050	0.050	0.070
W.S. Elev (ft)	346.02	Reach Len. (ft)	114.00	114.00	114.00
Crit W.S. (ft)		Flow Area (sq ft)	34.76	92.58	8.19
E.G. Slope (ft/ft)	0.004433	Area (sq ft)	34.76	92.58	8.19
Q Total (cfs)	500.00	Flow (cfs)	69.67	419.50	10.82
Top Width (ft)	68.84	Top Width (ft)	34.03	26.00	8.81
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	2.00	4.53	1.32
Max Chl Dpth (ft)	4.02	Hydr. Depth (ft)	1.02	3.56	0.93
Conv. Total (cfs)	7509.4	Conv. (cfs)	1046.4	6300.4	162.6
Length Wtd. (ft)	114.00	Wetted Per. (ft)	34.10	26.72	9.05
Min Ch El (ft)	342.00	Shear (lb/sq ft)	0.28	0.96	0.25
Alpha	1.31	Stream Power (lb/ft s)	0.57	4.35	0.33
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	0.32	0.75	1.20
C & E Loss (ft)	0.02	Cum SA (acres)	0.17	0.15	0.46

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3108

INPUT
Description: Existing Cross Section 31+08
Station Elevation Data num= 11
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 350 33 348 63 346 103 346.81 112 344
116 342 120 340.3 124 342 182 344 255 346
324 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 116 .05 124 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
116 124 93 93 93 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	345.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	344.67	Reach Len. (ft)	93.00	93.00	93.00
Crit W.S. (ft)		Flow Area (sq ft)	7.39	28.15	104.90
E.G. Slope (ft/ft)	0.011750	Area (sq ft)	7.39	28.15	104.90
Q Total (cfs)	500.00	Flow (cfs)	18.12	198.44	283.45
Top Width (ft)	96.53	Top Width (ft)	6.14	8.00	82.39
Vel Total (ft/s)	3.56	Avg. Vel. (ft/s)	2.45	7.05	2.70
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	1.20	3.52	1.27
Conv. Total (cfs)	4612.6	Conv. (cfs)	167.1	1830.6	2614.9
Length Wtd. (ft)	93.00	Wetted Per. (ft)	6.71	8.69	82.43
Min Ch El (ft)	340.30	Shear (lb/sq ft)	0.81	2.38	0.93
Alpha	1.90	Stream Power (lb/ft s)	1.98	16.75	2.52
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	0.20	0.33	0.96
C & E Loss (ft)	0.07	Cum SA (acres)	0.03	0.02	0.22

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3015

INPUT
Description: Existing Cross Section 30+15
Station Elevation Data num= 15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 347.27 6.5 346 11 345.83 32 345.8 57 345.4
70 344 87 342 93 341.88 94 340.74 99 340
103 340.3 105 341.76 116 342 220 344 303 346

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .07 93 .05 105 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
93 105 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	344.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	344.20	Reach Len. (ft)	200.00	200.00	200.00
Crit W.S. (ft)		Flow Area (sq ft)	34.24	44.63	151.64
E.G. Slope (ft/ft)	0.004332	Area (sq ft)	34.24	44.63	151.64
Q Total (cfs)	500.00	Flow (cfs)	58.98	198.06	242.96
Top Width (ft)	160.36	Top Width (ft)	24.89	12.00	123.47
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)	1.72	4.44	1.60
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	1.38	3.72	1.23
Conv. Total (cfs)	7596.4	Conv. (cfs)	896.0	3099.1	3691.2
Length Wtd. (ft)	200.00	Wetted Per. (ft)	25.02	13.06	123.49
Min Ch El (ft)	340.00	Shear (lb/sq ft)	0.37	0.92	0.33
Alpha	2.00	Stream Power (lb/ft s)	0.64	4.10	0.53
Frctn Loss (ft)	1.74	Cum Volume (acre-ft)	0.16	0.25	0.68
C & E Loss (ft)	0.04	Cum SA (acres)			

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2802

INPUT
Description: Existing Cross Section 28+02
Station Elevation Data num= 12
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
-32 346 62 344 105 342 110 340 121 338
128 336.4 138 336.4 158 338 246 340 289 342
356 344 403 346

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
-32 .07 121 .05 158 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
121 158 65 109 47 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	342.21	Reach Len. (ft)	65.00	109.00	47.00
Crit W.S. (ft)		Flow Area (sq ft)	41.84	193.37	335.26
E.G. Slope (ft/ft)	0.001009	Area (sq ft)	41.84	193.37	335.26
Q Total (cfs)	1000.00	Flow (cfs)	44.53	547.23	408.23
Top Width (ft)	195.55	Top Width (ft)	20.52	37.00	138.04
Vel Total (ft/s)	1.75	Avg. Vel. (ft/s)	1.06	2.83	1.22
Max Chl Dpth (ft)	5.81	Hydr. Depth (ft)	2.04	5.23	2.43
Conv. Total (cfs)	31487.2	Conv. (cfs)	1402.2	17230.9	12854.2
Length Wtd. (ft)	73.48	Wetted Per. (ft)	21.09	37.24	138.11
Min Ch El (ft)	336.40	Shear (lb/sq ft)	0.12	0.33	0.15
Alpha	1.64	Stream Power (lb/ft s)	0.13	0.93	0.19
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	50.25	29.31	51.91
C & E Loss (ft)	0.02	Cum SA (acres)	12.16	2.38	9.96

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run

REACH: main RS: 2693

INPUT
Description: Existing Cross Section 2693
Station Elevation Data num= 16
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
-110.5 348 -60.5 346 -24 344 36 342 59 340
76 338 106 336 111 334.82 118 334.82 123 336
166 338 292 340 342 342 393 344 443 346
499 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
-110.5 .07 106 .05 123 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
106 123 135 116 42 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	342.21	Reach Len. (ft)	135.00	116.00	42.00
Crit W.S. (ft)		Flow Area (sq ft)	239.33	119.72	689.45
E.G. Slope (ft/ft)	0.000334	Area (sq ft)	239.33	119.72	689.45
Q Total (cfs)	1000.00	Flow (cfs)	198.49	236.35	565.16
Top Width (ft)	317.63	Top Width (ft)	76.29	17.00	224.34
Vel Total (ft/s)	0.95	Avg. Vel. (ft/s)	0.83	1.97	0.82
Max Chl Dpth (ft)	7.39	Hydr. Depth (ft)	3.14	7.04	3.07
Conv. Total (cfs)	54720.9	Conv. (cfs)	10861.3	12933.4	30926.2
Length Wtd. (ft)	75.00	Wetted Per. (ft)	76.56	17.27	224.45
Min Ch El (ft)	334.82	Shear (lb/sq ft)	0.07	0.14	0.06
Alpha	1.58	Stream Power (lb/ft s)	0.05	0.29	0.05
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	50.04	28.91	51.36
C & E Loss (ft)	0.00	Cum SA (acres)	12.09	2.31	9.76

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2577

INPUT
Description: Existing Cross Section 25+77
Station Elevation Data num= 20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
-101 346 -39 344 8 342 41 340 49 338
54 336 56 334 63 333.76 68 334 70 336
72 336.5 88 336 96 335.5 96 336 220 338
303 340 359 342 386 344 434 346 486 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
-101 .07 54 .05 96 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
54 96 85 106 85 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	342.20	Reach Len. (ft)	85.00	106.00	85.00
Crit W.S. (ft)		Flow Area (sq ft)	91.69	287.36	977.97
E.G. Slope (ft/ft)	0.000148	Area (sq ft)	91.69	287.36	977.97
Q Total (cfs)	1000.00	Flow (cfs)	34.88	362.20	602.92
Top Width (ft)	358.41	Top Width (ft)	50.71	42.00	265.71
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.38	1.26	0.62
Max Chl Dpth (ft)	8.44	Hydr. Depth (ft)	1.81	6.84	3.68
Conv. Total (cfs)	82064.9	Conv. (cfs)	2862.6	29723.9	49478.5
Length Wtd. (ft)	90.74	Wetted Per. (ft)	51.41	44.25	265.79
Min Ch El (ft)	333.76	Shear (lb/sq ft)	0.02	0.06	0.03
Alpha	1.49	Stream Power (lb/ft s)	0.01	0.08	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	49.52	28.37	50.56
C & E Loss (ft)	0.00	Cum SA (acres)	11.89	2.23	9.53

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2471

INPUT
Description: Existing Cross Section 24+71

INPUT
Description: Existing Cross Sectin 38+21
Station Elevation Data num= 24
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 353.51 18 352 22.5 351.35 25.5 350 31.5 348
36 346 46 346 52 348 72 351 115 352
226 352 276 352.5 322 352 334 350 338 348
341 346 348.5 344.88 356 346 364.5 348 369 350
391 352.1 476 352 482.5 354 503 356

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 22.5 .05 391 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
22.5 391 250 241 230 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	349.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.050		
W.S. Elev (ft)	349.25	Reach Len. (ft)	250.00	241.00	230.00
Crit W.S. (ft)		Flow Area (sq ft)	149.82		
E.G. Slope (ft/ft)	0.004309	Area (sq ft)	149.82		
Q Total (cfs)	500.00	Flow (cfs)	500.00		
Top Width (ft)	64.35	Top Width (ft)	64.35		
Vel Total (ft/s)	3.34	Avg. Vel. (ft/s)	3.34		
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	2.33		
Conv. Total (cfs)	7616.7	Conv. (cfs)	7616.7		
Length Wtd. (ft)	241.00	Wetted Per. (ft)	66.96		
Min Ch El (ft)	344.88	Shear (lb/sq ft)	0.60		
Alpha	1.00	Stream Power (lb/ft s)	2.01		
Frctn Loss (ft)	1.52	Cum Volume (acre-ft)	0.40	2.28	1.22
C & E Loss (ft)	0.00	Cum SA (acres)	0.25	1.10	0.49

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3215

INPUT
Description: Existing Cross Section 32+15
Station Elevation Data num= 13
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 348.5 9 348 47 346.94 68 346.71 68.01 347.21
84.5 346 125 344 144 342 150 341.8 156 342
160 344 225 346 275 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .05 125 .05 160 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
125 160 107 107 107 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	345.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	347.5	44.4	346	83.2	344	144.5	342	162	340
175.3	338.82	177	338.62	202	337.83	206	336	210	334
212	332.8	218	332.8	220	333.8	226	334	234	334
259	336	357	338	510	340	550	342	581	344
634	346	667	348	675	350	682	352		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	210	.05	226	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
210 226 135 106 360 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.20	Element	Left OB Channel Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	342.19	Reach Len. (ft)	135.00 106.00 360.00
Crit W.S. (ft)		Flow Area (sq ft)	213.35 141.47 1290.36
E.G. Slope (ft/ft)	0.000110	Area (sq ft)	213.35 141.47 1290.36
Q Total (cfs)	1000.00	Flow (cfs)	97.70 184.37 717.93
Top Width (ft)	414.34	Top Width (ft)	71.37 16.00 326.97
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.46 1.30 0.56
Max Chl Dpth (ft)	9.39	Hydr. Depth (ft)	2.99 8.84 3.95
Conv. Total (cfs)	95245.5	Conv. (cfs)	9305.6 17560.2 68379.7
Length Wtd. (ft)	277.09	Wetted Per. (ft)	72.44 16.57 327.14
Min Ch El (ft)	332.80	Shear (lb/sq ft)	0.02 0.06 0.03
Alpha	1.50	Stream Power (lb/ft s)	0.01 0.08 0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	49.22 27.85 48.34
C & E Loss (ft)	0.00	Cum SA (acres)	11.77 2.16 8.95

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2365

INPUT

1097.31 338 1099.11 338.82 1112.3 340 1116.88 342 1121.49 344
1125.25 346 1128.93 348 1133.17 350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
824.11	.07	985.03	.05	1014.11	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
985.03 1014.11 206 206 206 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.08	Element	Left OB Channel Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	341.96	Reach Len. (ft)	206.00 206.00 206.00
Crit W.S. (ft)		Flow Area (sq ft)	503.51 332.66 567.93
E.G. Slope (ft/ft)	0.000719	Area (sq ft)	503.51 332.66 567.93
Q Total (cfs)	3100.00	Flow (cfs)	814.80 1279.34 1005.86
Top Width (ft)	236.02	Top Width (ft)	104.27 29.08 102.68
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)	1.62 3.85 1.77
Max Chl Dpth (ft)	11.81	Hydr. Depth (ft)	4.83 11.44 5.53
Conv. Total (cfs)	115597.3	Conv. (cfs)	30383.3 47706.0 37508.1
Length Wtd. (ft)	206.00	Wetted Per. (ft)	105.05 31.38 103.49
Min Ch El (ft)	330.15	Shear (lb/sq ft)	0.22 0.48 0.25
Alpha	1.60	Stream Power (lb/ft s)	0.35 1.83 0.44
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	42.37 24.95 21.28
C & E Loss (ft)	0.02	Cum SA (acres)	10.10 1.87 3.32

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1712

INPUT
Description: EX. CROSS SECTION 17+12
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
834.7	344	882.7	342	904	340	911.7	338	917.35	336		
929.2	334	936.13	333.66	952.81	333.02	972.21	332	974.9	331.79		
988.7	331.07	989.12	330	990.97	328.01	1000	328.01	1007.7	328.22		
1008.95	330	1009.2	332	1009.45	332.38	1026.08	332.52	1045.2	334		
1051.5	334.64	1074.96	335.41	1093.96	335.96	1094.2	336	1101.13	338		
1105.7	340	1110.36	342	1115.05	344	1119.7	346	1124.2	348		

774 342.47 788.3 340.47 794.7 338.47 800 336.47 805.3 334.47
812.5 332.47 860.6 330.47 944.5 329.36 981.5 328.94 984.5 328.47
989.6 327.5 990.25 326.47 992 325.81 1000 325.7 1006 325.7
1007 326.47 1007.75 328.09 1009.75 328.47 1012.5 329.77 1031.3 330.22
1036.8 330.35 1041 330.47 1071 331.47 1074.3 332.47 1084 334.47
1089 336.47 1093.5 338.47 1097.12 340.47 1101 342.47 1104.5 344.47
1118.4 346.47

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
774	.07	981.5	.05	1012.5	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
981.5 1012.5 195 195 195 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
774	810	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.86	Element	Left OB Channel Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	341.84	Reach Len. (ft)	195.00 195.00 195.00
Crit W.S. (ft)		Flow Area (sq ft)	1991.39 461.49 836.02
E.G. Slope (ft/ft)	0.000087	Area (sq ft)	2107.90 461.49 836.02
Q Total (cfs)	3500.00	Flow (cfs)	2025.39 737.69 736.92
Top Width (ft)	321.27	Top Width (ft)	203.00 31.00 87.28
Vel Total (ft/s)	1.06	Avg. Vel. (ft/s)	1.02 1.60 0.88
Max Chl Dpth (ft)	16.14	Hydr. Depth (ft)	11.61 14.89 9.58
Conv. Total (cfs)	374365.7	Conv. (cfs)	216638.8 78904.9 78822.1
Length Wtd. (ft)	195.00	Wetted Per. (ft)	171.65 33.44 89.31
Min Ch El (ft)	325.70	Shear (lb/sq ft)	0.06 0.08 0.05
Alpha	1.15	Stream Power (lb/ft s)	0.06 0.12 0.05
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	20.62 19.33 10.05
C & E Loss (ft)	0.01	Cum SA (acres)	7.58 1.46 1.89

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
652.87	342	676.87	340	682.37	338	690.2	336	702.87	335.8
717.87	336	732.87	338	763.87	340	772.87	339.6	808.87	339.6
808.87	340.1	824.87	340.1	824.87	339.6	894.87	340.5	923.87	340
930.27	338	936.69	336	939.38	335.21	942.98	334	948.54	332
955.69	330	960.58	328	961.5	327.57	979.61	327.5	987.9	326.53
988.85	326	991.36	324.86	992	324	1000	324	1008	324
1008.9	324.81	1011	326	1013.12	326.63	1021.24	326.6	1041.5	328
1045.5	330	1049.75	332	1052.5	332.88	1055	334	1060	336
1063.5	338	1066.75	340	1069.7	342				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
652.87	.07	763.87	.013	894.87	.07	987.9	.05	1013.12	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
987.9 1013.12 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
652.87	710	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.97	Element	Left OB Channel Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.058 0.050 0.070
W.S. Elev (ft)	340.89	Reach Len. (ft)	113.00 113.00 113.00
Crit W.S. (ft)		Flow Area (sq ft)	917.22 411.69 572.40
E.G. Slope (ft/ft)	0.000306	Area (sq ft)	1061.93 411.69 572.40
Q Total (cfs)	3500.00	Flow (cfs)	1199.36 1323.55 977.09
Top Width (ft)	401.85	Top Width (ft)	321.69 25.22 54.94
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	1.31 3.21 1.71
Max Chl Dpth (ft)	16.89	Hydr. Depth (ft)	3.30 16.32 10.42

E.G. Elev (ft) 340.93 Element Left OB Channel Right OB
Vel Head (ft) 0.03 Wt. n-Val. 0.056 0.050 0.070
W.S. Elev (ft) 340.91 Reach Len. (ft) 84.00 84.00 84.00
Crit W.S. (ft) Flow Area (sq ft) 1331.97 411.47 1251.10
E.G. Slope (ft/ft) 0.000114 Area (sq ft) 1410.81 411.47 1251.10
Q Total (cfs) 3500.00 Flow (cfs) 1314.30 840.49 1345.22
Top Width (ft) 414.32 Top Width (ft) 271.32 24.23 118.77
Vel Total (ft/s) 1.17 Avg. Vel. (ft/s) 0.99 2.04 1.08
Max Chl Dpth (ft) 17.48 Hydr. Depth (ft) 5.48 16.98 10.53
Conv. Total (cfs) 328227.9 Conv. (cfs) 123254.2 78820.2 126153.5
Length Wtd. (ft) 84.00 Wetted Per. (ft) 246.99 25.14 120.84
Min Ch El (ft) 323.43 Shear (lb/sq ft) 0.04 0.12 0.07
Alpha 1.33 Stream Power (lb/ft s) 0.04 0.24 0.08
Frctn Loss (ft) 0.01 Cum Volume (acre-ft) 10.95 13.95 4.25
C & E Loss (ft) 0.00 Cum SA (acres) 3.71 1.14 0.94

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 628

INPUT
Description: EX. CROSS SECTION 6+28
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
714.58	350	714.59	350	715.58	340	726.28	338	731.33	336
737.98	334	746.08	332	789.09	330	799.58	330	812.38	332
817.58	334	823.58	336	828.58	338	833.58	340	838.58	340.6
873.08	340	873.09	340.5	890.08	340.25	890.09	339.75	925.08	339.15
931.18	338	934.86	336	938.53	334	942.18	332	946.18	330
949.68	328	953.68	326	957.5	323.83	975	323.65	981.75	323.53
1000	323.38	1023.25	322.95	1032.9	324	1037.5	326	1043.4	328
1049.7	328.85	1051.2	330	1055.05	332	1062.2	334	1069.7	335.83
1070.2	336	1075.4	338	1080.2	340	1084.7	342	1090.34	344

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
714.58	.07	838.58	.013	925.08	.07	953.68	.05	1037.5	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
953.68 1037.5 197 197 197 .1 .3

Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val
636.05 .07 658.25 .013 811.71 .07 921.41 .05 1056.8 .07

Bank Sta: Left Right Coeff Contr. Expan.
921.41 1056.8 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
636.05	778	F	

Upstream Embankment side slope = 2 horiz. to 1.0 vertical
Downstream Embankment side slope = 2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
Culvert #1 Box 12 10
FHWA Chart # 9 - flared wingwalls and Inlet top edge bevel
FHWA Scale # 1 - 45 deg Wingwall flare; inlet top edge bevel=0.043D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 155 .013 .013 0 .5 1

Number of Barrels = 4
Upstream Elevation = 322.58
Centerline Stations

Sta.	Sta.	Sta.	Sta.
983.5	994.5	1005.5	1016.5

Downstream Elevation = 322.09
Centerline Stations

Sta.	Sta.	Sta.	Sta.
983.5	994.5	1005.5	1016.5

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 431

INPUT
Description: EX. CROSS SECTION 4+31

Description: Ex. Cross-sections 23+65
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	345.1	29	344	73	342	116	340	128	338
187	336	202	334	212	333	220	333	230	334
306	336	404	338	509	340	521	342	523.5	344
527	346								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	202	.05	230	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
202 230 75 98 180 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.18	Element	Left OB Channel Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	342.17	Reach Len. (ft)	75.00 98.00 180.00
Crit W.S. (ft)		Flow Area (sq ft)	501.85 246.89 1399.81
E.G. Slope (ft/ft)	0.000000	Area (sq ft)	501.85 246.89 1399.81
Q Total (cfs)	1000.00	Flow (cfs)	182.13 220.62 597.25
Top Width (ft)	452.06	Top Width (ft)	132.84 28.00 291.22
Vel Total (ft/s)	0.47	Avg. Vel. (ft/s)	0.36 0.89 0.43
Max Chl Dpth (ft)	9.17	Hydr. Depth (ft)	3.78 8.82 4.81
Conv. Total (cfs)	141606.6	Conv. (cfs)	25791.0 31240.7 84574.9
Length Wtd. (ft)	145.72	Wetted Per. (ft)	133.22 28.10 291.51
Min Ch El (ft)	333.00	Shear (lb/sq ft)	0.01 0.03 0.01
Alpha	1.43	Stream Power (lb/ft s)	0.00 0.02 0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	48.12 27.38 37.23
C & E Loss (ft)	0.00	Cum SA (acres)	11.45 2.11 6.39

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2267

INPUT
Description: Ex cross Section 22+67
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	344	46	342	82.6	340.11	125	338	153.5	336		

1128.2 350

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
834.7	.07	988.7	.05	1009.2	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
988.7 1009.2 244 244 244 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.95	Element	Left OB Channel Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	341.88	Reach Len. (ft)	244.00 244.00 244.00
Crit W.S. (ft)		Flow Area (sq ft)	701.24 278.51 702.78
E.G. Slope (ft/ft)	0.000439	Area (sq ft)	701.24 278.51 702.78
Q Total (cfs)	3100.00	Flow (cfs)	1101.10 869.64 1129.27
Top Width (ft)	226.11	Top Width (ft)	104.73 20.50 100.88
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	1.57 3.12 1.61
Max Chl Dpth (ft)	13.87	Hydr. Depth (ft)	6.70 13.59 6.97
Conv. Total (cfs)	148004.7	Conv. (cfs)	52570.1 41519.5 53915.1
Length Wtd. (ft)	244.00	Wetted Per. (ft)	105.66 24.79 102.29
Min Ch El (ft)	328.01	Shear (lb/sq ft)	0.18 0.31 0.19
Alpha	1.34	Stream Power (lb/ft s)	0.29 0.96 0.30
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	39.52 23.50 18.27
C & E Loss (ft)	0.01	Cum SA (acres)	9.61 1.75 2.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1468

INPUT
Description: EX. CROSS SECTION 14+68
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
748.5	346	752.83	344	762.65	342	769	340	774	338		
778.9	336	784	334	887.66	332	944.22	330.09	958.5	330		
962	329.96	985.3	329.18	985.5	329.073	987.5	328	988.5	326.91		

RIVER: sugarland run
REACH: main RS: 1045

INPUT
Description: SPRING ST CULVER US 10+45
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
558.55	342	857.55	340	876.55	340.6	916.55	341	926.55	340		
955.55	338	959.55	336	961.86	334	964.55	332	966.55	330		
967.55	329.07	968.3	328	973.96	326.5	988.92	326.27	990.97	325		
1000	325	1008.3	325	1014.8	326.64	1029.2	326.92	1042.3	328		
1044.8	328.68	1050.55	330	1059.34	332	1062.84	334	1066.32	336		
1069.91	338	1073.81	340	1100.4	342						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
558.55	.013	916.55	.07	988.92	.05	1014.8	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
988.92 1014.8 220 220 220 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
558.55	916.55	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.82	Element	Left OB Channel Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	341.70	Reach Len. (ft)	220.00 220.00 220.00
Crit W.S. (ft)	330.91	Flow Area (sq ft)	502.40 425.59 700.38
E.G. Slope (ft/ft)	0.000382	Area (sq ft)	781.36 425.59 700.38
Q Total (cfs)	3500.00	Flow (cfs)	732.11 1575.67 1192.22
Top Width (ft)	493.19	Top Width (ft)	385.68 25.88 81.63
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)	1.46 3.70 1.70
Max Chl Dpth (ft)	16.70	Hydr. Depth (ft)	6.94 16.44 8.58
Conv. Total (cfs)	179083.0	Conv. (cfs)	37459.6 80621.4 61002.0
Length Wtd. (ft)	220.00	Wetted Per. (ft)	76.32 26.45 84.27
Min Ch El (ft)	325.00	Shear (lb/sq ft)	0.16 0.38 0.20
Alpha	1.65	Stream Power (lb/ft s)	0.23 1.42 0.34
Frctn Loss (ft)		Cum Volume (acre-ft)	14.16 17.34 6.61
C & E Loss (ft)		Cum SA (acres)	6.26 1.34 1.51

CULVERT

Centerline Stations

Sta.	Sta.	Sta.	Sta.
983.5	994.5	1005.5	1016.5

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 825

INPUT
Description: SPRING ST CULVER DS 8+25
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
652.87	342	676.87	340	682.37	338	690.2	336	702.87	335.8		
717.87	336	732.87	338	763.87	340	772.87	339.6	808.87	339.6		
808.87	340.1	824.87	340.1	824.87	339.6	894.87	340.5	923.87	340		
930.27	338	936.69	336	939.38	335.21	942.98	334	948.54	332		
955.69	330	960.58	328	961.5	327.57	979.61	327.5	987.9	326.53		
988.85	326	991.36	324.86	992	324	1000	324	1008	324		
1008.9	324.81	1011	326	1013.12	326.63	1021.24	326.6	1041.5	328		
1045.5	330	1049.75	332	1052.5	332.88	1055	334	1060	336		
1063.5	338	1066.75	340	1069.7	342						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
652.87	.07	763.87	.013	894.87	.07	987.9	.05	1013.12	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
987.9 1013.12 113 113 113 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
652.87	710	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.97	Element	Left OB Channel Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.058 0.050 0.070
W.S. Elev (ft)	340.89	Reach Len. (ft)	113.00 113.00 113.00
Crit W.S. (ft)		Flow Area (sq ft)	917.22 411.69 572.40
E.G. Slope (ft/ft)	0.000306	Area (sq ft)	1061.93 411.69 572.40
Q Total (cfs)	3500.00	Flow (cfs)	1199.36 1323.55 977.09
Top Width (ft)	401.85	Top Width (ft)	321.69 25.22 54.94
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	1.31 3.21 1.71
Max Chl Dpth (ft)	16.89	Hydr. Depth (ft)	3.30 16.32 10.42

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
714.58	726	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.93	Element	Left OB Channel Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.065 0.050 0.070
W.S. Elev (ft)	340.89	Reach Len. (ft)	197.00 197.00 197.00
Crit W.S. (ft)	327.69	Flow Area (sq ft)	1191.92 1448.96 349.44
E.G. Slope (ft/ft)	0.000089	Area (sq ft)	1211.33 1448.96 349.44
Q Total (cfs)	3900.00	Flow (cfs)	940.90 2694.11 265.00
Top Width (ft)	366.70	Top Width (ft)	238.19 83.82 44.69
Vel Total (ft/s)	1.30	Avg. Vel. (ft/s)	0.79 1.86 0.76
Max Chl Dpth (ft)	17.94	Hydr. Depth (ft)	5.24 17.29 7.82
Conv. Total (cfs)	413292.0	Conv. (cfs)	99709.2 285500.6 28082.3
Length Wtd. (ft)	197.00	Wetted Per. (ft)	234.41 84.87 47.44
Min Ch El (ft)	322.95	Shear (lb/sq ft)	0.03 0.09 0.04
Alpha	1.52	Stream Power (lb/ft s)	0.02 0.18 0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	8.42 12.16 2.70
C & E Loss (ft)		Cum SA (acres)	3.22 1.04 0.78

CULVERT

RIVER: sugarland run
REACH: main RS: 530

INPUT
Description: FFXCO PKWY CULVERT
Distance from Upstream XS = 51
Deck/Roadway Width = 104
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 22

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
714.58	350	0 714.59	350	0 715.58	340 0
726.28	338	0 731.33	336	0 737.98	334 0
746.08	332	0 789.09	330	0 799.58	330 0
812.38	332	0 817.58	334	0 823.58	336 0
828.58	338	0 833.58	340	0 838.58	340.6 0
873.08	340	0 873.09	340.5	0 890.08	340.25 0
1000	342	0 1033	344	0 1064	346 0

Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val
636.05 .07 658.25 .013 811.71 .07 921.41 .05 1056.8 .07

Bank Sta: Left Right Coeff Contr. Expan.
921.41 1056.8 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
636.05	778	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.84	Element	Left OB Channel Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.069 0.050 0.070
W.S. Elev (ft)	340.82	Reach Len. (ft)	121.00 121.00 121.00
Crit W.S. (ft)		Flow Area (sq ft)	1164.68 2269.71 337.32
E.G. Slope (ft/ft)	0.000045	Area (sq ft)	1266.43 2269.71 337.32
Q Total (cfs)	3900.00	Flow (cfs)	781.15 2945.02 173.83
Top Width (ft)	454.97	Top Width (ft)	272.25 135.39 47.34
Vel Total (ft/s)	1.03	Avg. Vel. (ft/s)	0.67 1.30 0.52
Max Chl Dpth (ft)	17.82	Hydr. Depth (ft)	8.12 16.76 7.13
Conv. Total (cfs)	580371.3	Conv. (cfs)	116244.8 438258.3 25868.3
Length Wtd. (ft)	121.00	Wetted Per. (ft)	145.25 137.05 49.13
Min Ch El (ft)	323.00	Shear (lb/sq ft)	0.02 0.05 0.02
Alpha	1.28	Stream Power (lb/ft s)	0.02 0.06 0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	8.42 6.50 2.70
C & E Loss (ft)	0.00	Cum SA (acres)	2.06 0.54 0.57

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

182 335.6 200 334 204 333 212.5 333 216 334
222 335 330 336 478 338 529 340 541 342
551 344

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	200	.05	216	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
200 216 365 365 365 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.17	Element	Left OB Channel Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	342.17	Reach Len. (ft)	365.00 365.00 365.00
Crit W.S. (ft)		Flow Area (sq ft)	634.67 142.96 1707.12
E.G. Slope (ft/ft)	0.000038	Area (sq ft)	634.67 142.96 1707.12
Q Total (cfs)	1000.00	Flow (cfs)	210.86 112.15 677.00
Top Width (ft)	499.74	Top Width (ft)	157.90 16.00 325.85
Vel Total (ft/s)

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 216

INPUT
Description: EX. CROSS SECTION 2+16
Station Elevation Data num= 36
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
636 342 684 340 698 338 708 336 784 336
800 338 811 340 823 340 842 340 860 338
880 336 900 334 911 332 916 330.87 951 330
981 328 983 326 985 324 987 322.95 1000 322.95
1011 322.95 1012 324 1014 326 1016 328 1020 330
1024 332 1028 334 1032 336 1036 338 1039 340
1043 342 1046 344 1053 346 1056 348 1059 350
1062 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
636 .07 981 .05 1016 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
981 1016 18 18 18 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
636 870 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	340.69	Reach Len. (ft)	18.00	18.00	18.00
Crit W.S. (ft)		Flow Area (sq ft)	996.45	595.01	159.40
E.G. Slope (ft/ft)	0.000343	Area (sq ft)	1580.99	595.01	159.40
Q Total (cfs)	3900.00	Flow (cfs)	1685.59	2012.40	202.02
Top Width (ft)	373.00	Top Width (ft)	313.62	35.00	24.38
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)	1.69	3.38	1.27

Max Chl Dpth (ft)	17.74	Hydr. Depth (ft)	8.98	17.00	6.54
Conv. Total (cfs)	210718.9	Conv. (cfs)	91073.0	108730.9	10915.0
Length Wtd. (ft)	18.00	Wetted Per. (ft)	111.53	39.02	27.51
Min Ch El (ft)	322.95	Shear (lb/sq ft)	0.19	0.33	0.12
Alpha	1.46	Stream Power (lb/ft s)	0.32	1.10	0.16
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1.18	1.41	0.45
C & E Loss (ft)	0.01	Cum SA (acres)	0.74	0.24	0.34

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 198

INPUT
Description: EX. CROSS SECTION 1+98
Station Elevation Data num= 42
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
637 342 684 340 695 338 704 336 725 334
780 334 785 336 799 338 808 340 822 340
835 338 849 336 875 334 890 332 896 330.83
898 330 902 327.97 933 327.51 935 328 938 329.05
954.5 330 969.8 328 977.5 326 983.5 324 1000 322.9
1012.07 322.9 1014.27 324 1016.75 326 1019.07 328 1021.7 330
1024.2 332 1027.2 334 1029.76 336 1032.66 338 1033.5 339.71
1033.71 340 1035.21 342 1036.71 344 1039.71 346 1042.21 348
1044.96 350 1050.71 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
637 .07 969.8 .05 1019.07 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
969.8 1019.07 100 75 70 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
637 898 T

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	340.70	Reach Len. (ft)	100.00	75.00	70.00

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
637 .07 969.8 .05 1019.07 .07

Bank Sta: Left Right Coeff Contr. Expan.
969.8 1019.07 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
637 898 T

Downstream Deck/Roadway Coordinates
num= 8
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
588 354 0 636 354 0 670 352 0
725 350 0 900 350 0 1000 350 0
1030 352 0 1066 354 0

Downstream Bridge Cross Section Data
Station Elevation Data num= 39
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
588 354 853 346 857 344 860 342 864 340
867.5 338 871.5 336 874.5 334 877.5 332 882 330
884 328.55 896 326.5 901 326.57 906 327.04 919 328.2
933 330 960 332.27 970 332.27 976 330 982 328
986 326 988 324 991 322.52 1000 322.52 1009 322.52
1013 323.08 1014 324 1017 326 1020 327.75 1024 330
1030 332 1033 334 1034.5 336 1036 338 1041 340
1044 342 1047 344 1049 346 1051 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
588 .07 986 .05 1017 .07

Bank Sta: Left Right Coeff Contr. Expan.
986 1017 .1 .3

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
Downstream Embankment side slope = 3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 2

RIVER: sugarland run
REACH: main RS: 93

INPUT
Description: EX. CROSS SECTION 0+93
Station Elevation Data num= 16
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
865 334 885 332 895 330 914 328 946 327.9
947 325.96 978 325.37 991 323.32 1000 322.48 1010 324
1017 326 1025 328 1067 329 1170 330 1219 332
1310 334

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
865 .07 947 .05 1017 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
947 1017 91 93 95 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	331.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	329.57	Reach Len. (ft)	91.00	93.00	95.00
Crit W.S. (ft)	329.57	Flow Area (sq ft)	66.33	344.51	82.56
E.G. Slope (ft/ft)	0.014289	Area (sq ft)	66.33	344.51	82.56
Q Total (cfs)	3900.00	Flow (cfs)	205.38	3520.86	173.76
Top Width (ft)	226.96	Top Width (ft)	47.94	70.00	109.02
Vel Total (ft/s)	7.90	Avg. Vel. (ft/s)	3.10	10.22	2.10
Max Chl Dpth (ft)	7.09	Hydr. Depth (ft)	1.38	4.92	0.76
Conv. Total (cfs)	32626.4	Conv. (cfs)	1718.1	29454.6	1453.6
Length Wtd. (ft)	92.88	Wetted Per. (ft)	49.21	70.60	109.28
Min Ch El (ft)	322.48	Shear (lb/sq ft)	1.20	4.35	0.67
Alpha	1.52	Stream Power (lb/ft s)	3.72	44.49	1.42
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	0.37	0.63	0.36
C & E Loss (ft)	0.24	Cum SA (acres)	0.15	0.12	0.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.

main	160	Culvert			
main	123		.07	.05	.07
main	93		.07	.05	.07
main	0		.07	.05	.07

SUMMARY OF REACH LENGTHS

River: sugarland run

Reach	River Sta.	Left	Channel	Right
2	758	70	100	110
2	640	95	100	95
2	538	90	100	130
2	424	80	200	145
2	215	0	0	0
1	3821	250	241	230
1	3580	205	251	240
1	3329	114	114	114
1	3215	107	107	107
1	3108	93	93	93
1	3015	0	0	0
main	2902	92	100	20
main	2802	65	109	47
main	2693	135	116	42
main	2577	85	106	85
main	2471	135	106	360
main	2365	75	98	180
main	2267	365	365	365
main	1918	206	206	206
main	1712	244	244	244
main	1468	228	228	228
main	1240	195	195	195
main	1045	220	220	220
main	935	Culvert		
main	825	113	113	113
main	712	84	84	84
main	628	197	197	197
main	530	Culvert		
main	431	121	121	121
main	301	85	85	85
main	216	18	18	18

conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3580 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3215 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3108 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3015 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: main RS: 2902 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 2802 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 2693 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 2471 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 1712 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.

Crit W.S. (ft)	330.34	Flow Area (sq ft)	874.53	807.90	105.37
E.G. Slope (ft/ft)	0.000235	Area (sq ft)	1940.06	807.90	105.37
Q Total (cfs)	3900.00	Flow (cfs)	1493.64	2302.66	103.70
Top Width (ft)	366.72	Top Width (ft)	302.28	49.27	15.17
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	1.71	2.85	0.98
Max Chl Dpth (ft)	17.80	Hydr. Depth (ft)	12.18	16.40	6.95
Conv. Total (cfs)	254513.7	Conv. (cfs)	97474.7	150271.4	6767.6
Length Wtd. (ft)	75.00	Wetted Per. (ft)	72.68	51.60	20.02
Min Ch El (ft)	322.90	Shear (lb/sq ft)	0.18	0.23	0.08
Alpha	1.25	Stream Power (lb/ft s)	0.30	0.65	0.08
Frctn Loss (ft)		Cum Volume (acre-ft)	0.45	1.12	0.40
C & E Loss (ft)		Cum SA (acres)	0.62	0.22	0.33

CULVERT

RIVER: sugarland run
REACH: main RS: 160

INPUT
Description: W&OD CULVERT
Distance from Upstream XS = 20
Deck/Roadway Width = 30
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 8
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
588 354 0 636 354 0 670 352 0
725 350 0 900 350 0 1000 350 0
1030 352 0 1066 354 0

Upstream Bridge Cross Section Data
Station Elevation Data num= 42
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
637 342 684 340 695 338 704 336 725 334
780 334 785 336 799 338 808 340 822 340
835 338 849 336 875 334 890 332 896 330.83
898 330 902 327.97 933 327.51 935 328 938 329.05
954.5 330 969.8 328 977.5 326 983.5 324 1000 322.9
1012.07 322.9 1014.27 324 1016.75 326 1019.07 328 1021.7 330
1024.2 332 1027.2 334 1029.76 336 1032.66 338 1033.5 339.71
1033.71 340 1035.21 342 1036.71 344 1039.71 346 1042.21 348
1044.96 350 1050.71 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
588 .07 986 .05 1017 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
986 1017 30 30 30 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	332.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.19	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	330.63	Reach Len. (ft)	30.00	30.00	30.00
Crit W.S. (ft)	330.63	Flow Area (sq ft)	167.46	234.52	18.84
E.G. Slope (ft/ft)	0.014442	Area (sq ft)	167.46	234.52	18.84
Q Total (cfs)	3900.00	Flow (cfs)	741.85	3085.02	73.14
Top Width (ft)	111.39	Top Width (ft)	71.51	31.00	8.88
Vel Total (ft/s)	9.27	Avg. Vel. (ft/s)	4.43	13.15	3.88
Max Chl Dpth (ft)	8.11	Hydr. Depth (ft)	2.34	7.57	2.12
Conv. Total (cfs)	32453.0	Conv. (cfs)	6173.1	25671.3	608.6
Length Wtd. (ft)	30.00	Wetted Per. (ft)	73.41	33.18	10.04
Min Ch El (ft)	322.52	Shear (lb/sq ft)	2.06	6.37	1.69
Alpha	1.64	Stream Power (lb/ft s)	9.11	83.84	6.57
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	0.45	0.83	0.40
C & E Loss (ft)	0.21	Cum SA (acres)	0.19	0.15	0.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 0

INPUT
Description: EX. CROSS SECTION 0+00
Station Elevation Data num= 20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
777 334 813 332 833 330 886 330 898 328
919 326 940 325.48 955 324.84 971 325.24 983 325.87
989 322.74 1000 322.3 1012 322.15 1014 323.86 1021 325.3
1025 326 1136 328 1183 330 1208 332 1220 332.3

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
777 .07 983 .05 1025 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
983 1025 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	329.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.070	0.050	0.070
W.S. Elev (ft)	329.13	Reach Len. (ft)			
Crit W.S. (ft)	328.43	Flow Area (sq ft)	287.39	242.43	251.06
E.G. Slope (ft/ft)	0.008000	Area (sq ft)	287.39	242.43	251.06
Q Total (cfs)	3900.00	Flow (cfs)	1166.07	2021.96	711.97
Top Width (ft)	271.25	Top Width (ft)	91.76	42.00	137.49
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)	4.06	8.34	2.84
Max Chl Dpth (ft)	6.98	Hydr. Depth (ft)	3.13	5.77	1.83
Conv. Total (cfs)	43603.1	Conv. (cfs)	13037.0	22606.1	7960.0
Length Wtd. (ft)		Wetted Per. (ft)	91.99	43.62	137.53
Min Ch El (ft)	322.15	Shear (lb/sq ft)	1.56	2.78	0.91

Alpha	1.70	Stream Power (lb/ft s)	6.33	23.15	2.59
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:sugarland run

Reach	River Sta.	n1	n2	n3	n4	n5
2	758	.07	.05	.07		
2	640	.07	.05	.07		
2	538	.07	.05	.07		
2	424	.07	.05	.07		
2	215	.07	.05	.07		
1	3821	.05	.05	.07		
1	3580	.05	.05	.07		
1	3329	.05	.05	.07		
1	3215	.05	.05	.07		
1	3108	.07	.05	.07		
1	3015	.07	.05	.07		
main	2902	.07	.05	.07		
main	2802	.07	.05	.07		
main	2693	.07	.05	.07		
main	2577	.07	.05	.07		
main	2471	.07	.05	.07		
main	2365	.07	.05	.07		
main	2267	.07	.05	.07		
main	1918	.07	.05	.07		
main	1712	.07	.05	.07		
main	1468	.07	.05	.07		
main	1240	.07	.05	.07		
main	1045	.013	.07	.05	.07	
main	935	Culvert				
main	825	.07	.013	.07	.05	.07
main	712	.07	.013	.07	.05	.07
main	628	.07	.013	.07	.05	.07
main	530	Culvert				
main	431	.07	.013	.07	.05	.07
main	301	.07	.013	.07	.05	.07
main	216	.07	.05	.07		
main	198	.07	.05	.07		

main	198		100	75	70
main	160	Culvert			
main	123		30	30	30
main	93		91	93	95
main	0		0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: sugarland run

Reach	River Sta.	Contr.	Expan.
2	758	.1	.3
2	640	.1	.3
2	538	.1	.3
2	424	.1	.3
2	215	.1	.3
1	3821	.1	.3
1	3580	.1	.3
1	3329	.1	.3
1	3215	.1	.3
1	3108	.1	.3
1	3015	.1	.3
main	2902	.1	.3
main	2802	.1	.3
main	2693	.1	.3
main	2577	.1	.3
main	2471	.1	.3
main	2365	.1	.3
main	2267	.1	.3
main	1918	.1	.3
main	1712	.1	.3
main	1468	.1	.3
main	1240	.1	.3
main	1045	.1	.3
main	935	Culvert	
main	825	.1	.3
main	712	.1	.3
main	628	.1	.3
main	530	Culvert	
main	431	.1	.3
main	301	.1	.3

main	216		.1	.3	
main	198		.1	.3	
main	160	Culvert			
main	123		.1	.3	
main	93		.1	.3	
main	0		.1	.3	

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 02

River: sugarland run Reach: 2 RS: 758 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 2 RS: 640 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 2 RS: 538 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: sugarland run Reach: 2 RS: 215 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3821 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream

River: sugarland run Reach: main RS: 1240 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 935 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported
inlet energy grade answer may not be valid.
River: sugarland run Reach: main RS: 825 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 530 Profile: PF 1
Warning:The weir over culvert is submerged.
River: sugarland run Reach: main RS: 530 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported
inlet energy grade answer may not be valid.
River: sugarland run Reach: main RS: 431 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 301 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 160 Profile: PF 1 Culv: Culvert #2
Note: The flow in the culvert is entirely supercritical.
River: sugarland run Reach: main RS: 160 Profile: PF 1 Culv: Culvert #1
Warning:Since the culvert has supercritical flow, the program should be run in mixed flow in order to check if the
section downstream of the culvert has supercritical flow.
Note: The flow in the culvert is entirely supercritical.
River: sugarland run Reach: main RS: 123 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS

	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

UPDATED EX. CONDITIONS (BASELINE) MODEL HEC-RAS OUPUT

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	06.03

PLOT DATE: October 15, 2020 TIME: 10:51:00 AM LAYOUT: 06.03 USER: Oconnor DATE: October 15, 2020 TIME: 10:51:00 AM LAYOUT: 06.03
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 06.01 EXISTING (BASELINE) HEC-RAS.dwg

LEGEND:

- 100-YEAR FEMA FLOODPLAIN DELINEATION
- 100-YEAR 'MINOR FLOODPLAIN' DELINEATION (SEE FLOODPLAIN NOTE BELOW)
- SUBJECT SITE AREA
- INEFFECTIVE FLOW AREA
- POTENTIAL STREAM RESTORATION AREA

FLOODPLAIN NOTE:
THE PROPOSED FLOODPLAIN DELINEATION SHOWN HEREON INCLUDES BOTH THE FEMA FLOODPLAIN AS WELL AS THE UPSTREAM 'MINOR FLOODPLAIN' ON SITE. BOTH THE 100-YEAR FEMA AND MINOR FLOODPLAIN ELEVATIONS HAVE BEEN PROVIDED TO SHOW THAT THE IMPROVEMENTS WITH THE PROPOSED REDEVELOPMENT DO NOT NEGATIVELY IMPACT THE 100-YEAR WATER SURFACE ELEVATIONS FOR BOTH THE FEMA FLOODPLAIN AND 'MINOR FLOODPLAIN'. AS SHOWN ON THIS SHEET AS WELL AS SHEETS 8.01 THROUGH 8.05, THERE IS NO INCREASE IN THE LIMITS OF EITHER FLOODPLAIN.

NORTH (VCS 83)
GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

WETLAND IMPACT PERMIT NOTE:
A WETLAND IMPACT PERMIT WILL BE REQUIRED PRIOR TO ANY LAND DISTURBANCE.

OFF-SITE WORK NOTE:
PARCEL 4A-1 IS NOT A PART OF THE APPLICATION PROPERTY AND IS SHOWN FOR INFORMATIONAL PURPOSES ONLY.

PROPOSED CROSSING 5.5'X6' BOX CULVERTS OR APPROVED EQUAL

POTENTIAL STREAM RESTORATION AREAS. SEPARATE PLAN TO BE SUBMITTED BY WSSI.
CROSS-SECTIONS:
23+65
24+74
25+77
26+93

POTENTIAL STREAM RESTORATION AREAS. SEPARATE PLAN TO BE SUBMITTED BY WSSI.
CROSS-SECTIONS:
19+18

POTENTIAL STREAM RESTORATION AREAS. SEPARATE PLAN TO BE SUBMITTED BY WSSI.
CROSS-SECTIONS:
12+40

POTENTIAL STREAM RESTORATION AREAS. SEPARATE PLAN TO BE SUBMITTED BY WSSI.

INEFFECTIVE FLOW AREA

FAIRFAX COUNTY PARKWAY ON RAMP

HERNDON PKWY

FAIRBROOK DR

SPRING STREET

(UNUSABLE WITH PUBLIC RIGHT OF WAY)

V 10.01

VIKA
ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
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TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

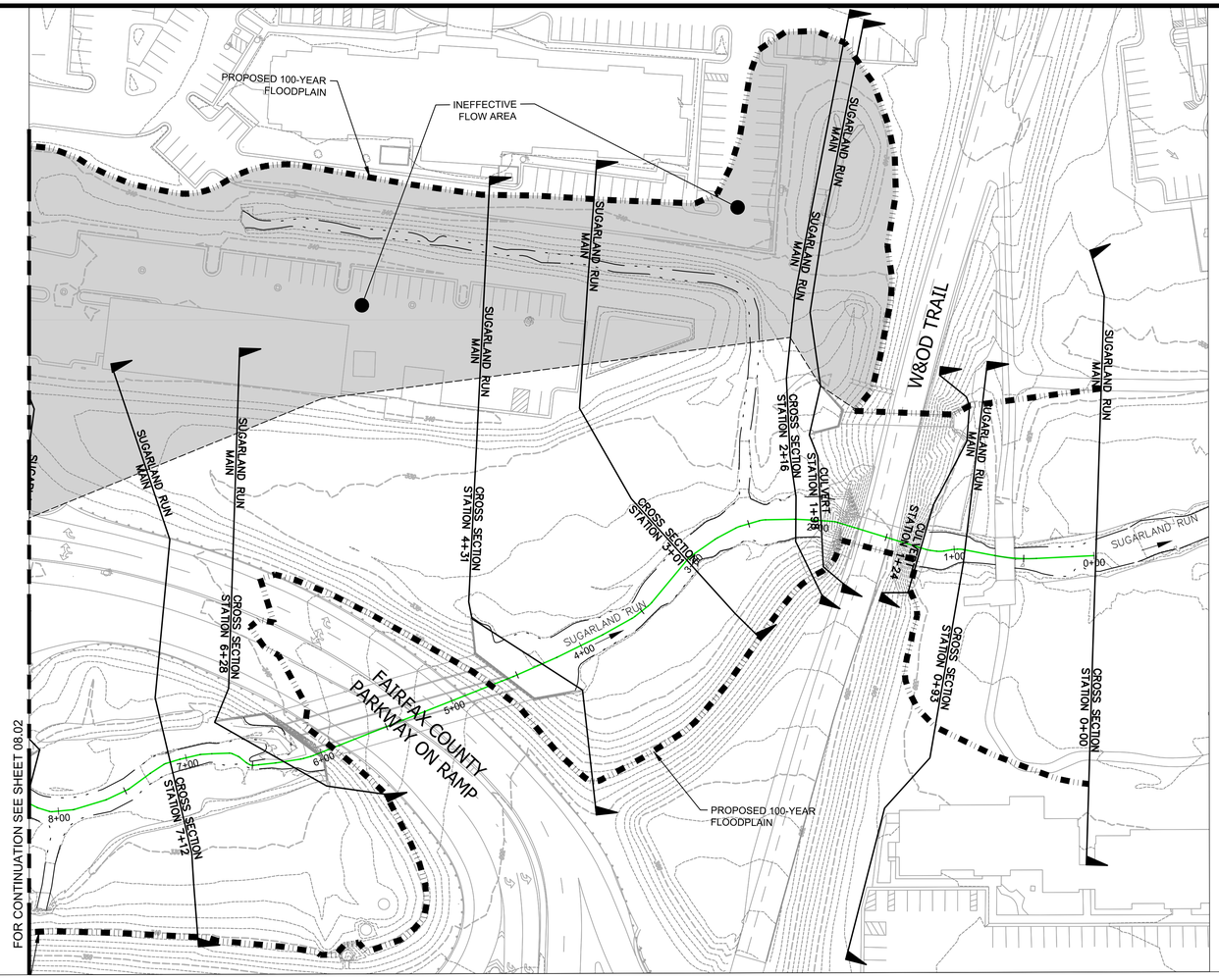
DISTRICT
TOWN OF HERNDON, VIRGINIA

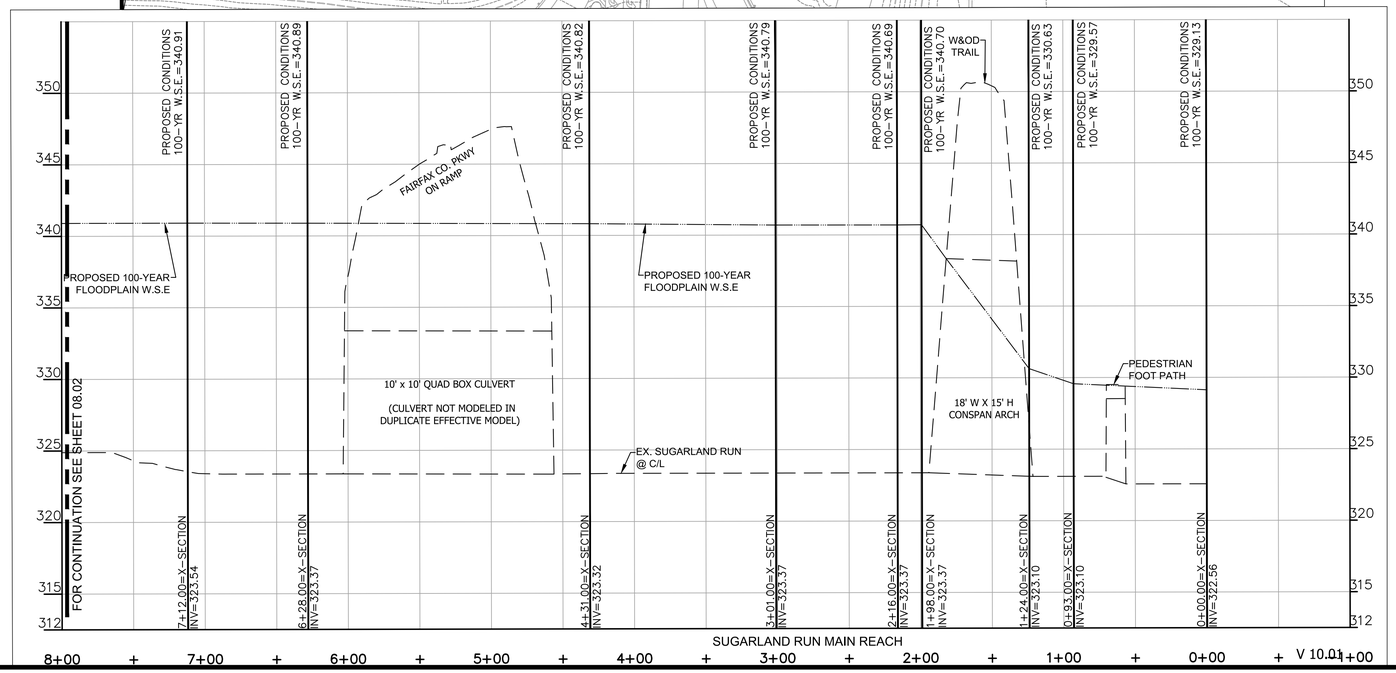
OVERALL PROPOSED STUDY AREA

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 100'
VIKA NO.	6045X
SHEET NO.	07.01

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 07.01 OVERALL PROPOSED CONDITIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:53:47 AM LAYOUT: 07.01

LAYOUT: 07.01 Plotted By: oconnor







GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

PROPOSED 100-YEAR FLOODPLAIN DELINEATION

OFF-SITE WORK NOTE:
PARCEL 4A-1 IS NOT A PART OF THE APPLICATION PROPERTY AND IS SHOWN FOR INFORMATIONAL PURPOSES ONLY.

VIKA
ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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PHONE: (703) 442-7800
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TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

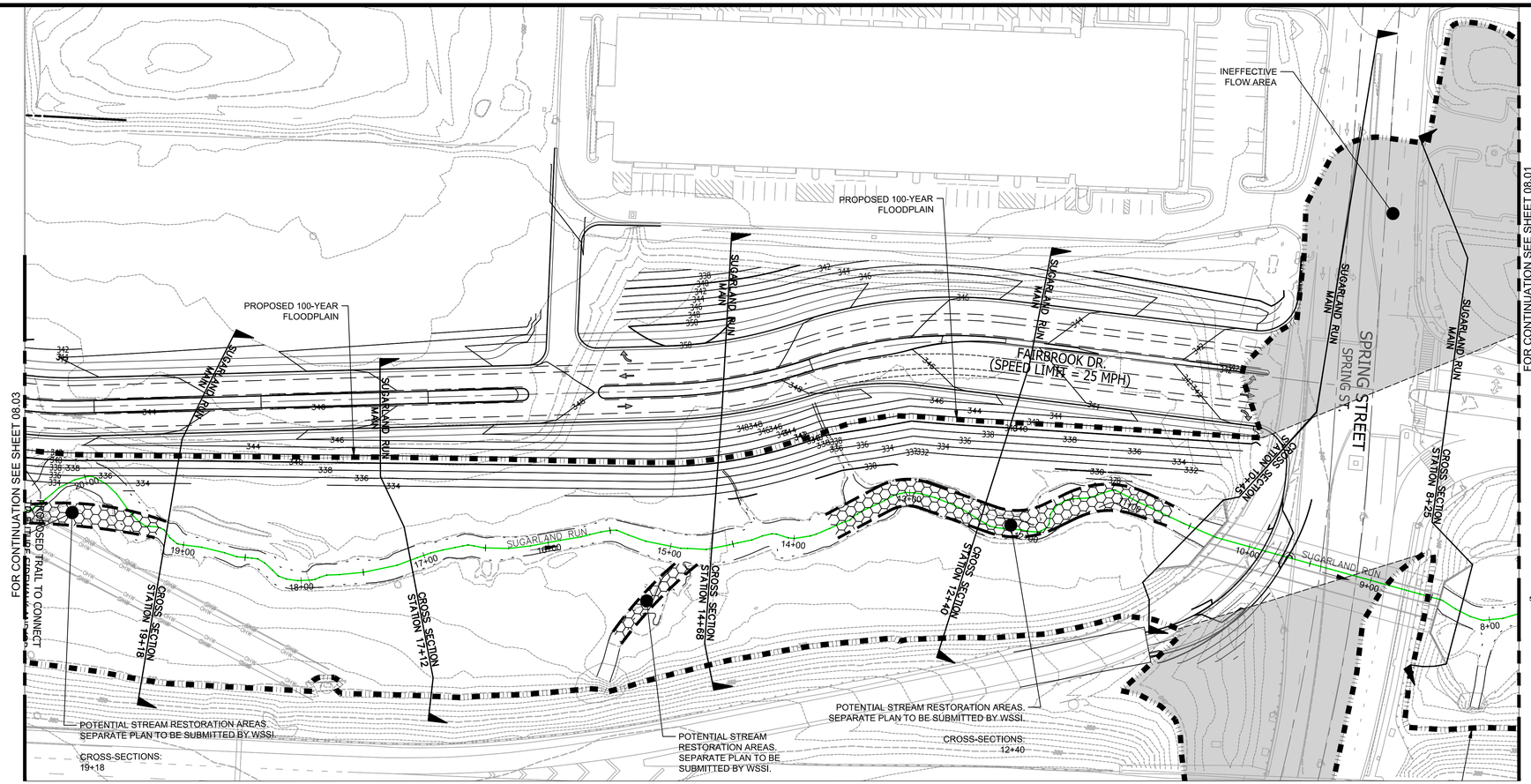
DISTRICT
TOWN OF HERNDON, VIRGINIA

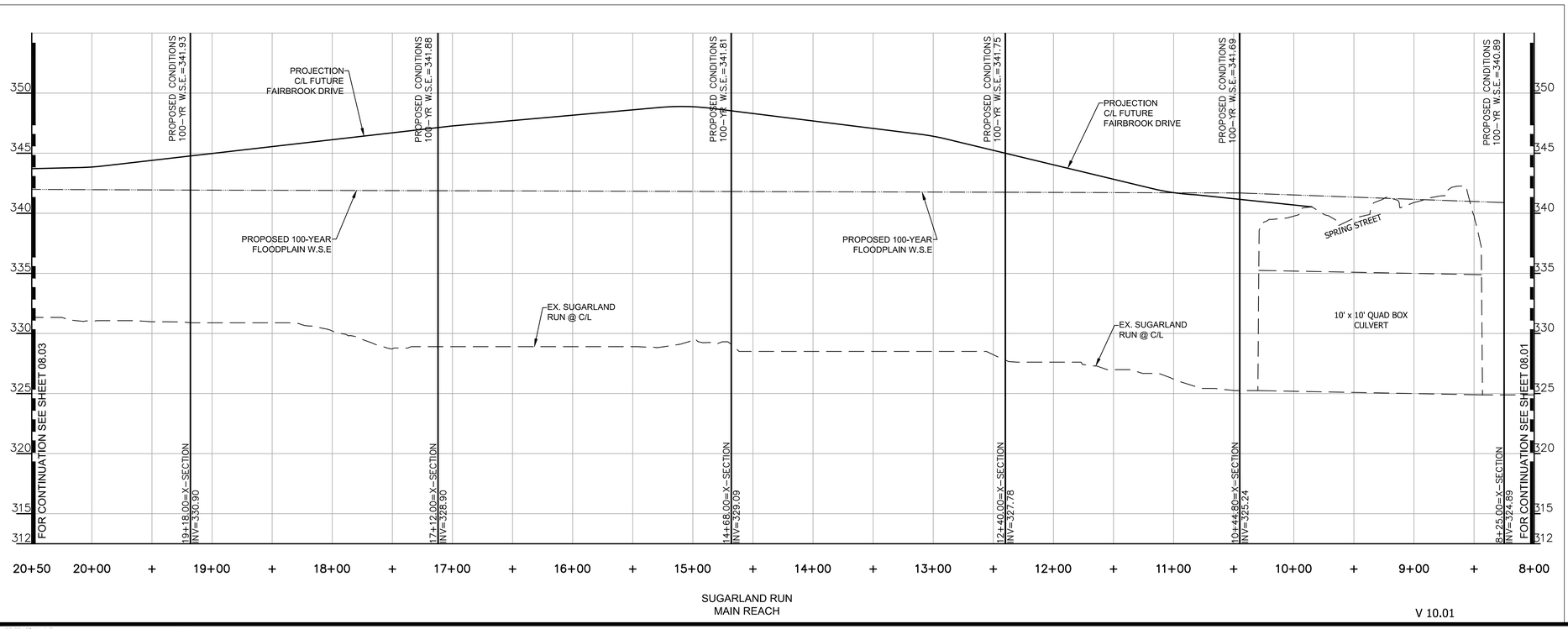
PROPOSED CONDITION SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	08.01

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 08.01-08.05 PROPOSED P & P.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:55:15 AM LAYOUT: 08.01

LAYOUT: 08.01 Plotted By: oconnor







GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

PROPOSED 100-YEAR FLOODPLAIN DELINEATION

OFF-SITE WORK NOTE:
PARCEL 4A-1 IS NOT A PART OF THE APPLICATION PROPERTY AND IS SHOWN FOR INFORMATIONAL PURPOSES ONLY.

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

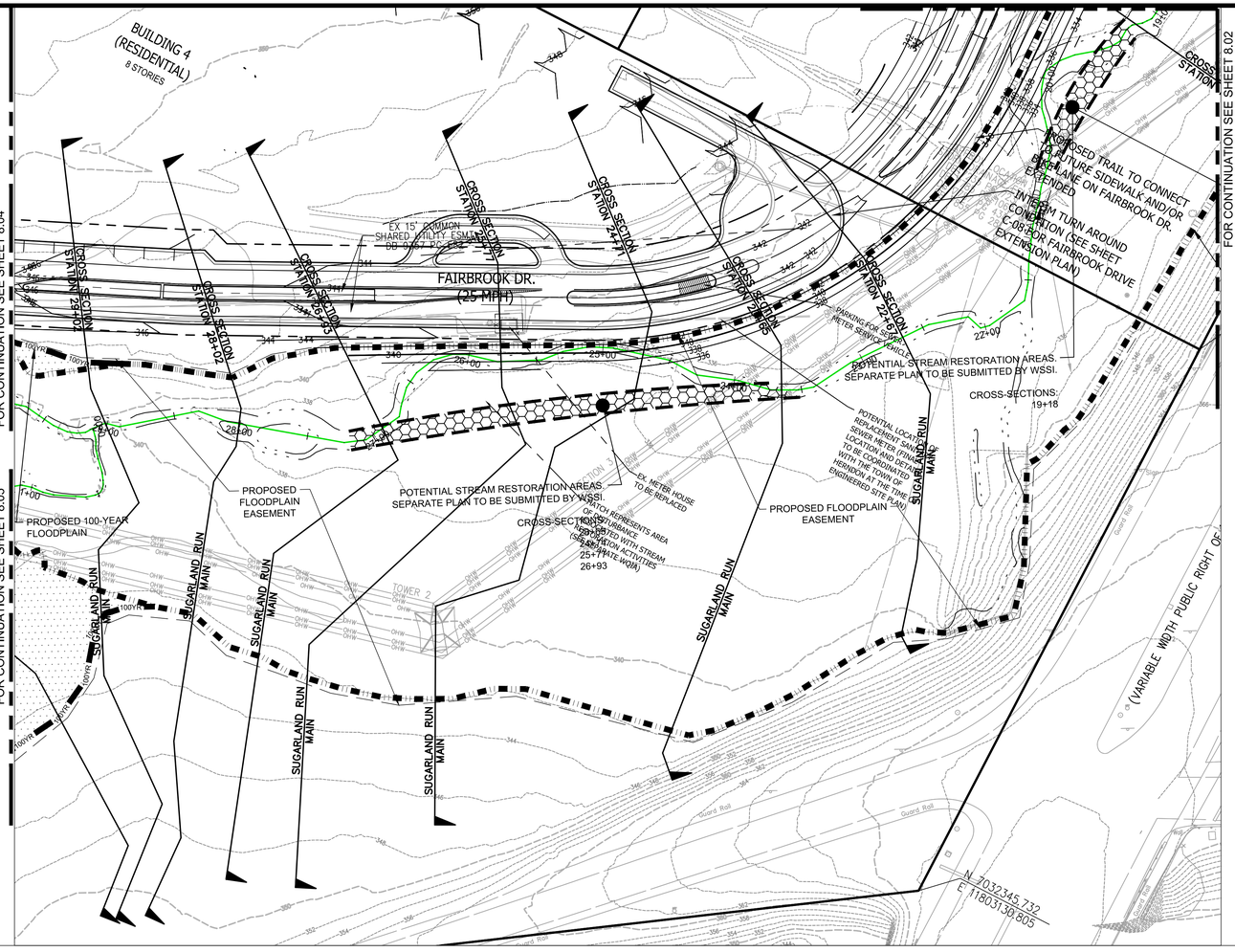
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

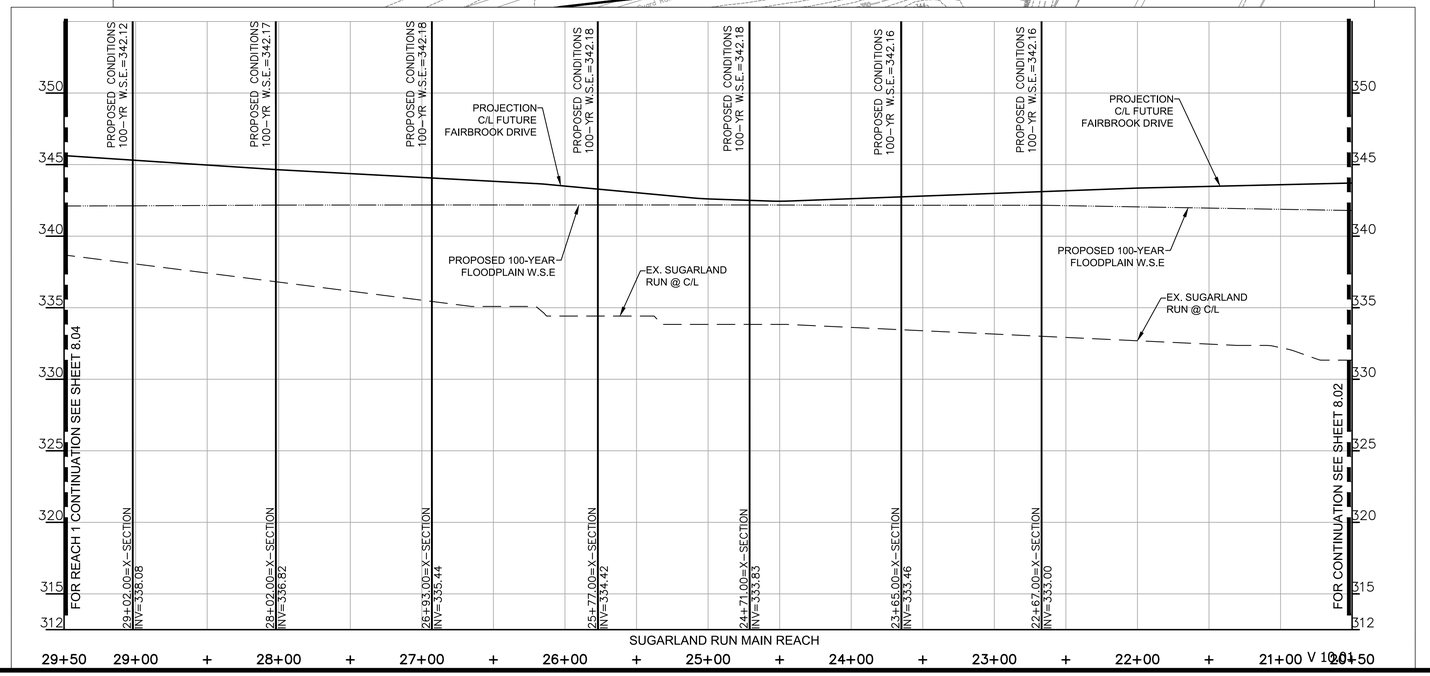
DISTRICT
TOWN OF HERNDON, VIRGINIA

PROPOSED CONDITION SUGARLAND RUN PLAN AND PROFILE

DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	08.02

FILE: P:\projects\6045\6045X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 08.01.08.05 PROPOSED P & P.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:56:13 AM LAYOUT: 08.02





NORTH (VCS 83)
GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

LEGEND:

PROPOSED 100-YEAR FLOODPLAIN DELINEATION

PROPOSED 100-YEAR 'MINOR FLOODPLAIN' DELINEATION

FLOODPLAIN & STORM DRAINAGE EASEMENT NOTE:
NO USE SHALL BE MADE OF, NOR SHALL ANY IMPROVEMENTS BE MADE IN, THE FLOODPLAIN EASEMENT WITHOUT SPECIFIC AUTHORIZATION OF THE TOWN OF HERNDON

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FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

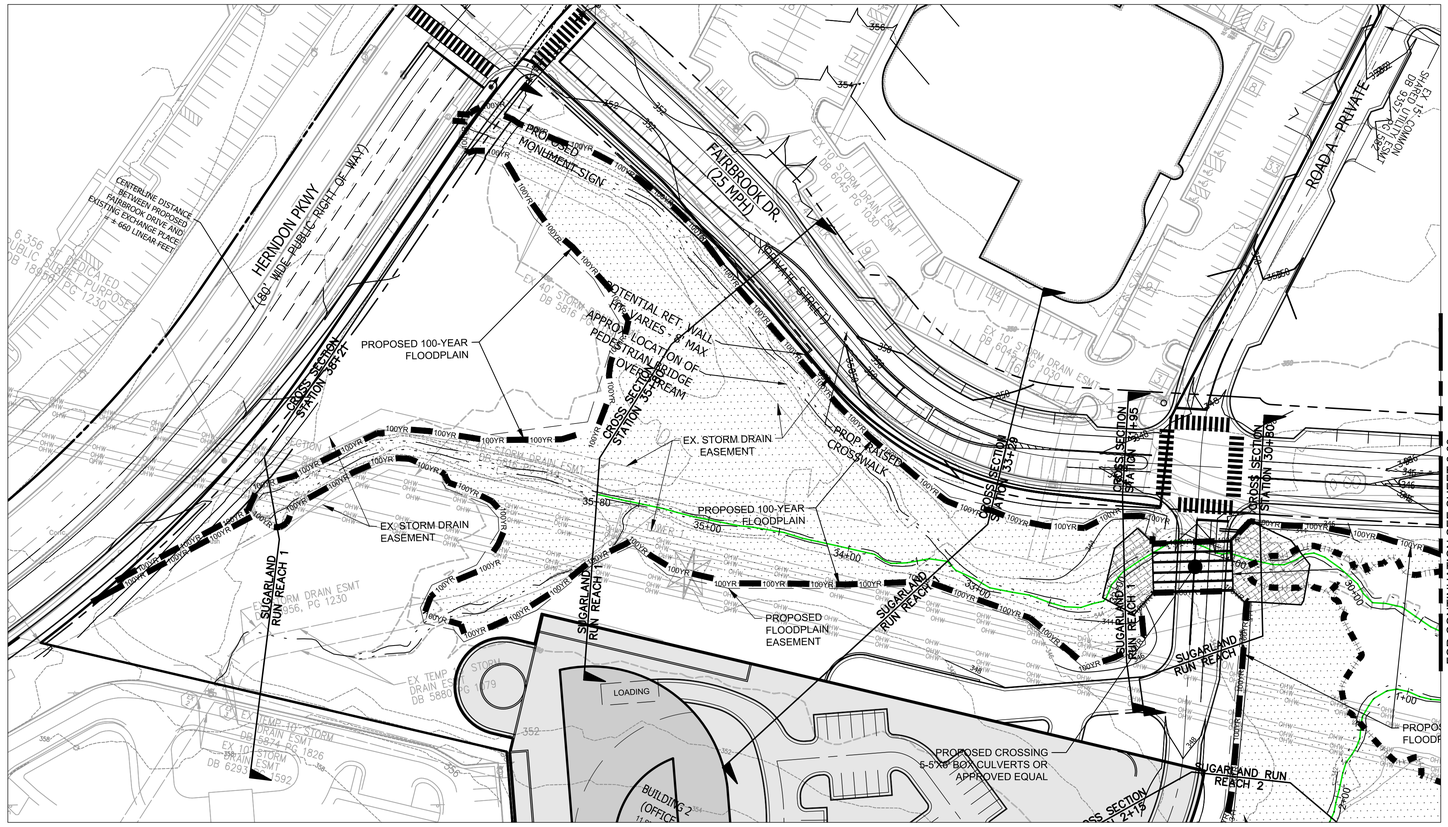
DISTRICT
TOWN OF HERNDON, VIRGINIA

PROPOSED CONDITION SUGARLAND RUN PLAN AND PROFILE

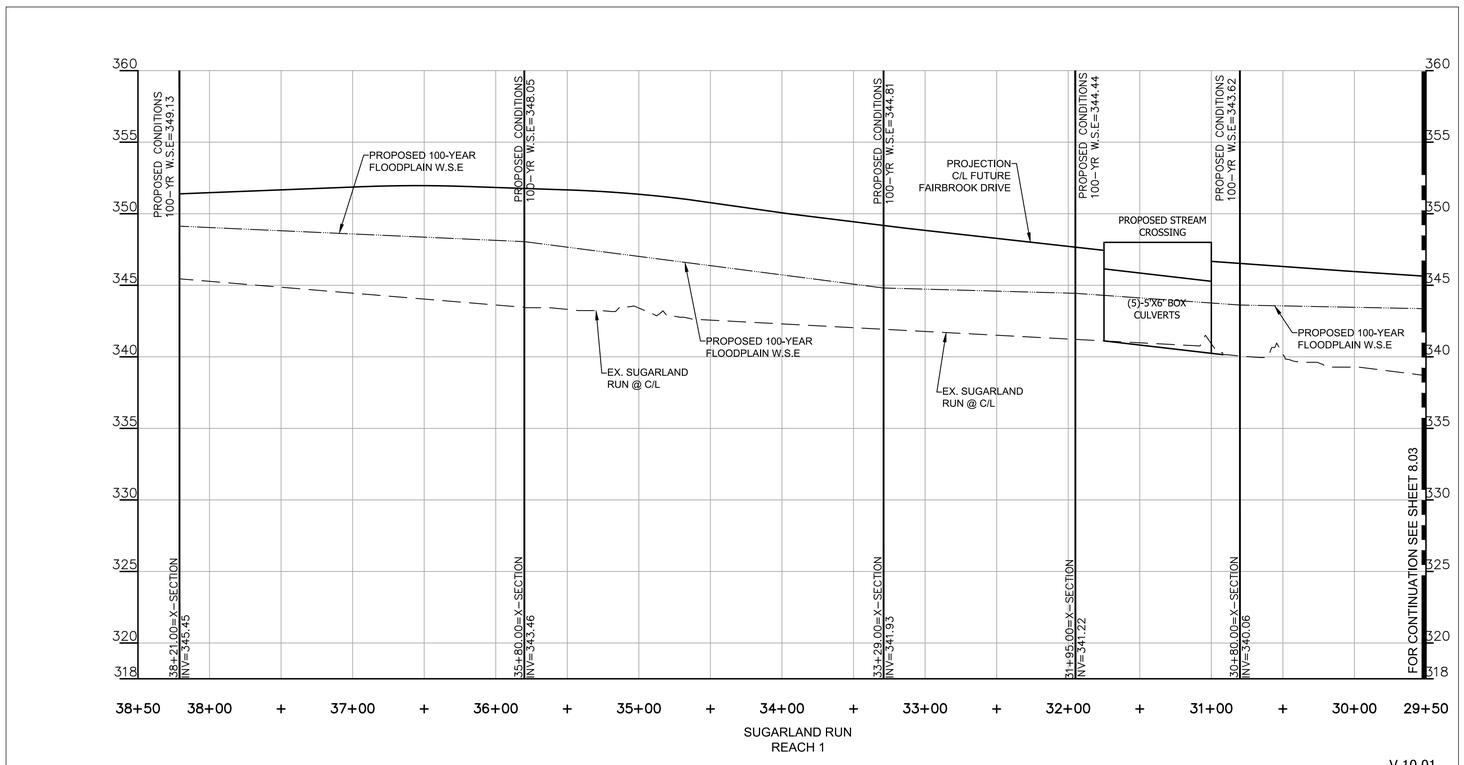
DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	08.03

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 08.01-08.05 PROPOSED P & P.dwg USER: Oconnor DATE: October 15, 2020 TIME: 11:06:55 AM LAYOUT: 08.03

Layout: 08.03, Plotted By: oconnor



REACH 1 PLAN & PROFILE



V 10.01

NORTH (VCS 83)
GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

LEGEND:

PROPOSED 100-YEAR FLOODPLAIN DELINEATION

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FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

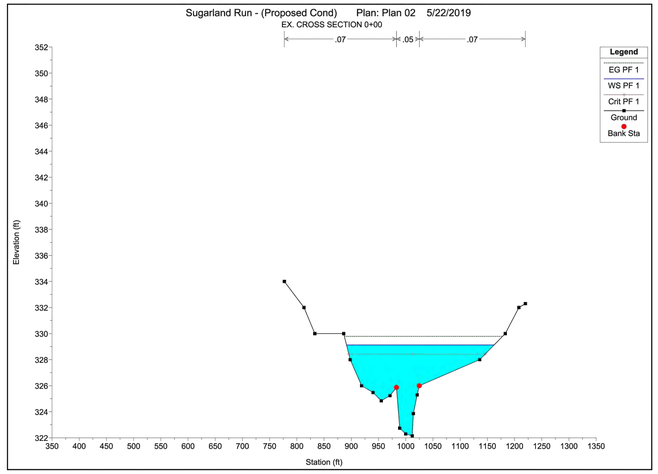
PROPOSED CONDITION SUGARLAND RUN PLAN AND PROFILE

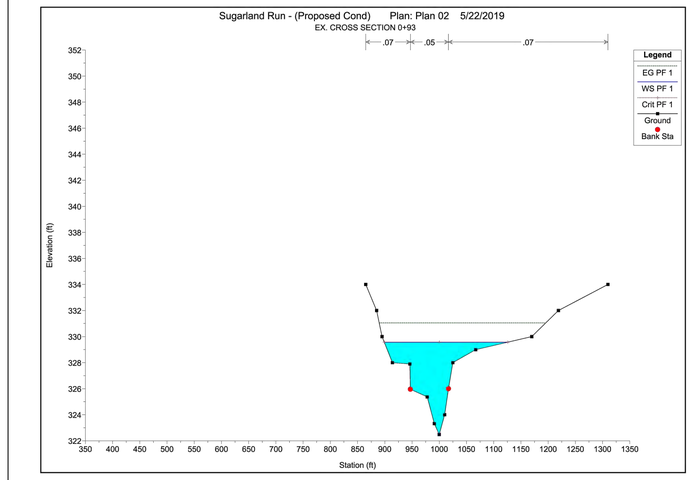
DRAWN BY:	DCZ
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	1" = 50'
VIKA NO.	6045X
SHEET NO.	08.04

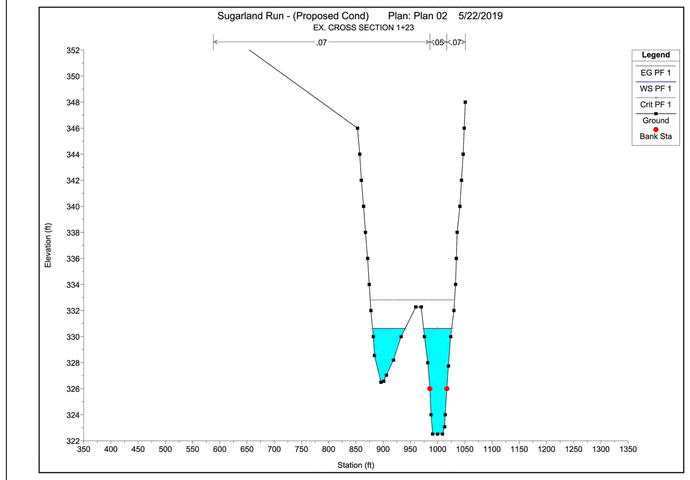
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 08.01-08.05 PROPOSED P & P.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:58:33 AM LAYOUT: 08.04

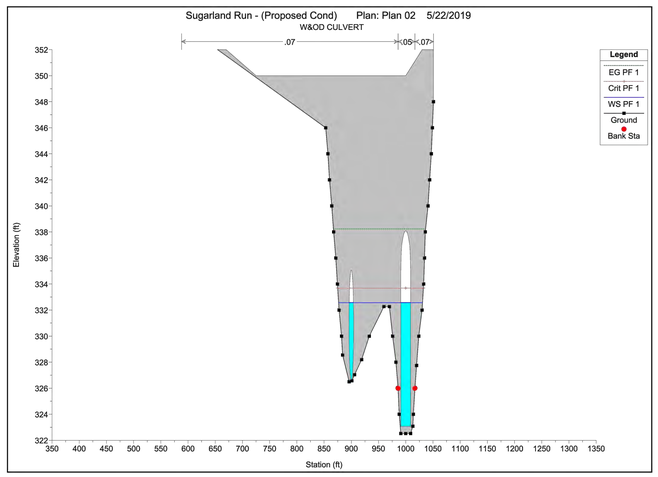
LAYOUT: 08.04, Plotted By: Jocelyn

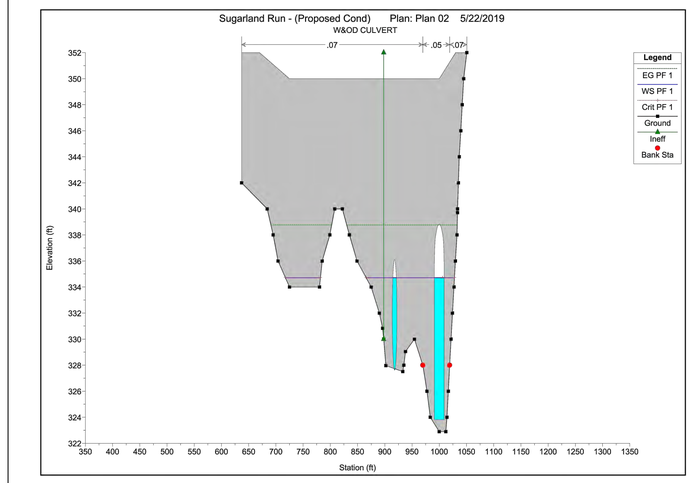

BUILDING 1
(OFFICE)
18 STORIES OF OFFICE
3 STORIES OF GARAGE
PODIUM
360,000 GSF
PROPOSED CROSSING
6'-5"W BOX CULVERTS OR
APPROVED EQUAL
CROSS SECTION
STATION 1+15
CROSS SECTION
STATION 2+38
CROSS SECTION
STATION 3+40
CROSS SECTION
STATION 4+24
CROSS SECTION
STATION 6+40
CROSS SECTION
STATION 7+58
SUGARLAND RUN
REACH 1
SUGARLAND RUN
REACH 2
PROPOSED
FLOODPLAIN
EASEMENT
PROPOSED 100-YEAR
FLOODPLAIN
SUGARLAND RUN
MAIN
100YR
348
350
352
354
356
-5+00
3+00
2+00
4+00
DRAIN EASMT
D.B. 1253
D.B. 10453
D.B. 10453
EX VDOT FEE
SYM. 123
D.B. 10453
PG. 1
EX. 30' WATER
EASEMENT
D.B. 10453
PG. 1
EX. 30' SANITARY
SEWER EASEMENT
D.B. 10453
PG. 1
EX. 30' STORM

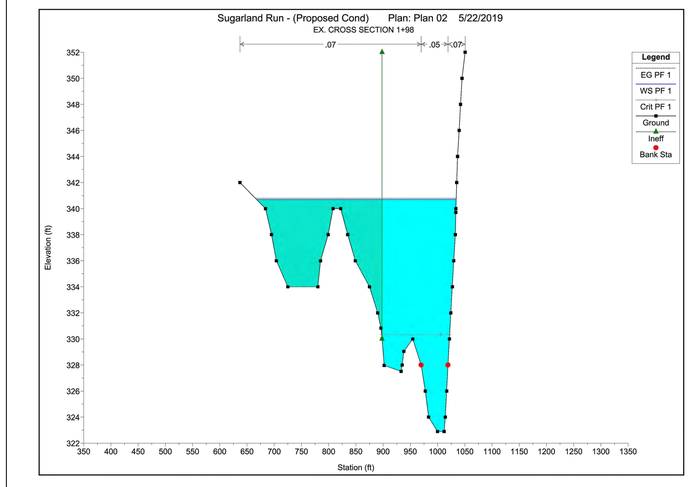


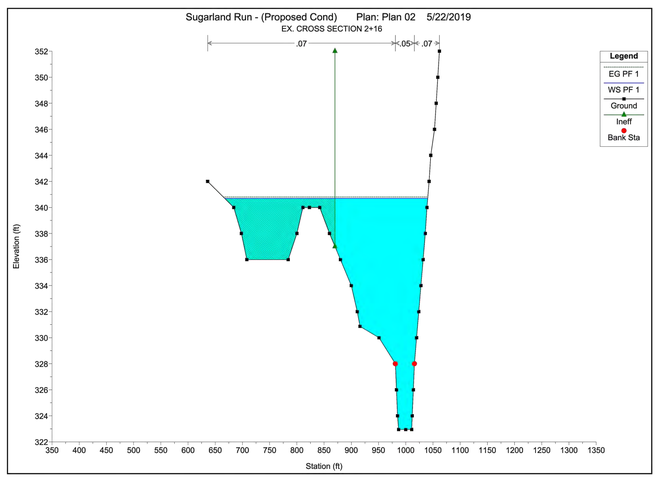


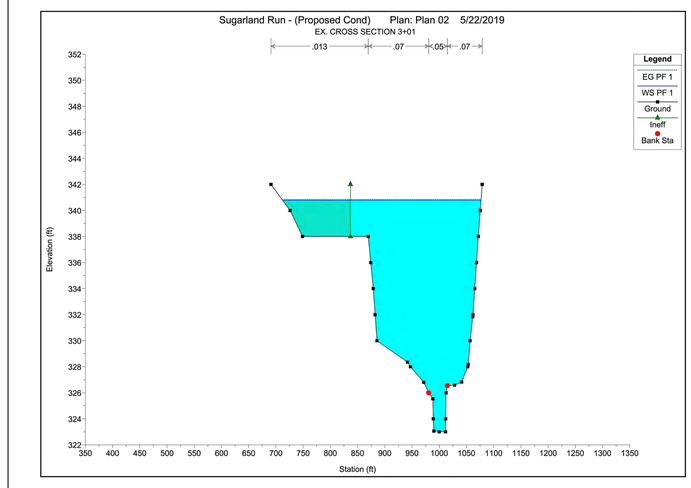


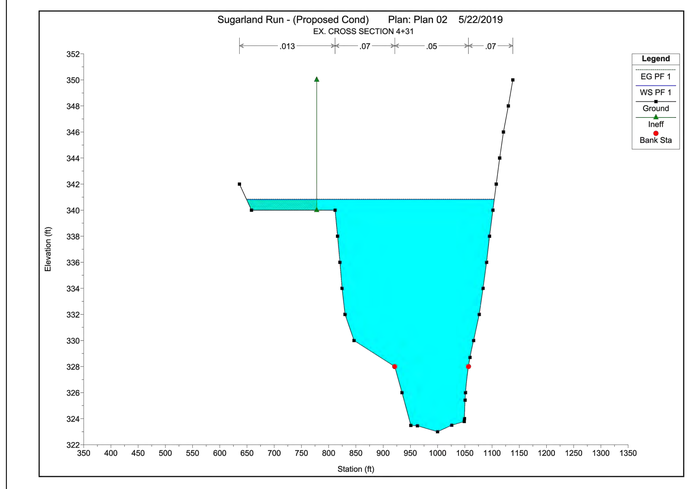












ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
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FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

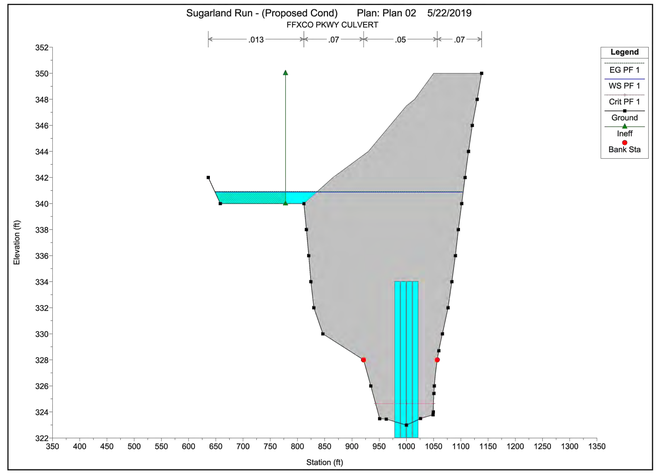
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

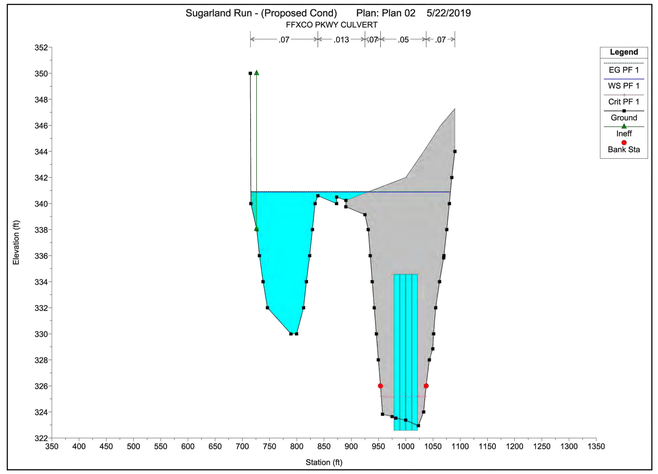
DISTRICT
TOWN OF HERNDON, VIRGINIA

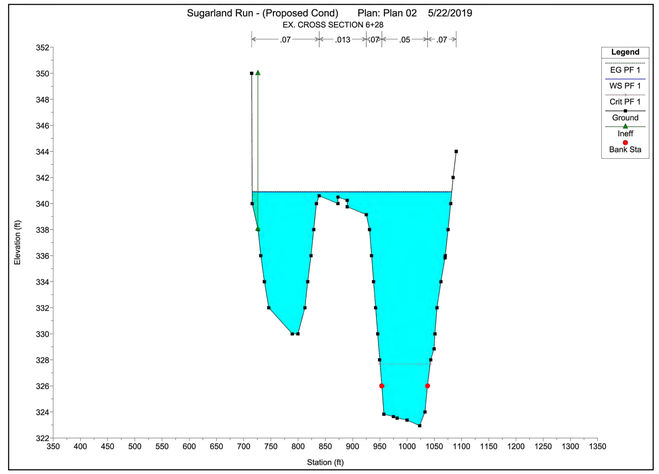
PROPOSED CROSS-SECTIONS

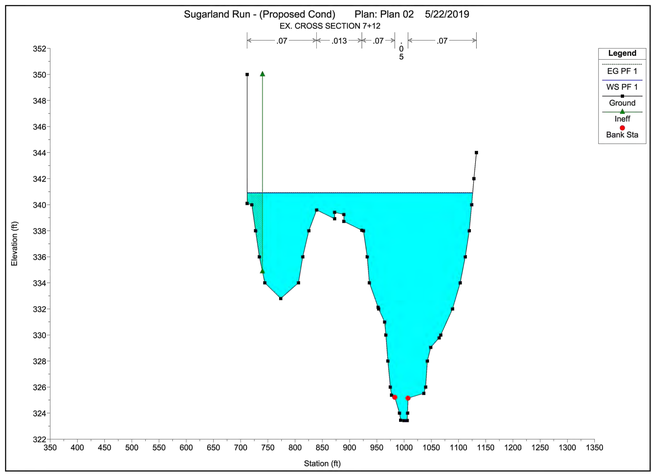
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	09.01

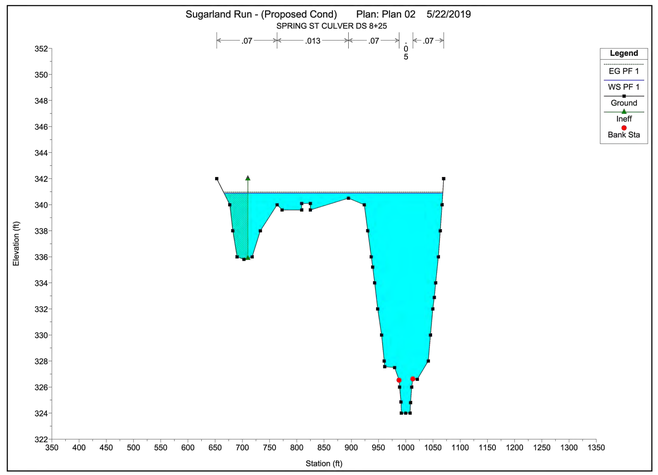
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 09.01 PROPOSED CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:30:39 AM LAYOUT: 09.01

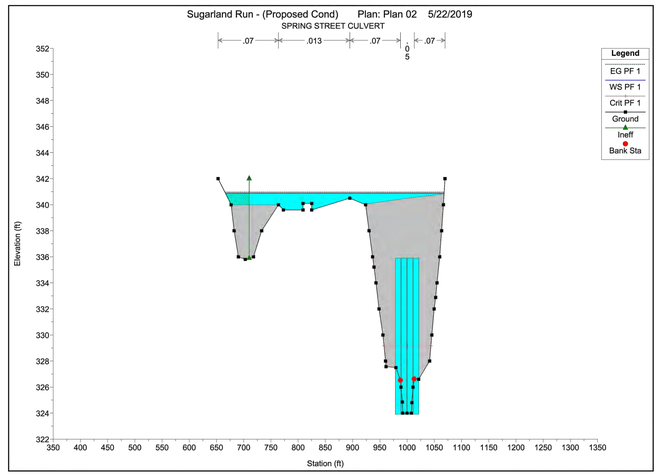


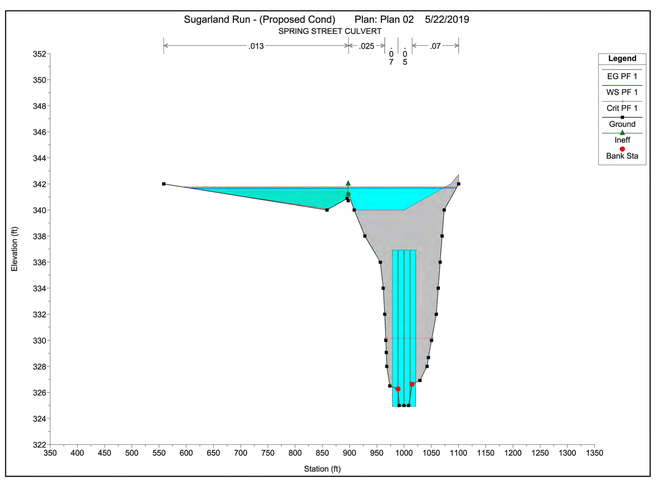


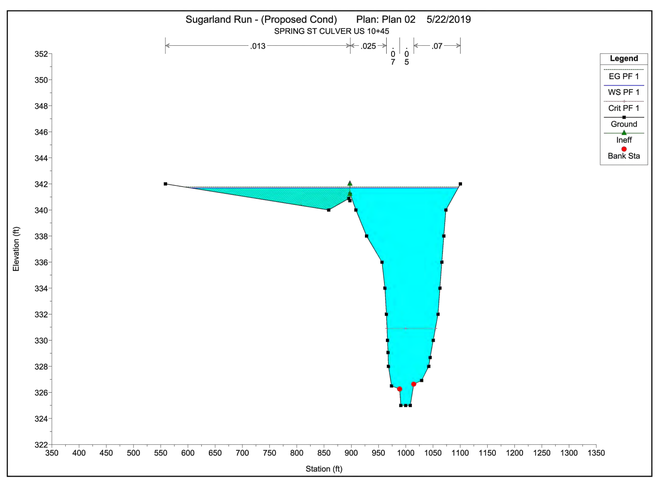


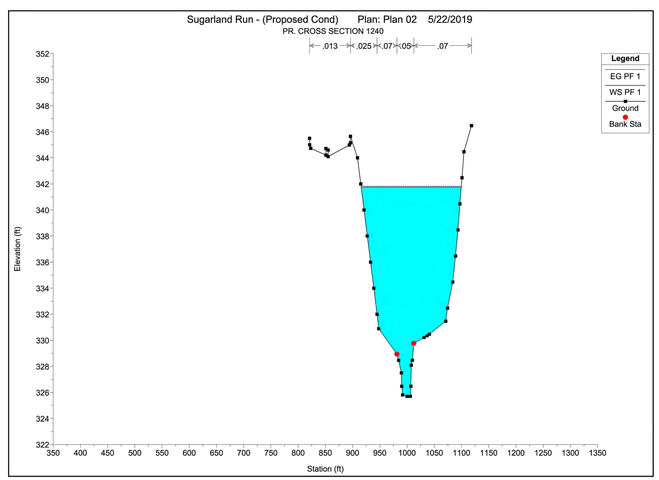












ENGINEERS PLANNERS SURVEYORS
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REVISIONS	DATE
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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

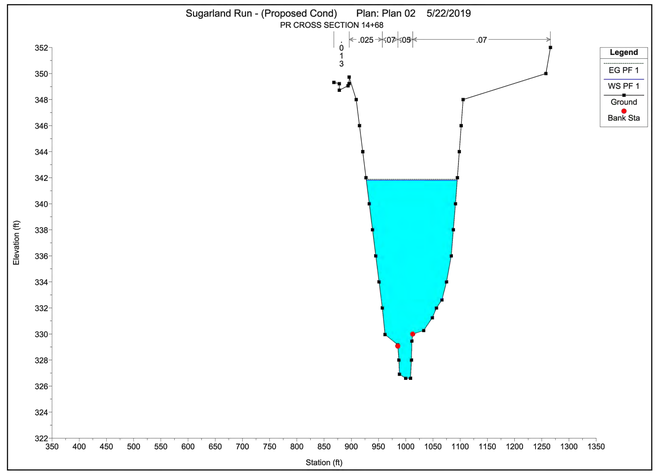
FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

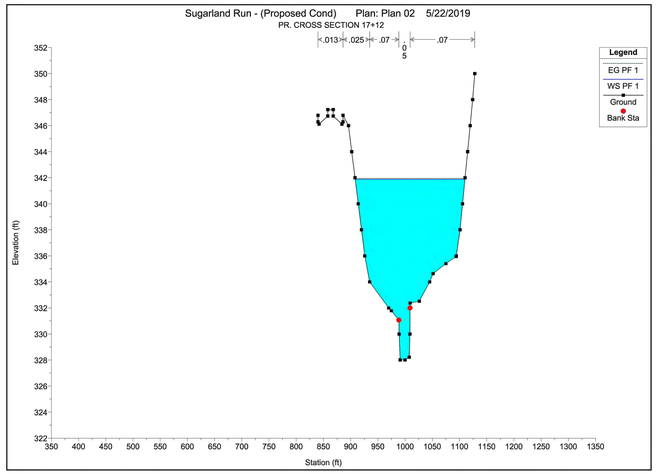
DISTRICT
TOWN OF HERNDON, VIRGINIA

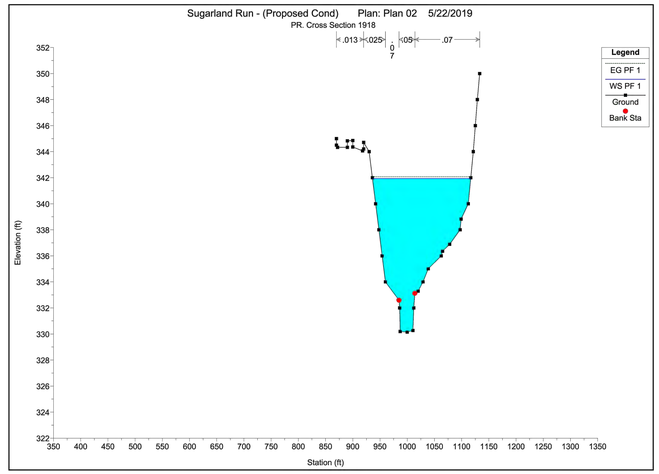
PROPOSED CROSS-SECTIONS

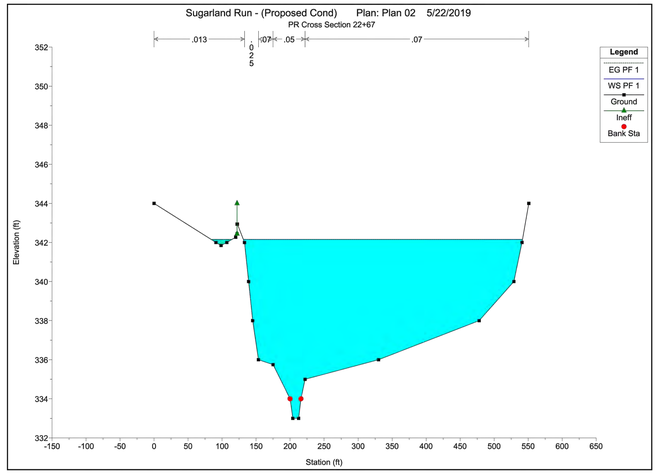
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	09.02

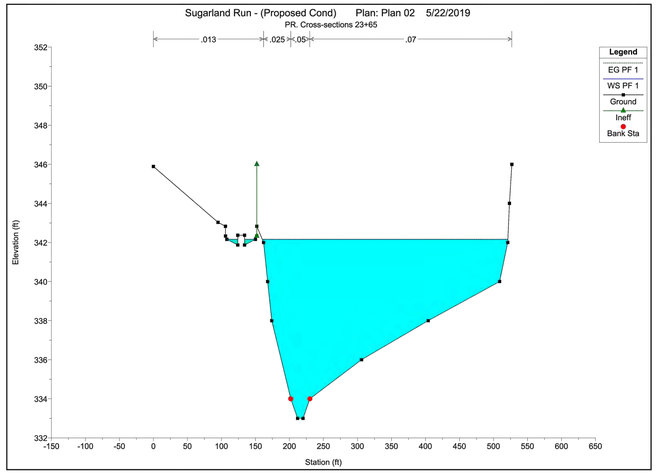
FILE: P:\projects\6045\6045X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 09.01 PROPOSED CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:31:06 AM LAYOUT: 09.02

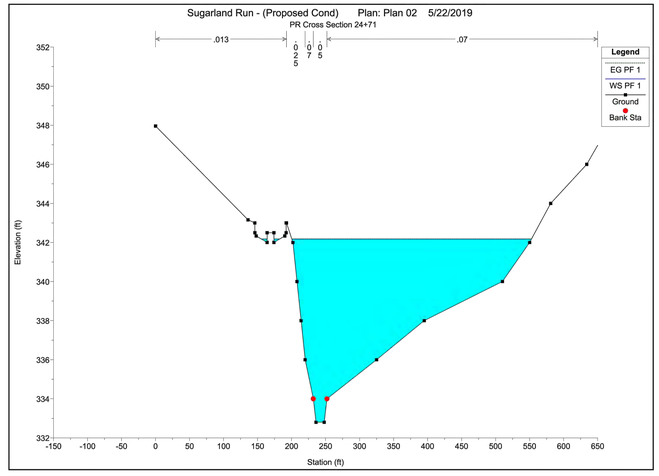


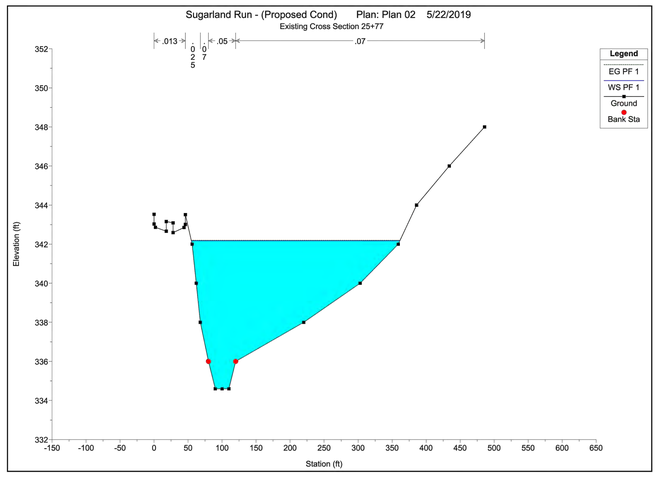


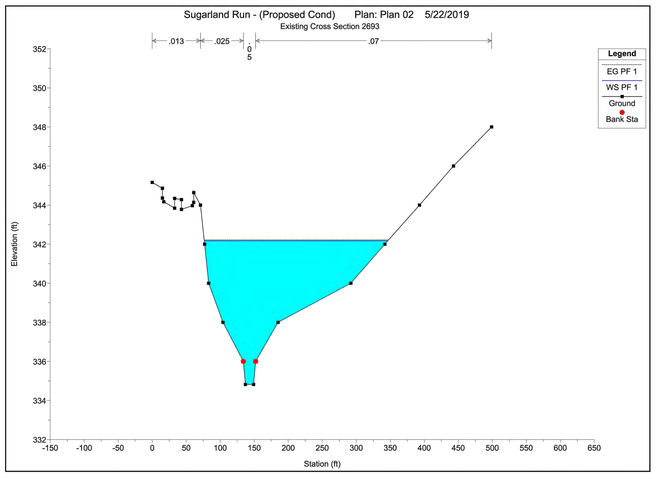


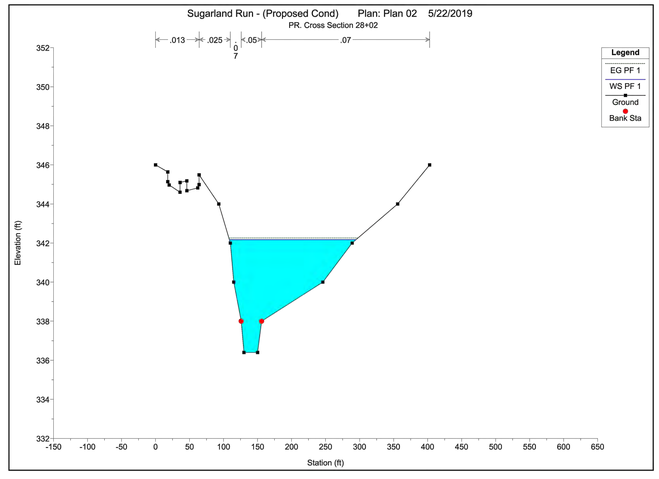












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KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

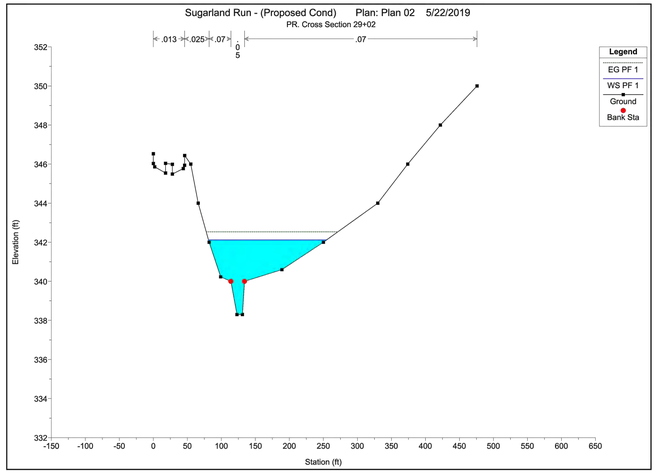
DISTRICT
TOWN OF HERNDON, VIRGINIA

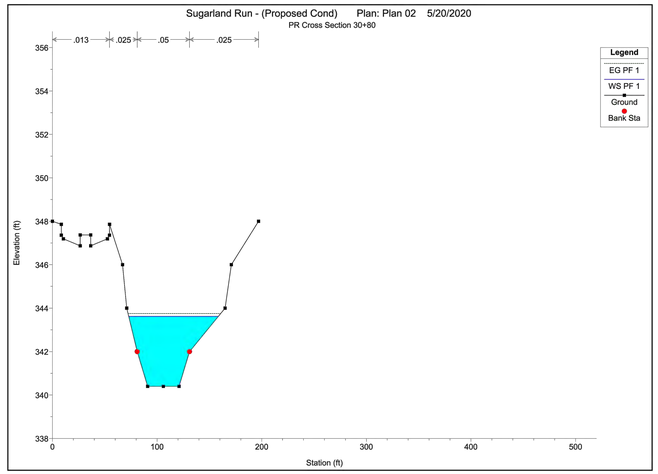
PROPOSED CROSS-SECTIONS

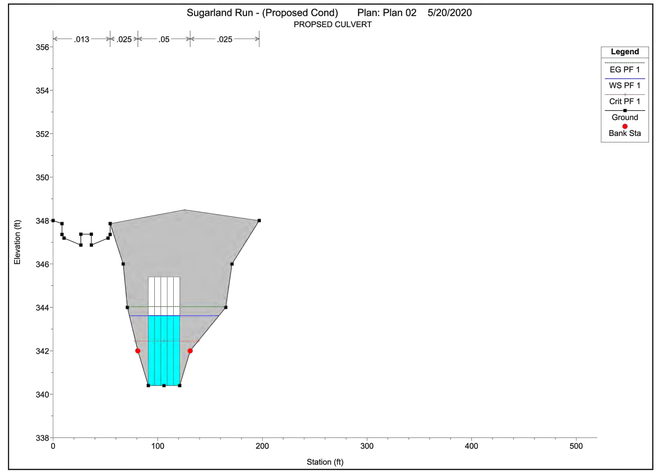
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	09.03

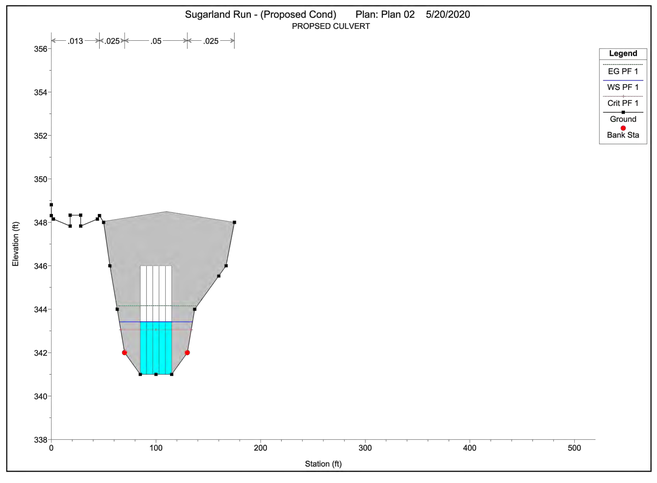
FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 09.01 PROPOSED CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:31:21 AM LAYOUT: 09.03

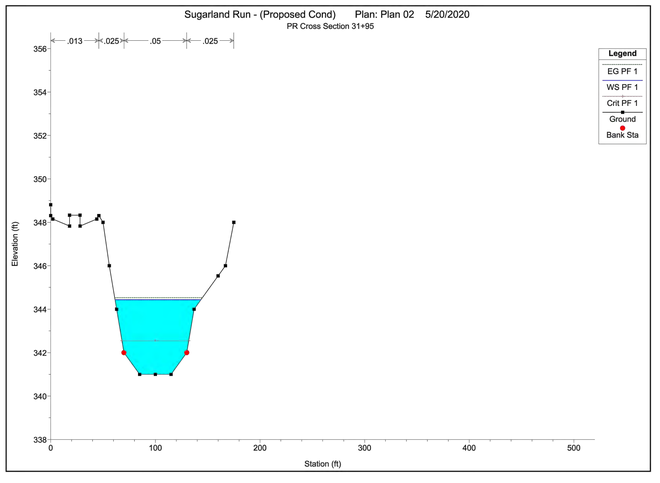
Vika Va, Llc. Plan By: 2020-10

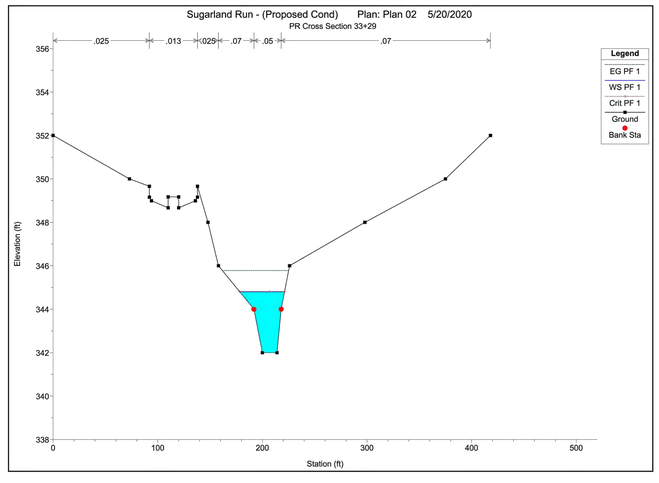


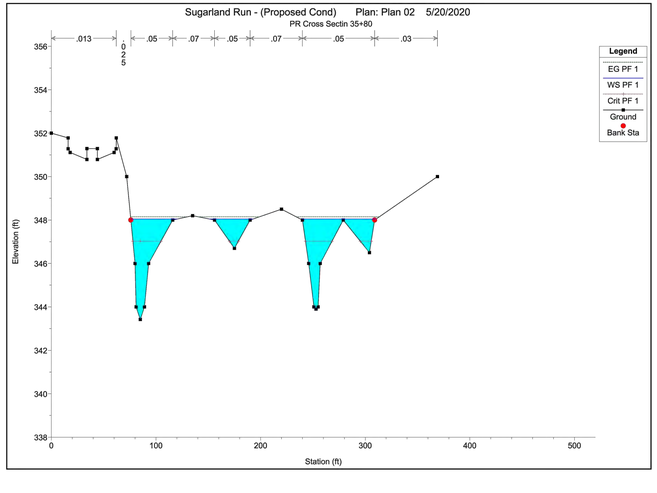


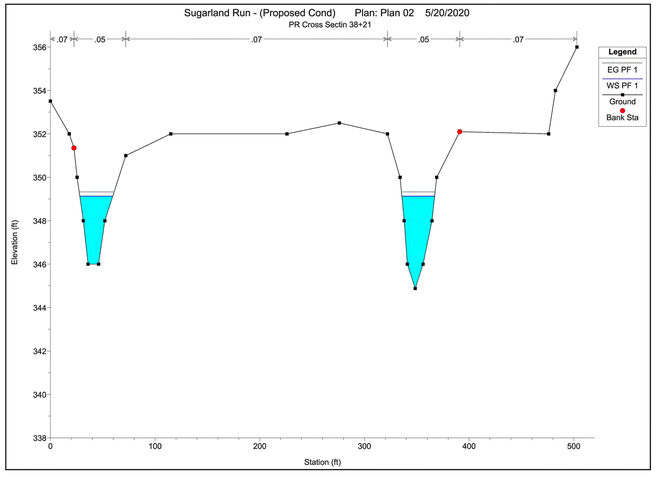












V 10.01

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

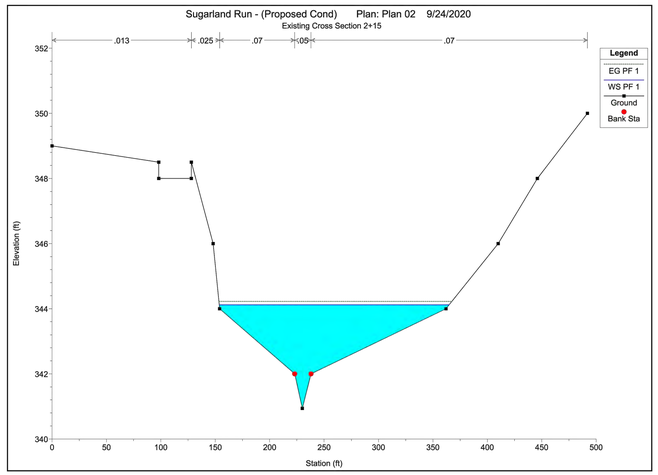
DISTRICT
TOWN OF HERNDON, VIRGINIA

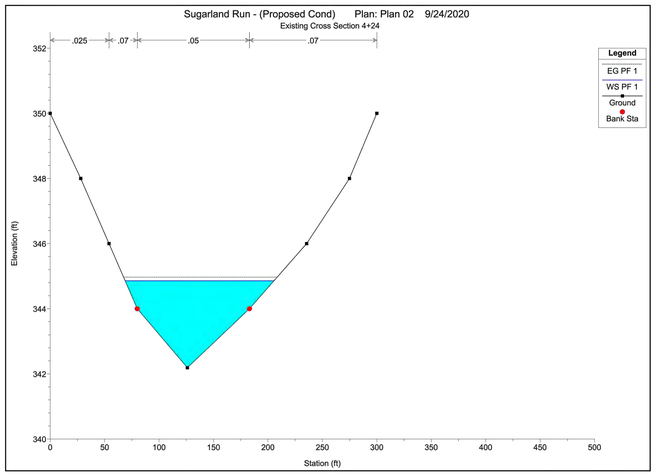
PROPOSED CROSS-SECTIONS

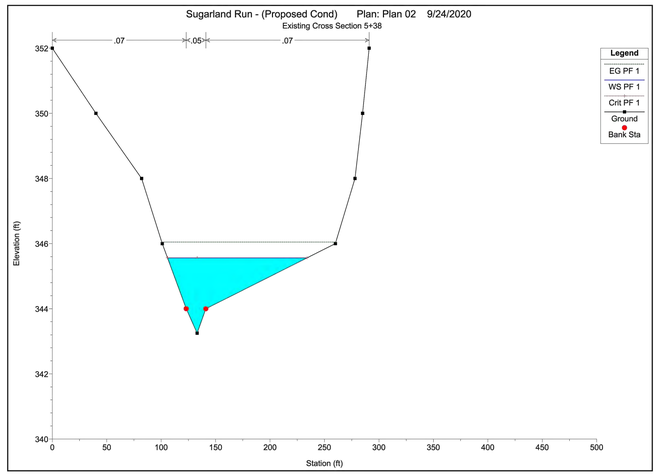
DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	09.04

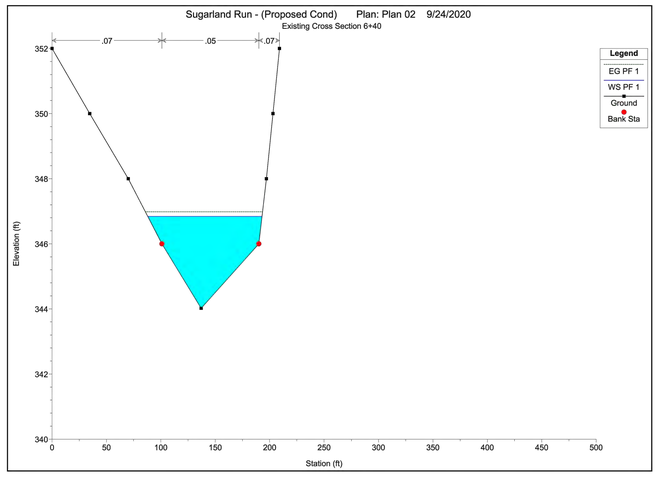
FILE: P:\projects\6045\6045X\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 09.01 PROPOSED CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:32:45 AM LAYOUT: 09.04

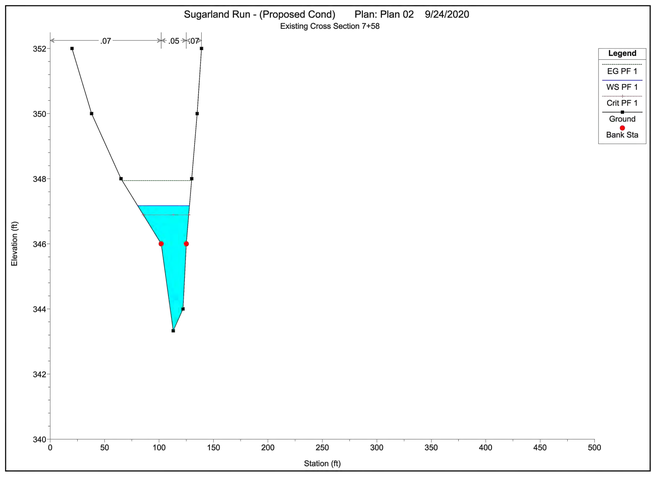
LAST EDIT: KMO PLOT BY: KMO











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PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
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10/16/2020
PROFESSIONAL ENGINEER

VV

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

PROPOSED CROSS-SECTIONS

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	09.05

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 09.01 PROPOSED CROSS SECTIONS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:34:25 AM LAYOUT: 09.05

HEC-RAS HEC-RAS 5.0.7 March 2019
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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PROJECT DATA
Project Title: Sugarland Run - (Proposed Cond)
Project File : Sugarland_Run_Proposed.prj
Run Date and Time: 9/24/2020 3:40:47 PM

Project in English units

Project Description:

PLAN DATA

Plan Title: Plan 02
Plan File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Proposed Model 2019.04.23\Sugarland_Run_Proposed.p02

Geometry Title: Sugarland Run - Proposed 2019
Geometry File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Proposed Model 2019.04.23\Sugarland_Run_Proposed.g04

Flow Title : Sug Run Ex Flow
Flow File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Proposed Model 2019.04.23\Sugarland_Run_Proposed.f02

Plan Summary Information:
Number of: Cross Sections = 32 Multiple Openings = 0
Culverts = 4 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Sug Run Ex Flow
Flow File : p:\projects\6045\6045X\DATA\Floodplain Study\HEC-RAS\Proposed Model 2019.04.23\Sugarland_Run_Proposed.f02

Flow Data (cfs)

River	Reach	RS	PF 1
sugarland run	2	758	500
sugarland run	1	3821	500
sugarland run	1	3580	500
sugarland run	main	2902	1000
sugarland run	main	1918	3100
sugarland run	main	1240	3500
sugarland run	main	1045	3500
sugarland run	main	628	3900
sugarland run	main	216	3900

Boundary Conditions

River	Reach	Profile	Upstream	Downstream

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	355.7	15	354	20	352	38	350	65	348
102	346	113	343.33	122	344	125	346	130	348
135	350	139	352						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	102	.05	125	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
102 125 70 100 110 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	347.94	Element	Left OB Channel Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	347.17	Reach Len. (ft)	70.00 100.00 110.00
Crit W.S. (ft)	346.89	Flow Area (sq ft)	12.69 65.64 1.71
E.G. Slope (ft/ft)	0.015375	Area (sq ft)	12.69 65.64 1.71
Q Total (cfs)	500.00	Flow (cfs)	23.35 473.65 3.01
Top Width (ft)	47.59	Top Width (ft)	21.67 23.00 2.93
Vel Total (ft/s)	6.25	Avg. Vel. (ft/s)	1.84 7.22 1.75
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	0.59 2.85 0.59
Conv. Total (cfs)	4032.4	Conv. (cfs)	188.3 3819.9 24.2
Length Wtd. (ft)	99.21	Wetted Per. (ft)	21.70 23.95 3.15
Min Ch El (ft)	343.33	Shear (lb/sq ft)	0.56 2.63 0.52
Alpha	1.27	Stream Power (lb/ft s)	1.03 18.98 0.91
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	0.42 1.49 1.12
C & E Loss (ft)	0.19	Cum SA (acres)	0.16 0.66 0.53

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 640

INPUT

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	352	34.6	350	70	348	101	346	137	344.02
190	346	197	348	203	350	209	352		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	101	.05	190	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
101 190 95 100 95 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	346.98	Element	Left OB Channel Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	346.84	Reach Len. (ft)	95.00 100.00 95.00
Crit W.S. (ft)		Flow Area (sq ft)	5.49 163.01 1.24
E.G. Slope (ft/ft)	0.004657	Area (sq ft)	5.49 163.01 1.24
Q Total (cfs)	500.00	Flow (cfs)	4.46 494.56 0.98
Top Width (ft)	104.99	Top Width (ft)	13.05 89.00 2.95
Vel Total (ft/s)	2.95	Avg. Vel. (ft/s)	0.81 3.03 0.79
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)	0.42 1.83 0.42
Conv. Total (cfs)	7327.1	Conv. (cfs)	65.3 7247.3 14.4
Length Wtd. (ft)	98.75	Wetted Per. (ft)	13.07 89.09 3.06
Min Ch El (ft)	344.02	Shear (lb/sq ft)	0.12 0.53 0.12
Alpha	1.05	Stream Power (lb/ft s)	0.10 1.61 0.09
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	0.40 1.23 1.12
C & E Loss (ft)	0.03	Cum SA (acres)	0.14 0.53 0.53

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 538

INPUT
Description: Existing Cross Section 5+38
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	352	40	350	82	348	101	346	123	344
133	343.25	141	344	260	346	278	348	285	350
291	352								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	123	.05	141	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
123 141 90 100 130 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	346.05	Element	Left OB Channel Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	345.56	Reach Len. (ft)	90.00 100.00 130.00
Crit W.S. (ft)	345.56	Flow Area (sq ft)	13.42 34.87 72.59
E.G. Slope (ft/ft)	0.025127	Area (sq ft)	13.42 34.87 72.59
Q Total (cfs)	500.00	Flow (cfs)	38.20 254.65 207.15
Top Width (ft)	128.13	Top Width (ft)	17.18 18.00 92.95
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)	2.85 7.30 2.85
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.78 1.94 0.78
Conv. Total (cfs)	3154.2	Conv. (cfs)	241.0 1606.5 1306.8
Length Wtd. (ft)	106.01	Wetted Per. (ft)	17.25 18.06 92.96
Min Ch El (ft)	343.25	Shear (lb/sq ft)	1.22 3.03 1.23
Alpha	1.82	Stream Power (lb/ft s)	3.47 22.12 3.50
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	0.38 1.00 1.04
C & E Loss (ft)	0.11	Cum SA (acres)	0.10 0.41 0.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 424

INPUT
Description: Existing Cross Section 4+24
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	350	28	348	54	346	80	344	126	342.19
183	344	235.5	346	274.9	348	300	350		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	54	.07	80	.05	183	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
80 183 80 200 145 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	344.97	Element	Left OB Channel Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	344.86	Reach Len. (ft)	80.00 200.00 145.00
Crit W.S. (ft)		Flow Area (sq ft)	4.80 181.72 9.69
E.G. Slope (ft/ft)	0.003851	Area (sq ft)	4.80 181.72 9.69
Q Total (cfs)	500.00	Flow (cfs)	3.59 489.14 7.27
Top Width (ft)	136.73	Top Width (ft)	11.17 103.00 22.56
Vel Total (ft/s)	2.55	Avg. Vel. (ft/s)	0.75 2.69 0.75
Max Chl Dpth (ft)	2.67	Hydr. Depth (ft)	0.43 1.76 0.43
Conv. Total (cfs)	8057.1	Conv. (cfs)	57.9 7882.1 117.1
Length Wtd. (ft)	172.26	Wetted Per. (ft)	11.20 103.06 22.57
Min Ch El (ft)	342.19	Shear (lb/sq ft)	0.10 0.42 0.10
Alpha	1.09	Stream Power (lb/ft s)	0.08 1.14 0.08
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	0.36 0.75 0.91
C & E Loss (ft)	0.00	Cum SA (acres)	0.07 0.27 0.25

CROSS SECTION

RIVER: sugarland run
REACH: 2 RS: 215

INPUT
Description: Existing Cross Section 2+15
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	349	98	348.5	98.01	348	128	348	128.01	348.5		
148	346	154	344	223	342	230	340.94	238	342		
362	344	410	346	446	348	492	350				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	128.01	.025	154	.07	223	.05	238	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
223 238 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	344.22	Element	Left OB Channel Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	344.12	Reach Len. (ft)	200.00 200.00 200.00
Crit W.S. (ft)		Flow Area (sq ft)	77.41 39.77 139.25
E.G. Slope (ft/ft)	0.004867	Area (sq ft)	77.41 39.77 139.25
Q Total (cfs)	500.00	Flow (cfs)	123.70 156.94 219.36
Top Width (ft)	211.28	Top Width (ft)	69.36 15.00 126.92
Vel Total (ft/s)	1.95	Avg. Vel. (ft/s)	1.60 3.95 1.58
Max Chl Dpth (ft)	3.18	Hydr. Depth (ft)	1.12 2.65 1.10
Conv. Total (cfs)	7166.8	Conv. (cfs)	1773.1 2249.5 3144.2
Length Wtd. (ft)	200.00	Wetted Per. (ft)	69.41 15.15 126.94
Min Ch El (ft)	340.94	Shear (lb/sq ft)	0.34 0.80 0.33
Alpha	1.74	Stream Power (lb/ft s)	0.54 3.15 0.53
Frctn Loss (ft)	1.66	Cum Volume (acre-ft)	0.29 0.24 0.67
C & E Loss (ft)	0.03	Cum SA (acres)	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3821

INPUT
Description: PR Cross Sectin 38+21
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	353.51	18	352	22.5	351.35	25.5	350	31.5	348		
36	346	46	346	52	348	72	351	115	352		
226	352	276	352.5	322	352	334	350	338	348		
341	346	348.5	344.88	356	346	364.5	348	369	350		
391	352.1	476	352	482.5	354	503	356				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.07	22.5	.05	72	.07	322	.05	391	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
22.5 391 250 241 230 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	349.33	Element	Left OB Channel Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.050
W.S. Elev (ft)	349.13	Reach Len. (ft)	250.00 241.00 230.00
Crit W.S. (ft)		Flow Area (sq ft)	142.70
E.G. Slope (ft/ft)	0.004778	Area (sq ft)	142.70
Q Total (cfs)	500.00	Flow (cfs)	500.00
Top Width (ft)	62.79	Top Width (ft)	62.79
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)	3.50
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	2.27
Conv. Total (cfs)	7233.5	Conv. (cfs)	7233.5
Length Wtd. (ft)	241.00	Wetted Per. (ft)	65.32
Min Ch El (ft)	344.88	Shear (lb/sq ft)	0.65
Alpha	1.00	Stream Power (lb/ft s)	2.28
Frctn Loss (ft)	1.15	Cum Volume (acre-ft)	0.16 2.75 0.42
C & E Loss (ft)	0.03	Cum SA (acres)	0.08 1.37 0.04

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run

REACH: 1 RS: 3580

INPUT
Description: PR Cross Sectin 35+80
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	352	16	351.78	16.01	351.28	18	351.11	34	350.79
34.01	351.29	44	351.29	44.01	350.79	60	351.11	62	351.28
62.01	351.78	72	350	76	348	80	346	81	344
85	343.42	89	344	93	346	116	348	135	348.2
156	348	175	346.7	190	348	220	348.5	240	348
246	346	251	344	253	343.9	255	344	257	346
279	348	304	346.5	309	348	369	350		

Manning's n Values num= 8

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	62.01	.025	76	.05	116	.07	156	.05
190	.07	240	.05	309	.03				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
76 309 205 251 240 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	348.15	Element	Left OB Channel Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.000 0.050 0.030
W.S. Elev (ft)	348.05	Reach Len. (ft)	205.00 251.00 240.00
Crit W.S. (ft)	347.02	Flow Area (sq ft)	0.00 193.16 0.03
E.G. Slope (ft/ft)	0.004768	Area (sq ft)	0.00 193.16 0.03
Q Total (cfs)	500.00	Flow (cfs)	0.00 499.99 0.01
Top Width (ft)	158.58	Top Width (ft)	0.09 157.08 1.41
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)	0.31 2.59 0.28
Max Chl Dpth (ft)	4.63	Hydr. Depth (ft)	0.02 1.23 0.02
Conv. Total (cfs)	7241.2	Conv. (cfs)	0.0 7241.0 0.1
Length Wtd. (ft)	250.52	Wetted Per. (ft)	0.10 161.43 1.41
Min Ch El (ft)	343.42	Shear (lb/sq ft)	0.36 0.01
Alpha	1.00	Stream Power (lb/ft s)	0.92 0.00
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	0.16 1.83 0.42
C & E Loss (ft)	0.09	Cum SA (acres)	0.08 0.76 0.04

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3329

INPUT
Description: PR Cross Section 33+29
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	352	73	350	92	349.66	92.01	349.16	94	348.99		
110	348.67	110.01	349.17	120	349.17	120.01	348.67	136	348.99		
138	349.16	138.01	349.66	148	348	158	346	192	344		
200	342	214	342	218	344	226	346	298	348		
375	350	418	352								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.025	92	.013	138.01	.025	158	.07	192	.05		
218	.07										

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
192 218 114 114 114 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	345.78	Element	Left OB Channel Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.070 0.050 0.070
W.S. Elev (ft)	344.81	Reach Len. (ft)	114.00 114.00 114.00
Crit W.S. (ft)	344.81	Flow Area (sq ft)	5.55 61.00 1.31
E.G. Slope (ft/ft)	0.024072	Area (sq ft)	5.55 61.00 1.31
Q Total (cfs)	500.00	Flow (cfs)	9.97 487.73 2.30
Top Width (ft)	42.97	Top Width (ft)	13.73 26.00 3.23
Vel Total (ft/s)	7.37	Avg. Vel. (ft/s)	1.80 7.99 1.76
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	0.40 2.35 0.40
Conv. Total (cfs)	3222.7	Conv. (cfs)	64.3 3143.6 14.8
Length Wtd. (ft)	114.00	Wetted Per. (ft)	13.76 26.72 3.33
Min Ch El (ft)	342.00	Shear (lb/sq ft)	0.61 3.43 0.59

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 344.52 Element Left OB Channel Right OB
Vel Head (ft) 0.09 Wt. n-Val. 0.025 0.050 0.025
W.S. Elev (ft) 344.44 Reach Len. (ft) 75.00 95.00 10.00
Crit W.S. (ft) 342.55 Flow Area (sq ft) 10.41 191.32 11.51
E.G. Slope (ft/ft) 0.001351 Area (sq ft) 10.41 191.32 11.51
Q Total (cfs) 500.00 Flow (cfs) 25.29 452.50 22.22
Top Width (ft) 82.12 Top Width (ft) 8.54 60.00 13.58
Vel Total (ft/s) 2.34 Avg. Vel. (ft/s) 2.43 2.37 1.93
Max Chl Dpth (ft) 3.44 Hydr. Depth (ft) 1.22 3.19 0.85
Conv. Total (cfs) 13600.8 Conv. (cfs) 687.8 12308.6 604.3
Length Wtd. (ft) 95.00 Wetted Per. (ft) 8.88 60.07 13.88
Min Ch El (ft) 341.00 Shear (lb/sq ft) 0.10 0.27 0.07
Alpha 1.01 Stream Power (lb/ft s) 0.24 0.64 0.14
Frctn Loss (ft) Cum Volume (acre-ft) 0.12 0.76 0.40
C & E Loss (ft) Cum SA (acres) 0.01 0.12 0.00

CULVERT

RIVER: sugarland run
REACH: 1 RS: 3175

INPUT
Description: PROPSED CULVERT
Distance from Upstream XS = 32
Deck/Roadway Width = 32
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 3

Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
44.06 348	110 348.5	175 348

Upstream Bridge Cross Section Data
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	348.81	.01	348.31	2.01	348.15	18.01	347.83	18.02	348.33		
28.02	348.33	28.03	347.83	44.03	348.15	46.03	348.31	46.04	348.31		
50	348	56	346	63	344	70	342	85	341		
100	341	115	341	130	342	137	344	160	345.533		
167	346	175	348								

Alpha	1.15	Stream Power (lb/ft s)	1.09	27.43	1.04
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	0.14	1.09	0.41
C & E Loss (ft)	0.27	Cum SA (acres)	0.04	0.23	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3195

INPUT
Description: PR Cross Section 31+95
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	348.81	.01	348.31	2.01	348.15	18.01	347.83	18.02	348.33		
28.02	348.33	28.03	347.83	44.03	348.15	46.03	348.31	46.04	348.31		
50	348	56	346	63	344	70	342	85	341		
100	341	115	341	130	342	137	344	160	345.533		
167	346	175	348								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	46.04	.025	70	.05	130	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
70 130 75 95 10 .1 .3

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	54.54	.025	81	.05	131	.025

Bank Sta: Left Right Coeff Contr. Expan.
81 131 .1 .3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 5

Culvert Name Shape Rise Span
Culvert #1 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef

20 75 .013 .013 0 .5 1
Upstream Elevation = 341
Centerline Station = 88
Downstream Elevation = 340.4
Centerline Station = 94

Culvert Name Shape Rise Span
Culvert #2 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 75 .013 .013 0 .5 1
Upstream Elevation = 341
Centerline Station = 94
Downstream Elevation = 340.4
Centerline Station = 100

Culvert Name Shape Rise Span
Culvert #3 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 75 .013 .013 0 .5 1
Upstream Elevation = 341
Centerline Station = 100
Downstream Elevation = 340.4
Centerline Station = 106

Culvert Name Shape Rise Span
Culvert #4 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 75 .013 .013 0 .5 1
Upstream Elevation = 341
Centerline Station = 106
Downstream Elevation = 340.4
Centerline Station = 112

Culvert Name Shape Rise Span
Culvert #1 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef

Culvert Name Shape Rise Span
Culvert #5 Box 5 6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 75 .013 .013 0 .5 1
Upstream Elevation = 341
Centerline Station = 112
Downstream Elevation = 340.4
Centerline Station = 118

CROSS SECTION

RIVER: sugarland run
REACH: 1 RS: 3080

INPUT
Description: PR Cross Section 30+80
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	348	8.5	347.86	8.51	347.36	10.51	347.19	26.51	346.87
26.52	347.37	36.52	347.37	36.53	346.87	52.53	347.19	54.53	347.36
54.54	347.86	67	346	71	344	81	342	91	340.4
106	340.4	121	340.4	131	342	165	344	171	346
197	348								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	54.54	.025	81	.05	131	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
81 131 100 90 20 .1 .3

CROSS SECTION OUTPUT Profile

Q Total (cfs)	1000.00	Flow (cfs)		53.34	511.30	435.36			
Top Width (ft)	186.25	Top Width (ft)		17.47	30.00	138.78			
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)		1.30	3.10	1.29			
Max Chl Dpth (ft)	5.77	Hydr. Depth (ft)		2.34	5.51	2.42			
Conv. Total (cfs)	29596.5	Conv. (cfs)		1578.6	15132.8	12885.1			
Length Wtd. (ft)	73.50	Wetted Per. (ft)		18.04	30.52	138.86			
Min Ch El (ft)	336.40	Shear (lb/sq ft)		0.16	0.39	0.17			
Alpha	1.68	Stream Power (lb/ft s)		0.21	1.19	0.22			
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		30.35	29.52	51.51			
C & E Loss (ft)	0.02	Cum SA (acres)		9.50	2.38	9.75			

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2693

INPUT
Description: Existing Cross Section 2693
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	345.16	15	344.86	15.01	344.36	17	344.17	33	343.84
33.01	344.34	43	344.28	43.01	343.78	59	343.97	61	344.14
61.01	344.64	71	344	77	342	83	340	104	338
134	336	137	334.82	149	334.82	152	336	185	338
292	340	342	342	393	344	443	346	499	348

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	71	.025	134	.05	152	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
134 152 135 116 42 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.025	0.050	0.070
W.S. Elev (ft)	342.18	Reach Len. (ft)	135.00	116.00	42.00
Crit W.S. (ft)		Flow Area (sq ft)	229.28	128.93	570.53

Conv. Total (cfs)	110014.4	Conv. (cfs)		13496.3	23453.0	73065.1			
Length Wtd. (ft)	267.10	Wetted Per. (ft)		50.15	20.35	300.84			
Min Ch El (ft)	332.80	Shear (lb/sq ft)		0.01	0.05	0.02			
Alpha	1.46	Stream Power (lb/ft s)		0.01	0.05	0.01			
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		29.43	28.02	48.24			
C & E Loss (ft)	0.00	Cum SA (acres)		9.24	2.17	8.84			

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2365

INPUT
Description: PR. Cross-sections 23+65
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	345.89	95	343.03	106	342.83	106.01	342.33	108	342.16
124	341.87	124.01	342.37	134	342.37	134.01	341.87	150	342.16
152	342.33	152.01	342.83	162	342	168	340	174	338
202	334	212	333	220	333	230	334	306	336
404	338	509	340	521	342	523.5	344	527	346

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	162	.025	202	.05	230	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
202 230 75 98 180 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	152		F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.025	0.050	0.070
W.S. Elev (ft)	342.16	Reach Len. (ft)	75.00	98.00	180.00
Crit W.S. (ft)		Flow Area (sq ft)	198.53	246.46	1395.42
E.G. Slope (ft/ft)	0.000045	Area (sq ft)	203.15	246.46	1395.42
Q Total (cfs)	1000.00	Flow (cfs)	226.56	208.99	564.46
Top Width (ft)	393.06	Top Width (ft)	73.86	28.00	291.20

E.G. Elev (ft)	342.07	Element		Left OB	Channel	Right OB			
Vel Head (ft)	0.14	Wt. n-Val.		0.051	0.050	0.070			
W.S. Elev (ft)	341.93	Reach Len. (ft)		206.00	206.00	206.00			
Crit W.S. (ft)		Flow Area (sq ft)		310.52	331.92	565.33			
E.G. Slope (ft/ft)	0.000695	Area (sq ft)		310.52	331.92	565.33			
Q Total (cfs)	3100.00	Flow (cfs)		866.07	1252.59	981.34			
Top Width (ft)	180.53	Top Width (ft)		48.83	29.08	102.62			
Vel Total (ft/s)	2.57	Avg. Vel. (ft/s)		2.79	3.77	1.74			
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)		6.36	11.41	5.51			
Conv. Total (cfs)	117630.8	Conv. (cfs)		32863.2	47530.0	37237.5			
Length Wtd. (ft)	206.00	Wetted Per. (ft)		50.16	31.38	103.43			
Min Ch El (ft)	330.15	Shear (lb/sq ft)		0.27	0.46	0.24			
Alpha	1.35	Stream Power (lb/ft s)		0.75	1.73	0.41			
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)		25.43	25.07	21.21			
C & E Loss (ft)	0.02	Cum SA (acres)		8.28	1.87	3.32			

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1712

INPUT
Description: PR. CROSS SECTION 17+12
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
840	346.79	840.01	346.29	842	346.12	858	346.73	858.01	347.23
868	347.23	868.01	346.73	884	346.12	886	346.29	886.01	346.79
896	346	902	344	908	342	914	340	920	338
926	336	935	334	970	332	974.9	331.79	988.7	331.07
989.12	330	990.97	328.01	1000	328.01	1007.7	328.22	1008.95	330
1009.2	332	1009.45	332.38	1026.08	332.52	1045.2	334	1051.5	334.64
1074.96	335.41	1093.96	335.96	1094.2	336	1101.13	338	1105.7	340
1110.36	342	1115.05	344	1119.7	346	1124.2	348	1128.2	350

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
840	.013	886.01	.025	935	.07	988.7	.05	1009.2	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
988.7 1009.2 244 244 244 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.055	0.050	0.070
W.S. Elev (ft)	341.75	Reach Len. (ft)	195.00	195.00	195.00
Crit W.S. (ft)		Flow Area (sq ft)	570.17	458.79	828.43
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	570.17	458.79	828.43
Q Total (cfs)	3500.00	Flow (cfs)	1086.02	1210.04	1203.94
Top Width (ft)	183.87	Top Width (ft)	65.76	31.00	87.11
Vel Total (ft/s)	1.88	Avg. Vel. (ft/s)	1.90	2.64	1.45
Max Chl Dpth (ft)	16.05	Hydr. Depth (ft)	8.67	14.80	9.51
Conv. Total (cfs)	226009.1	Conv. (cfs)	70128.7	78137.2	77743.1
Length Wtd. (ft)	195.00	Wetted Per. (ft)	67.60	33.44	89.12
Min Ch El (ft)	325.70	Shear (lb/sq ft)	0.13	0.21	0.14
Alpha	1.20	Stream Power (lb/ft s)	0.24	0.54	0.20
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	17.38	19.47	10.03
C & E Loss (ft)	0.00	Cum SA (acres)	7.26	1.46	1.89

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1045

INPUT
Description: SPRING ST CULVER US 10+45
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
558.55	342	858.5	340	895.5	340.88	897.5	340.71	897.51	341.21
898.01	341.21	908.5	340	928.05	338	956.5	336	961.86	334
964.55	332	966.55	330	967.55	329.07	968.3	328	973.96	326.5
988.92	326.27	990.97	325	1000	325	1008.3	325	1014.8	326.64
1029.2	326.92	1042.3	328	1044.8	328.68	1050.55	330	1059.34	332
1062.84	334	1066.32	336	1069.91	338	1073.81	340	1100.4	342

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
558.55	.013	898.01	.025	964.55	.07	988.92	.05	1014.8	.07

Bank Sta: Left Right Coeff Contr. Expan.
988.92 1014.8 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
558.55	897.51		F

Downstream Deck/Roadway Coordinates
num= 9

Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
676.87 340	0 763.87 340	0 772.87 339.6 0
808.87 339.6	0 824.87 339.6	0 915.54 340 0
1000 340.5	0 1100 341	0 1200 342 0

Downstream Embankment side slope = 2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
Culvert #1 Box 12 10
FHWA Chart # 9 - flared wingwalls and Inlet top edge bevel
FHWA Scale # 1 - 45 deg Wingwall flare; inlet top edge bevel=0.043D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
17 186 .013 .013 0 .5 1

Number of Barrels = 4
Upstream Elevation = 324.92
Centerline Stations
Sta. Sta. Sta. Sta.
983.5 994.5 1005.5 1016.5
Downstream Elevation = 323.9
Centerline Stations
Sta. Sta. Sta. Sta.
983.5 994.5 1005.5 1016.5

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 825

INPUT
Description: SPRING ST CULVER DS 8+25
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
652.87	342	676.87	340	682.37	338	690.2	336	702.87	335.8
717.87	336	732.87	338	763.87	340	772.87	339.6	808.87	339.6
808.87	340.1	824.87	340.1	824.87	339.6	894.87	340.5	923.87	340
930.27	338	936.69	336	939.38	335.21	942.98	334	948.54	332
955.69	330	960.58	328	961.5	327.57	979.61	327.5	987.9	326.53
988.85	326	991.36	324.86	992	324	1000	324	1008	324
1008.9	324.81	1011	326	1013.12	326.63	1021.24	326.6	1041.5	328
1045.5	330	1049.75	332	1052.5	332.88	1055	334	1060	336

RIVER: sugarland run
REACH: main RS: 628

INPUT
Description: EX. CROSS SECTION 6+28
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
714.58	350	714.59	350	715.58	340	726.28	338	731.33	336
737.98	334	746.08	332	789.09	330	799.58	330	812.38	332
817.58	334	823.58	336	828.58	338	833.58	340	838.58	340.6
873.08	340	873.09	340.5	890.08	340.25	890.09	339.75	925.08	339.15
931.18	338	934.86	336	938.53	334	942.18	332	946.18	330
949.68	328	953.68	326	957.5	323.83	975	323.65	981.75	323.53
1000	323.38	1023.25	322.95	1032.9	324	1037.5	326	1043.4	328
1049.7	328.85	1051.2	330	1055.05	332	1062.2	334	1069.7	335.83
1070.2	336	1075.4	338	1080.2	340	1084.7	342	1090.34	344

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
714.58	.07	838.58	.013	925.08	.07	953.68	.05	1037.5	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
953.68 1037.5 197 197 197 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
714.58	726		F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	340.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.065	0.050	0.070
W.S. Elev (ft)	340.89	Reach Len. (ft)	197.00	197.00	197.00
Crit W.S. (ft)	327.69	Flow Area (sq ft)	1191.92	1448.96	349.44
E.G. Slope (ft/ft)	0.000089	Area (sq ft)	1211.33	1448.96	349.44
Q Total (cfs)	3900.00	Flow (cfs)	940.90	2694.11	265.00
Top Width (ft)	366.70	Top Width (ft)	238.19	83.82	44.69
Vel Total (ft/s)	1.30	Avg. Vel. (ft/s)	0.79	1.86	0.76
Max Chl Dpth (ft)	17.94	Hydr. Depth (ft)	5.24	17.29	7.82
Conv. Total (cfs)	413292.0	Conv. (cfs)	99709.2	285500.6	28082.3
Length Wtd. (ft)	197.00	Wetted Per. (ft)	234.41	84.87	47.44
Min Ch El (ft)	322.95	Shear (lb/sq ft)	0.03	0.09	0.04
Alpha	1.52	Stream Power (lb/ft s)	0.02	0.18	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	8.42	12.16	2.70
C & E Loss (ft)		Cum SA (acres)	3.22	1.04	0.78

E.G. Slope (ft/ft)	0.000188	Area (sq ft)		229.28	128.93	570.53			
Q Total (cfs)	1000.00	Flow (cfs)		467.36	192.25	340.39			
Top Width (ft)	270.12	Top Width (ft)		57.54	18.00	194.58			
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)		2.04	1.49	0.60			
Max Chl Dpth (ft)	7.36	Hydr. Depth (ft)		3.98	7.16	2.93			
Conv. Total (cfs)	72856.8	Conv. (cfs)		34050.4	14006.7	24799.7			
Length Wtd. (ft)	89.34	Wetted Per. (ft)		58.05	18.45	194.70			
Min Ch El (ft)	334.82	Shear (lb/sq ft)		0.05	0.08	0.03			
Alpha	2.15	Stream Power (lb/ft s)		0.09	0.12	0.02			
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		30.15	29.15	51.02			
C & E Loss (ft)	0.01	Cum SA (acres)		9.44	2.32	9.57			

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2577

INPUT
Description: Existing Cross Section 25+77
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	343.53	.01	343.03	2	342.86	18	342.66	18.01	343.16
28	343.09	28.01	342.59	44	342.85	46	343.01	46.01	343.51
56	342	62	340	68	338	80	336	90	334.6
100	334.6	110	334.6	120	336	220	338	303	340
359	342	386	344	434	346	486	348		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	46.01	.025	68	.07	80	.05	120	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
80 120 85 106 85 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.053	0.050	0.070
W.S. Elev (ft)	342.18	Reach Len. (ft)	85.00	106.00	85.00
Crit W.S. (ft)		Flow Area (sq ft)	88.43	289.21	848.28
E.G. Slope (ft/ft)	0.000156	Area (sq ft)	88.43	289.21	848.28
Q Total (cfs)	1000.00	Flow (cfs)	78.88	400.68	520.44
Top Width (ft)	306.62	Top Width (ft)	25.19	40.00	241.43

Vel Total (ft/s)	0.54	Avg. Vel. (ft/s)		1.14	0.85	0.40			
Max Chl Dpth (ft)	9.16	Hydr. Depth (ft)		4.74	8.80	4.79			
Conv. Total (cfs)	149059.9	Conv. (cfs)		33770.3	31151.7	84137.9			
Length Wtd. (ft)	142.87	Wetted Per. (ft)		42.86	28.10	291.49			
Min Ch El (ft)	333.00	Shear (lb/sq ft)		0.01	0.02	0.01			
Alpha	1.82	Stream Power (lb/ft s)		0.01	0.02	0.01			
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		28.89	27.50	37.11			
C & E Loss (ft)	0.00	Cum SA (acres)		9.05	2.11	6.39			

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 2267

INPUT
Description: PR Cross Section 22+67
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	344	91	342	98.5	341.85	107	342	120	342.27
122	342.44	122.01	342.94	122.5	342.94	133	342	139	340
212.5	333	216	334	222	335	330	336	478	338
529	340	541	342	551	344				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.013	133	.025	153.5	.07	175	.05	222	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
200 216 365 365 365 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
0	122		F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	342.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.049	0.050	0.069
W.S. Elev (ft)	342.16	Reach Len. (ft)	365.00	365.00	365.00
Crit W.S. (ft)		Flow Area (sq ft)	386.96	142.76	1703.06
E.G. Slope (ft/ft)	0.000036	Area (sq ft)	391.83	142.76	1703.06

E.G. Elev (ft)	341.95	Element		Left OB	Channel	Right OB			
Vel Head (ft)	0.07	Wt. n-Val.		0.058	0.050	0.070			
W.S. Elev (ft)	341.88	Reach Len. (ft)		244.00	244.00	244.00			
Crit W.S. (ft)		Flow Area (sq ft)		617.56	278.46	702.53			
E.G. Slope (ft/ft)	0.000374	Area (sq ft)		617.56	278.46	702.53			
Q Total (cfs)	3100.00	Flow (cfs)		1254.19	803.15	1042.67			
Top Width (ft)	201.71	Top Width (ft)		80.33	20.50	100.88			
Vel Total (ft/s)	1.94	Avg. Vel. (ft/s)		2.03	2.88	1.48			
Max Chl Dpth (ft)	13.87	Hydr. Depth (ft)		7.69	13.58	6.96			
Conv. Total (cfs)	160209.3	Conv. (cfs)		64817.0	41506.9	53885.4			
Length Wtd. (ft)	244.00	Wetted Per. (ft)		81.59	24.79	102.28			
Min Ch El (ft)	328.01	Shear (lb/sq ft)		0.18	0.26	0.16			
Alpha	1.21	Stream Power (lb/ft s)		0.36	0.76	0.24			
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)		23.24	23.63	18.21			
C & E Loss (ft)	0.00	Cum SA (acres)		7.97	1.75	2.84			

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1468

INPUT
Description: PR CROSS SECTION 14+68
PR. CROSS SECTION 14+68
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
868	349.32	877.99	349.22	878	348.72	894	349.06	895.99	349.23
896	349.73	909	348	915	346	921	344	927	342
933	340	939	338	945	336	951	334	957	332
962	329.96	985.3	329.18	985.5	329.073	987.5	328	988.5	326.91
1000	326.6	1008.75	326.6	1010.5	328	1011.25	329.46	1012.92	330
1033	330.27	1048.89	331.25	1056.5	332	1066.6	332.62	1075	334
1083.67	336	1087.5	338	1091.5	340	1095	342	1098.5	344
1102	346	1105.5	348	1257.73	350	1266	352		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
868	.013	896	.025	957	.07	985.5	.05	1012.92	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
985.5 1012.92 228 228 228 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.053	0.050	0.070
W.S. Elev (ft)	341.81	Reach Len. (ft)	228.00	228.00	228.00
Crit W.S. (ft)		Flow Area (sq ft)	486.07	402.42	746.22
E.G. Slope (ft/ft)	0.000246	Area (sq ft)	486.07	402.42	746.22
Q Total (cfs)	3100.00	Flow (cfs)	964.53	1067.01	1068.46
Top Width (ft)	167.08	Top Width (ft)	57.92	27.42	81.74
Vel Total (ft/s)	1.90	Avg. Vel. (ft/s)	1.98	2.65	1.43
Max Chl Dpth (ft)	15.21	Hydr. Depth (ft)	8.39	14.68	9.13
Conv. Total (cfs)	197740.6	Conv. (cfs)	61524.8	68061.7	68154.1
Length Wtd. (ft)	228.00	Wetted Per. (ft)	59.95	29.64	83.61
Min Ch El (ft)	326.60	Shear (lb/sq ft)	0.12	0.21	0.14
Alpha	1.21	Stream Power (lb/ft s)	0.25	0.55	0.20
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	20.15	21.72	14.15
C & E Loss (ft)	0.00	Cum SA (acres)	7.59	1.62	2.33

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 1240

INPUT
Description: PR. CROSS SECTION 1240
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
820.99	345.5	821	345	823	344.73	850.99	344.21	851	344.71
854.99	344.6	855	344.1	894	344.98	895.99	345.15	896	345.65
909	344	915	342	921	340	927	338	933	336
939	334	945	332	948	330.89	981.5	328.94	984.5	328.47
989.6	327.5	990.25	326.47	992	325.81	1000	325.7	1006	325.7
1007	326.47	1007.75	328.09	1009.75	328.47	1012.5	329.77	1031.3	330.22
1036.8	330.35	1041	330.47	1071	331.47	1074.3	332.47	1084	334.47
1089	336.47	1093.5	338.47	1097.12	340.47	1101	342.47	1104.5	344.47
1118.4	346.47								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
820.99	.013	896	.025	945	.07	981.5	.05	1012.5	.07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
981.5 1012.5 195 195 195 .1 .3

558.55 897.51 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	341.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.049	0.050	0.070
W.S. Elev (ft)	341.69	Reach Len. (ft)	220.00	220.00	220.00
Crit W.S. (ft)	330.91	Flow Area (sq ft)	610.67	425.22	699.21
E.G. Slope (ft/ft)	0.000251	Area (sq ft)	871.93	425.22	699.21
Q Total (cfs)	3500.00	Flow (cfs)	1259.60	1275.28	965.12
Top Width (ft)	490.70	Top Width (ft)	383.38	25.88	81.43
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)	2.06	3.00	1.38
Max Chl Dpth (ft)	16.69	Hydr. Depth (ft)	6.68	16.43	8.59
Conv. Total (cfs)	220942.8	Conv. (cfs)	79514.4	80504.0	60924.4
Length Wtd. (ft)	220.00	Wetted Per. (ft)	94.62	26.45	84.08
Min Ch El (ft)	325.00	Shear (lb/sq ft)	0.10	0.25	0.13
Alpha	1.31	Stream Power (lb/ft s)	0.21	0.76	0.18
Frctn Loss (ft)		Cum Volume (acre-ft)	14.16	17.49	6.61
C & E Loss (ft)		Cum SA (acres)

FHWA Scale # 1 - 45 deg Wingwall flare; inlet top edge bevel=0.043D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
20 155 .013 .013 0 .5 1
Number of Barrels = 4
Upstream Elevation = 322.58
Centerline Stations
Sta. Sta. Sta. Sta. Sta.
983.5 994.5 1005.5 1016.5
Downstream Elevation = 322.03
Centerline Stations
Sta. Sta. Sta. Sta. Sta.
983.5 994.5 1005.5 1016.5

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 431

INPUT
Description: EX. CROSS SECTION 4+31
Station Elevation Data num= 31
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
636.05 342 658.25 340 811.71 340 816.33 338 820.7 336
824.55 334 830.05 332 846.63 330 921.41 328 934.65 326
951 323.48 963 323.45 1000 323 1026 323.5 1049 323.78
1049.5 324 1050.6 325.42 1051.3 326 1056.8 328 1059.5 328.7
1066.2 330 1076.5 332 1083.5 334 1090 336 1095.5 338
1101.6 340 1107.8 342 1114.13 344 1121 346 1130 348
1138.3 350

Manning's n Values num= 4
Sta n Val Sta n Val Sta n Val Sta n Val
636.05 .013 811.71 .07 921.41 .05 1056.8 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
921.41 1056.8 121 121 121 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
636.05 778 F

CROSS SECTION OUTPUT Profile #PF 1

1043 342 1046 344 1053 346 1056 348 1059 350
1062 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
636 .07 981 .05 1016 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
981 1016 18 18 18 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
636 870 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 340.80 Element Left OB Channel Right OB
Vel Head (ft) 0.11 Wt. n-Val. 0.070 0.050 0.070
W.S. Elev (ft) 340.69 Reach Len. (ft) 18.00 18.00 18.00
Crit W.S. (ft) Flow Area (sq ft) 996.45 595.01 159.40
E.G. Slope (ft/ft) 0.000343 Area (sq ft) 1580.99 595.01 159.40
Q Total (cfs) 3900.00 Flow (cfs) 1685.59 2012.40 202.02
Top Width (ft) 373.00 Top Width (ft) 313.62 35.00 24.38
Vel Total (ft/s) 2.23 Avg. Vel. (ft/s) 1.69 3.38 1.27
Max Chl Dpth (ft) 17.74 Hydr. Depth (ft) 8.98 17.00 6.54
Conv. Total (cfs) 210718.9 Conv. (cfs) 91073.0 108730.9 10915.0

Length Wtd. (ft) 18.00 Wetted Per. (ft) 111.53 39.02 27.51
Min Ch El (ft) 322.95 Shear (lb/sq ft) 0.19 0.33 0.12
Alpha 1.46 Stream Power (lb/ft s) 0.32 1.10 0.16
Frctn Loss (ft) 0.01 Cum Volume (acre-ft) 1.18 1.41 0.45
C & E Loss (ft) 0.01 Cum SA (acres) 0.74 0.24 0.34

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 198

INPUT
Description: EX. CROSS SECTION 1+98
Station Elevation Data num= 42
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
637 342 684 340 695 338 704 336 725 334
780 334 785 336 799 338 808 340 822 340

884 328.55 896 326.5 901 326.57 906 327.04 919 328.2
933 330 960 332.27 970 332.27 976 330 982 328
986 326 988 324 991 322.52 1000 322.52 1009 322.52
1013 323.08 1014 324 1017 326 1020 327.75 1024 330
1030 332 1033 334 1034.5 336 1036 338 1041 340
1044 342 1047 344 1049 346 1051 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
588 .07 986 .05 1017 .07

Bank Sta: Left Right Coeff Contr. Expan.
986 1017 .1 .3

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
Downstream Embankment side slope = 3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 2

Culvert Name Shape Rise Span
Culvert #2 Circular 8.5
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 2 - Groove end entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
0 75 .013 .013 0 .5 1
Upstream Elevation = 327.61
Centerline Station = 918
Downstream Elevation = 326.57
Centerline Station = 900

Culvert Name Shape Rise Span
Culvert #1 Conspan Arch 15 18
FHWA Chart # 61- Span/Rise ratio approximate 4:1
FHWA Scale # 1 - 0 degree wing wall angle
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
8 60 .013 .013 0 .5 1

E.G. Elev (ft) 331.05 Element Left OB Channel Right OB
Vel Head (ft) 1.48 Wt. n-Val. 0.070 0.050 0.070
W.S. Elev (ft) 329.57 Reach Len. (ft) 91.00 93.00 95.00
Crit W.S. (ft) 329.57 Flow Area (sq ft) 66.33 344.51 82.56
E.G. Slope (ft/ft) 0.014289 Area (sq ft) 66.33 344.51 82.56
Q Total (cfs) 3900.00 Flow (cfs) 205.38 3520.86 173.76
Top Width (ft) 226.96 Top Width (ft) 47.94 70.00 109.02
Vel Total (ft/s) 7.90 Avg. Vel. (ft/s) 3.10 10.22 2.10
Max Chl Dpth (ft) 7.09 Hydr. Depth (ft) 1.38 4.92 0.76
Conv. Total (cfs) 32626.4 Conv. (cfs) 1718.1 29454.6 1453.6
Length Wtd. (ft) 92.88 Wetted Per. (ft) 49.21 70.60 109.28
Min Ch El (ft) 322.48 Shear (lb/sq ft) 1.20 4.35 0.67
Alpha 1.52 Stream Power (lb/ft s) 3.72 44.49 1.42
Frctn Loss (ft) 0.97 Cum Volume (acre-ft) 0.37 0.63 0.36
C & E Loss (ft) 0.24 Cum SA (acres) 0.15 0.12 0.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 0

INPUT
Description: EX. CROSS SECTION 0+00
Station Elevation Data num= 20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
777 334 813 332 833 330 886 330 898 328
919 326 940 325.48 955 324.84 971 325.24 983 325.87
989 322.74 1000 322.3 1012 322.15 1014 323.86 1021 325.3

main 216 .07 .05 .07

main 198 .07 .05 .07

main 160 Culvert
main 123 .07 .05 .07

main 93 .07 .05 .07
main 0 .07 .05 .07

SUMMARY OF REACH LENGTHS

River: sugarland run

Reach River Sta. Left Channel Right
2 758 70 100 110
2 640 95 100 95
2 538 90 100 130
2 424 80 200 145
2 215 0 0 0
1 3821 250 241 230
1 3580 205 251 240
1 3329 114 114 114
1 3195 75 95 10
1 3175 Culvert
1 3080 100 90 20
main 2902 92 100 20
main 2802 65 109 47
main 2693 135 116 42
main 2577 85 106 85
main 2471 135 106 360
main 2365 75 98 180
main 2267 365 365 365
main 1918 206 206 206
main 1712 244 244 244
main 1468 228 228 228
main 1240 195 195 195
main 1045 220 220 220
main 935 Culvert
main 825 113 113 113

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3821 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3580 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: 1 RS: 3329 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: sugarland run Reach: 1 RS: 3080 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
River: sugarland run Reach: main RS: 2902 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 2802 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream

E.G. Elev (ft) 340.84 Element Left OB Channel Right OB
Vel Head (ft) 0.02 Wt. n-Val. 0.069 0.050 0.070
W.S. Elev (ft) 340.82 Reach Len. (ft) 121.00 121.00 121.00
Crit W.S. (ft) Flow Area (sq ft) 1164.68 2269.71 337.32
E.G. Slope (ft/ft) 0.000045 Area (sq ft) 1256.43 2269.71 337.32
Q Total (cfs) 3900.00 Flow (cfs) 781.15 2945.02 173.83
Top Width (ft) 454.97 Top Width (ft) 272.25 135.39 47.34
Vel Total (ft/s) 1.03 Avg. Vel. (ft/s) 0.67 1.30 0.52
Max Chl Dpth (ft) 17.82 Hydr. Depth (ft) 8.12 16.76 7.13
Conv. Total (cfs) 580371.3 Conv. (cfs) 116244.8 438258.3 25868.3

Length Wtd. (ft) 121.00 Wetted Per. (ft) 145.25 137.05 49.13
Min Ch El (ft) 323.00 Shear (lb/sq ft) 0.02 0.05 0.02
Alpha 1.28 Stream Power (lb/ft s) 0.02 0.06 0.01
Frctn Loss (ft) 0.01 Cum Volume (acre-ft) 8.42 6.50 2.70
C & E Loss (ft) 0.00 Cum SA (acres) 2.06 0.54 0.57

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 301

INPUT
Description: EX. CROSS SECTION 3+01
Station Elevation Data num= 32
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
690.94 342 726.1 340 748.85 338 869.64 338 874.21 336
878.84 334 882.22 332 885.6 330 941.51 328.36 947.11 328
971.44 326.81 980.84 326 988.34 325.54 989.14 324 990.19 323.06
1000 323.01 1011.48 323.01 1011.88 324 1012.61 326 1014.98 326.56
1028.13 326.59 1041.13 326.83 1052.31 328 1053.3 328.18 1056.74 330
1061.62 331.85 1061.97 332 1065.25 334 1068.49 336 1071.77 338
1075.28 340 1078.94 342

Manning's n Values num= 4
Sta n Val Sta n Val Sta n Val Sta n Val
690.94 .013 869.64 .07 980.84 .05 1014.98 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

835 338 849 336 875 334 890 332 896 330.83
898 330 902 327.97 933 327.51 935 328 938 329.05
954.5 330 969.8 328 977.5 326 983.5 324 1000 322.9
1012.07 322.9 1014.27 324 1016.75 326 1019.07 328 1021.7 330
1024.2 332 1027.2 334 1029.76 336 1032.66 338 1033.5 339.71
1033.71 340 1035.21 342 1036.71 344 1039.71 346 1042.21 348
1044.96 350 1050.71 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
637 .07 969.8 .05 1019.07 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
969.8 1019.07 100 75 70 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
637 898 T

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 340.79 Element Left OB Channel Right OB
Vel Head (ft) 0.09 Wt. n-Val. 0.070 0.050 0.070
W.S. Elev (ft) 340.70 Reach Len. (ft) 100.00 75.00 70.00
Crit W.S. (ft) 330.34 Flow Area (sq ft) 874.53 807.90 105.37
E.G. Slope (ft/ft) 0.000235 Area (sq ft) 1940.06 807.90 105.37
Q Total (cfs) 3900.00 Flow (cfs) 1493.64 2302.66 103.70
Top Width (ft) 366.72 Top Width (ft) 302.28 49.27 15.17
Vel Total (ft/s) 2.18 Avg. Vel. (ft/s) 1.71 2.85 0.98
Max Chl Dpth (ft) 17.80 Hydr. Depth (ft) 12.18 16.40 6.95
Conv. Total (cfs) 254513.7 Conv. (cfs) 97474.7 150271.4 6767.6
Length Wtd. (ft) 75.00 Wetted Per. (ft) 72.68 51.60 20.02
Min Ch El (ft) 322.90 Shear (lb/sq ft) 0.18 0.23 0.08
Alpha 1.25 Stream Power (lb/ft s) 0.30 0.65 0.08
Frctn Loss (ft) Cum Volume (acre-ft) 0.45 1.12 0.40
C & E Loss (ft) Cum SA (acres) 0.62 0.22 0.33

CULVERT

RIVER: sugarland run
REACH: main RS: 160

INPUT
Description: W&OD CULVERT

Upstream Elevation = 323.83
Centerline Station = 1000
Downstream Elevation = 323.08
Centerline Station = 1000

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 123

INPUT
Description: EX. CROSS SECTION 1+23
Station Elevation Data num= 39
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
588 354 853 346 857 344 860 342 864 340
867.5 338 871.5 336 874.5 334 877.5 332 882 330
884 328.55 896 326.5 901 326.57 906 327.04 919 328.2
933 330 960 332.27 970 332.27 976 330 982 328
986 326 988 324 991 322.52 1000 322.52 1009 322.52
1013 323.08 1014 324 1017 326 1020 327.75 1024 330
1030 332 1033 334 1034.5 336 1036 338 1041 340
1044 342 1047 344 1049 346 1051 348

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
588 .07 986 .05 1017 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
986 1017 30 30 30 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 332.82 Element Left OB Channel Right OB
Vel Head (ft) 2.19 Wt. n-Val. 0.070 0.050 0.070
W.S. Elev (ft) 330.63 Reach Len. (ft) 30.00 30.00 30.00
Crit W.S. (ft) 330.63 Flow Area (sq ft) 167.46 234.52 18.84
E.G. Slope (ft/ft) 0.014442 Area (sq ft) 167.46 234.52 18.84
Q Total (cfs) 3900.00 Flow (cfs) 741.85 3085.02 73.14
Top Width (ft) 111.39 Top Width (ft) 71.51 31.00 8.88
Vel Total (ft/s) 9.27 Avg. Vel. (ft/s) 4.43 13.15 3.88
Max Chl Dpth (ft) 8.11 Hydr. Depth (ft) 2.34 7.57 2.12
Conv. Total (cfs) 32453.0 Conv. (cfs) 6173.1 25671.3 608.6
Length Wtd. (ft) 30.00 Wetted Per. (ft) 73.41 33.18 10.04
Min Ch El (ft) 322.52 Shear (lb/sq ft) 2.06 6.37 1.69

1025 326 1136 328 1183 330 1208 332 1220 332.3

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
777 .07 983 .05 1025 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
983 1025 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 329.79 Element Left OB Channel Right OB
Vel Head (ft) 0.66 Wt. n-Val. 0.070 0.050 0.070
W.S. Elev (ft) 329.13 Reach Len. (ft)
Crit W.S. (ft) 328.43 Flow Area (sq ft) 287.39 242.43 251.06
E.G. Slope (ft/ft) 0.008000 Area (sq ft) 287.39 242.43 251.06
Q Total (cfs) 3900.00 Flow (cfs) 1166.07 2021.96 711.97
Top Width (ft) 271.25 Top Width (ft) 91.76 42.00 137.49
Vel Total (ft/s) 4.99 Avg. Vel. (ft/s) 4.06 8.34 2.84
Max Chl Dpth (ft) 6.98 Hydr. Depth (ft) 3.13 5.77 1.83
Conv. Total (cfs) 43603.1 Conv. (cfs) 13037.0 22606.1 7960.0
Length Wtd. (ft) Wetted Per. (ft) 91.99 43.62 137.53
Min Ch El (ft) 322.15 Shear (lb/sq ft) 1.56 2.78 0.91
Alpha 1.70 Stream Power (lb/ft s) 6.33 23.15 2.59
Frctn Loss (ft) Cum Volume (acre-ft)
C & E Loss (ft) Cum SA (acres)

SUMMARY OF MANNING'S N VALUES

River:sugarland run

Reach River Sta. n1 n2 n3 n4 n5 n6 n7
n8
2 758 .07 .05 .07
2 640 .07 .05 .07
2 538 .07 .05 .07
2 424 .025 .07 .05 .07
2 215 .013 .025 .07 .05 .07
1 3821 .07 .05 .07 .05 .07

main 712 84 84 84
main 628 197 197 197
main 530 Culvert
main 431 121 121 121
main 301 85 85 85
main 216 18 18 18
main 198 100 75 70
main 160 Culvert
main 123 30 30 30
main 93 91 93 95
main 0 0 0 0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: sugarland run

Reach River Sta. Contr. Expan.
2 758 .1 .3
2 640 .1 .3
2 538 .1 .3
2 424 .1 .3
2 215 .1 .3
1 3821 .1 .3
1 3580 .1 .3
1 3329 .1 .3
1 3195 .1 .3
1 3175 Culvert
1 3080 .1 .3
main 2902 .1 .3
main 2802 .1 .3
main 2693 .1 .3
main 2577 .1 .3
main 2471 .1 .3
main 2365 .1 .3
main 2267 .1 .3
main 1918 .1 .3
main 1712 .1 .3
main 1468 .1 .3
main 1240 .1 .3
main 1045 .1 .3
main 935 Culvert
main 825 .1 .3

conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 2471 Profile: PF 1
Warning:Divided flow computed for this cross-section.
River: sugarland run Reach: main RS: 2365 Profile: PF 1
Warning:Divided flow computed for this cross-section.
River: sugarland run Reach: main RS: 2267 Profile: PF 1
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 935 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported
inlet energy grade answer may not be valid.
River: sugarland run Reach: main RS: 825 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: main RS: 530 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported
inlet energy grade answer may not be valid.
River: sugarland run Reach: main RS: 530 Profile: PF 1
Warning:The weir over culvert is submerged.
River: sugarland run Reach: main RS: 530 Profile: PF 1 Culv: Culvert #1
Warning:During the culvert inlet control computations, the program could not balance the culvert/weir flow. The reported
inlet energy grade answer may not be valid.
River: sugarland run Reach: main RS: 160 Profile: PF 1 Culv: Culvert #2
Note: The flow in the culvert is entirely supercritical.
River: sugarland run Reach: main RS: 160 Profile: PF 1 Culv: Culvert #1
Warning:Since the culvert has supercritical flow, the program should be run in mixed flow in order to check if the cross
section downstream of the culvert has supercritical flow.
Note: The flow in the culvert is entirely supercritical.
River: sugarland run Reach: main RS: 123 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:Divided flow computed for this cross-section.

980.84 1014.98 85 85 85 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
690.94 837 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft) 340.83 Element Left OB Channel Right OB
Vel Head (ft) 0.04 Wt. n-Val. 0.063 0.050 0.070
W.S. Elev (ft) 340.79 Reach Len. (ft) 85.00 85.00 85.00
Crit W.S. (ft) Flow Area (sq ft) 1375.05 574.67 687.09
E.G. Slope (ft/ft) 0.000137 Area (sq ft) 1667.05 574.67 687.09
Q Total (cfs) 3900.00 Flow (cfs) 1849.34 1229.99 820.67
Top Width (ft) 364.49 Top Width (ft) 268.61 34.14 61.74
Vel Total (ft/s) 1.48 Avg. Vel. (ft/s) 1.34 2.14 1.19
Max Chl Dpth (ft) 17.78 Hydr. Depth (ft) 9.56 16.83 11.13
Conv. Total (cfs) 333610.1 Conv. (cfs) 158194.3 105214.5 70201.4

Length Wtd. (ft) 85.00 Wetted Per. (ft) 145.87 37.58 65.07
Min Ch El (ft) 323.01 Shear (lb/sq ft) 0.08 0.13 0.09
Alpha 1.19 Stream Power (lb/ft s) 0.11 0.28 0.11
Frctn Loss (ft) 0.02 Cum Volume (acre-ft) 4.35 2.55 1.28
C & E Loss (ft) 0.01 Cum SA (acres) 1.31 0.31 0.42

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than
1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 216

INPUT
Description: EX. CROSS SECTION 2+16
Station Elevation Data num= 36
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
636 342 684 340 698 338 708 336 784 336
800 338 811 340 823 340 842 340 860 338
880 336 900 334 911 332 916 330.87 951 330
981 328 983 326 985 324 987 322.95 1000 322.95
1011 322.95 1012 324 1014 326 1016 328 1020 330
1024 332 1028 334 1032 336 1036 338 1039 340

Distance from Upstream XS = 20
Deck/Roadway Width = 30
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 8
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
588 354 0 636 354 0 670 352 0
725 350 0 900 350 0 1000 350 0
1030 352 0 1066 354 0

Upstream Bridge Cross Section Data
Station Elevation Data num= 42
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
637 342 684 340 695 338 704 336 725 334
780 334 785 336 799 338 808 340 822 340
835 338 849 336 875 334 890 332 896 330.83
898 330 902 327.97 933 327.51 935 328 938 329.05
954.5 330 969.8 328 977.5 326 983.5 324 1000 322.9
1012.07 322.9 1014.27 324 1016.75 326 1019.07 328 1021.7 330
1024.2 332 1027.2 334 1029.76 336 1032.66 338 1033.5 339.71
1033.71 340 1035.21 342 1036.71 344 1039.71 346 1042.21 348
1044.96 350 1050.71 352

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
637 .07 969.8 .05 1019.07 .07

Bank Sta: Left Right Coeff Contr. Expan.
969.8 1019.07 .1 .3
Ineffective Flow num= 1
Sta L Sta R Elev Permanent
637 898 T

Downstream Deck/Roadway Coordinates
num= 8
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
588 354 0 636 354 0 670 352 0
725 350 0 900 350 0 1000 350 0
1030 352 0 1066 354 0

Downstream Bridge Cross Section Data
Station Elevation Data num= 39
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
588 354 853 346 857 344 860 342 864 340
867.5 338 871.5 336 874.5 334 877.5 332 882 330

Alpha 1.64 Stream Power (lb/ft s) 9.11 83.84 6.57
Frctn Loss (ft) 0.43 Cum Volume (acre-ft) 0.45 0.83 0.40
C & E Loss (ft) 0.21 Cum SA (acres) 0.19 0.15 0.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

CROSS SECTION

RIVER: sugarland run
REACH: main RS: 93

INPUT
Description: EX. CROSS SECTION 0+93
Station Elevation Data num= 16
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
865 334 885 332 895 330 914 328 946 327.9
947 325.96 978 325.37 991 323.32 1000 322.48 1010 324
1017 326 1025 328 1067 329 1170 330 1219 332
1310 334

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
865 .07 947 .05 1017 .07

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
947 1017 91 93 95 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

1 3580 .013 .025 .05 .07 .05 .07 .05
.03
1 3329 .025 .013 .025 .07 .05 .07
1 3195 .013 .025 .05 .025
1 3175 Culvert
1 3080 .013 .025 .05 .025
main 2902 .013 .025 .07 .05 .07
main 2802 .013 .025 .07 .05 .07
main 2693 .013 .025 .05 .07
main 2577 .013 .025 .07 .05 .07
main 2471 .013 .025 .07 .05 .07
main 2365 .013 .025 .05 .07
main 2267 .013 .025 .07 .05 .07
main 1918 .013 .025 .07 .05 .07
main 1712 .013 .025 .07 .05 .07
main 1468 .013 .025 .07 .05 .07
main 1240 .013 .025 .07 .05 .07
main 1045 .013 .025 .07 .05 .07
main 935 Culvert
main 825 .07 .013 .07 .05 .07
main 712 .07 .013 .07 .05 .07
main 628 .07 .013 .07 .05 .07
main 530 Culvert
main 431 .013 .07 .05 .07
main 301 .013 .07 .05 .07

main 825 .1 .3
main 712 .1 .3
main 628 .1 .3
main 530 Culvert
main 431 .1 .3
main 301 .1 .3
main 216 .1 .3
main 198 .1 .3
main 160 Culvert
main 123 .1 .3
main 93 .1 .3
main 0 .1 .3

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 02

River: sugarland run Reach: 2 RS: 758 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 2 RS: 640 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
River: sugarland run Reach: 2 RS: 538 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: sugarland run Reach: 2 RS: 215 Profile: PF 1

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.
River: sugarland run Reach: main RS: 93 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth
for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate
the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The
program defaulted to critical depth.

ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS

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REVISIONS

	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER
vv

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY

DISTRICT
TOWN OF HERNDON, VIRGINIA

PROPSED MODEL HEC-RAS OUPUT

DRAWN BY: KMO
DESIGNED BY: KMO
DATE ISSUED: 04-10-2019

DWG. SCALE: N/A
VIKA NO. 6045X
SHEET NO. 10.03

FILE: P:\projects\6045X\6045XCADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 10.01 PROPOSED HEC-RAS.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:20:37 AM LAYOUT: 10.03

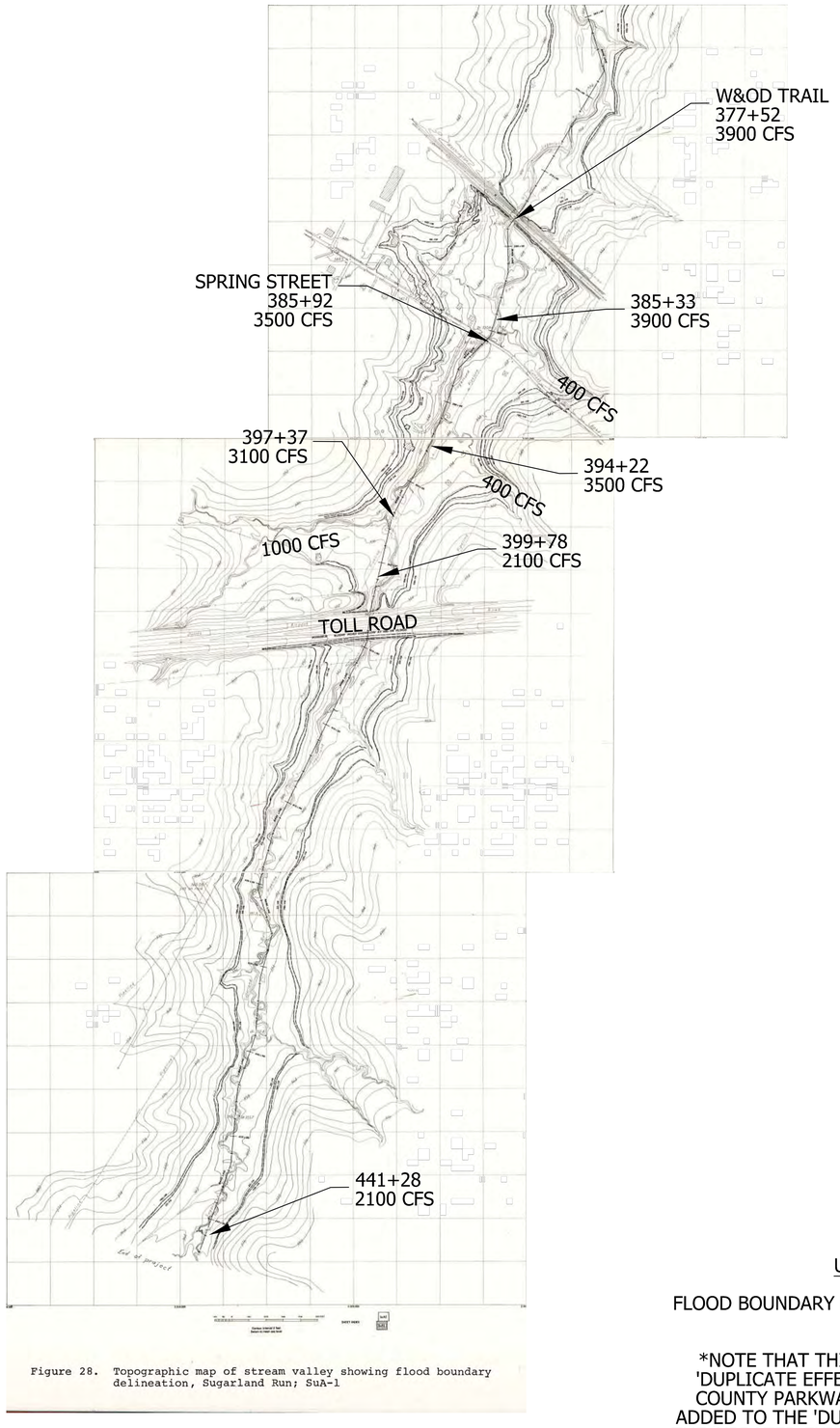

Figure 28. Topographic map of stream valley showing flood boundary delineation, Sugarland Run; SuA-1

SUGARLAND RUN BASIN
Table 5: Water-surface profile data for Sugarland Run - Continued

Section number	Base-line Station (feet)	Impervi-ousness (per cent)	Discharge, in cubic feet per second 25-year[a]	50-year[a]	100-year[a]	Elevation, in feet 25-year[a]	50-year[a]	100-year[a]	Remarks
136	328+58	65	3,300	3,800	4,400	313.8	314.3	314.7	
137	330+92	65	3,300	3,800	4,400	314.7	315.1	315.6	
1137	332+25	65	3,300	3,800	4,400	315.2	315.7	316.2	
138	333+04								Private Dam
1138	333+50	65	3,300	3,800	4,400	316.5	316.6	316.8	
139	336+25	65	3,300	3,800	4,400	316.6	316.8	317.0	
140	339+45	65	3,300	3,800	4,400	317.7	318.1	318.6	
141	343+50	65	3,300	3,800	4,400	318.6	319.0	319.5	
142	346+33	65	3,300	3,800	4,400	319.9	320.3	320.8	
143	348+00	65	3,300	3,800	4,400	320.6	321.0	321.5	
144	348+35								Washington Street (State 606)
145	348+90	65	3,300	3,800	4,400	320.8	321.2	321.6	
146	352+33	70	2,900	3,400	3,900	322.2	322.6	323.0	
147	356+48	70	2,900	3,400	3,900	323.4	323.8	324.3	
148	359+13	70	2,900	3,400	3,900	325.0	325.4	325.8	
149	362+58	70	2,900	3,400	3,900	326.6	327.0	327.4	
150	364+44	70	2,900	3,400	3,900	326.9	327.4	327.8	
151	368+30	70	2,900	3,400	3,900	327.8	328.2	328.6	
152	372+10	70	2,900	3,400	3,900	328.6	329.1	329.5	
153	374+18	70	2,900	3,400	3,900	329.3	329.7	330.1	
154	376+18	70	2,900	3,400	3,900	330.3	330.4	330.8	
155	377+52	70	2,900	3,400	3,900	330.6	331.0	331.4	
156	378+15								Old railroad grade
158	378+92	70	2,900	3,400	3,900	337.3	339.0	340.7	
159	381+50	70	2,900	3,400	3,900	337.3	339.0	340.7	
160	383+60	70	2,900	3,400	3,900	337.3	339.0	340.7	
161	385+33	70	2,900	3,400	3,900	337.4	339.0	340.8	
162	385+63								Spring Street (State 675)

[a] Recurrence interval

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SUGARLAND RUN BASIN
Table 5: Water-surface profile data for Sugarland Run - Continued

Section number	Base-line Station (feet)	Impervi-ousness (per cent)	Discharge, in cubic feet per second 25-year[a]	50-year[a]	100-year[a]	Elevation, in feet 25-year[a]	50-year[a]	100-year[a]	Remarks
163	385+92	75	2,700	3,100	3,500	337.4	339.0	340.8	
164	387+97	75	2,700	3,100	3,500	337.5	339.1	340.8	
165	390+91	75	2,700	3,100	3,500	337.8	339.2	340.8	
166	394+22	75	2,400	2,700	3,100	338.3	339.6	341.0	
167	397+37	75	2,400	2,700	3,100	339.4	340.2	341.4	
	398+00								Herndon-Fairfax County boundary
168	399+78	75	1,600	1,800	2,100	340.3	340.7	341.7	
169	402+28	75	1,600	1,800	2,100	341.1	341.4	342.1	
170	403+70								Dulles Airport access road
172	405+10	75	1,600	1,800	2,100	345.8	347.4	350.1	
173	408+48	75	1,600	1,800	2,100	346.3	347.6	350.1	
174	411+37	75	1,600	1,800	2,100	347.1	348.1	350.3	
175	414+17	75	1,600	1,800	2,100	348.9	349.3	350.7	
176	416+80	75	1,600	1,800	2,100	351.4	351.6	352.1	
177	419+72	75	1,600	1,800	2,100	354.1	354.3	354.5	
178	422+26	75	1,600	1,800	2,100	355.1	355.4	355.6	
179	425+00	75	1,600	1,800	2,100	356.6	356.8	357.1	
180	428+00	75	1,600	1,800	2,100	358.6	358.8	359.0	
181	430+65	75	1,600	1,800	2,100	360.0	360.2	360.4	
182	433+13	75	1,600	1,800	2,100	361.6	361.8	362.0	
183	435+52	75	1,600	1,800	2,100	363.2	363.4	363.6	
184	438+52	65	1,600	1,800	2,100	364.8	365.0	365.3	
185	441+28	75	1,600	1,800	2,100	366.0	366.2	366.4	

[a] Recurrence interval

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USGS OPEN FILE REPORT 78-1028

FLOOD BOUNDARY DELINEATION AND WATER-SURFACE PROFILE DATA FOR SUGARLAND RUN

*NOTE THAT THIS MODEL, WHICH WAS USED TO GENERATE THE 'DUPLICATE EFFECTIVE' MODEL DOES NOT INLCUDE THE FAIRFAX COUNTY PARKWAY ON-RAMP CROSSING. THESE CULVERTS WERE ADDED TO THE 'DUPLICATE EFFECTIVE' MODEL, WHICH THEN BECAME THE 'UPDATED EXISTING CONDITIONS' OR BASELINE EXISTING MODEL.

(SEE SHEET 02.02 FOR HYDROLOGY NARRATIVE)

V 10.01

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

REVISIONS	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

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USGS OPEN FILE REPORT 78-1028

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	11.01

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Project Narrative

Sugarland Run at Reston Section 904
Floodplain Analysis and LOMR Request
WSSI #21924.03

Introduction

The Reston Section 904 site is located adjacent to Sugarland Run in the southeast quadrant of the intersection of the Dulles Airport Access Road (Access Road) and the Fairfax County Parkway (Parkway) in Fairfax County, Virginia. Refer to the Vicinity Map provided in TAB 1. The Federal Emergency Management Agency (FEMA) depicts a Zone AE Special Flood Hazard Area (SFHA) adjacent to the site along Sugarland Run on the effective Flood Insurance Rate Map (FIRM), dated September 17, 2010. A copy of the FIRMette is provided in TAB 2. The Zone AE flood limits extend onto the Reston Section 904 site. The upstream limit of the Zone AE extends approximately 1200 feet upstream of the Access Road to a point at which the contributing drainage area is less than 1 square mile (approximately 640 feet downstream of Sunrise Valley Drive).

When Fairfax County Parkway was constructed, Sugarland Run was diverted into a closed storm drain system extending over 2,400 feet from the northeast quadrant of the confluence of the Parkway and Sunrise Valley Drive, travelling beneath the Parkway and outfalling back into the floodplain downstream of the Access Road. The intersection of the Parkway with the Access Road also required entrance and exit ramps between both roadways, resulting in a widening of the Access Road and extension of the culvert system beneath the Access Road further downstream. Although the Parkway is depicted on the effective FIRM, the SFHA floodplain does not reflect the effect of the storm drain system. Therefore, the purpose of this floodplain analysis is to demonstrate the effect of that system beneath the Parkway and the Access Road for the 10-yr, 50-yr, 100-yr and 500-yr flood events and the resulting flooding limits on the subject site.

This floodplain analysis entails modeling the closed storm drain system by performing hydraulic grade line (HGL) calculations utilizing FEMA effective discharges to determine if flow from any of the four (4) flood events analyzed bypasses the system in the form of overland flow. Such overland flow could then be modeled to determine the resulting extent and depth of flooding. However, after calculating the HGL for all four flood events, the results show that the 10-year, 50-year, 100-year and 500-year events are all conveyed entirely by the existing storm drain system. Although these storms submerge the entrance of the system and result in minimal surcharging of some of the connected minor storm drains, the headwater depth and minor storm drain surcharging do not result in overland flow. As a result, a Letter of Map Revision (LOMR) is requested to revise the Zone AE SFHA affecting the Reston Section 904 site. The appropriate MT-2 forms are provided in TAB 3.

Survey Data

Field run survey was performed by Wetland Studies and Solutions, Inc. (WSSI) to obtain detailed information regarding the configuration of the major storm drain system and all hydraulically connected minor storm drain systems up to at least the point in each minor system where surcharge levels from the 100-year event are contained within the system. For the major system, this involved surveying any change in the culvert that would introduce major or minor losses in the system, including manholes, junctions, bends, transitions, changes in pipe sizes, changes in invert slopes and connections with minor drainage systems. For the minor drainage systems, this involved surveying pipe inverts, manhole inverts and rim elevations, junctions, transitions, inlet inverts and connections with the major system. A summary of pertinent survey data describing the profile of the major system is provided in Table 1, included in TAB 4. A list of all the connected minor storm drain components surveyed is provided on sheet 5 of the plan set included in TAB 12. In addition, cross-sections were taken along potential overland flow paths along Parkway in case storm flows were found to bypass the storm drain system and flow overland.

In addition to conducting a field run survey, WSSI obtained certified aerial topography (with a contour interval of 6-inches) for the site and surrounding area.

Existing Conditions

The existing storm drain system begins at its upstream end as four (4) 10-foot wide by 6-foot high reinforced concrete box culverts (RCBCs) at the northeast quadrant of the intersection of the Parkway and Sunrise Valley Drive. Because each of these 4 RCBCs has been analyzed independently, they are referred to as "lines" when discussed independently and as a "system" when referred to collectively. The system extends downstream for a total of nearly 2,400 feet, bending in three locations to remain within the right-of-way of the Parkway and the Access Road. Two of the lines transition from a single RCBC into double 78" circular reinforced concrete pipes (RCPs) and back into an RCBC as those lines run beneath the main travel lanes of the Access Road. So although the system begins and ends as 4 RCBC cells, the system consists of 6 culverts beneath the Access Road (2 RCBCs and 4 RCPs). The combined storm drain system ends as four (4) 10' x 6' RCBCs in the northwest quadrant of the intersection of the Access Road and the Parkway as Sugarland Run outfalls back into an open channel and floodplain. Refer to sheets 3 and 4 of the plan set included in TAB 12 for plan views depicting existing conditions of the vicinity.

The upstream entrance of this system consists of a headwall with beveled top and side walls to each culvert opening. Although the headwall is aligned at a slight 26 degree skew with the road, the inlet pipes are in line with the alignment of Sugarland Run, the inflowing stream. The outfall of this system consists of an endwall connected to a large wingwall along the right bank conforming to the slope of the road embankment. Although some sediment has accumulated at the outfall, the system is not countersunk and the entire cross-sectional area of each culvert is effectively utilized for conveyance.

Upstream of the entrance to these culverts, Sugarland Run is conveyed through an open channel for a length of about 100 feet before its conveyance beneath Sunrise Valley Drive through a set of 4 straight 10' x 6' RCBCs. The upstream limit of this analysis begins at the downstream end of these culverts beneath Sunrise Valley Drive where the contributing drainage area is 0.85 square miles. As the FEMA Zone AE floodplain did not previously extend this far upstream, the upstream end of this analysis, mapping or profile data does not tie back into any FEMA data.

At the downstream end of the system, the revised profiles tie back in to the Effective FEMA profiles at the existing outfall since the revised profiles utilize the effective tailwater elevations. Prior to the construction of the Parkway, the effective study modeled an older system of culverts beneath the Access Road, with cross section AU located at the downstream end of these culverts. Due to an extension of these culverts to allow the construction of an access ramp from the Parkway to the Access Road, the outfall was extended further downstream just past the location of XS AU. Therefore, to tie back into the effective profile at an effective cross-section, the revised profile extends downstream to the next effective cross section, XS AT, located at station 397+38, approximately 230 feet downstream of the existing outfall. The floodplain limits in plan view do not tie out into the FEMA effective flood zones as the Parkway extends several thousand more feet downstream adjacent to Sugarland Run, well beyond the scope of this analysis.

Review of FEMA Effective and Historic Data

The effective Flood Insurance Study (FIS) flood limits and profile data for Sugarland Run originate from a 1971 USGS study. As documented in the Historic FIS for the Town of Herndon, dated February 1979:

> *The hydrologic and hydraulic analyses for this study were prepared by the U.S. Geological Survey for the Federal Insurance Administration, under Inter-Agency Agreement No. IAAA-H-17-75, Project Order No. 14. This work, which was completed in June 1977, covered all significant flooding sources in the Town of Herndon.*
>
> *In 1971, the USGS in cooperation with the County of Fairfax, determined flood profiles and flood boundaries for Fairfax County streams as part of an investigation of the effects of urbanization on flood discharges (Reference 4[1]). Detailed information was developed for the 25-, 50-, and 100-year floods. Also in 1971, the USGS prepared a FIA Type 5 flood plain study for selected streams in Fairfax County (Reference 6[2]). Detailed information was developed for the 10-, 25-, 100-, and 500-year floods.*
>
> *For Sugarland Run through Herndon, profiles for the 10-, 50-, 100-, and 500-year floods were defined in the two studies identified above, however, the 10- and 500-year profiles in the FIA Type 5 study terminated 1,800 feet before reaching the upstream town boundary. A comparison of the results of the present study for Sugarland Run with the results of the Flood Insurance Study for Fairfax County (Reference 4[1]) and the FIA Type 5 study (Reference 6[2]) resulted in profile differences not greater than 0.4 foot. Therefore, the pre-determined flood profiles for all floods for Sugarland Run were adopted for use in this report. However, the 10-, and 500-year elevations for the upstream 1,800 feet (base line station 39,740 to 41,540) were defined by the present study.*

[1] U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Fairfax County, Virginia, Washington, D.C., January 1972.
[2] U.S. Department of Housing and Urban Development, Federal Insurance Administration, Type 5 Flood Plain Study for Selected Streams in Fairfax County, Washington, D.C., October 1971.

The effective FIS dated September 17, 2010 for Fairfax County, Virginia and Incorporated Areas was prepared to include the Town of Herndon. As documented in the effective FIS, effective flood data was based on the same 1977 USGS study utilized for the development of the 1979 Historic FIS for the Town of Herndon. A comparison of the historic 1979 Town of Herndon FIS profile for Sugarland Run (provided in TAB 2) and the effective 2010 Fairfax County FIS profile for Sugarland Run (provided in TAB 2) reveal that the two profiles are identical. This concludes that the effective 2010 FIS utilizes 50- and 100-yr flood data from the 1971 USGS study and 10- and 500-yr flood data from the 1977 USGS study for the area adjacent to Reston Section 904 along Sugarland Run.

A copy of the 1977 USGS Step Backwater Program output and some base map information was available through the FEMA library. A reduced copy of the base map is provided in TAB 5. Although the cross section labels shown on the base map started with the letter B and cross section labels on the historic and effective profiles start with the letter A, it appears the cross section locations and limits of flooding are identical. As such, the baseline from this USGS plan was transposed onto the plan drawings used in this floodplain analysis and used as the baseline.

Effective Discharges

The major storm drain system was analyzed utilizing the discharges published in the effective FIS for Fairfax County, Virginia. From the "Summary of Discharges" table provided in TAB 2, the peak discharges for the 10-year, 50-year, 100-year and 500-year storms are 1,200 cfs, 1,800 cfs, 2,100 cfs, and 2,700 cfs, respectively, at the upstream corporate limits for the Town of Herndon. The upstream corporate limits for the Town of Herndon are located at the downstream side of the Access Road.

Floodplain Analysis and Hydraulic Grade Line Computations

Analysis Overview

The process of analyzing the floodplain begins with performing HGL computations on the existing major storm drain system to determine if a portion of the peak flows from the 100-yr or 500-yr storms bypass the system and, therefore, need to be modeled as overland flow. Although the culverts are hydraulically connected with a 6' wide by 4' high rectangular opening between culverts at station 409+40, each line is significantly different enough to warrant a separate analysis of each line, particularly since two of the 10' x 6' RCBC lines transition to and from 78" RCPs while the other two main lines remain a constant size. The unique configuration of the overall system does not lend itself well to being modeled by HEC-2 or HY-8, thus the

most effective and straightforward way to develop water surface elevations for the overall system is to perform HGL computations by hand for each line and for each storm and project the resulting HGL profiles onto a common baseline to determine a final water surface profile for each storm as the greatest HGL elevations of all the lines. Although the effective USGS Step Backwater computer program output file was obtained for Sugarland Run, it was not utilized in this analysis because the study area is at the upstream end of the effective model and no overland flow was found to exist after performing the HGL computations. This analysis will therefore provide flood information for the 10-, 50-, 100- and 500-year storms that will replace the effective data at the upstream end of the study, extending upstream to station 422+89, and tie into the effective profile at the downstream end, station 397+38, at effective cross-section "AT".

To perform and present the HGL calculations, a spreadsheet was developed based on the Virginia Department of Transportation (VDOT) drainage manual and the Federal Highway Administration (FHWA) Urban Drainage Design Manual, HEC-22. As the results of this analysis shall be utilized to revise not only the 100-yr and 500-yr floodplains depicted on the FEMA FIRM, but also the 10-yr, 50-yr, 100-yr and 500-yr flood profiles depicted on the FEMA FIS profile, the HGL for each of these four flooding events has been determined, each on a separate spreadsheet. Those four spreadsheets are provided in TAB 6.

Tailwater Conditions

Tailwater conditions are checked to determine if the outlet of the system is submerged or free flowing. Flood elevations for each of the analysis storms were obtained from the Effective FIS profiles at the downstream side of the Dulles Airport Access Road, as labeled on the Effective FIS profile. Although the existing outfall at station 399+68 is located further downstream than the centerline of the Access Road as shown on the FIS, Station 403+25, conservative tailwater elevations were taken at the centerline of the Access Road as shown on the FIS profile. Based on the field run survey, the highest outfall elevation of the four cells was found to be 333.17 ft, resulting in a crown elevation of 339.17 feet. A review of the Effective FIS profile results in tailwater elevations for the 10-yr, 50-yr, 100-yr and 500-yr storms of 341.0, 341.5, 342.25 and 344.8, respectively. A comparison of the flood elevations with the crown of the outfall pipes, as summarized in the following table, shows that the outfall for all four storm events is submerged.

TAILWATER CALCULATIONS

	Effective TW Elev* (ft)	Surveyed Crown Elev (ft)	Check for Submergence	TW Depth (ft)	TW Velocity (fps)
10-YEAR	341.00	339.17	YES	6.55	5.49
50-YEAR	341.50	339.17	YES	7.05	5.80
100-YEAR	342.25	339.17	YES	7.80	6.24
500-YEAR	344.80	339.17	YES	10.35	0**

* OBTAINED FROM FEMA EFFECTIVE FIS PROFILES AT DOWNSTREAM END OF DULLES AIRPORT ACCESS ROAD
** FIS PROFILE SHOWS 500-YEAR FLOOD IS BACKWATER AT DOWNSTREAM SIDE OF DULLES AIRPORT ACCESS ROAD

In addition to determining appropriate tailwater elevations, the velocity of the receiving channel is needed to calculate the tailwater velocity head and resulting exit loss at the outfall. Velocities for each flood event in the outfall channel were calculated using FlowMaster to model a representative cross-section using flow depths corresponding to the Effective FIS flood elevations. The resulting tailwater depth and velocities are provided in the table above. FlowMaster summary output files are provided in TAB 7.

Defining the Major Storm Drain System Components for Analysis

Although the four existing culverts start out identical in size, shape and material, there are differences along their longitudinal length that require them to be analyzed independently. Most significantly, the two easternmost culverts each transition from a single 10'x6' RCBC to double 78" round reinforced concrete pipes (RCPs) as they travel beneath the eastbound and westbound lanes of the Access Road. They then transition back to single 10'x6' RCBCs before their outfall downstream of the Access Road. Therefore, in this analysis, each of the 4 culvert lines are analyzed and referred to independently as Line 1, Line 2, Line 3 and Line 4, with Line 1 identified as the westernmost culvert line and Line 4 identified as the easternmost culvert line as depicted on the Existing Conditions drawings, sheets 3 and 4 provided in TAB 12. In each spreadsheet developed for each design storm, the HGL for each culvert line is analyzed separately, with each line separated by a thick black line (rows 11, 22 and 35).

The entire culvert system was built to be hydraulically efficient with smooth transitions and no manholes or junctions. As such, the only minor losses throughout each culvert line, other than entrance and exit losses at the upstream and downstream ends of the system, are due to bends formed in 3 locations. A separate narrative describing the process of calculating minor losses for this system is provided in TAB 9. The major storm drain system, and each line, has therefore been analyzed as 4 pipe segments defined by the 5 points along the system that introduce minor losses. These 5 points are identified as the following:

Point A: the downstream endwall outfall of the system,
Point B: 11.9 degree bend downstream of the eastbound lane of the Access Road,
Point C: 22.7 degree bend upstream of the westbound lane of the Access Road,
Point D: 63.9 degree bend approximately 100 feet from the system entrance, and
Point E: the upstream headwall entrance of the system.

There are several minor storm drain systems that enter the major system, but due to their calculated full flow capacity, they are considered insignificant sources of minor losses, particularly since the time of concentration of these smaller piped systems can reasonably be assumed to be significantly less than the time of concentration for the peak flow of Sugarland Run through the major system. In addition, the FEMA effective discharges for the 10-year, 50-year, 100-year and 500-year storms computed at the downstream end of the system were analyzed throughout the entire system, which would conservatively include the flow from all the minor drainage systems. However, each of these minor systems was surveyed to the extent that they could be analyzed for surcharging effects from the major system. A narrative presenting the evaluation of potential surcharging through the hydraulically connected minor storm drain systems is provided in TAB 10.

General Overview of Hydraulic Grade Line Calculation Worksheet

Calculations of the HGL begin with setting up the HGL worksheet, provided in TAB 6, to identify each pipe line to be analyzed. Each line is then analyzed by identifying sources of major and minor losses and identifying appropriate pipe segments, junctions and features for which those losses are calculated. Friction loss, the major loss in the system, is computed for each pipe segment between junctions or analysis points. Minor losses are then calculated at each junction or analysis point. Minor losses include expansion losses, contraction losses and bend losses. Because this system does not involve any junction boxes or manhole chambers in which expansion or contraction occurs, the only minor losses occur in the form of bend losses at each analysis point and entrance and exit losses at the upstream and downstream end of the system, respectively. A separate narrative describing the process of calculating minor losses for this system is provided in TAB 9.

In this project, as mentioned above, each line is analyzed independently and each line consists of 5 points and 4 culvert segments based on significant changes in the system that introduce losses. Referring to any of the HGL worksheets, the first column identifies the point or culvert segment for which computations are being completed. Points are identified with the line number followed by the point letter. For example, for Line 1, the Structure Numbers for all five analysis points are 1A, 1B, 1C, 1D and 1E. In the spreadsheet, a culvert segment is simply identified by its size and type, but in this report, specific segments may be referred to by its adjoining structure numbers, such as 1A-1B or 1D-1E. In lines 3 and 4, the pipe segment between points B and C transition into two 78" RCPs. Each 78" pipe is analyzed separately with half of the line flow through each pipe.

Tailwater conditions were checked to determine if the outfall of the system was submerged or flowing freely. Downstream tailwater elevations, obtained from the effective FEMA FIS profile, are 241.0 ft, 241.5 ft, 242.25 ft and 244.8 ft for the 10-yr, 50-yr, 100-yr and 500-yr floods. The highest invert of the 4 outfall culvert lines is 333.17, at Line 1, with a corresponding crown of the pipe at 339.17, indicating that the outlet is submerged for all four of the storms analyzed. For a submerged outlet, the tailwater elevation is the starting HGL elevation at a point just downstream of the outfall. That starting HGL elevation is input in the yellow cell in the first row of column #3 for all 4 lines.

The invert elevations for the system are input by starting with the downstream outfall elevation in the first row of column #30. The upstream invert elevation of each point and each line is then input into the yellow cells in successive rows of column #30 to describe the system in the upstream direction. For all box culverts, the culvert width, culvert height and culvert cross-sectional area are input into columns #33, #34 and #35, respectively, in each row containing a culvert segment. For the 78" round culverts, the culvert diameter, constant Pi and culvert cross-sectional area input into columns #33, #34 and #35, respectively. Corresponding rim elevations for each pipe are then automatically calculated based on the culvert height in column #31. Similar to the pipe inverts, the corresponding ground elevations are input into the yellow cells in column #32.

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FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY
DISTRICT
TOWN OF HERNDON, VIRGINIA

SUGARLAND RUN AND RESTON SECTION 904 FLOODPLAIN ANALYSIS - WSSI PROJECT FILE #21924.03

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	12.01

REVISIONS	#	DESCRIPTION	BY	APPROVED

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

V 10.01

THIS SHEET IS FOR INFORMATION PURPOSES ONLY!!!!

FILE: P:\projects\6045\CAD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 12.01 WSSI REPORT FOR INFO ONLY.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:44:07 AM LAYOUT: 12.01

This system involves three bends, 11.9 degrees, 22.7 degrees and 63.9 degrees at points B, C and D, respectively, for which minor losses are accounted for. In the row of each analysis point, the corresponding bend angle is input into the yellow cell in column #34.

Manning's n-values or roughness coefficients for the culverts are input into the yellow cell for each culvert segment in column #5. Since all pipe segments are concrete, an n-value of 0.013 was utilized for all pipe segments.

The overall system was analyzed utilizing Effective FIS peak discharges at the downstream end of the system for the 10-year, 50-year, 100-year and 500-year flooding events. Assuming equal conveyance through each line, the peak discharge for the analysis of each flooding event is divided by four and input into the most downstream culvert of each line under Q_{design} in column #8. This downstream peak discharge is analyzed through the entire system for a more conservative analysis.

For each culvert segment of each line, the corresponding length of pipe is input into the yellow cell in column #16. The corresponding slope of each pipe segment is calculated in column #7.

Since each line is submerged at the outfall, the HGL analysis begins by checking for pressure flow by calculating losses beginning from the downstream end and progressing upstream. A minor loss occurs at the outfall in the form of an exit loss. Refer to TAB 9 for a separate narrative describing the process of calculating minor losses for this system.

The downstream channel velocity is input into the yellow input cell corresponding to the downstream analysis point (Point A) of each line in column #10. The velocity head, $V_{ch}^2/2g$, for the outfall channel is calculated in the same row in column #14. The exit loss at Point A in each line is calculated in column #19.

Since the outfall is submerged, the velocity in the downstream pipe segment, A-B, is calculated based on full flow velocity conditions using the Continuity Equation as follows:

$Q_{analysis} = V_{full}A_{full}$ or $V_{full} = Q_{analysis} / A_{full}$, where

$Q_{analysis}$ = actual flow analyzed through the culvert (cfs)
V_{full} = full flow velocity (fps)
A_{full} = full cross-sectional area of the pipe segment (sf)

Column #4 displays the full flow cross-sectional area as input in Column #35. The full flow velocity is calculated in column #10 for all pipe segments. The full capacity of the pipe is calculated using Manning's Equation, as follows:

$$Q = (1.486/n)AR^{2/3}S^{1/2}$$

As a convenience, a term called the channel conveyance (K) is calculated in column #6 and is defined as follows:

$$K = (1.486/n)AR^{2/3}$$

Where

n = manning's roughness coefficient for the pipe material (unitless)
A = the full cross-sectional area of the pipe (sf)
R = the full hydraulic radius of the pipe (Area/wetted perimeter)

The capacity of the pipe is then computed in column #9 as:

$$Q_{analysis} = KS^{1/2}$$

When the hydraulic grade line transitions from a pressure flow (submerged) condition to a gravity flow (HGL lower than crown of pipe) condition, the flow can either be sub-critical, in which the normal depth is higher than critical depth, or supercritical, in which the normal depth is less than critical depth. As a more conservative approach in calculating the HGL, when pipe segments are found to transition into gravity flow, the HGL computations shall utilize the greater of either normal depth or critical depth. Normal and critical depth for all pipe segments for each of the four storm events analyzed were computed using FlowMaster and are summarized in Table 2 provided in TAB 8. For all segments of pipes flowing under gravity flow, critical depth is greater than normal depth. Therefore, for those supercritical flow conditions, critical depth was utilized in the HGL computations.

Critical depth, critical flow area and critical velocity of each pipe segment is recorded in columns #11, 12 and 13, respectively. For the 78" round pipes between points B and C in lines, critical flow values are obtained from modeling the pipe segment in FlowMaster using an iterative computational process. For the box culverts, critical depth is calculated using the following formula:

$$d_c = [q^2/g]^{1/3}$$

Where

d_c = critical depth (ft)
q = discharge per ft. of culvert width (cfs)
g = gravitational acceleration, 32.2 ft/s^2

Critical area is computed as the culvert width multiplied by the critical depth. Critical velocity is computed as the analysis discharge divided by the critical area.

Velocity head is calculated for both the full flow velocity and the critical velocity and input into columns #14 and 15, respectively.

The friction slope is recorded in column #17. For pressure flow conditions, the friction slope is computed using Manning's Equation for full flow conditions based on the actual flow through the pipe and the full cross-sectional area and hydraulic radius. For non-pressure flow,

friction losses are calculated based on the actual slope of the pipe segment. Pressure and partial flow conditions are checked at the downstream and upstream ends of each pipe segment and identified in columns #19 through #26 for each line in the spreadsheet associated with a pipe segment. For pipe segments under pressure flow at the downstream end but partial flow at the upstream end, the HGL intersects the crown of the pipe somewhere within that segment and then converts to open channel flow in which the HGL is the greater of normal depth or critical depth within the pipe.

The following form of Manning's Equation is used to calculate the friction slope for pressure flow conditions in the downstream outfall pipe segment:

$$S_f = [(Q\,n) / (1.486AR^{2/3})]^2$$

Or

$$S_f = Q_{analysis} / K$$

The major losses in the system, friction losses, are calculated in column #18 as the product of the friction slope and pipe segment length.

Minor losses may include exit, entrance, transition and bend losses with an increase or decrease factor for surface or shaping practices within manholes and junctions. Minor losses for this system include only an exit loss at the downstream end of the system, an entrance loss at the upstream end of the system, and bend losses at each bend. There are no junctions or manholes where expansion or contraction occur anywhere in the system other than where lines 3 and 4 transition from single box culverts to round culverts and back to box culverts. However, as these transitions are formed as smooth junctions, similar to precast Y- or T-connections, and they include a bend at their junction, only bend losses were calculated to account for minor losses at those transitions, as required for precast Y- or T- connections in the Fairfax County Public Facilities Manual (PFM). Refer to TAB 9 for a separate narrative regarding calculation of minor losses in the system. Minor losses are calculated in columns #19 through #24. A factor of 1.3 may be applied to the total junction loss in column #25 for drop structures in which flow drops into the system from the surface. There are no such junctions in this system. Similarly, a factor of 0.5 may be applied to the total junction loss in column #26 for manholes that have been shaped to minimize flow disturbance. No such manholes are present in this system.

The resulting energy grade line, velocity head and hydraulic grade line elevations at the upstream end of each point or pipe segment are then calculated in columns #27, 28 and 29, respectively. The HGL elevations are highlighted in blue in column #29.

The calculation of the water surface elevation at the upstream end of each line, the headwater elevation, depends on whether the entrance is under inlet or outlet control. When the entrance pipe segment is submerged and under outlet control, the headwater elevation is calculated as an entrance loss added to the energy grade line at the upstream end of the line (and HGL is equal to the EGL minus the velocity head in the pipe). When the entrance pipe is not submerged, the

headwater depth is calculated assuming inlet control using the nomographs from HDS-5[3]. The headwater elevation is the greater of the headwater depth added to the upstream pipe invert or the entrance loss added to the HGL at the upstream end of the line. Headwater depth calculations using HDS-5 nomographs are provided in TAB 7. Headwater depth is input in the worksheet in column #11 in the last row of each pipe line.

Hydraulic Grade Line Computation Results

A plan view of each of the four lines analyzed and the corresponding HGL profiles for the 10-, 50-, 100- and 500-year floods within the study limits are provided on sheets 6-13 of the plan set provided in TAB 12. The baseline and stationing for each line differs from each other due to differences in the overall length of each line. Since the overall goal was to compute the HGL in each line and then project the results onto the overall effective FIS baseline, the stationing for each line is distinguished from the overall FIS baseline stationing by simply starting with station 0+00 at the downstream end of each line. The results of projecting the HGL computed for each line onto an overall system profile along the effective FIS baseline are depicted on the plan and profile sheets for the overall system, provided in TAB 12. The profile view of the overall system depicts the greatest hydraulic grade line elevations of all four lines for each of the storms analyzed.

Based on the survey data of the connecting minor storm drains provided in TAB 4, a comparison of the projected overall HGL of the system for each storm with that of the controlling elevations of each minor system results in some minor pooling in specific areas, but does not result in overland flow. A narrative presenting the evaluation of potential surcharging through the hydraulically connected minor storm drain systems is provided in TAB 10. Areas of shallow flooding from the surcharging of minor storm drain inlets, grates and end sections are depicted on the plan views of the overall system provided on sheets 16 and 17 of TAB 12.

Although this system is not suitable to model in most storm drain analysis programs, a program called Hydraflow Storm Sewers[4] was used to model LINE #1, one of the easier lines to model, for the 100-yr and 500-yr flood events and used as backup computations to help validate the worksheet HGL calculations. The results of the analysis of LINE #1 using the program match the results of the calculations from the worksheet. The summary printouts of these backup computations are provided at the end of TAB 6.

FEMA FIRM and FIS Profile Revisions

Based on the results of the HGL computations and floodplain analysis, the effective FIRM has been annotated to reflect the effects of the existing major storm drain system on the Zone AE SFHA depicted on Sugarland Run within the study limits adjacent to the Reston Section 904 site. In addition, the effective FIS profile has also been annotated to reflect the effects of this analysis. The annotated FIRM and FIS profile are provided in TAB 11.

[3] Hydraulic Design Series Number 5, Federal Highway Administration, Publication No. FHWA-NHI-01-020, September 2001, Revised May 2005
[4] Hydraflow Storm Sewers Extension for AutoCAD Civil 3D, Version 6.066, Autodesk, Inc.,

Summary

The effective FIRM and FIS profile for Sugarland Run depicts flood data based on outdated information. Specifically, the effective flood data reflects topography that pre-dates the development of the Fairfax County Parkway and the major storm drain system that conveys Sugarland Run underneath the Parkway from approximately 100 feet downstream of Sunrise Valley Drive to the downstream side of the Dulles Airport Access Road. This floodplain analysis therefore involves performing hydraulic grade line computations on the major storm drain system to determine its affect on flood flows. As a result, this analysis demonstrates that effective peak flow rates from the 10-, 50-, 100-, and 500-year floods are contained within the storm drain system and do not result in overland flooding, with the exception of minor surcharge pooling for the 500-year flood in some of the hydraulically connected minor storm drain systems.

This LOMR request is based on updated topography and structure data. The appropriate MT-2 forms for this request are provided in TAB 3. The revised FIRM panel and FIS profile are provided in TAB 11. Although the revised flood elevations tie into the effective profiles at the downstream end of the study, the limits of the revised floodplain in plan view do not tie into the effective flood zones at the downstream limit of study. Fairfax County Parkway extends several thousand feet further downstream adjacent to Sugarland Run and such floodplain revisions are well beyond the scope of this project.

L:\21000s\21900\21924.03\Admin\04-ENGR\05-LOMR\2012-05-01_Narrative.doc

Table 4, "Summary of Discharges"

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance	2-Percent-Annual-Chance	1-Percent-Annual-Chance	0.2-Percent-Annual-Chance
LITTLE HUNTING CREEK TRIBUTARY NO. 1					
At confluence with Little Hunting Creek	1.22	†	†	1,672	†
LONG BRANCH FOURMILE RUN					
At county boundary	1.00	1,220	1,937	2,295	3,600
Approximately 1,000 feet upstream of Fairfax County boundary	0.86	1,116	1,722	2,041	3,210
Approximately 0.49 mile upstream of Fairfax County boundary	0.67	885	1,365	1,618	2,500
Approximately 1,000 feet upstream of State Route 714	0.41	580	922	1,092	1,750
NORTH BRANCH					
At confluence with Little Hunting Creek	4.98	4,039	5,551	6,925	8,700
At State Route 628	2.64	2,539	3,503	4,431	5,520
NORTH FORK DOGUE CREEK					
At confluence with Dogue Creek	4.17	3,176	4,600		
Just upstream of confluence of Tributary 1 to North Fork Dogue Creek	2.12	1,774	2,700	3,129	4,300
Just downstream of Union Farm Road	1.68	1,826	2,580	2,986	2,810
Just downstream of State Route 624	1.08	1,202	1,810	2,208	3,000
Just upstream of State Route 624	0.89	963	1,580	1,904	2,800
Approximately 0.32 mile upstream of State Route 624	0.68	625*	1,024*	1,261*	1,805*
At Woodley Drive	0.46	286	468	618	810
PAUL SPRING BRANCH					
At confluence with North Branch	1.93	2,154	2,960	3,687	4,550
Upstream of Mason Hill Drive	1.27	1,726	2,382	2,948	3,850
Upstream of Paul Spring Road	1.13	1,636	22,668	2,820	3,460
Upstream of University Drive	0.41	894	1,217	1,563	1,950
PIMMIT RUN					
Approximately 500 feet downstream of State Route 694	2.92	2,805	4,455	5,115	7,000
Approximately 600 feet upstream of Dulles Access Road	2.42	1,541	2,447	2,810	3,950
At State Route 7	0.64	1,013	1,609	1,847	2,500
POPES HEAD CREEK	18*	2,400*	4,600*	5,900*	10,000*
SPRING BRANCH					
At confluence with Folly Lick Branch	0.65	570	930	1,140	1,540
At Park Avenue	0.43	380	620	750	1,020
At Willow Street	0.39	340	560	680	930
SUGARLAND RUN					
At confluence with Folly Lick Branch	6.70	3,700	5,500	6,400	8,600
At downstream corporate limit	5.07	3,100	4,800	5,500	7,400
At Spring Street	2.22	2,100	3,100	3,500	4,600
At upstream corporate limits	1.08	1,200	1,800	2,100	2,700

13

VIKA
ENGINEERS PLANNERS SURVEYORS
LANDSCAPE ARCHITECTS GEOMATICS
VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE SUITE 200
TYSONS, VIRGINIA 22102
PHONE: (703) 442-7800
FAX: (703) 761-2787
TYSONS, VA. GERMANTOWN, MD.

REVISIONS	DATE
FIRST SUBMISSION	2019.05.29
SECOND SUBMISSION	2019.05.29
THIRD SUBMISSION	2020.09.28
FOURTH SUBMISSION	2020.10.15

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
KYLE M. O'CONNOR
Lic. No. 57246
10/16/2020
PROFESSIONAL ENGINEER

FAIRBOOK BUSINESS PARK FLOOD PLAIN STUDY
DISTRICT
TOWN OF HERNDON, VIRGINIA

SUGARLAND RUN AND RESTON SECTION 904 FLOODPLAIN ANALYSIS - WSSI PROJECT FILE #21924.03

DRAWN BY:	KMO
DESIGNED BY:	KMO
DATE ISSUED:	04-10-2019
DWG. SCALE:	N/A
VIKA NO.	6045X
SHEET NO.	12.02

REVISIONS	#	DESCRIPTION	BY	APPROVED

V 10.01

APPROVED BY THE DEPARTMENT OF COMMUNITY DEVELOPMENT

THIS SHEET IS FOR INFORMATION PURPOSES ONLY!!!!

FILE: P:\projects\6045\6045X\CADD\ENGINEERING\CONSTRUCTION DRAWINGS\FLOODPLAIN STUDY\6045X - 12.01 WSSI REPORT FOR INFO ONLY.dwg USER: Oconnor DATE: October 15, 2020 TIME: 10:44:39 AM LAYOUT: 12.02

TOWN OF Herndon VIRGINIA

MEMORANDUM

To: **Chairman Romeo and Members of the Planning Commission**

From: **David Stromberg, AICP, Zoning Administrator** DS

Date: **October 22, 2020**

Subject: **RPA #17-01 – Resource Protection Area Exception - Fairbrook Development**

This memo serves as an addendum to the staff report dated October 5, 2020 and provided for the work session.

A revised plan set (sealed on October 29, 2020, attachment 2) has been submitted to the town that more clearly identifies the on-site encroachment subject to the exception request. This plan also incorporates the most recent changes to the plan set for the primary SE #17-03 application.

The 2.92 acres of encroachment for the construction of the Fairbrook Drive extension on the adjacent 5.14 acre Herndon I, LLC parcel (Fairfax County Tax Map Number 0173 02 0004A) is an exempt activity in the RPA and does not require an exception. The revised plan set now show this area as not being part of the encroachment exception request.

Adjacent parcel 0173 02 0004A is required to be dedicated to the town pursuant to Proffered Condition Amendment PCA #15-101 to allow the construction of a hotel on 232 Sunset Park Drive. The dedication is expected to occur in the near future in conjunction with approval of the building permit for the hotel, which is currently under review.

The revised total areas specific to the applicant's site are shown on Sheets 4-5 for total encroachment in the RPA and on Sheets 6-7 for total impervious area in the RPA. The revised plan set also specifically shows the area of encroachment subject to the exception request by each building. The sheets are summarized in the table on the next page.

The mitigation plan on Sheets 10-11 show the stream restoration and mitigation areas that can occur on site. The on-site mitigation compensates for the encroachment cause by the construction of either buildings 3 and 4 or buildings 1 and 2. Off-site mitigation and stream restoration on the adjacent parcel 0173 02 0004A, as shown on Sheet 11 of the plan set (dated September 28, 2020) provided to the planning commission for the work session on October 5, 2020 identifies the locations where the mitigation will provide the greatest benefit to the resource protection area.

Staff has also amended condition 4 related to mitigation planting and stream restoration to reflect the current ownership situation. The revised condition will require the applicant to do the following:

- Sheet 11 from the September 28, 2020 plan set will be incorporated into the current plan set and labeled 11.A
- The mitigation for each respective building will be required at the time of site plan for that building.
- Mitigation associated with the site plan for the final two buildings constructed shall be on the adjacent parcel (which will have been dedicated to the town pursuant to PCA #15-101) in the locations identified on Sheet 11.A (sheet 11 from previous submission).
    - If the applicant is unable to install the mitigation improvements on the adjacent parcel for any reason, they are required to seek another RPA exception prior to any site plan approvals for the final two buildings.

Updated Encroachment and Impervious Areas (Exception Request Areas highlighted)

	Amount of Encroachment (sheets 4-5)	Amount of Impervious Area (sheets 6-7)
Herndon Parkway Streetscape Improvements (Exempt Activity)	0.49 acres	0.32 acres
Proposed Trail System and Public Sidewalks (Exempt Activity)	1.86 acres	1.01 acres
Stormwater outfalls and stream restoration (Permitted Activity)	0.38 acres	0 acres
Fairbrook Drive on-site (Exempt Activity)	1.96 acres	1.52 acres
(Office) Buildings 1 and 2 Previously Approved by CU #00-07	1.14 acres	1.10 acres
Buildings 1 & 2 (Office on single podium garage)	0.45 acres	0.18 acres
Building 3 (mixed-use along Herndon Parkway)	0.10 acres	0.07 acres
Building 4 (residential)	0.22 acres	0.17 acres
Totals	6.60 acres	4.38 acres

Attachments:

1. Proposed Planning Commission Resolution
2. Revised RPA Exception Conditions
3. Revised Plan Set dated October 19, 2020 (hard copy physical dispatch)

TOWN OF HERNDON, VIRGINIA

PLANNING COMMISSION

DRAFT RESOLUTION

October 26, 2020

Resolution- to recommend approval with conditions of Resource Protection Area Exception request RPA #17-01, to the Town Council allowing an exception to the requirements of the Chesapeake Bay Preservation Overlay district to allow a mixed-use development.

WHEREAS, the applicant, Fairbrook Business Parks Associates and LP and Fairbrook Business Parks Associates II, LP, has submitted an associated application, special exception SE #17-03, to permit a mixed-use development consisting of residential, office and retail square footage not to exceed 1,515,000 total square feet or a maximum of 1.25 FAR, with a residential to office percentage not to exceed 60 percent residential at total build out on property located at 100, 150, 200 Fairbrook Drive, Fairbrook Business Park and identified as Fairfax County Tax Map Reference Numbers: 0164-10-0005A, 0164-25-H, 0164-25-O in accordance with the plan dated October 16, 2020; and

WHEREAS, the development at full build-out would result in 6.60 acres of total encroachment into the RPA; of which, 4.31 acres are exempted activity, 0.38 acres are permitted activity, 1.14 acres are previously approved, and 0.77 acres are subject to an exception; and

WHEREAS, the applicant has proposed a mitigation plan consisting of stream restoration and vegetative plantings that will ultimately improve the health of the buffer and quality of the water beyond pre-development conditions; and

WHEREAS a portion of the required mitigation is shown on the adjacent parcel identified as 0173-02-0004A1 and the applicant shall be required to seek a new RPA exception should they be unable to install the mitigation on adjacent parcel 0173-02-0004A1; and

WHEREAS, the Planning Commission has reviewed this application and has held a public hearing on October 26, 2020 in accordance with the provisions of §15.2-2204 of the State Code; and

WHEREAS, the Planning Commission finds that the proposed development, with the conditions dated October 26, 2020, meets the purpose and intent of the Zoning Ordinance, in particular Section 78-60.4 Chesapeake Bay Preservation Overlay district, including the allowances and criteria found therein; and

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the Town of Herndon, Virginia, hereby recommends that the Town Council approved Resource Protection Area Exception RPA #17-01, in accordance with the conditions set forth below to achieve compliance with the standards found in Section 78-155.3 and Section 78-60.4.

INSERT CONDITIONS

Conditions of Approval

Resource Protection Area Exception RPA #17-01, 100, 150, 200 Fairbrook Drive, Fairbrook Business Park

~~September 29~~October 26, 2020

1. Substantial Conformance. The development of the Chesapeake Bay Resource Protection Area ("**RPA**")described in Condition 2 and 3 below shall be in substantial conformance with Sheets 1-18 of the plan entitled "Fairbrook Water Quality Impact Assessment & Resource Protection Area Exception Request" sealed on ~~September 28~~October 19, 2020, prepared by Wetland Studies and Solutions, Inc. (the "**Plan**"), incorporated by reference and the Town of Herndon Zoning Ordinance (the "**Zoning Ordinance**"). Approval of this application for the approximately 4.60-acre parcel identified as Fairfax County Tax Map Reference Number 0164-10-0005A, the 2.52-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-H, and the 20.44-acre parcel identified as Fairfax County Tax Map Reference Number 0164-25-O~~, and the 5.14-acre parcel identified as Fairfax County Tax Map Reference Number 0173-02-0004A1,~~ (the "**Property**") shall not relieve the applicant or the owners of the Property their successors or parties developing, establishing or operating the approved Special Exception use (the "**Applican**t") from the obligation to comply with and conform to an Zoning Ordinance, the Town of Herndon Codified Ordinance or regulatory Requirement.

2. Use Permitted. This RPA Exception grants approval to permit development within the CBPAO, Chesapeake Bay Preservation Area Overlay district pursuant to Section 78-60.4 of the Zoning Ordinance.

3. Development. Development within the Resource Protection Area on the Property includes constructing a portion of Fairbrook Drive, outdoor recreation facilities, private streets and drive aisles, installing infrastructure, and associated grading within the RPA.

4. RPA Enhancement and Revegetation. ~~The Applicant shall incorporate the mitigation measures proposed on Sheets 10-12 of the Plan and any other mitigation measures required from Conditional Use Permit CU #00-07. Minor alterations due to final engineering may be authorized by the zoning administrator during site plan review.~~Prior to the approval of any site plan for development on the Property that encroaches into the RPA, the applicant shall incorporate mitigation associated with the encroachment for each phase of development as shown on Sheets 4-5 of the Plan. If the amount of encroachment not otherwise exempt, permitted, or previously authorized, as shown on Sheet 5 of the plan, exceeds the amount of stream restoration and planting mitigation that can be accommodated on site, as shown on Sheet 10-11 of

the plan, then no other site plans for new development shall be approved unless one of the following conditions (a or b) occurs:

a. The area on the property currently identified as Fairfax County Tax Map Reference Number 0173-02-0004A1 has been dedicated to the Town of Herndon pursuant to Proffer Condition Amendment PCA #15-101 and Ordinance 16-O-01, duly adopted by the Town Council of the Town of Herndon on January 12, 2016; and,
    i. The three areas of stream restoration are installed as shown on Sheet 11.A of the plan submission sealed on October 19, 2020; and,
    ii. The planting areas identified as Planting Area 4, 5, 6, and 7, consisting of 62,756 square feet, are installed as shown on Sheet 11.A of the plan submission sealed on October 19, 2020.

~~4.~~b. A revised exception for encroachment into the RPA proposing alternate mitigation is submitted to the town.

Commented [SD1]: This is Sheet 11 that was distributed to the planning commission for the October 5, 2020 work session. It will be retitled Sheet 11.A and inserted as a slip sheet in the October 19, 2020 plan set that was distributed for the public hearing.

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Attachment #3

FAIRBROOK
WATER QUALITY IMPACT ASSESSMENT & RESOURCE PROTECTION AREA EXCEPTION REQUEST

TOWN OF HERNDON, VIRGINIA

APPLICANT:
FAIRBROOK BUSINESS PARK ASSOCIATES, LP
FAIRBROOK BUSINESS PARK ASSOCIATES II, LP
1001 G STREET NW, SUITE 900
WASHINGTON, DC 20001
BOB KNOPF
(202) 393-1999

LAND USE ATTORNEY:
WALSH, COLUCCI, LUBELEY, & WALSH, P.C.
2200 CLARENDON BLVD, SUITE 1300
ARLINGTON, VIRGINIA 22201
ELIZABETH D. BAKER
(703) 528-4700

ARCHITECT:
DCS DESIGN - DAVIS, CARTER, SCOTT LTD
8614 WESTWOOD CENTER DRIVE, SUITE 800
TYSONS, VIRGINIA 22182
DOUG CARTER, AIA
JASNA BEJELIC, LEED AP BC+C
(703) 556-9275

ENGINEER:
VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE, SUITE 200
TYSONS, VIRGINIA 22102
ROBERT COCHRAN L.S.
(703) 442-7800

LANDSCAPE ARCHITECT:
VIKA VIRGINIA, LLC
8180 GREENSBORO DRIVE, SUITE 200
TYSONS, VIRGINIA 22102
JEFF KREPS, PLA/ASLA
(703) 442-7800

TRANSPORTATION:
WELLS + ASSOCIATES, INC.
1420 SPRING HILL ROAD, SUITE 610
TYSONS, VIRGINIA 22102
MICHAEL J. WORKOSKY, PTP, TOPS, TSOS
(703) 917-6620

Vicinity Map
SCALE: 1" = 2,000'



Copyright ADC The Map People
Permitted Use Number 20711184

Vicinity Map
Fairbrook Business Park and Offsite Study Area
WSSI #4674.06
Original Scale: 1" = 2000'



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Wetland Studies and Solutions, Inc.
a DAVEY company

SHEET INDEX

1 COVER SHEET
2-3 EXISTING CONDITIONS PLAN
4-5 PROPOSED RPA ENCROACHMENT PLAN
6-7 PROPOSED IMPERVIOUS CONDITIONS PLAN
8-9 VEGETATION ASSESSMENT
10-11 RPA ENHANCEMENT PLAN
12 PROPOSED REVEGETATION PLANTING SCHEDULE
13-16 STORMWATER MANAGEMENT INFORMATION
17 WATER QUALITY IMPACT ASSESSMENT NARRATIVE
18 RESOURCE PROTECTION AREA EXCEPTION REQUEST

Resource Protection Area (RPA) Map
SCALE: 1" = 500'

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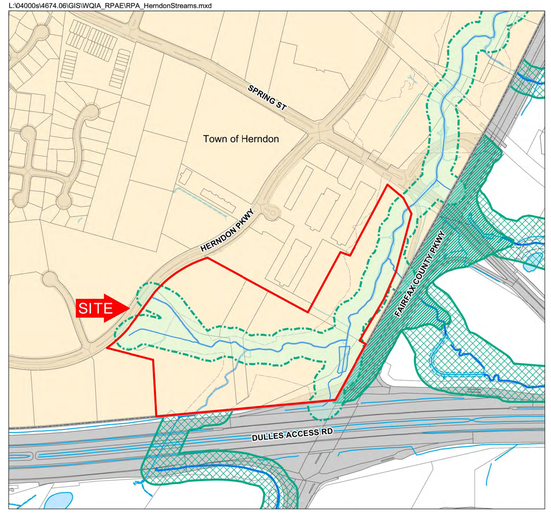

Fairfax County
- RPA 1993
- RPA 2003
- RPA 2005
- Pipes
- Perennial Stream
- Non-perennial Streams
- Ditch
- Waterbody
- Fairfax County Parcels
- Fairfax County Floodplains

Resource Protection Area (RPA) Map
Fairfax County and
Town of Herndon Digital Data
Fairbrook Business Park and Offsite Study Area
WSSI #4674.06
Original Scale: 1" = 500'

Town of Herndon
- RPA
- Perennial Streams
- Non-perennial Streams
- Town of Herndon

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Feet

Wetland Studies and Solutions, Inc.
a DAVEY company

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Cover Sheet

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COMMONWEALTH OF VIRGINIA
JOHN T. KELLEY, JR
Lic. No. 035786
9/28/2020
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: JUNE 2020
SCALE: N/A

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet #
1 of 18

Computer File Name:
L:\04000s\4674.06\CADD\07-REGS\WQIA\May 2020 WQIA Revision 2020-10-14_Fairbrook WQIA.dwg

LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLANDS (PER WSSI'S OBSERVATIONS)
- FIELD VERIFIED RESOURCE PROTECTION AREA
- RPA — TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- EXISTING ONSITE IMPERVIOUS AREA WITHIN RPA
- FEMA-2010 — EFFECTIVE 100-YEAR FEMA FLOODPLAIN
- RPA CUTOFF
- LIMITS OF DISTURBANCE

50 25 0 50 100 150
SCALE: 1"=50'

SCALE: 1"=50'

N/F
FP VAN BUREN, LLC
(DB 18059 PG 225)
TM# 016-4 ((10)) 001B
ZONE : O & LI
USE: LOW RISE OFFICE

N/F
HERNDON SUITES, LLC
(DB 9021 PG 1525)
TM# 016-4 ((02)) 0015
ZONE: O & LI
USE: HOTEL
WITHOUT RESTAURANT
& OTHER COMM

SUNSET PARK DR.

SUNSET BUSINESS PARK II
ZONE: PD-b
USE: WHOLESALE, WAREHOUSING
AND STORAGE

N/F
PROPERTY OF
FAIRBROOK BUSINESS
PARK ASSOCIATES II, LP
(DB 20742, PG 1375)
LOT 5A
PARKWAY TRADE CENTER
(DB 9357, PG 582)
(DB 18956, PG 1230)
(DB 19759, PG 1183)
(200,580 SQ. FT. OR 4.60468 AC.)

FAIRBROOK LAND
CONDOMINIUM
LAND UNIT "O"
ELEV 355.60' & ABOVE
LAND UNIT "H"
BELOW ELEV 355.60'
DB 20145 PG 1285
(10,965 SQ. FT. OR
.25172 ACRES)

LIMITS OF
DISTURBANCE

FAIRBROOK
LAND CONDOMINIUM
LAND UNIT "H"
DB 20145 PG 1285
(109,771 SQ. FT. OR
2.52000 ACRES)

N/F
HERNDON 1, LLC
(DB 23620 PG 252)
TM# 017-3 ((02)) 0004A
ZONE: O & LI
USE: VACANT LAND

HERNDON PARKWAY
(80' WIDE PUBLIC RIGHT OF WAY)

FAIRBROOK DRIVE

FIELD-VERIFIED RPA

TOWN OF HERNDON RPA (2004)

100'

R3

PFO

PEM

PSS

RPA

FEMA - 2010

MATCHLINE SEE SHEET 3

N/F
CMP I HERNDON OWNER, LLC
(DB 23826 PG 522)
TM# 016-4 ((10)) 0004
ZONE: O & LI
USE: PD-T (PLANNED DEV-TRANSIT)

EXISTING STREAM WAS IDENTIFIED AS PERENNIAL THROUGH FIELD INVESTIGATION BUT NOT INCLUDED AS AN RPA COMPONENT IN THE 2014 HERNDON RPA MAP.

FAIRBROOK LAND CONDOMINIUM
LAND UNIT "O"
(DB 20145 PG 1285)
(890,390 SQ. FT.
OR 20.44054 ACRES)

DULLES TOLL ROAD — RTE 267

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Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Existing Conditions Plan

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JOHN T. KELLEY, JR.
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10/19/2020
PROFESSIONAL ENGINEER

REVISIONS				
No.	Date	Description	Rev. By	App. By

SCALE: 1" = 50'
DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	APE	JTK

Sheet # 2 of 18

Computer File Name:
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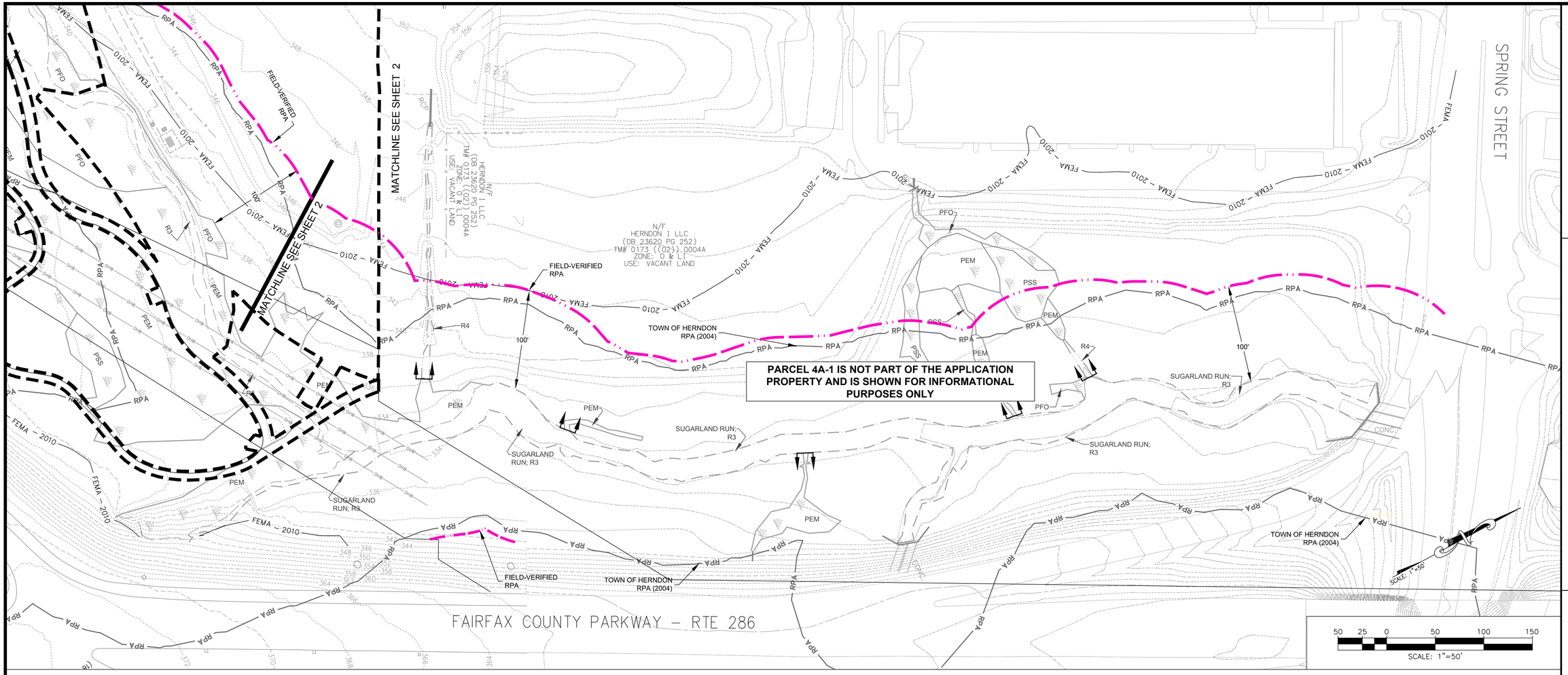

LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLANDS (PER WSSI'S OBSERVATIONS)
- RPA CUTOFF
- FIELD VERIFIED RESOURCE PROTECTION AREA
- TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- EXISTING ONSITE IMPERVIOUS AREA WITHIN RPA
- EFFECTIVE 100-YEAR FEMA FLOODPLAIN
- LIMITS OF DISTURBANCE

EXISTING SITE CONDITIONS:

TOTAL RESOURCE PROTECTION AREA WITHIN PARCEL AREA:
716,771 SF (±16.45 ACRES)

TOTAL RESOURCE PROTECTION AREA WITHIN LIMITS OF DISTURBANCE:
287,505 SF (±6.60 ACRES)

TOTAL EX. IMPERVIOUS AREA WITHIN LIMITS OF DISTURBANCE:
38,812 SF (±0.89 ACRES)

GENERAL NOTES

1. The subject property area is 1,200,742 square feet (27.57 acres).

2. Boundary information and topography (2-foot contour intervals) obtained from VIKA Virginia, LLC was used as a base for this attachment. This information is based in the NAD 83 horizontal coordinate system and referenced to the NGVD 29 vertical datum.

3. A waters of the U.S. (including wetlands) delineation was conducted within the study area by Wetland Studies and Solutions, Inc. (WSSI), as described in the May 31, 2016 report entitled, "Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation, Fairbrook Business Park and Off-site Study Area". The U.S. Army Corps of Engineers (COE) issued a jurisdictional determination (JD) verifying the delineated boundaries of these waters of the U.S on September 21, 2016 (NAO-2016-01643).

4. The Town of Herndon Mapped RPA was based on data from the perennial stream mapping project conducted by the Fairfax County DPWES (section 78-304.4(d)(4)) and was digitized by WSSI from the February 10, 2004 Town of Herndon RPA map.

5. RPAs are defined in section 78-304.4(d)(1) of the Town of Herndon Ordinance:

(1) The RPA shall consist of:
(a) Nontidal wetlands connected by surface flow and contiguous to water bodies with perennial flow; and
(b) A buffer area not less than 100 feet in width that is (a) along each side of any water body with perennial flow and (b) located adjacent to and landward of nontidal wetlands as described in a. above;
(c) The full buffer area shall be designated as the landward component of the RPA notwithstanding the presence of permitted uses, encroachments, and permitted vegetation clearing in compliance with sections 78-304.4(g), 78-304.4(i) and 78-304.4(j); and
(d) The buffer is to be measured from the top of bank or ordinary high water mark landward 100 feet.

6. A water body with perennial flow is defined in section 78-701 of the Town of Herndon Ordinance:

"Water body with perennial flow" means a body of water flowing in a natural or man-made channel year-round, except during periods of drought. The term 'water body with perennial flow' includes perennial streams, estuaries, and tidal embayments. A perennial stream means any stream that is both perennial and so depicted on the map of Chesapeake Bay Preservation Areas adopted by the Town Council. Lakes and ponds that form the source of a perennial stream, or through which the perennial stream flows, are a part of the perennial stream. The width of the perennial stream may be measured from either (i) top-of-bank to top-of-bank on the opposite side of the stream or (ii) from the Ordinary High Water Mark (OHWM) to the OHWM on the opposite side of the stream, as defined by 33 CFR Part 328.3(e), as determined by the zoning administrator. Ponds or lakes are to be measured from the limits of the normal water level. Generally, the water table is located above the streambed for most of the year and the groundwater is the primary source for stream flow.

7. A 100-foot buffer, landward of RPA core components, governs the location of the RPA. Six (6) perennial streams (Sugarland Run and five (5) unnamed tributaries to Sugarland Run) and four (4) intermittent streams are present within the study area. Additionally, non-tidal wetlands connected by surface flow and contiguous to the perennial streams are present on the study area. Therefore, the limits of the RPA on this study area are governed by the 100-foot buffer extending landward from the OHWM of the perennial stream and any wetlands contiguous and connected by surface flow to these streams.

8. The flow regime of the streams within the study area (Sugarland Run and unnamed tributaries to Sugarland Run) were determined based on the 2004 Town of Herndon RPA map, 2003 Fairfax County RPA map, and by field investigation. Stream evaluation methods developed by the North Carolina Division of Water Quality (NCDWQ) and the Fairfax County Department of Public Works and Environmental Services (DPWES) were used in the field to distinguish between ephemeral and intermittent streams (based on the NCDWQ method) and between intermittent and perennial streams (based on both methods). These methods were used to characterize representative reaches of the streams on the study area. Based on field observations, six (6) perennial streams and four (4) intermittent streams are present within the study area.

Stream assessment field work was performed on April 25 and 26, 2016 by Jennifer D. Feese, PWS, PWD, CT, Lauren Shaffer, PWD, WPIT, CT and Neil Gutherman. These results are described in WSSI's May 2016 wetland delineation report.

9. Six (6) RPA cutoffs were identified in the field; four (4) at the point where intermittent streams flow into perennial streams and two (2) at narrow vegetated swales (non-perennial conveyances). Narrow linear wetlands contiguous and connected by surface flow to a perennial waterbody are not generally considered a component of the RPA pursuant to the Chesapeake Bay Local Assistance Department June 18, 2007 (revised December 10, 2007) "Resource Protection Areas: Non-tidal Wetlands, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations."

10. The remainder of this subject property is designated as a Resource Management Area (RMA), as are all areas of the Town not included as an RPA.

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Existing Conditions Plan (cont'd)

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10/19/2020
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REVISIONS				
No.	Date	Description	Rev. By	App. By

SCALE: 1" = 50'
DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	APE	JTK

Sheet #
3 of 18

Computer File Name:
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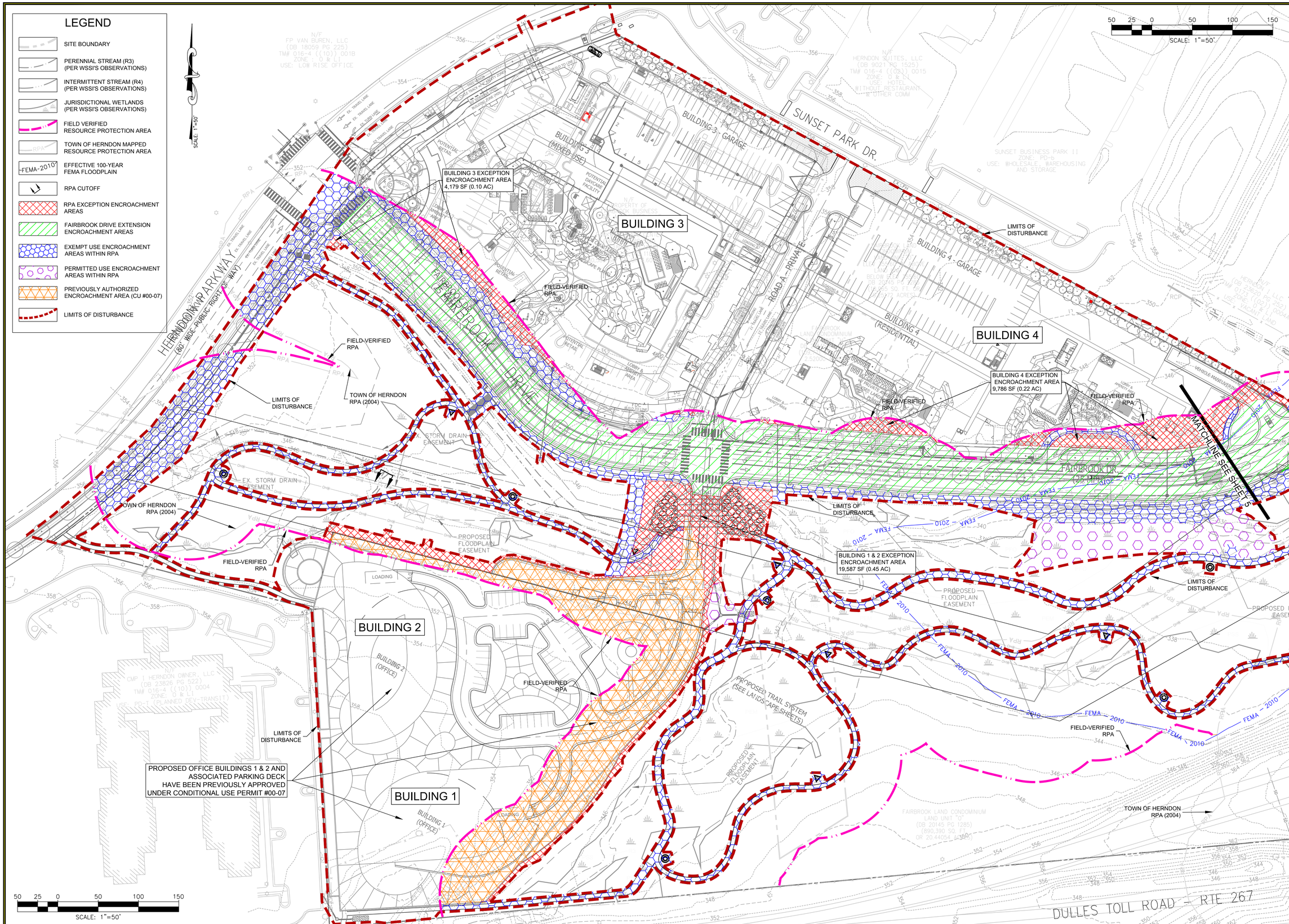

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Proposed RPA Encroachment Plan

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JOHN T. KELLEY, JR
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10/19/2020
PROFESSIONAL ENGINEER

REVISIONS

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DATE: JUNE 2020
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Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet #
4 of 18

Computer File Name:
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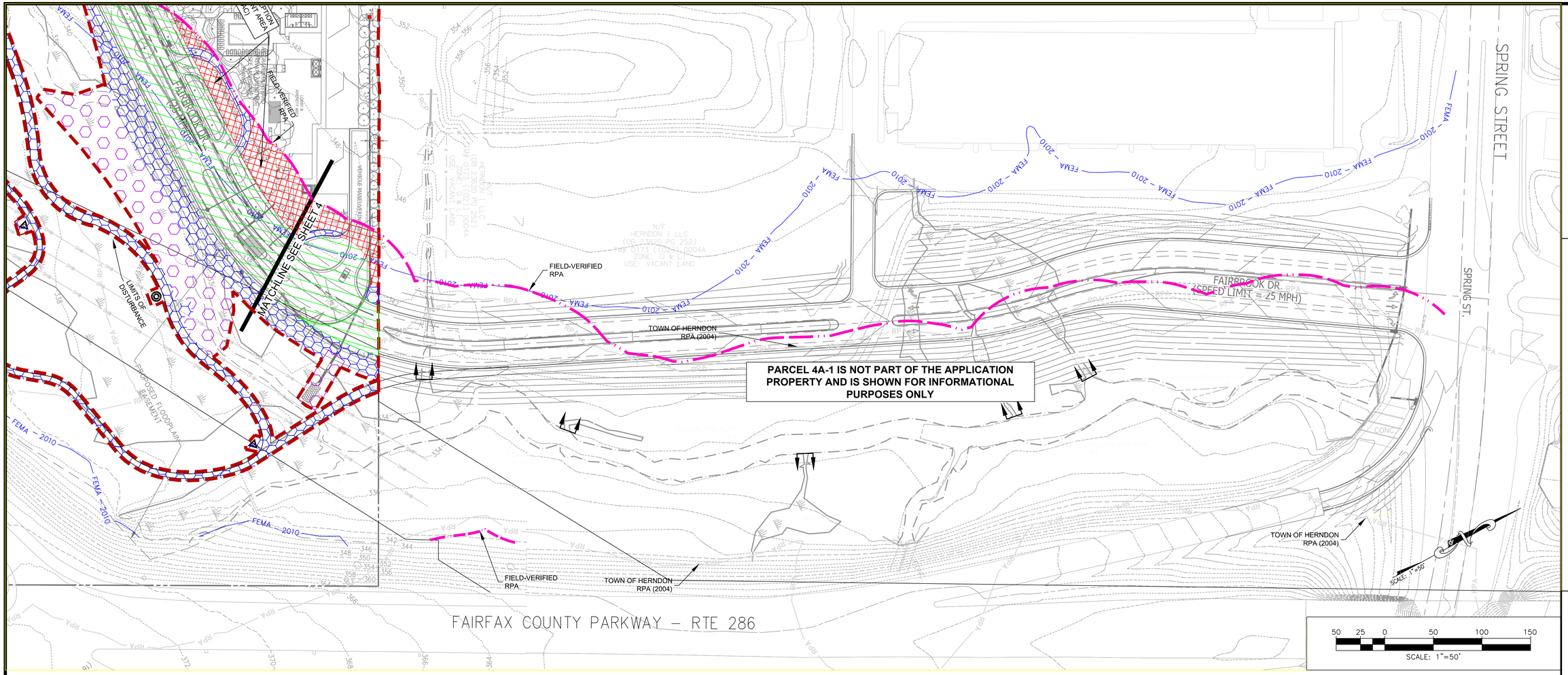

LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLANDS (PER WSSI'S OBSERVATIONS)
- EFFECTIVE 100-YEAR FEMA FLOODPLAIN
- FIELD VERIFIED RESOURCE PROTECTION AREA
- RPA CUTOFF
- TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- RPA EXCEPTION ENCROACHMENT AREAS
- FAIRBROOK DRIVE EXTENSION ENCROACHMENT AREAS
- EXEMPT USE ENCROACHMENT AREAS WITHIN RPA
- PERMITTED USE ENCROACHMENT AREAS WITHIN RPA
- PREVIOUSLY AUTHORIZED ENCROACHMENT AREA (CU #00-07)
- LIMITS OF DISTURBANCE

PROPOSED SITE NOTES:

1. Existing survey and proposed grading, utilities, and building plan were provided by VIKA Virginia, LLC in AutoCAD format and used as a base for this exhibit.
2. Presented on this sheet is the proposed impact of the development known as "Fairbrook Business Park" within the Resource Protection Area as established by Wetland Studies and Solutions, Inc.

PROPOSED SITE CONDITIONS:

TOTAL RESOURCE PROTECTION AREA (RPA) IN PARCEL AREA:
716,771 SF (±16.45 ACRES)

EXEMPT ENCROACHMENT AREA WITHIN THE RPA (HERNDON PARKWAY):
21,451 SF (±0.49 ACRES)

EXEMPT ENCROACHMENT AREA WITHIN THE RPA (SIDEWALKS/TRAILS/UTILITY CROSSINGS):
81,022 SF (±1.86 ACRES)

PERMITTED ENCROACHMENT AREA WITHIN THE RPA (STREAM RESTORATION):
13,666 SF (±0.31 ACRES)

PERMITTED ENCROACHMENT AREA WITHIN THE RPA (STORM WATER OUTFALLS):
2,996 SF (±0.07 ACRES)

EXEMPT ENCROACHMENT AREA WITHIN THE RPA (FAIRBROOK DRIVE):
85,262 SF (±1.96 ACRES)

PREVIOUSLY AUTHORIZED ENCROACHMENT AREA WITHIN THE RPA (CU #00-07; SOUTH OF FAIRBROOK DRIVE):
49,556 SF (±1.14 ACRES)

EXCEPTION ENCROACHMENT AREA WITHIN THE RPA (BUILDING 1 & 2):
19,587 SF (±0.45 ACRES)

EXCEPTION ENCROACHMENT AREA WITHIN THE RPA (BUILDING 3):
4,179 SF (±0.10 ACRES)

EXCEPTION ENCROACHMENT AREA WITHIN THE RPA (BUILDING 4):
9,786 SF (±0.22 ACRES)

Total Exception Encroachment Area Being Requested:
33,552 SF (±0.77 Acres)

TOTAL RPA ENCROACHMENT
287,585 SF (±6.60 ACRES)

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Proposed RPA Encroachment Plan

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10/19/2020
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1" = 50'
DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 5 of 18

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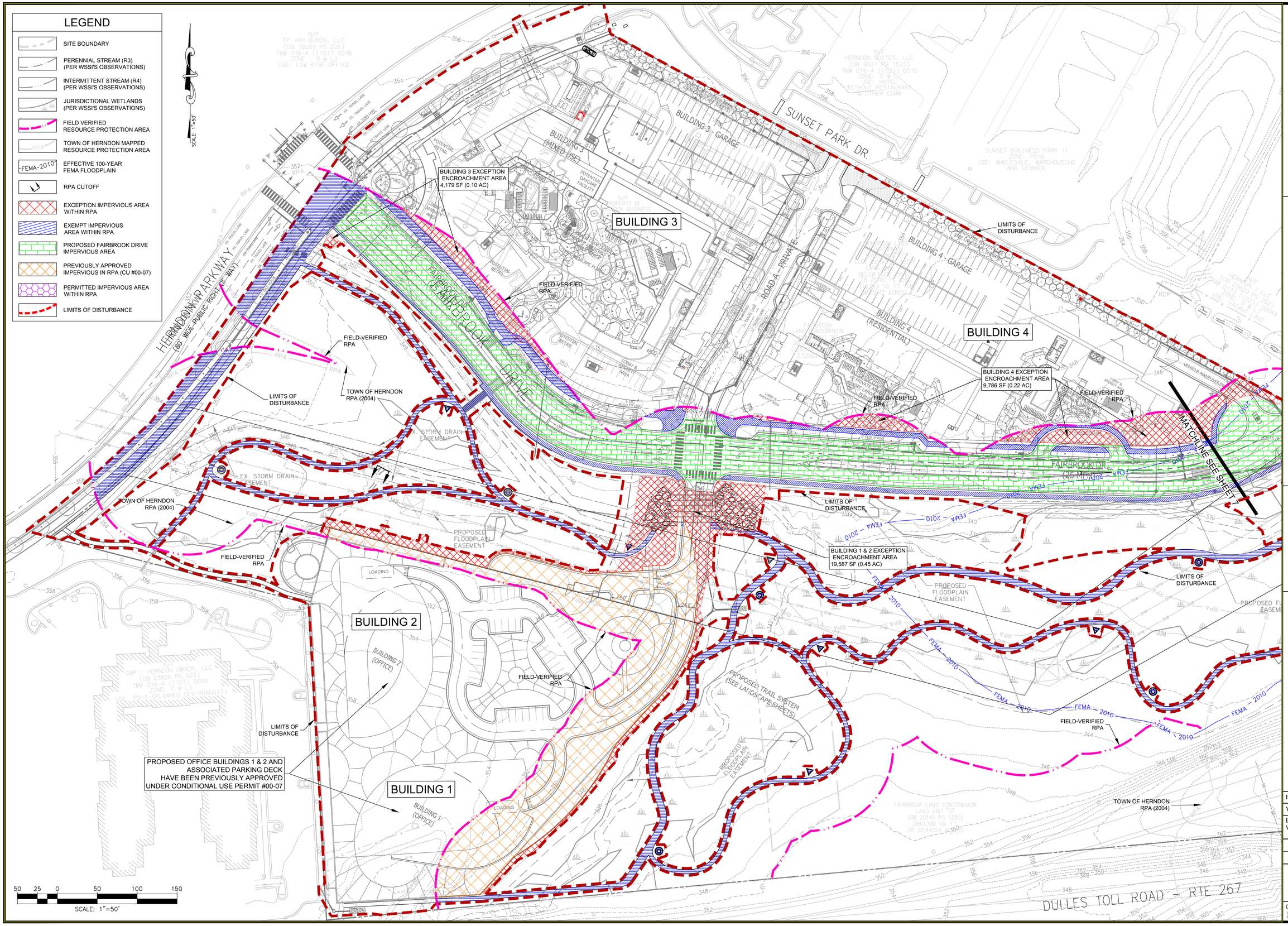

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Proposed Impervious Surfaces Plan

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REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: JUNE 2020

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Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 1929

Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet #
6 of 18

Computer File Name:
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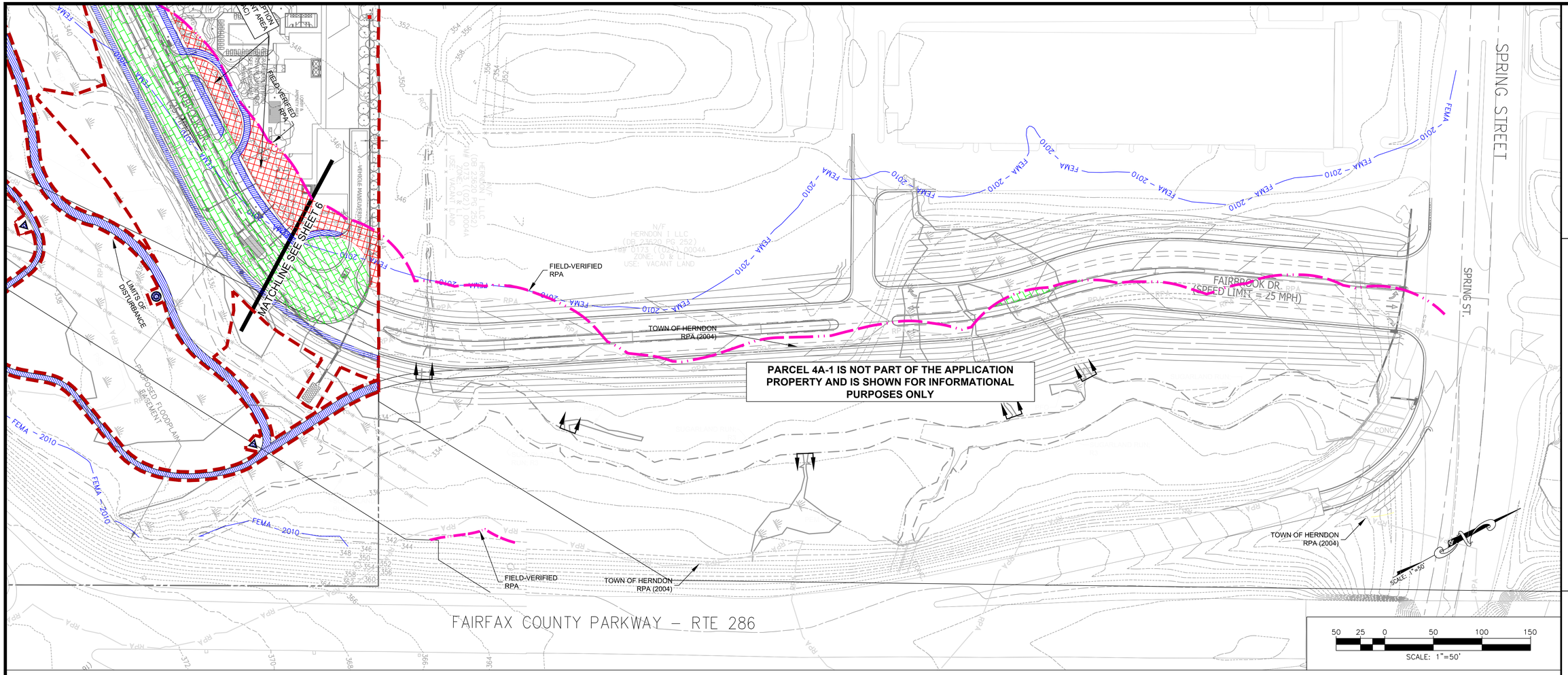

LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLANDS (PER WSSI'S OBSERVATIONS)
- FEMA-2010 — EFFECTIVE 100-YEAR FEMA FLOODPLAIN
- FIELD VERIFIED RESOURCE PROTECTION AREA
- RPA — TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- RPA CUTOFF
- EXCEPTION IMPERVIOUS AREA WITHIN RPA
- EXEMPT IMPERVIOUS AREA WITHIN RPA
- PROPOSED FAIRBROOK DRIVE IMPERVIOUS AREA
- PREVIOUSLY APPROVED IMPERVIOUS IN RPA (CU #00-07)
- PERMITTED IMPERVIOUS AREA WITHIN RPA
- LIMITS OF DISTURBANCE

PROPOSED SITE NOTES:

1. Existing survey and proposed grading, utilities, and building plan were provided by VIKA Virginia, LLC in AutoCAD format and used as a base for this exhibit.
2. Presented on this sheet is the proposed impact of the development known as "Fairbrook Business Park" within the Resource Protection Area as established by Wetland Studies and Solutions, Inc.

PROPOSED SITE CONDITIONS:

TOTAL RESOURCE PROTECTION AREA (RPA) IN PARCEL AREA:
716,771 SF (±16.45 ACRES)

EXEMPT IMPERVIOUS AREA WITHIN THE RPA (HERNDON PARKWAY):
13,901 SF (±0.32 ACRES)

EXEMPT IMPERVIOUS AREA WITHIN THE RPA (SIDEWALKS/TRAILS):
43,959 SF (±1.01 ACRES)

EXEMPT IMPERVIOUS AREA WITHIN THE RPA (FAIRBROOK DRIVE):
66,427 SF (±1.52 ACRES)

PERMITTED IMPERVIOUS AREA WITHIN THE RPA (STORMWATER OUTFALLS):
310 SF (±0.01 ACRES)

APPROVED IMPERVIOUS AREA WITHIN THE RPA (CU #00-07; SOUTH OF FAIRBROOK DRIVE):
48,012 SF (±1.10 ACRES)

EXCEPTION IMPERVIOUS AREA WITHIN THE RPA (BUILDING 1 & 2):
7,776 SF (±0.18 ACRES)

EXCEPTION IMPERVIOUS AREA WITHIN THE RPA (BUILDING 3):
3,149 SF (±0.07 ACRES)

EXCEPTION IMPERVIOUS AREA WITHIN THE RPA (BUILDING 4):
7,390 SF (±0.17 ACRES)

TOTAL PROPOSED IMPERVIOUS AREA WITHIN THE RPA:
199,924 SF (±4.38 ACRES)

NET INCREASE OF IMPERVIOUS AREA OVER EXISTING CONDITIONS WITHIN THE RPA:
152,112 SF (±3.49 ACRES)

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Fairbrook
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Town of Herndon, Virginia

Proposed Impervious Surfaces Plan

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10/19/2020
PROFESSIONAL ENGINEER

REVISIONS				
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Design	Draft	Approved
RPC	APE	JTK

Sheet # 7 of 18

Computer File Name:
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LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLANDS (PER WSSI'S OBSERVATIONS)
- FIELD VERIFIED RESOURCE PROTECTION AREA
- TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- EFFECTIVE 100-YEAR FEMA FLOODPLAIN
- RPA CUTOFF
- NO EXISTING VEGETATION TO REMOVE
- PROPOSED SCRUB SHRUB WITHIN RPA TO BE CLEARED
- EXISTING MAINTAINED EASEMENT AREA
- PROPOSED FORESTED AREA WITHIN RPA TO BE CLEARED
- LIMITS OF DISTURBANCE

SCALE: 1" = 50'

50 25 0 50 100 150

SCALE: 1" = 50'

FIELD-VERIFIED RPA

LIMITS OF DISTURBANCE

FIELD-VERIFIED RPA

FIELD-VERIFIED RPA

LIMITS OF DISTURBANCE

FIELD-VERIFIED RPA

MATCHLINE SEE SHEET 9

LIMITS OF DISTURBANCE

FIELD-VERIFIED RPA

FIELD-VERIFIED RPA

LIMITS OF DISTURBANCE

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Fairbrook

Water Quality Impact Assessment

Town of Herndon, Virginia

Vegetation Assessment

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REVISIONS

No.	Date	Description	Rev. By	App. By
1.	10/2020	Revision to remove offset area.	RPC	JTK

DATE: JUNE 2020

SCALE: 1" = 50'

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 1929

Boundary and Topo Source: VIKA

Design	Draft	Approved
APE	RPC	JTK

Sheet #

8 of 18

Computer File Name:

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LEGEND

- SITE BOUNDARY
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- FIELD VERIFIED RESOURCE PROTECTION AREA
- RPA TOWN OF HERNDON MAPPED RESOURCE PROTECTION AREA
- RPA CUTOFF
- NO EXISTING VEGETATION TO REMOVE
- PROPOSED SCRUB SHRUB WITHIN RPA TO BE CLEARED
- EXISTING MAINTAINED EASEMENT AREA
- PROPOSED FORESTED AREA WITHIN RPA TO BE CLEARED
- LIMITS OF DISTURBANCE

PROPOSED SITE NOTES:

1. Existing survey and proposed grading, utilities, and building plan were provided by VIKA Virginia, LLC in AutoCAD format and used as a base for this exhibit.

1

PROPOSED SITE CLEARING:

TOTAL FORESTED AREA PROPOSED TO BE CLEARED WITHIN THE RPA:
98,723 SF (±2.27 ACRES)

TOTAL SCRUB/SHRUB AREA PROPOSED TO BE CLEARED WITHIN THE RPA:
85,115 SF (±1.95 ACRES)

TOTAL AREA CLEARED AND MAINTAINED IN EXISTING EASEMENT WITHIN THE RPA:
59,545 SF (±1.37 ACRES)

TOTAL AREA CURRENTLY DEVELOPED WITHIN THE RPA (NO VEGETATIVE CLEARING):
44,691 SF (±1.03 ACRES)

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Vegetation Assessment (cont'd)

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Sheet #
9 of 18

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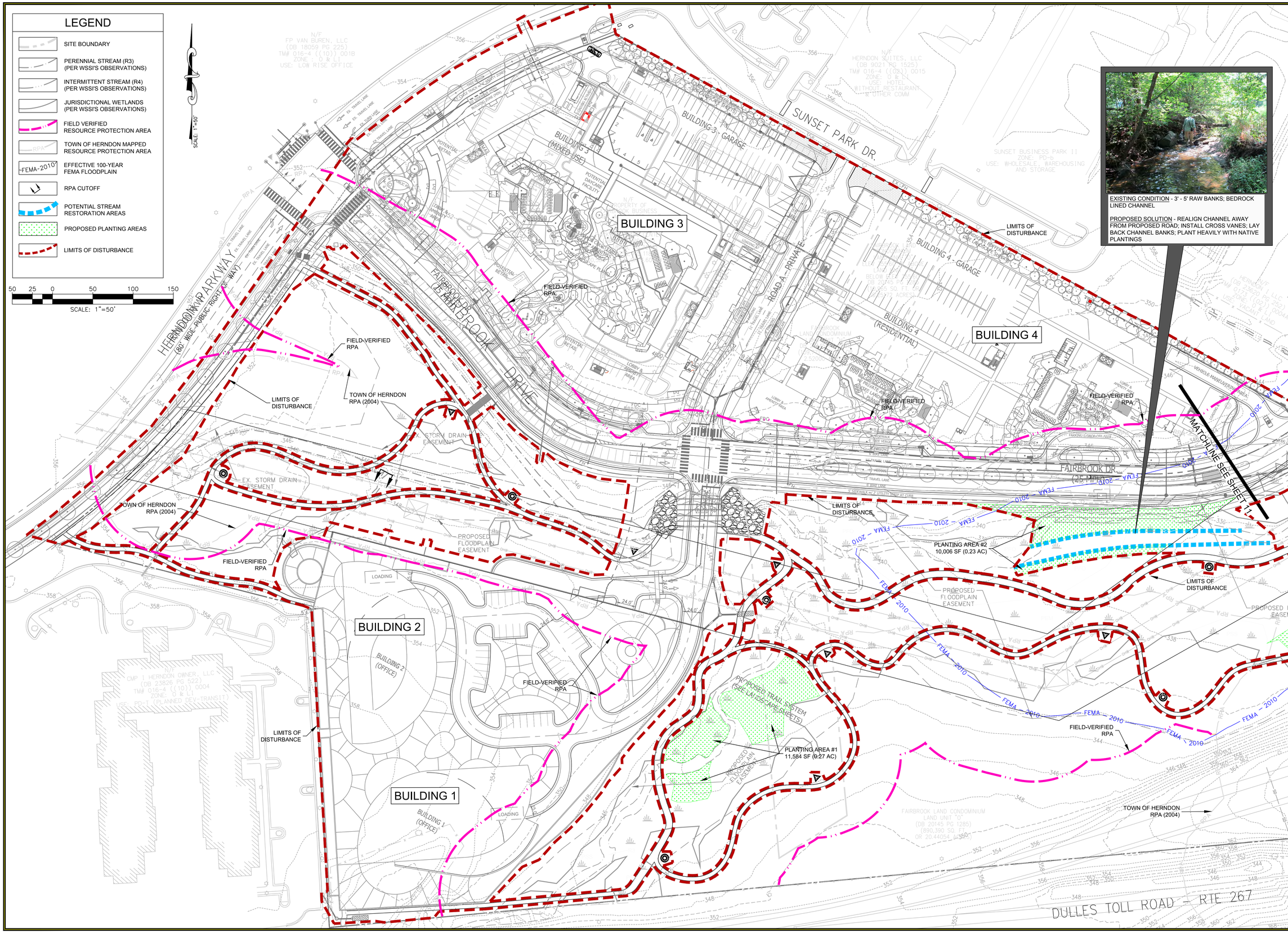

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Fairbrook
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Town of Herndon, Virginia

RPA Enhancement Plan

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10 of 18

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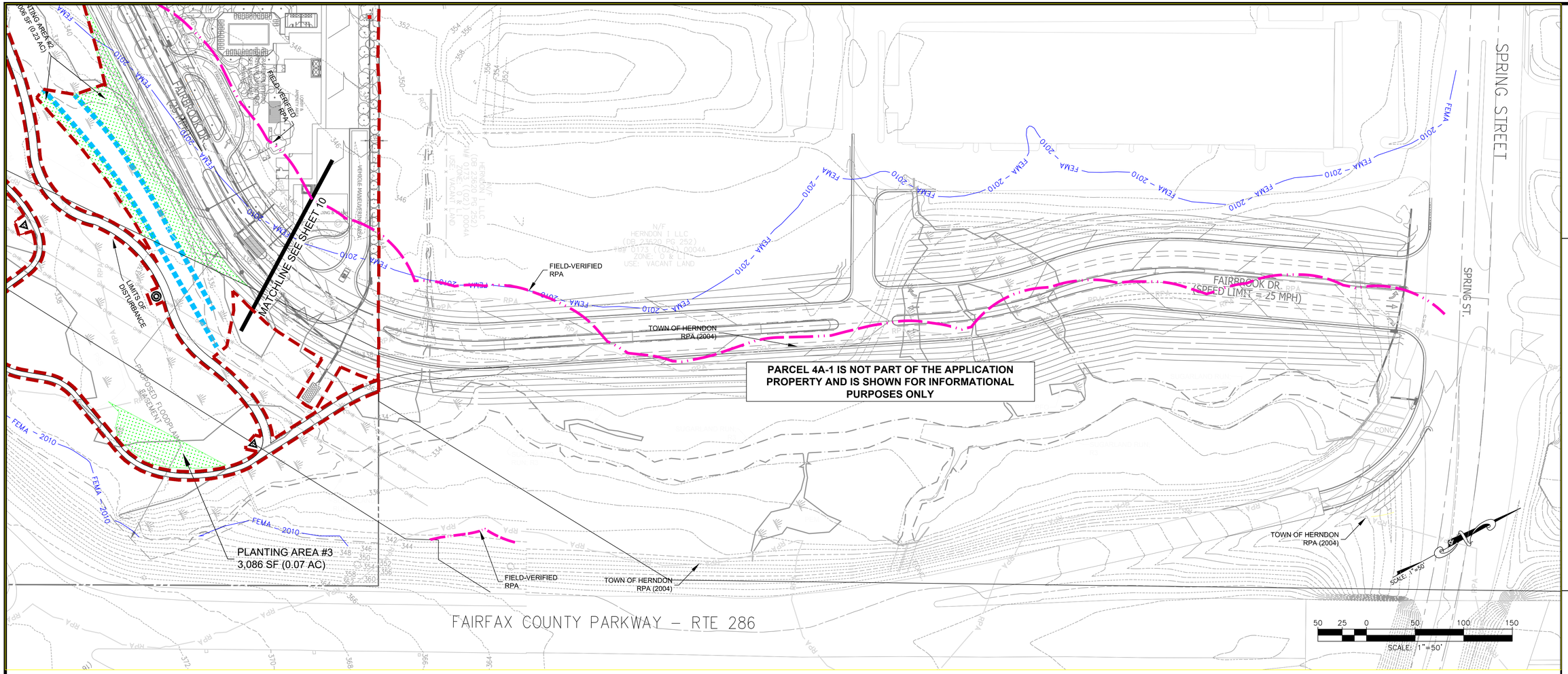

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- PERENNIAL STREAM (R3) (PER WSSI'S OBSERVATIONS)
- INTERMITTENT STREAM (R4) (PER WSSI'S OBSERVATIONS)
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- RPA CUTOFF
- POTENTIAL STREAM RESTORATION AREAS
- PROPOSED PLANTING AREAS
- LIMITS OF DISTURBANCE

PROPOSED SITE NOTES:

1. Existing survey and proposed grading, utilities, and building plan were provided by VIKA Virginia, LLC in AutoCAD format and used as a base for this exhibit.

RPA ENHANCEMENT NARRATIVE:

The existing RPA components within the Fairbrook parcel consist of Sugarland Run (a perennial stream), several additional perennial and intermittent tributaries to Sugarland Run, and adjacent wetlands throughout both parcels. Vegetation throughout the stream corridor and within the RPA is a combination of scrub/shrub, forested, and a maintained easement. Sections of the Sugarland Run channel and its associated tributaries are currently incised and actively eroding, creating a stream system that is disconnected from its floodplain and contributing sediment and pollutants to the downstream receiving waters.

As part of the development of the Fairbrook parcel and the extension of Fairbrook Drive to Spring Street, stream restoration and riparian plantings are proposed not only to mitigate the impacts to the RPA, but also to improve the stream corridor and promote a healthier, more effective RPA. The planned stream restoration design which will be developed along with the future site plan will utilize Natural Channel Design (NCD) techniques. As the name implies, the goal of NCD is to restore a degraded stream by mimicking, as much as possible, the characteristics of a stable, "natural" system. Through the use of fluvial geomorphic principles, NCD seeks to achieve long-term stability given current as well as future flow rates.

The stream restoration design will include re-sizing the channel cross section to the bankfull flow rate (~1 to 1.5 year storm event), raising the stream bed as much as possible, laying back the stream banks and grading bankfull benches to provide floodplain access during storm events, installing in-stream structures to provide grade control and maintain a stable channel pattern, installing woody habitat features, and planting the riparian corridor with a native plant mix. The results of this stream restoration will provide a more stable plan and profile within the stream corridor, encourage more overbank access to the existing floodplain, and likely generate additional wetlands within the overbank areas of the restored stream sections. Restoration will also reduce the amount of sediment entering the stream channel which contributes to downstream pollutant loads in the receiving waters.

In addition to the stream restoration, depression areas are planned to be graded along the restored stream segments to encourage the formation of new wetlands adjacent to the stream. These new wetland areas will include woody features as well as wetland plantings to provide additional habitat through the stream corridor. Following restoration, the Sugarland Run stream and the adjacent wetland areas will be greatly improved over the existing conditions thus resulting an environmentally sound, aesthetically pleasing, and structurally stable stream corridor.

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

RPA Enhancement Plan (cont'd)

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COMMONWEALTH OF VIRGINIA
JOHN T. KELLEY, JR.
Lic. No. 035786
10/19/2020
PROFESSIONAL ENGINEER

REVISIONS					SCALE: 1" = 50'
No.	Date	Description	Rev. By	App. By	DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
APE	RPC	JTK

Sheet # 11 of 18

Computer File Name:
L:\0600s-0676\04\CAD\07-RE\07RE\WQIA-May 2020 WQIA Revison 2020-10-14_Fairbrook WQIA.dwg

RIPARIAN BUFFER VEGETATION SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	REQUIRED PLANTING QUANTITIES: PLANTING AREA	1	2	3
											AREA (SF):	11,584	10,006	3,086
											AREA (AC):	0.27	0.23	0.07
RIPARIAN FOREST			QUERCUS BICOLOR (SWAMP WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter		72		19	17	5
			QUERCUS ALBA (WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter		ONE GAL		ONE GAL	ONE GAL	ONE GAL
										-- or --		-- or --	-- or --	-- or --
		1	QUERCUS PALUSTRIS (PIN OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter	SEE NOTE #3	144		38	33	10
										TUBELINGS		TUBELINGS	TUBELINGS	TUBELINGS
										-- or --		-- or --	-- or --	-- or --
			QUERCUS PHELLOS (WILLOW OAK)	FAC	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter		MIX AT 1:2 RATIO		MIX AT 1:2 RATIO	MIX AT 1:2 RATIO	MIX AT 1:2 RATIO
										(SEE NOTE #4)		(SEE NOTE #4)	(SEE NOTE #4)	(SEE NOTE #4)
			QUERCUS RUBRA (NORTHERN RED OAK)	FACU	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter						
	OVERSTORY TREE LAYER		ACER NEGUNDO (BOX ELDER)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer		37		10	8	3
			ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer		ONE-GALLON		ONE GAL	ONE GAL	ONE GAL
										-- or --		-- or --	-- or --	-- or --
		2	BETULA NIGRA (RIVER BIRCH)	FACW	Food, cover	Song birds	Seeds, plant	All	SEE NOTE #3	74		20	17	6
										TUBELINGS		TUBELINGS	TUBELINGS	TUBELINGS
						Finches, cardinals, chickadees, sparrows,				-- or --		-- or --	-- or --	-- or --
			LIQUIDAMBAR STYRACIFULA (SWEET GUM)	FAC	Food	squirrels	Seed	Summer, fall, winter		MIX AT 1:2 RATIO		MIX AT 1:2 RATIO	MIX AT 1:2 RATIO	MIX AT 1:2 RATIO
			PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FACW	Food	Raccoons, opossum, wood duck, pileated and other woodpeckers	Hollow trunks	All		(SEE NOTE #4)		(SEE NOTE #4)	(SEE NOTE #4)	(SEE NOTE #4)
	OVERSTORY TREE SUBTOTAL (BASED ON ONE GALLON)											29	25	8
	UNDERSTORY TREE LAYER	3	ILEX OPACA (AMERICAN HOLLY)	FACU	Food, cover, reproductive areas	Robins, bluebirds, mockingbirds, hermit thrush	Fruit, plant	All	SEE NOTE #3	109 ONE-GALLON --or-- 218 TUBELINGS --or-- MIX AT 1:2 RATIO (SEE NOTE #4)		29 ONE-GALLON --or-- 58 TUBELINGS --or-- MIX AT 1:2 RATIO (SEE NOTE #4)	25 ONE-GALLON --or-- 50 TUBELINGS --or-- MIX AT 1:2 RATIO (SEE NOTE #4)	8 ONE-GALLON --or-- 16 TUBELINGS --or-- MIX AT 1:2 RATIO (SEE NOTE #4)
			AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	Food, cover	Song birds, small mammals	Fruit, plant	All						
			CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer						
		4	CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall	SEE NOTE #3	109 ONE-GALLON -- or -- 218 TUBELINGS -- or -- MIX AT 1:2 RATIO		29 ONE-GALLON -- or -- 58 TUBELINGS -- or -- MIX AT 1:2 RATIO	25 ONE-GALLON -- or -- 50 TUBELINGS -- or -- MIX AT 1:2 RATIO	8 ONE-GALLON -- or -- 16 TUBELINGS -- or -- MIX AT 1:2 RATIO
			CORYLUS AMERICANA (AMERICAN HAZELNUT)	FACU	Food, cover	Songbirds, small mammals	Fruit	Summer, fall						
			LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall						
			SALIX NIGRA (BLACK WILLOW)	OBL	Food, cover	Beaver, porcupine, deer, muskrat, ducks, fish	Seeds, plant, leaves	Spring, summer, fall						
	UNDERSTORY TREE SUBTOTAL (BASED ON ONE-GALLON)											58	50	16
	SHRUB LAYER	5	CORNUS AMOMUM (SILKY DOGWOOD)	FACW	Food	Catbird, thrasher, thrushes, woodpeckers	Fruit	Summer, fall	SEE NOTE #3	327 ONE-GALLON -- or -- 654 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)		88 ONE-GALLON -- or -- 177 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	75 ONE-GALLON -- or -- 150 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	23 ONE-GALLON -- or -- 46 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)
			ILEX VERTICILLATA (COMMON WINTERBERRY)	FACW	Food, cover, reproductive areas	Bluebird, catbird, brown thrasher, robin, yellow bellied sapsucker, mockingbird	Flower, seed, leaves	All						
			ROSA PALUSTRIS (SWAMP ROSE)	OBL	Food, cover, reproductive areas	Purple finch, goldfinch, robin, junco, bluebird, hermit thrush	Flower, fruit	Spring, summer, fall						
			VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Brown thrasher, catbird, thrashers, pollinators	Flowers, seeds, and foliage	Spring, fall, winter						
						Catbirds, thrashers, thrushes, cover and nest sites for songbirds	Fruit, plant	Spring, fall						
	SHRUB LAYER SUBTOTAL (BASED ON ONE-GALLON)											88	75	23

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   a) 4 of the 5 species in Group 1,
   b) 4 of the 5 species in Group 2,
   c) all of Group 3,
   d) 5 of the 6 species in Group 4,
   e) 4 of the 5 species in Group 5,
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, If the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1.

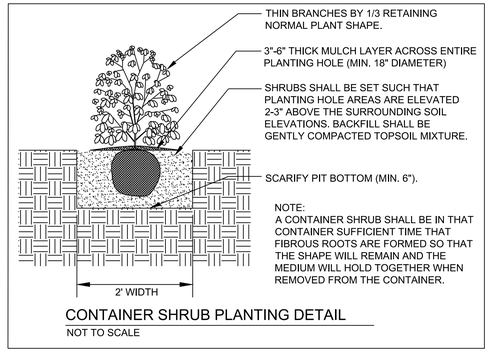
NOTE: SEE SHEETS 10 & 11 FOR PLANTING AREAS

NOTE: PERMANENT SEED MIX PER APPROVED SITE PLAN

Tree Density Requirements (per Virginia Riparian Buffers Modification and Mitigation Guidance Manual)

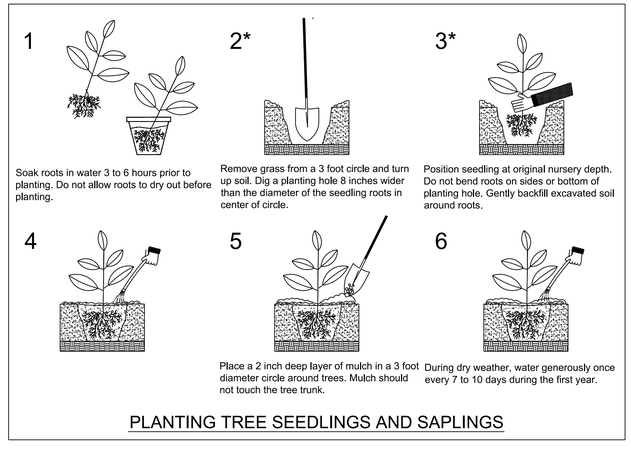
	Ratio/400 s.f.	Ratio/ac.	Area (ac.)	Required	Provided
Overstory Tree Total	1	109	0.84	92	62
Understory Tree Total	2	218	0.84	183	124
Shrub Total	3	327	0.84	275	186

Planting areas shown represent the maximum available planting areas on the non-forested areas of the parcel based on existing conditions.

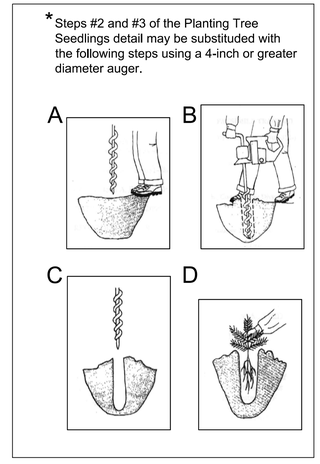


CONTAINER SHRUB PLANTING DETAIL

NOT TO SCALE



PLANTING TREE SEEDLINGS AND SAPLINGS



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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Proposed Revegetation Planting Schedule

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JOHN T. KELLEY, JR.
Lic. No. 035786
10/19/2020
PROFESSIONAL ENGINEER

No.	Date	Description	Rev. By	App. By

REVISIONS

SCALE: NTS

DATE: JUNE 2020

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 1929

Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 12 of 18

Computer File Name:
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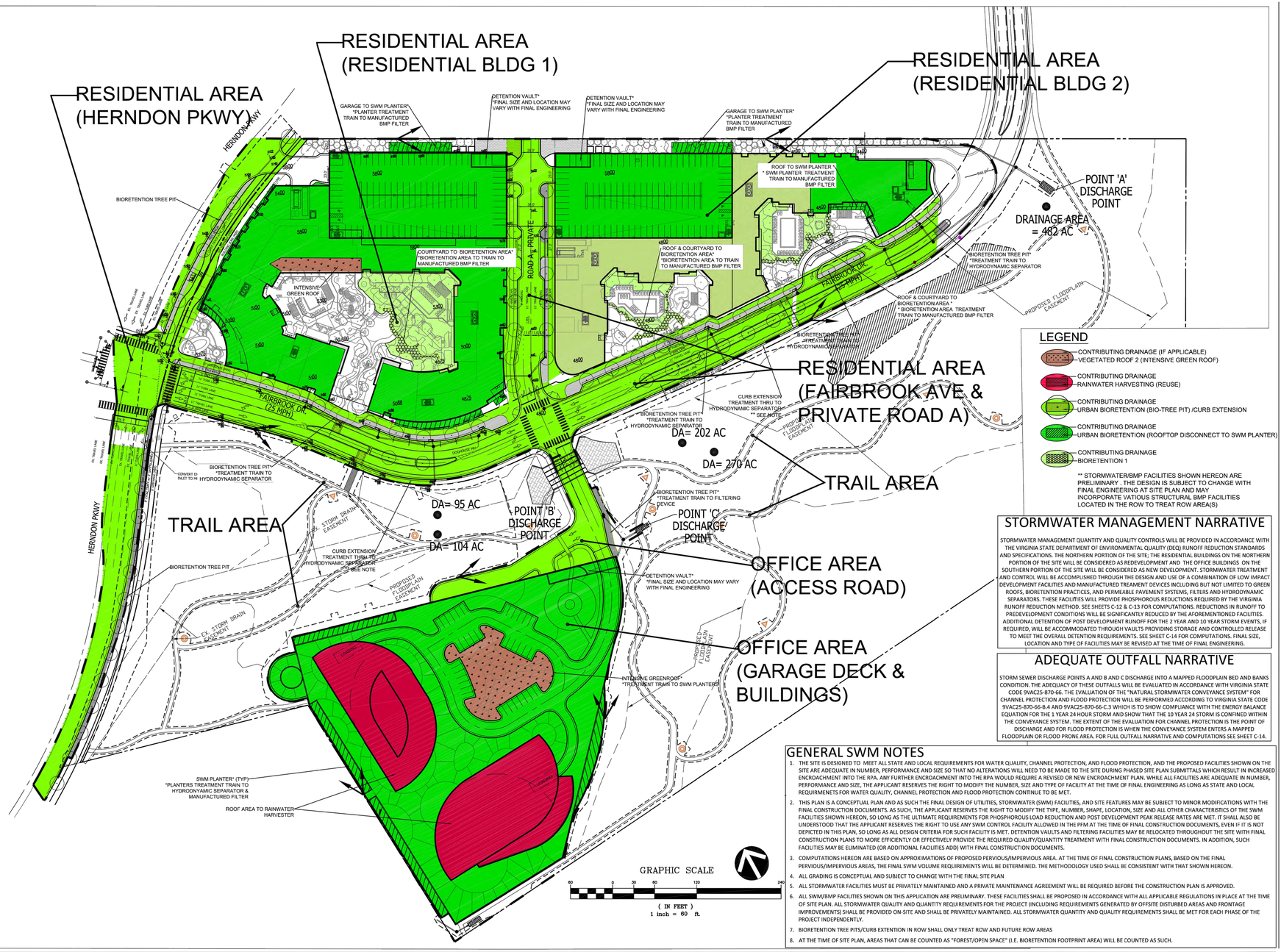

LEGEND

- CONTRIBUTING DRAINAGE (IF APPLICABLE) VEGETATED ROOF 2 (INTENSIVE GREEN ROOF)
- CONTRIBUTING DRAINAGE RAINWATER HARVESTING (REUSE)
- CONTRIBUTING DRAINAGE URBAN BIORETENTION (BIO-TREE PIT) /CURB EXTENSION
- CONTRIBUTING DRAINAGE URBAN BIORETENTION (ROOFTOP DISCONNECT TO SWM PLANTER)
- CONTRIBUTING DRAINAGE BIORETENTION 1

** STORMWATER/BMP FACILITIES SHOWN HEREON ARE PRELIMINARY . THE DESIGN IS SUBJECT TO CHANGE WITH FINAL ENGINEERING AT SITE PLAN AND MAY INCORPORATE VATIOUS STRUCTURAL BMP FACILITIES LOCATED IN THE ROW TO TREAT ROW AREA(S)

STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT QUANTITY AND QUALITY CONTROLS WILL BE PROVIDED IN ACCORDANCE WITH THE VIRGINIA STATE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) RUNOFF REDUCTION STANDARDS AND SPECIFICATIONS. THE NORTHERN PORTION OF THE SITE; THE RESIDENTIAL BUILDINGS ON THE NORTHERN PORTION OF THE SITE WILL BE CONSIDERED AS REDEVELOPMENT AND THE OFFICE BUILDINGS ON THE SOUTHERN PORTION OF THE SITE WILL BE CONSIDERED AS NEW DEVELOPMENT. STORMWATER TREATMENT AND CONTROL WILL BE ACCOMPLISHED THROUGH THE DESIGN AND USE OF A COMBINATION OF LOW IMPACT DEVELOPMENT FACILITIES AND MANUFACTURED TREAMENT DEVICES INCLUDING BUT NOT LIMITED TO GREEN ROOFS, BIORETENTION PRACTICES, AND PERMEABLE PAVEMENT SYSTEMS, FILTERS AND HYDRODYNAMIC SEPARATORS. THESE FACILITIES WILL PROVIDE PHOSPHORUS REDUCTIONS REQUIRED BY THE VIRGINIA RUNOFF REDUCTION METHOD. SEE SHEETS C-12 & C-13 FOR COMPUTATIONS. REDUCTIONS IN RUNOFF TO PREDEVELOPMENT CONDITIONS WILL BE SIGNIFICANTLY REDUCED BY THE AFOREMENTIONED FACILITIES. ADDITIONAL DETENTION OF POST DEVELOPMENT RUNOFF FOR THE 2 YEAR AND 10 YEAR STORM EVENTS, IF REQUIRED, WILL BE ACCOMMODATED THROUGH VAULTS PROVIDING STORAGE AND CONTROLLED RELEASE TO MEET THE OVERALL DETENTION REQUIREMENTS. SEE SHEET C-14 FOR COMPUTATIONS. FINAL SIZE, LOCATION AND TYPE OF FACILITIES MAY BE REVISED AT THE TIME OF FINAL ENGINEERING.

ADEQUATE OUTFALL NARRATIVE

STORM SEWER DISCHARGE POINTS A AND B AND C DISCHARGE INTO A MAPPED FLOODPLAIN BED AND BANKS CONDITION. THE ADEQUACY OF THESE OUTFALLS WILL BE EVALUATED IN ACCORDANCE WITH VIRGINIA STATE CODE 9VAC25-870-66. THE EVALUATION OF THE "NATURAL STORMWATER CONVEYANCE SYSTEM" FOR CHANNEL PROTECTION AND FLOOD PROTECTION WILL BE PERFORMED ACCORDING TO VIRGINIA STATE CODE 9VAC25-870-66-B.4 AND 9VAC25-870-66-C.3 WHICH IS TO SHOW COMPLIANCE WITH THE ENERGY BALANCE EQUATION FOR THE 1 YEAR 24 HOUR STORM AND SHOW THAT THE 10 YEAR 24 STORM IS CONFINED WITHIN THE CONVEYANCE SYSTEM. THE EXTENT OF THE EVALUATION FOR CHANNEL PROTECTION IS THE POINT OF DISCHARGE AND FOR FLOOD PROTECTION IS WHEN THE CONVEYANCE SYSTEM ENTERS A MAPPED FLOODPLAIN OR FLOOD PRONE AREA. FOR FULL OUTFALL NARRATIVE AND COMPUTATIONS SEE SHEET C-14.

GENERAL SWM NOTES

1. THE SITE IS DESIGNED TO MEET ALL STATE AND LOCAL REQUIREMENTS FOR WATER QUALITY, CHANNEL PROTECTION, AND FLOOD PROTECTION, AND THE PROPOSED FACILITIES SHOWN ON THE SITE ARE ADEQUATE IN NUMBER, PERFORMANCE AND SIZE SO THAT NO ALTERATIONS WILL NEED TO BE MADE TO THE SITE DURING PHASED SITE PLAN SUBMITTALS WHICH RESULT IN INCREASED ENCROACHMENT INTO THE RPA. ANY FURTHER ENCROACHMENT INTO THE RPA WOULD REQUIRE A REVISED OR NEW ENCROACHMENT PLAN. WHILE ALL FACILITIES ARE ADEQUATE IN NUMBER, PERFORMANCE AND SIZE, THE APPLICANT RESERVES THE RIGHT TO MODIFY THE NUMBER, SIZE AND TYPE OF FACILITY AT THE TIME OF FINAL ENGINEERING AS LONG AS STATE AND LOCAL REQUIRMENETS FOR WATER QUALITY, CHANNEL PROTECTION AND FLOOD PROTECTION CONTINUE TO BE MET.
2. THIS PLAN IS A CONCEPTUAL PLAN AND AS SUCH THE FINAL DESIGN OF UTILITIES, STORMWATER (SWM) FACILITIES, AND SITE FEATURES MAY BE SUBJECT TO MINOR MODIFICATIONS WITH THE FINAL CONSTRUCTION DOCUMENTS. AS SUCH, THE APPLICANT RESERVES THE RIGHT TO MODIFY THE TYPE, NUMBER, SHAPE, LOCATION, SIZE AND ALL OTHER CHARACTERISTICS OF THE SWM FACILITIES SHOWN HEREON, SO LONG AS THE ULTIMATE REQUIREMENTS FOR PHOSPHOROUS LOAD REDUCTION AND POST DEVELOPMENT PEAK RELEASE RATES ARE MET. IT SHALL ALSO BE UNDERSTOOD THAT THE APPLICANT RESERVES THE RIGHT TO USE ANY SWM CONTROL FACILITY ALLOWED IN THE PFM AT THE TIME OF FINAL CONSTRUCTION DOCUMENTS, EVEN IF IT IS NOT DEPICTED IN THIS PLAN, SO LONG AS ALL DESIGN CRITERIA FOR SUCH FACILITY IS MET. DETENTION VAULTS AND FILTERING FACILITIES MAY BE RELOCATED THROUGHOUT THE SITE WITH FINAL CONSTRUCTION PLANS TO MORE EFFICIENTLY OR EFFECTIVELY PROVIDE THE REQUIRED QUALITY/QUANTITY TREATMENT WITH FINAL CONSTRUCTION DOCUMENTS. IN ADDITION, SUCH FACILITIES MAY BE ELIMINATED (OR ADDITIONAL FACILITIES ADD) WITH FINAL CONSTRUCTION DOCUMENTS.
3. COMPUTATIONS HEREON ARE BASED ON APPROXIMATIONS OF PROPOSED PERVIOUS/IMPERVIOUS AREA. AT THE TIME OF FINAL CONSTRUCTION PLANS, BASED ON THE FINAL PERVIOUS/IMPERVIOUS AREAS, THE FINAL SWM VOLUME REQUIREMENTS WILL BE DETERMINED. THE METHODOLOGY USED SHALL BE CONSISTENT WITH THAT SHOWN HEREON.
4. ALL GRADING IS CONCEPTUAL AND SUBJECT TO CHANGE WITH THE FINAL SITE PLAN
5. ALL STORMWATER FACILITIES MUST BE PRIVATELY MAINTAINED AND A PRIVATE MAINTENANCE AGREEMENT WILL BE REQUIRED BEFORE THE CONSTRUCTION PLAN IS APPROVED.
6. ALL SWM/BMP FACILITIES SHOWN ON THIS APPLICATION ARE PRELIMINARY. THESE FACILITIES SHALL BE PROPOSED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS IN PLACE AT THE TIME OF SITE PLAN. ALL STORMWATER QUALITY AND QUANTITY REQUIREMENTS FOR THE PROJECT (INCLUDING REQUIREMENTS GENERATED BY OFFSITE DISTURBED AREAS AND FRONTAGE IMPROVEMENTS) SHALL BE PROVIDED ON-SITE AND SHALL BE PRIVATELY MAINTAINED. ALL STORMWATER QUANTITY AND QUALITY REQUIREMENTS SHALL BE MET FOR EACH PHASE OF THE PROJECT INDEPENDENTLY.
7. BIORETENTION TREE PITS/CURB EXTENTION IN ROW SHALL ONLY TREAT ROW AND FUTURE ROW AREAS
8. AT THE TIME OF SITE PLAN, AREAS THAT CAN BE COUNTED AS "FOREST/OPEN SPACE" (I.E. BIORETENTION FOOTPRINT AREA) WILL BE COUNTED AS SUCH.

LAYOUT: C-11 SWM MAP, Plotted By: mekonen

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Our Site Set on the Future.

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V 11.00

PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA — REGISTERED LANDSCAPE ARCHITECT — ROBERT P. CHIRAN — Lic. No. 002912 — 10/19/2020

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

STORMWATER MANAGEMENT MAP

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-11

FILE: P:\projects\6045\dwg\CAD\PLANNING\PLANNING DRAWINGS\6045X_C-11 SWM MAP- NARRATIVE.dwg USER: Mekonnen DATE: October 16, 2020 TIME: 10:16:18 AM LAYOUT: C-11 SWM MAP

GENERAL NOTES

1. The above stormwater management plan was prepared by VIKA Virginia, LLC.
2. The plan includes a combination of BMP's including green roofs, planter boxes, cisterns, stormfilters, bioretention street trees, and a hydrodynamic separator to treat the stormwater from the proposed development.
3. Stormwater computations are provided on Sheet 13-16 to show compliance with the Virginia's stormwater requirements.

NOT TO SCALE

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Fairbrook

Water Quality Impact Assessment

Town of Herndon, Virginia

Preliminary Stormwater Management Plan

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COMMONWEALTH OF VIRGINIA — JOHN T. KELLEY, JR. — LICENSED PROFESSIONAL ENGINEER — Lic. No. 035786 — 10/19/2020

REVISIONS				App. By
No.	Date	Description	Rev. By	

SCALE: N/A

DATE: JUNE 2020

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 1929

Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 13 of 18

Computer File Name:
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SWM QUALITY REQUIREMENTS (SEE SHEET C-13 FOR VRRM FOR OFFICE BUILDING)

RESIDENTIAL AREA

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

☐ 2011 BMP Standards and Specifications ☒ 2013 Draft BMP Standards and Specifications

Project Name: Fairbrook Residential
Date: 9/24/2020
Linear Development Project? No

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 10.83

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	5.76
Post-Development TP Load Reduction for Site (lb/yr):	11.66

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ✓
Total disturbed area entered? ✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, forest/open space or reforested					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				7.82	7.82
Impervious Cover (acres)				3.01	3.01
					10.83

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				2.06	2.06
Impervious Cover (acres)				8.77	8.77
Area Check	OK.	OK.	OK.	OK.	10.83

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) FAC (mg/L)	0.26
Total Nitrogen (TN) FAC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre

Pre-ReDevelopment	Listed	Adjusted*
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(Forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	7.82	7.06
Weighted Rv(Turf)	0.25	0.25
% Managed Turf	72%	41%
Impervious Cover (acres)	3.01	3.01
Rv(Impervious)	0.95	0.95
% Impervious	28%	59%
Total Site Area (acres)	**10.83**	**5.07**
Site Rv	**0.44**	**0.67**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)

Post-ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(Forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.06
Weighted Rv(Turf)	0.25
% Managed Turf	19%
Impervious Cover (acres)	8.77
Rv(Impervious)	0.95
% Impervious	81%
Final Site Area (acres)	**10.83**
Final Post Dev Site Rv	**0.82**

Land Cover Summary-Post

Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(Forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	2.06
Weighted Rv(Turf)	0.25
% Managed Turf	41%
ReDev. Impervious Cover (acres)	3.01
Rv(Impervious)	0.95
% Impervious	59%
Total ReDev. Site Area (acres)	**5.07**
ReDev Site Rv	**0.67**

Land Cover Summary-Post

Post-Development New Impervious	
New Impervious Cover (acres)	5.76
Rv(Impervious)	0.95

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.4012	0.2812	Final Post-Development Treatment Volume (acre-ft)	0.7372	Post-ReDevelopment Treatment Volume (acre-ft)	0.2812	Post-Development Treatment Volume (acre-ft)	0.4560
Pre-ReDevelopment Treatment Volume (cubic feet)	17,477	12,249	Final Post-Development Treatment Volume (cubic feet)	32,113	Post-ReDevelopment Treatment Volume (cubic feet)	12,249	Post-Development Treatment Volume (cubic feet)	19,863
Pre-ReDevelopment TP Load (lb/yr)	**10.98**	**7.70**	**Final Post-Development TP Load (lb/yr)**	**20.18**	**Post-ReDevelopment Load (TP) (lb/yr)***	**7.70**	**Post-Development TP Load (lb/yr)**	**12.48**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.01	1.53	Final Post-Development TP Load per acre (lb/acre/yr)	1.86	Post-ReDevelopment TP Load per acre (lb/acre/yr)	1.53		
Baseline TP Load (lb/yr): (0.41 lbs/acre/yr applied to pre-redevelopment area excluding previous land proposed for new impervious cover)	2.08				Max. Reduction Required (Below Pre-ReDevelopment Load)	30%		
					TP Load Reduction Required for Redeveloped Area (lb/yr)	1.54	TP Load Reduction Required for New Impervious Area (lb/yr)	10.12

*Adjusted Land Cover Summary:
Pre ReDevelopment land cover minus previous land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit; 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr): 11.66

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr):	78.55	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr):	144.34

TRAIL AREA

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 3.0

☐ 2011 BMP Standards and Specifications ☒ 2013 Draft BMP Standards and Specifications

Project Name: Fairbrook Trail
Date: 9/24/2020
Linear Development Project? No

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 1.14

Maximum reduction required:	20%
The site's net increase in impervious cover (acres) is:	0.7
Post-Development TP Load Reduction for Site (lb/yr):	1.28

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? No
Land cover areas entered correctly? ✓
Total disturbed area entered? ✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, forest/open space or reforested					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				1.14	1.14
Impervious Cover (acres)				0.00	0.00
					1.14

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) – undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) – disturbed, graded for yards or other turf to be				0.44	0.44
Impervious Cover (acres)				0.70	0.70
Area Check	OK.	OK.	OK.	OK.	1.14

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) FAC (mg/L)	0.26
Total Nitrogen (TN) FAC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre

Pre-ReDevelopment	Listed	Adjusted*
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(Forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	1.14	0.44
Weighted Rv(Turf)	0.25	0.25
% Managed Turf	100%	100%
Impervious Cover (acres)	0.00	0.00
Rv(Impervious)	0.95	0.95
% Impervious	0%	0%
Total Site Area (acres)	**1.14**	**0.44**
Site Rv	**0.25**	**0.25**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)

Post-ReDev. & New Impervious	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(Forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.44
Weighted Rv(Turf)	0.25
% Managed Turf	39%
Impervious Cover (acres)	0.70
Rv(Impervious)	0.95
% Impervious	61%
Final Site Area (acres)	**1.14**
Final Post Dev Site Rv	**0.68**

Land Cover Summary-Post

Post-ReDevelopment	
Forest/Open Space Cover (acres)	0.00
Weighted Rv(Forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.44
Weighted Rv(Turf)	0.25
% Managed Turf	100%
ReDev. Impervious Cover (acres)	0.00
Rv(Impervious)	0.95
% Impervious	0%
Total ReDev. Site Area (acres)	**0.44**
ReDev Site Rv	**0.25**

Land Cover Summary-Post

Post-Development New Impervious	
New Impervious Cover (acres)	0.70
Rv(Impervious)	0.95

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	0.0238	0.0092	Final Post-Development Treatment Volume (acre-ft)	0.0646	Post-ReDevelopment Treatment Volume (acre-ft)	0.0092	Post-Development Treatment Volume (acre-ft)	0.0554
Pre-ReDevelopment Treatment Volume (cubic feet)	1,035	399	Final Post-Development Treatment Volume (cubic feet)	2,813	Post-ReDevelopment Treatment Volume (cubic feet)	399	Post-Development Treatment Volume (cubic feet)	2,414
Pre-ReDevelopment TP Load (lb/yr)	**0.65**	**0.25**	**Final Post-Development TP Load (lb/yr)**	**1.77**	**Post-ReDevelopment Load (TP) (lb/yr)***	**0.25**	**Post-Development TP Load (lb/yr)**	**1.52**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.57	0.57	Final Post-Development TP Load per acre (lb/acre/yr)	1.55	Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.57		
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-redevelopment area excluding previous land proposed for new impervious cover)	0.18				Max. Reduction Required (Below Pre-ReDevelopment Load)	20%		
					TP Load Reduction Required for Redeveloped Area (lb/yr)	0.05	TP Load Reduction Required for New Impervious Area (lb/yr)	1.23

*Adjusted Land Cover Summary:
Pre ReDevelopment land cover minus previous land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit; 0.41 lbs/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr): 1.28

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr):	4.65	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr):	12.64

SWM QUALITY NARRATIVE

SEE SHEET C-12 FOR PRELIMINARY STORMWATER MANAGEMENT PLAN AND SWM/BMP FACILTIES. COMPLIANCE WITH ALL APPLICABLE REGULATIONS WILL BE SHOWN WITH FINAL SITE PLAN, INCLUDING BUT NOT LIMITED TO SIZING COMPUTATIONS FOR INDIVIDUAL SWM/BMP FACILITIES.

PHASING NARRATIVE

THE SUBJECT SITE IS DESIGNED SUCH THAT DEVELOPMENT MAY OCCUR IN PHASES. FOR THE PURPOSES OF THIS NARRATIVE THE PHASE WILL BE CONSIDERED THE RESIDENTIAL PHASE AND THE OFFICE PHASE. ADDITIONALLY, THE CONSTRUCTION OF THE TRAIL SYSTEM SHALL BE CONSIDERED AS A SEPARATE STORMWATER AREA, BUT NOT A SEPARATE PHASE. THE OVERALL WATER QUANTITY AND QUALITY CONTROLS FOR THE PROJECT WILL MEET THE NECESSARY STANDARDS / REQUIREMENTS FOR THE ENTIRE DEVELOPMENT. EACH PHASE ABOVE WILL BE DESIGNED TO CONTROL STORMWATER RUNOFF TO A LEVEL THAT AT A MINIMUM IS SUFFICIENT TO MEET THE STANDARDS / REQUIREMENTS FOR THE WORK PROPOSED WITHIN THAT PHASE. ADDITIONAL CONTROLS ABOVE THOSE NEEDED FOR THE WORK IN THE PHASE WILL BE PROVIDED WITHIN EACH PHASE SUCH THAT THE WATER QUALITY AND WATER QUANTITY GOALS FOR THE OVERALL DEVELOPMENT WILL BE MET AT BUILDOUT. MORE SIMPLY, THE RESIDENTIAL PHASE AND OFFICE PHASE WILL PROVIDE CONTROLS TO ACCOUNT FOR THE WORK WITHIN THE TRAIL SYSTEM - THERE WILL BE NO CONTROLS PROPOSED WITHIN THE TRAIL SYSTEM AREA. THE LEVEL OF CONTROL TO ACCOUNT FOR THE TRAIL SYSTEM WORK WILL BE ALLOCATED BETWEEN THE TWO PHASES AT THE TIME OF FUTURE SITE PLAN PREPARATION. A RUNNING TABULATION WILL BE KEPT ENSURING OVERALL COMPLIANCE AT BUILDOUT. EACH PHASE WILL PROVIDE A MINIMUM CONTROL LEVEL TO "STAND ALONE" WITH ADDITIONAL LEVELS OF CONTROL DOCUMENTED AND TABULATED TO CREDIT TOWARD THE TRAIL SYSTEM, KEEPING A RUNNING TABULATION AS FUTURE PHASES OF DEVELOPMENT OCCUR.

LAYOUT: C-12 SWM COMPUTATIONS QUALITY, Plotted By: makonner

GENERAL NOTES

1. The above stormwater management computations were prepared by VIKA Virginia, LLC.
2. Shown on this sheet are the stormwater computations for the Fairbrook site (excluding the off-site extension of Fairbrook Drive). Proposed stormwater controls have only been specified on site at this time. Excluding the offsite road extension, the specified controls will slightly exceed the requirements of the state's water quality standards. With the offsite road extension, additional controls (such as bioretention tree pits) will be required to meet the state stormwater requirements and will be developed along with the final site design as the project progresses.
3. In addition to the state stormwater requirements for nutrient removal, further pollutant removal will be achieved through the proposed stream restoration outlined on Sheets 10-11. This stream restoration and associated additional pollutant removal benefit will improve the existing RPA condition on site following construction.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
ROBERT P. CHRAN
Lic. No. 042012
PROFESSIONAL ENGINEER
9/28/2020

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-12

FILE: P:\projects\6045\6045X\CADD\PLANNING\PLANNING DRAWINGS\6045X_C-11 SWM MAP - NARRATIVE.dwg | USER: Mekonnen | DATE: October 16, 2020 | TIME: 10:18:47 AM | LAYOUT: C-12 SWM COMPUTATIONS QUALITY

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Water Quality Computations

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COMMONWEALTH OF VIRGINIA
JOHN T. KELLEY, JR
Lic. No. 035786
9/28/2020
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: N/A

DATE: JUNE 2020

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 1929

Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 14 of 18

Computer File Name:
L:\6000s\6036\DOCS\DEP07-REGS\WQIA\May 2020 WQIA Revison 2020-10-14_Fairbrook WQIA.dwg

SWM QUALITY REQUIREMENTS

OFFICE AREA

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 3.0

☐ 2011 BMP Standards and Specifications ☒ 2013 Draft BMP Standards and Specifications

Project Name: Fairbrook Office Bldgs
Date: 9/24/2020
BMP Design Specifications List: 2013 Draft Stds & Specs

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				0.07	0.07
Impervious Cover (acres)				3.91	3.91
					3.98

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	6.88

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary

Forest/Open Space Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	0.07
Weighted Rv (turf)	0.25
% Managed Turf	2%
Impervious Cover (acres)	3.91
Rv (impervious)	0.95
% Impervious	98%
Site Area (acres)	3.98
Site Rv	0.94

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	0.3110
Treatment Volume (cubic feet)	13,547
TP Load (lb/yr)	8.51
TN Load (lb/yr) (Informational Purposes Only)	60.89

LAYOUT: C-13 SWM COMPUTATIONS QUALITY, Plotted By: mekonnen

GENERAL NOTES

1. The above stormwater management computations were prepared by VIKA Virginia, LLC.
2. Shown on this sheet are the stormwater computations for the Fairbrook site (excluding the off-site extension of Fairbrook Drive). Proposed stormwater controls have only been specified on site at this time. Excluding the offsite road extension, the specified controls will slightly exceed the requirements of the state's water quality standards. With the offsite road extension, additional controls (such as bioretention tree pits) will be required to meet the state stormwater requirements and will be developed along with the final site design as the project progresses.
3. In addition to the state stormwater requirements for nutrient removal, further pollutant removal will be achieved through the proposed stream restoration outlined on Sheets 10-11. This stream restoration and associated additional pollutant removal benefit will improve the existing RPA condition on site following construction.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA ROBERT P. CHAMAN Lic. No. 012 PROFESSIONAL ENGINEER

FAIRBROOK

SPECIAL EXCEPTION PLAN

TOWN OF HERNDON, VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-13

FILE: P:\projects\6045\6045X\CADD\PLANNING\DRAWINGS\6045X_C-13 SWM-MAPS- NARRATIVE.dwg USER: mekonnen DATE: October 16, 2020 TIME: 10:19:12 AM LAYOUT: C-13 SWM COMPUTATIONS QUALITY

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Water Quality Computations

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COMMONWEALTH OF VIRGINIA JOHN T. KELLEY, JR Lic. No. 035786 10/19/2020 PROFESSIONAL ENGINEER

REVISIONS					SCALE: N/A
No.	Date	Description	Rev. By	App. By	DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 15 of 18

Computer File Name:
L:\04000s\4674.06\CADD\07-RIEGS\WQIA\May 2020 WQIA Revision 2020-10-14_Fairbrook WQIA.dwg

SWM QUANTITY REQUIREMENTS

RESIDENTIAL AREA

THE RESIDENTIAL AREA COMPRISES FOUR (4) SUB DRAINAGE AREAS: HERNDON PARKWAY, RESIDENTIAL BUILDING 1, RESIDENTIAL BUILDING 2, AND FAIRBROOK DRIVE & PRIVATE ROAD A.

IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS FOR SWM QUANTITY, THE PEAK FLOW RATE FOR THE PROPOSED DEVELOPMENT SHALL NOT EXCEED THE EXISTING PEAK DEVELOPMENT.

AT THE TIME OF SITE PLAN, THE EXISTING CN WILL BE CALCULATED BASED ON THE FINAL PROPOSED LIMITS OF DISTURBANCE AND THE POST REDEVELOPED CN WILL BE CALCULATED USING THE RUNOFF REDUCTION METHOD (OR OTHER APPROVED METHOD).

DETENTION VAULTS WILL BE PROPOSED (WITH POTENTIAL LOCATIONS SHOWN ON SHEET C-11) TO DETAIN THE STORMWATER AS NEEDED TO MEET THE REQUIREMENTS. DETENTION VAULT SIZING AND ROUTINGS WILL BE SHOWN WITH FINAL ENGINEERING TO SHOW COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS.

OFFICE AREA

THE OFFICE AREA COMPRISES TWO (2) SUB DRAINAGE AREAS: THE OFFICE BUIDLING & GARAGE DECK AND THE ENTRY ROAD TO THE GARAGE.

IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS FOR SWM QUANTITY, THE PEAK FLOW RATE FOR THE PROPOSED DEVELOPMENT SHALL NOT EXCEED THE EXISTING PEAK DEVELOPMENT.

AT THE TIME OF SITE PLAN, THE EXISTING CN WILL BE CALCULATED BASED ON THE FINAL PROPOSED LIMITS OF DISTURBANCE AND THE POST REDEVELOPED CN WILL BE CALCULATED USING THE RUNOFF REDUCTION METHOD (OR OTHER APPROVED METHOD) AT THE TIME OF SITE PLAN.

DETENTION VAULTS WILL BE PROPOSED (WITH POTENTIAL LOCATIONS SHOWN ON SHEET C-11) TO DETAIN THE STORMWATER AS NEEDED TO MEET THE REQUIREMENTS. DETENTION VAULT SIZING AND ROUTINGS WILL BE SHOWN WITH FINAL ENGINEERING TO SHOW COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS.

ADEQUATE OUTFALL NARRATIVE

THE SUBJECT DEVELOPMENT HAS THREE (3) MAIN OUTFALLS. ALL THREE (3) OUTFALLS DISCHARGE DIRECTLY INTO A NATURAL STORMWATER CONVEYANCE CHANNEL THROUGH EXISTING OR PROPOSED PIPES TO AN OUTFALL STRUCTURE.

CHANNEL PROTECTION
PER 9VAC25-870-66-B.3 WHEN DISCHARGING TO NATURAL STORMWATER CONVEYANCE SYSTEMS, THE MAXIMUM PEAK FLOW RATE FROM THE 1 YR 24 HR STORM POST DEVELOPMENT MUST BE IN ACCORDANCE WITH THE ENERGY BALANCE EQUATION: Q DEVELOPED <= I.F.*(Q PRE DEVELOPED* RV PRE DEVELOPED)/RV DEVELOPED. THIS WILL BE ACHIEVED THROUGH THE USE OF LID TECHNIQUES AND STORMWATER DETENTION VAULTS. COMPLIANCE WILL BE SHOWN AT THE TIME OF FINAL SI TE PLAN. PER 9VAC25-870-66-B-4 THE LIMITS OF ANALYSIS SHALL TERMINATE AT THE POINT OF DISCHARGE. THEREFORE NO FURTHER ANALYSIS FOR CHANNEL PROTECTION WIL BE REQUIRED.

FLOOD PROTECTION
PER 9VAC25-870-66-C, THE POST DEVELOPMENT 10 YEAR 24 HOUR STORM EVENT MUST BE LESS THAN THE PREDVELOPMENT PEAK FLOW RATE FROM THE 10-YEAR 24 HOUR STORM EVENT. THE 10-YEAR FLOW IS CONFINED WITHIN THE PROPOSED PIPES TO THE DISCHARGE LOCATION INTO THE NATURAL STORMWATER CONVEYANCE SYSTEM. COMPLIANCE WILL BE SHOWN AT THE TIME OF FINAL SITE PLAN. PER 9VAC25-870-66-C.3.C, THE LIMIT OF ANALYSIS IS TO A POINT WHERE THE STORMWATER CONVEYANCE SYSTEM ENTERS A MAPPED FLOODPLIAN OR OTHER FLOO-PRONE AREA. EACH POINT OF DISCHARGE IS LOCATED WITHIN AN EXISTING MAPPED FLOOPLAIN. THEREFORE NO FURTHER ANALYSIS WILL BE REQUIRED.

BASED ON THE ABOVE AND CORRESPONDING COMPUTATIONS, IT IS THE OPINION OF VIKA VA, LLC THAT THIS PROJECT WILL HAVE NO ADVERSE AFFECTS NOR CAUSE FLOODING OF ANY DOWNSTREAM PROPERTY OR STRUCTURE AND THAT THE OUTFALL IS ADEQUATE.

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PLAN STATUS	DATE
1ST SUBMISSION	06/19/17
2ND SUBMISSION	06/07/19
3RD SUBMISSION	06/04/20
4TH SUBMISSION	09/28/20
5TH SUBMISSION	10/16/20

POST-APPROVAL SHEET STATUS	DATE

PROFESSIONAL SEAL

COMMONWEALTH OF VIRGINIA
ROBERT P. COCHRAN
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LAND SURVEYOR

FAIRBROOK

SPECIAL EXCEPTION PLAN
TOWN OF HERNDON,
VIRGINIA

STORMWATER MANAGEMENT COMPUTATIONS

DRAWN BY:	NDR
DESIGNED BY:	GJ
DATE ISSUED:	JUNE 19, 2017
DWG. SCALE:	1"=60'
VIKA NO.	VV6045X
SHEET NO.	C-14

FILE: P:\projects\6045\6045X\CADD\PLANNING\DRAWINGS\6045X_C-13 SWM MAP- NARRATIVE.dwg USER: Melsonnon DATE: October 15, 2020 TIME: 10:20:00 AM LAYOUT: C-14 SWM COMPUTATIONS QUANTITY

LAYOUT: C--14 SWM COMPUTATIONS QUANTITY, Plotted By: mekonnen

GENERAL NOTES

1. The above stormwater management computations were prepared by VIKA Virginia, LLC.
2. Shown on this sheet are the stormwater computations for the Fairbrook site (excluding the off-site extension of Fairbrook Drive). Proposed stormwater controls have only been specified on site at this time. Excluding the offsite road extension, the specified controls will slightly exceed the requirements of the state's water quality standards. With the offsite road extension, additional controls (such as bioretention tree pits) will be required to meet the state stormwater requirements and will be developed along with the final site design as the project progresses.
3. In addition to the state stormwater requirements for nutrient removal, further pollutant removal will be achieved through the proposed stream restoration outlined on Sheets 10-11. This stream restoration and associated additional pollutant removal benefit will improve the existing RPA condition on site following construction.

Wetland Studies and Solutions, Inc. — a DAVEY company
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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Water Quality Computations

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COMMONWEALTH OF VIRGINIA
JOHN T. KELLEY, JR
Lic. No. 035786
9/28/2020
PROFESSIONAL ENGINEER

REVISIONS				SCALE: N/A
No.	Date	Description	Rev. By	App. By

DATE: JUNE 2020

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 1929
Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	RPC	JTK

Sheet # 16 of 18

Computer File Name:
L-040006-6674.04-CADD\07-REGS\WQIA\May 2020 WQIA Revision 2020-10-14_Fairbrook WQIA.dwg

Water Quality Impact Assessment Narrative

The Fairbrook project is located within the existing Fairbrook Business Park at the intersection of Fairbrook Drive and Herndon Parkway in the Town of Herndon, Virginia. The proposed development will consist of the extension of Fairbrook Drive along Sugarland Run, the demolition of an existing office building, construction of a mixed-use development (containing office, residential, and retail space), as well as the associated private roads and parking. Currently, the existing site is composed of a single office building between Fairbrook Drive and Sunset Park Drive and unmanaged landscape including forested conditions, stream corridor, and an existing 100 foot transmission easement. In addition, the proposed extension of Fairbrook Drive will continue off site onto the adjoining parcel (Herndon I LLC) located adjacent to the Fairfax County Parkway. Approximately 716,771 SF (16.45 ac) of the Fairbrook property is located within the Resource Protection Area (RPA) for Sugarland Run and its associated wetlands and tributaries. The proposed construction will result in a total of 287,505 SF (6.60 ac) of RPA encroachment of which there is 190,924 SF (4.38 ac) of impervious area. A discussion and breakdown of the proposed impervious areas is included within Section II RPA Encroachments below.

This Water Quality Impact Assessment (WQIA) was prepared as required by Section 78-60.4 of the Town of Herndon Code, *Chesapeake Bay Preservation Area Overlay District (CBPAOD)*. The following narrative addresses each element of consideration for evaluating a WQIA.

I. RPA Components & Boundary

Two RPA boundaries, the "Field Verified RPA" and "2004 Town of Herndon Mapped RPA", are depicted on the Existing and Proposed Conditions Maps, provided as Sheets 2-7.

The "Field Verified RPA" is governed by a 100-ft buffer extending landward from the RPA core components as defined in §78-304.4(d)(1) of the Town of Herndon Code. The RPA core components existing on site include six (6) perennial streams (Sugarland Run and five (5) unnamed tributaries to Sugarland Run) within the study area. Additionally, non-tidal wetlands connected by surface flow and contiguous to the perennial streams are present on the study area. Therefore, the limits of the RPA on this study area are governed by the 100-foot buffer extending landward from the OHWM of the perennial stream and any wetlands contiguous and connected by surface flow to these streams. The jurisdictional limits (OHWM) of these streams have been delineated and survey located by WSSI as described in the May 31, 2016 report entitled, "Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation, Fairbrook Business Park and Off-site Study Area". The U.S. Army Corps of Engineers (COE) issued a jurisdictional determination (JD) verifying the delineated boundaries of these waters of the U.S on September 21, 2016 (NAO-2016-01643).

The Town of Herndon Mapped RPA was based on data from the perennial stream mapping project conducted by the Fairfax County DPWES and was digitized by WSSI from the February 10, 2004 Town of Herndon RPA map.

II. RPA Encroachments and Impervious Area

The existing conditions within the RPA consist of a combination of existing parking and office building for the Fairbrook Business Park, Fairbrook Drive, unmanaged landscape, a maintained transmission easement, scrub-shrub, and forested conditions. The existing building, parking, and roadway areas are located on the northwestern side of the parcel and comprise approximately 3.4% of the total RPA area onsite. The remaining RPA area within the Fairbrook parcel consists of pervious conditions comprised of the unmanaged landscape, a maintained transmission easement, scrub-shrub, and forested conditions. Within this area are Sugarland Run and its associated wetlands and tributaries. The existing impervious area within the RPA and within the proposed limits of disturbance is 38,812 SF (0.89 ac). Refer to Sheet 2-3 for more detail on the existing conditions.

The proposed development consists of the extension of Fairbrook Drive, improvements along Herndon Parkway, the construction of a mixed-use development (office, residential, and retail) with associated infrastructure, sidewalks/hardscape pathways along Herndon Parkway, Fairbrook Drive, and throughout the RPA, necessary utility installations, and stream restoration activities. The proposed encroachments into the RPA associated with this development include clearing of vegetation within the limits of disturbance, grading and earthwork, and construction of infrastructure. The extension of Fairbrook Drive lies almost completely within the RPA on the Fairbrook parcel. The road extension is proposed to be built at a higher grade than the existing grade and will be graded out adjacent to Sugarland Run in some areas and retaining walls will be utilized in others. The extension of Fairbrook Drive will become a new public road in the Town of Herndon and thus the encroachment associated with the road is permitted under Section 78-60.4(j)(2). It should be noted that the Fairbrook Drive extension is listed as a comprehensive road in the Herndon Comprehensive Plan. In addition, a private access road is proposed across the tributary to Sugarland Run connecting proposed Buildings 1 and 2 with Fairbrook Drive. This proposed development will result in a total of 287,505 SF (6.60 ac) of RPA encroachment of which there is 190,924 SF (4.38 ac) of impervious area. Refer to Sheet 4-7 for more detail on the proposed impervious conditions.

Of the 287,505 SF (6.60 ac) of RPA encroachment:

- 21,451 SF (0.49 ac) is exempt under Section 78-40.4(k)(2) associated with the improvements along Herndon Parkway.
- 81,022 SF (1.86 ac) is exempt under Section 78-40.4(k)(1) & (2) associated with proposed utility crossings, trail network, and public sidewalks along Fairbrook Drive.
- 13,666 SF (0.31 ac) is permitted under Section 78-40.4(j)(2) associated with the stream restoration activity.
- 2,996 SF (0.07 ac) is permitted under Section 78-40.4(j)(2) associated with stormwater outfalls.
- 85,262 SF (1.96 ac) is exempt under Section 78-40.4(k)(2) associated with the extension of Fairbrook Drive.
- 49,556 SF (1.14 ac) has been previously approved under Conditional Use #00-07 associated with proposed Buildings 1 and 2 south of Fairbrook Drive.
- 19,587 SF (0.45 ac) will require an exception under Section 78-40.4(o) associated with Buildings 1 & 2.
- 4,179 SF (0.10 ac) will require an exception under Section 78-40.4(o) associated with Building 3.
- 9,786 SF (0.22 ac) will require an exception under Section 78-40.4(o) associated with Building 4.

Of the 190,924 SF (4.38 ac) of proposed impervious area within the RPA:

- 13,901 SF (0.32 ac) is exempt under Section 78-40.4(k)(2) associated with the improvements along Herndon Parkway.
- 43,959 SF (1.01 ac) is exempt under Section 78-40.4(k)(1) & (2) associated with the proposed trail system and associated public sidewalks.
- 66,427 SF (1.52 ac) is exempt under Section 78-40.4(k)(2) associated with the extension of Fairbrook Drive.
- 310 SF (0.01 ac) is permitted under Section 78-40.4(j)(2) associated with the proposed stormwater outfalls.
- 48,012 SF (1.10 ac) has been previously approved under Conditional Use #00-07 associated with proposed Buildings 1 and 2 south of Fairbrook Drive.
- 7,776 SF (0.18 ac) will require an exception under Section 78-40.4(o) associated with Buildings 1 & 2.
- 3,149 SF (0.07 ac) will require an exception under Section 78-40.4(o) associated with Building 3.
- 7,390 SF (0.17 ac) will require an exception under Section 78-40.4(o) associated with Building 4.

It should be noted that following the construction of the proposed extension to Fairbrook Drive, the remaining RPA to the north side of the road will no longer be connected or acting as a buffer for Sugarland Run. Being that these fringe areas will no longer be acting as a buffer following the construction of the road, as shown on the Proposed Conditions Plan (Sheets 4-7).

III. Proposed Best Management Practices

To offset the proposed increase in impervious area within the limits of disturbance, a combination of low impact development practices, including but not limited to green roofs, bioretention facilities, and permeable pavement systems - as well as possible underground detention vaults (detention and/or filtering) are proposed. These facilities will provide phosphorus reductions required by the Virginia Stormwater Management Program (VSMP). Significant reductions from the post-developed runoff volumes are anticipated from the use of such practices, which will serve to benefit not only water quality control but also water quantity control.

Additional detention of post development runoff for the 2-year and 10-year storm events, if required for adequacy of outfall and/or peak shaving, will be accommodated through vaults providing storage and controlled release to meet the overall detention/outfall adequacy requirements. The proposed roadway extension will also require stormwater quality and quantity controls. Such improvements will be subjected to stormwater controls more in keeping with a linear project. Such controls may include, but are not limited to, localized urban bioretention (possibly in tree pits), filter cartridges within manholes or drop inlets, purchase of nutrient credits, and/or piping the runoff to the on-site control facilities. Stormwater BMP locations and water quality calculations have been developed and are provided on Sheets 13-16.

IV. Existing Vegetation

The existing pervious area on both the Fairbrook parcels consists of a mixture of forested conditions, a 100 foot transmission easement, and unmanaged landscape. A mixture of small to medium sized trees and shrubs are located within the forested areas and predominately grasses and shrubs are located within the easement and other unmanaged areas of the RPA. The proposed development will result in the removal of multiple trees and shrubs within the limits of disturbance to accommodate the proposed Fairbrook Drive extension, multiple buildings, and associated infrastructure. A vegetation assessment is included on Sheets 8-9.

V. Re-vegetation and RPA Enhancements

The newly graded area within the RPA outside of the building footprint will be re-planted in accordance with the Virginia Department of Conservation and Recreation's *Riparian Buffers Modification & Mitigation Guidance Manual* as required by the Town of Herndon Code. The building footprints will also provide an assortment of street trees that will assist in providing additional water quality improvements for the site. Additionally, non-forested areas within the floodplain will be planted in order to meet the appropriate planting requirements as shown on the RPA Enhancement Plan (Sheets 10-11). As the required amount of re-planting is greater than what can be planted onsite, offsite areas identified by the Town of Herndon can be used to make up the delta if required. Additionally, stream restoration is proposed along areas of Sugarland Run, of which the temporary disturbance adjacent to the stream channel will be seeded and planted with a native plant selection to stabilize the stream bed and banks. For reference:

- Buildings 1 & 2 will require 0.45 acre of re-planting.
- Building 3 will require 0.10 acre of re-planting.
- Building 4 will require 0.22 acre of re-planting.

VI. Existing Conditions

The existing topography within the Fairbrook parcel consists of relatively low slopes throughout much of the RPA as well as within the proposed limits of disturbance shown on Sheets 2-3. The existing site drains to Sugarland Run (a perennial stream) and flows northeast off the Fairbrook parcel and onto the Herndon I LLC parcel until entering into four concrete box culverts beneath Spring Street/Sunset Hills Road. The existing soils within the RPA consist of a combination of Elbert silt loam, 0 to 2 percent slopes (35A); Jackland and Haymarket soils, 7 to 15 percent slopes, 2 to 7 percent slopes (very stony), and 7 to 15 percent slopes (very stony) (63B, 64B, and 64C respectively); as well as urban land (95) associated with the existing development of Fairbrook business park. Being that much of the land has been developed, much of the soils on site have been disturbed previously and thus soil properties may vary significantly in areas with previous cut and fill. Refer to Sheets 2-3 for further details on existing site conditions.

VII. Proposed Impacts

The development of the Fairbrook site will result in both excavation and fill throughout the limits of disturbance in order to allow for the construction of the proposed buildings, extension of Fairbrook Drive, improvements to Herndon Parkway, a trail/sidewalk system, and necessary utility installations. Sections of Fairbrook Drive will be elevated slightly above the existing stream valley and will require retaining walls at two locations, specifically between Herndon Parkway and the connector road to Buildings 1 and 2, as shown on the Proposed Conditions Plan (Sheets 4-7). The limits of disturbance (LOD) and grading is shown on the Proposed RPA Encroachment and Impervious Conditions plans. Disturbance to the topography, soils, and hydrology within the RPA is limited to the area within the LOD. The hydrology on site will be modified by updating and expanding the existing stormwater network but the site will continue to drain to Sugarland Run. Refer to Sheets 4-7 for further details on proposed site conditions including proposed topography and stormwater network.

VIII. Disturbance to Wetlands

The boundaries of jurisdictional wetlands and other waters of the U.S. were delineated by Wetland Studies and Solutions, Inc., as described in the May 31, 2016 report entitled, "Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area Evaluation, Fairbrook Business Park and Off-site Study Area". The U.S. Army Corps of Engineers (COE) issued a jurisdictional determination (JD) verifying the delineated boundaries of these waters of the U.S on September 21, 2016 (NAO-2016-01643). The limits of the Waters of the U.S. were survey located by Wetland Studies and Solutions, Inc. There is a current authorization from both the COE and DEQ to disturb wetlands associated with the Fairbook site. This permit will be modified to include the proposed impacts from Fairbook Drive.

IX. Changes in Hydrology

Much of the existing site is pervious and excess runoff in these areas currently drains to Sugarland Run by means of surface flow, shallow concentrated flow, and channel flow. On the Fairbrook parcel, the existing office building, associated parking, and Fairbrook Drive drain by means of an existing underground stormwater network to an unnamed perennial tributary to Sugarland Run. Being that proposed construction will result in an increase of impervious area throughout the site and therefore an increase in flow rate from the site, stormwater detention is required. To offset the proposed increase in impervious area within the limits of disturbance, a combination of low impact development practices including but not limited to green roofs, bioretention facilities, and permeable pavement systems - as well as possible underground detention vaults (detention and/or filtering) are proposed. Significant reductions from the post-developed runoff volumes is anticipated from the use of such practices, which will serve to benefit not only water quality control but also water quantity control.

Preliminary stormwater BMP locations and water quality calculations have been developed and are provided on Sheets 13-16. The stormwater management plan and computations will be updated as needed along with the full site design as the project progresses.

X. Proposed Fill Material

Earthwork volumes have not been determined at this time. Cut/Fill volumes and proposed fill material (if necessary) will be determined as the project progresses.

XI. Pre- and Post-Development Pollutant Load

The proposed development will result in a net increase in impervious area onsite as well as within the RPA. To offset the proposed increase in impervious area within the limits of disturbance, a combination of low impact development facilities, including but not limited to green roofs, bioretention practices, and permeable pavement systems - as well as possible underground detention vaults (detention and/or filtering). These facilities will provide phosphorus reductions required by the VSMP. Significant reductions from the post-developed runoff volumes are also anticipated from the use of such practices, which will serve to benefit not only water quality control but also water quantity control. Preliminary stormwater computations have been developed to demonstrate pollutant load reductions for the project site and are shown on Sheets 13-16.

In addition to the required pollutant load reductions associated with the increase in impervious areas on the site, the proposed encroachments into the RPA will ultimately reduce the buffer area. To account for this loss of buffer area and its associated filtering capacity, several sections of stream restoration are shown in the RPA Enhancement Plan (Sheets 10-11) which will result in a reduced pollutant loading to Sugarland Run. Badly eroding stream channels contribute tremendous amounts of sediment and attached nutrients to downstream receiving waters. DEQ recognizes this and therefore allows a credit of 0.068 lbs. TP per linear foot for stream restoration projects. This credit can be used by localities and entities that have been designated as "MS4's" (those that operate Municipal Separate Storm Sewer Systems) to meet their regulatory requirements. Details of this process can be found in the DEQ document Chesapeake Bay TMDL Action Plan Guidance, Guidance Memo No. 15-2005 (Guidance Document) dated May 18, 2015.

XII. Increases in Impervious Surfaces

The proposed development on the Fairbrook will result in a net increase in impervious area onsite as well as within the RPA. This new impervious area results from the construction of the mixed-use development, the extension of Fairbrook Drive, and all required infrastructure associated with the buildings and roadways. The proposed development will result in a net increase of approximately 152,112 SF (3.49 ac) of impervious area within the RPA. Of the proposed impervious area, a large portion is associated with the construction of Fairbrook Drive, improvements to Herndon Parkway, and construction of sidewalks along Herndon Parkway and Fairbrook Drive, a trail network, and are exempt under the Town of Herndon Chesapeake Bay Preservation Area overlay district as detailed in Section II.

XIII. Site Clearing

The proposed Fairbrook development has a total disturbed area of approximately 721,111 SF (16.55 ac) with a total of 287,505 SF (6.60 ac) within the RPA. The total area of the Fairbrook parcel is 1,200,741 SF (27.57 ac). Thus, approximately 40% of the limits of disturbance area is located within the RPA and approximately 60% of the parcels will be cleared. All required erosion and sediment controls will be installed to minimize impacts offsite.

XIV. Anticipated Duration and Phasing Schedule

A Special Exception Plan was submitted to the Town of Herndon ahead of final site plan. The anticipated duration and phasing of construction has not been determined at this time.

A specific schedule will be developed in conjunction with the full site design as the project progresses.

XV. Requisite Permits for Project

The following permits required for construction along with the issuing agency are listed below:

- Land Disturbance Permit - **Town of Herndon**
- Demolition/Grading Permit - **Town of Herndon**
- Right-of-Way Permit - **Town of Herndon**
- Building Permit (Footing to Grade) - **Town of Herndon**
- Building Permit (Above Grade) - **Town of Herndon**
- VSMP and VWP Permits - **Virginia Dept. Environmental Quality**
- Section 404 Permit - **U.S. Army Corps of Engineers**
- VMRC Authorization (for impacts with D.A. > 5 sq. mi.) - **Virginia Marine Resources Commission**

XVI. Proposed Mitigation Measures for Hydrogeological Impacts

While the proposed development will result in the net increase of impervious area onsite and within the RPA, proposed stormwater management quantity and quality controls will be provided in accordance with the VSMP. Stormwater treatment and control will be accomplished through the design and use of a combination of low impact development practices including but not limited to green roofs, bioretention facilities, and permeable pavement systems - as well as possible underground detention vaults (detention and/or filtering) are proposed. These facilities will provide phosphorus reductions required by the Virginia state stormwater regulations. Significant reductions from the post-developed runoff volumes is anticipated from the use of such practices, which will serve to benefit not only water quality control but also water quantity control.

Storm sewer for the proposed development discharges into a floodplain bed and banks condition. The adequacy of these outfalls will be evaluated in accordance with Herndon Town Code Chapter 26, Section 329. The evaluation of the "natural stormwater conveyance system" for channel protection and flood protection will be performed to evaluate the natural conveyance system to point at least 150 feet downstream of a point where the drainage area is 360 acres or greater. The extent of the evaluation will be onsite as the drainage area of the floodplain discharge point at the eastern boundary is greater than 482 acres. Taking the runoff reduction methodologies to be employed into account, the Site Engineer anticipates that an adequate outfall exists onsite without impact to downstream properties.

In order to mitigate for the proposed impacts to the the stream channels and wetlands onsite, stream restoration is proposed along the highly eroded sections of Sugarland Run and its tributaries. The proposed restoration will provide a much more stable planform geometry and significantly reduce the amount of erosion to the bed and banks. Along with stream improvements, a variety of pollinator plants are specified to be planted in areas outside of the existing wetlands and within the transmission easement. For all work associated with the stream and wetlands onsite, a permit will be acquired from COE and DEQ to disturb these areas. Refer to the RPA Enhancement Plan on Sheets 10-11 for locations of plantings and stream improvements.

XVII. Identification of Characteristics and Conditions of Sensitive Lands

The boundaries of jurisdictional wetlands and other waters of the U.S. were delineated by Wetland Studies and Solutions, Inc. and serve as components to the field verified RPA plotted on Sheets 2-3. The RPA core components existing on site include six (6) perennial streams (Sugarland Run and five (5) unnamed tributaries to Sugarland Run). Additionally, non-tidal wetlands connected by surface flow and contiguous to the perennial streams are present in the study area. Much of the stream valley is newly forested with small to medium sized trees and shrubs. A significant portion of the stream valley is located within an existing 100' transmission easement running from Herndon Parkway, along the existing Fairbrook Drive, and paralleling the Fairfax County Parkway to its intersection with Sunset Hills Road.

Several sections of the stream channel, including multiple outfalls into Sugarland Run, are actively eroding. Stream restoration is proposed for these sections in order to stabilize the channel and reconnect the stream to its floodplain. In addition, in areas outside of the existing wetlands and within the transmission easement, a variety of pollinator plants are specified to be planted.

XVIII. Identification of and Impact on the Natural Processes and Ecological Relationships

The existing stream valley and associated wetlands provide a wide variety of both ecological and environmental benefits. The presence of water in the stream and adjacent wetlands encourages significant growth of vegetation and simultaneously provides habitat for many different species. The wetlands and vegetation also assist in filtering water and removing nutrients and other pollutants from surface runoff. In addition, the wetlands and floodplain provide storage for excess runoff during storm events as well as adding overbank roughness and reducing velocities. The stream valley also provides aesthetic value to the community and potential opportunities for recreational use.

The proposed encroachments into the RPA will reduce the buffer area around the existing streams and wetlands associated with Sugarland Run. In addition, a small portion of the existing stream and wetlands will be directly impacted by the extension of Fairbrook Drive. Although these impacts will occur on the northern and western side of the stream, the majority of the wetlands associated with Sugarland Run are located between the existing stream channel and the Dulles Toll Road to the south. This area will remain undisturbed and will continue to provide ecological and environmental benefits for the community.

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Water Quality Impact Assessment Narrative

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COMMONWEALTH OF VIRGINIA
JOHN T. KELLEY, JR
Lic. No. 035786
10/19/2020
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

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Boundary and Topo Source: VIKA

Design	Draft	Approved
RPC	APE	JTK

Sheet # 17 of 18

Computer File Name:
L:\04000s\0474.04\CAD\0474-RD10-WQIA-May 2020 WQIA Revison 2020-10-14_Fairbrook WQIA.dwg

June 17, 2020
Revised October 19, 2020

Town Council
Herndon Municipal Center
777 Lynn Street
Herndon, Virginia 20170

Re: Water Quality Impact Assessment & RPA Exception Request
Fairbrook
Map #: 0164-10-0005A; 0164-25-O; 0164-25-H; 0173-02-0004A
Town of Herndon, Virginia
WSSI #4674.06

To the Town Council:

Wetland Studies and Solutions, Inc. (WSSI), on behalf of Fairbrook Business Park Associates, LP and Fairbrook Business Park Associates II, LP, (hereafter referred to as the "Applicant"), is requesting an authorization of resource protection area (RPA) encroachments under §78-60.4(j), §78-60.4(k), and §78-60.4(o) per the Town of Herndon Chesapeake Bay Preservation Area Overlay District ("Ordinance") for encroachments into the Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) in Town of Herndon, Virginia.

Project Description

The Fairbrook project is a development project located within the existing Fairbrook Business Park at the intersection of Fairbrook Drive and Herndon Parkway in the Town of Herndon, Virginia. The proposed development will consist of the extension of Fairbrook Drive along Sugarland Run to tie into Spring Street, road improvements along Herndon Parkway, a trail system, stream restoration, the demolition of an existing office building, construction of a mixed-use development (containing office, residential, and retail space), as well as the associated private roads and parking. Currently, the existing site is composed of a single office building between Fairbrook Drive and Sunset Park Drive and unmanaged landscape including forested conditions, stream corridor, and an existing 100-foot transmission easement. In addition, the proposed extension of Fairbrook Drive will continue off site onto the adjoining parcel (Herndon I LLC) located adjacent to the Fairfax County Parkway and connect to Spring Street. Approximately 716,771 square feet (16.45 acres) of the Fairbrook property is located within the Resource Protection Area (RPA) for Sugarland Run and its associated wetlands and tributaries. The proposed construction of the Fairbrook development will result in the total of 287,505 square feet (6.60 acres) of RPA encroachment consisting of 190,924 square feet (4.38 acres) of impervious area within the RPA.

Of the 287,505 SF (6.60 ac) of RPA encroachment:

- 21,451 SF (0.49 ac) is exempt under Section 78-40.4(k)(2) associated with the improvements along Herndon Parkway.
- 81,022 SF (1.86 ac) is exempt under Section 78-40.4(k)(1) & (2) associated with proposed utility crossings, trail network, and public sidewalks along Fairbrook Drive.

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contactus@wetlands.com • www.wetlands.com

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- 3,149 SF (0.07 ac) will require an exception under Section 78-40.4(o) associated with Building 3.
- 7,390 SF (0.17 ac) will require an exception under Section 78-40.4(o) associated with Building 4.

RPA Exception Request

In order to demonstrate compliance with the intent and purpose of the Ordinance, WSSI has evaluated the requirements for an exception request under Section 78-40.4(o) of the Ordinance. In accordance with §78-40.4(o)(3), WSSI evaluated the following findings when developing the above mentioned WQIA:

I. *The requested CBPA exception is the minimum necessary to afford relief;*

The proposed impact within the RPA is the minimum necessary to allow for the extension of Fairbrook Drive. The proposed road has been aligned such that the impacts to the RPA has been minimized to the extent practicable given the site constraints (including the

location of the tie-in points to existing roads). Additionally, the location of this road is outlined in the 2030 Town of Herndon Comprehensive Plan. As demonstrated in the WQIA, the proposed site condition will incorporate stream restoration practices and planting pursuant to the Virginia Department of Conservation and Recreation's *Riparian Buffers Modification & Mitigation Guidance Manual* to mitigate for these impacts and will result in an improved RPA condition and reduced pollutant loading to Sugarland Run.

II. *Granting the CBPA exception does not confer upon the applicant any special privileges that are denied by sections 78-60.4, 78-60.4(l), and 78-60.4(m) to other property owners who are similarly situated;*

The proposed Fairbrook project has been developed to accommodate the extension of Fairbrook Drive which will ultimately serve as a new public road for the Town of Herndon. The proposed road has been aligned in order to minimize the impact to the RPA. Additionally, the location of this road is outlined in the 2030 Town of Herndon Comprehensive Plan. The construction of the seven buildings will supplement the new public road and provide an improved mixed-use community for the Town of Herndon. The RPA impacts associated with the construction of Buildings 3-7 are located in areas that will no longer be acting as a buffer following the construction of the exempt road (i.e. will be isolated from Sugarland Run by the road).

III. *The request is in harmony with the purpose and intent of sections 78-60.4(j), 78-60.4(l), and 78-60.4(m) and is not of substantial detriment to water quality;*

The proposed development will not only reduce stormwater flows to Sugarland Run and its associated tributaries but will provide outfall protection for stormwater discharges from the site. The reduction of stormwater flow rates and the proposed outlet protection will reduce the likelihood of streambank erosion and provide a more stable stream channel. In addition, the proposed BMP's will reduce the phosphorus loading in the stormwater runoff thus improving the quality of water entering the stream. In order to mitigate for the proposed impacts, stream restoration is also proposed for several sections of Sugarland Run and will greatly reduce the sediment supply and pollutant load to the downstream receiving waters. Following construction, the total pollutant load will be less than the current land use and therefore will not be of substantial detriment to the receiving water quality.

IV. *The request is not based upon conditions or circumstances that are self-created or self-imposed;*

The most significant encroachments for the development of the Fairbrook parcel are related to the extension of the Fairbrook Drive and the construction of Buildings 1 and 2 south of Fairbrook Drive. The encroachments associated with the extension of Fairbrook Drive are necessary in order to extend the new public road to Spring Street. While in the interim, Fairbrook Drive will only service the Fairbrook development project, the road will be maintained by VDOT and will ultimately connect to Spring Street and serve as a thoroughfare for the County. Thus, this public road extension should be considered exempt

under Section 78-60.4(j)(2) of the Ordinance. In addition, the proposed construction of Buildings 1 and 2 located on the south side of the Fairbrook parcel has been previously approved by the Town under conditional use (CU) #00-07. The RPA impacts associated with the construction of Buildings 3-7 south of Fairbrook Drive are located in areas that will no longer be acting as a buffer following the construction of the exempt road (i.e. will be isolated from Sugarland Run by the road). Much of this area is located on the north side of the proposed Fairbrook Drive extension and will therefore no longer be acting as a buffer zone for Sugarland Run.

V. *Reasonable and appropriate conditions are imposed, as warranted, that will prevent the allowed activity from causing a degradation of water quality; and*

In addition to the reducing stormwater flowrates as well as phosphorus loading, the proposed development will employ various erosion and sediment control features to minimize site runoff from impacting water quality during construction.

VI. *Other findings, as appropriate and required by the Town are met.*

The existing stream channel and wetlands will be improved through stream restoration measures. These improvements will increase the effectiveness of the RPA and its associated components. In addition, the proposed mitigation measures detailed in the WQIA will greatly reduce pollutant loading to Sugarland Run and offsite receiving waters.

Conclusion

In conclusion, the Applicant is requesting an authorization under §78-60.4(j), §78-60.4(k), and §78-60.4(o) based on the WQIA which outlines the proposed changes to the RPA associated with the Fairbrook development. Thank you for your consideration and please feel free to contact me at (703) 679-5632 or by email at rclark@wetlands.com or John T. Kelley at (703) 679-5652 or by email at jkelley@wetlands.com.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.

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Fairbrook
Water Quality Impact Assessment
Town of Herndon, Virginia

Resource Protection Area Exception Request

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PROFESSIONAL ENGINEER

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