APPLICATION ACCEPTED: October 18, 2014
PLANNING COMMISSION: March 2, 2016
BOARD OF SUPERVISORS: Not Yet Scheduled

County of Fairfax, Virginia

February 29, 2016

STAFF REPORT ADDENDUM

APPLICATION RZ 2014-DR-022

DRANESVILLE DISTRICT

APPLICANT:	Basheer/Edgemoore-Brooks, LLC
PRESENT ZONING:	R-A and R-E
REQUESTED ZONING:	R-E
PARCEL(S):	7-2 ((1)) 17 and 23
ACREAGE:	51.97 acres
DENSITY:	0.38 dwelling units/acre
OPEN SPACE:	41%
PLAN MAP:	Residential – 0.2 to 0.5 units/acre
PROPOSAL:	To rezone the R-A portion of the property to R-E to permit development of a 20-lot cluster single family detached dwelling subdivision at a density of 0.38 du/ac.

STAFF RECOMMENDATIONS:

Staff recommends approval of RZ 2014-DR-022, subject to the execution of proffers consistent with those contained in Appendix 1.

Bob H. Katai

Department of Planning and Zoning
Zoning Evaluation Division
12055 Government Center Parkway, Suite 801
Fairfax, Virginia 22035-5509
Phone 703-324-1290 FAX 703-324-3924
www.fairfaxcounty.gov/dpz/

Staff recommends a waiver of Sect. 6-1308.2D of the Public Facilities Manual (PFM) to allow stormwater management and best management practices within the minimum required setbacks specified in that section.

Staff recommends a waiver of Sect. 6-1308.2G of the PFM to allow the maximum drainage area to a vegetated swale to be greater than two acres.

It should be noted that it is not the intent of staff to recommend that the Board, in adopting any conditions proffered by the owner, relieve the applicant/owner from compliance with the provisions of any applicable ordinances, regulations, or adopted standards.

The approval of this rezoning does not interfere with, abrogate or annul any easement, covenants, or other agreements between parties, as they may apply to the property subject to this application.

It should be further noted that the content of this report reflects the analysis and recommendation of staff; it does not reflect the position of the Board of Supervisors.

For information, contact the Zoning Evaluation Division, Department of Planning and Zoning, 12055 Government Center Parkway, Suite 801, Fairfax, Virginia 22035-5505, (703) 324-1290.

N:\Bkatai\Basheer-Edgemoore\Staff Report and Conditions\00 – Consolidated Staff Report Addendum for Basheer-Edgemoore – RZ 2014-DR-022

Americans with Disabilities Act (ADA): Reasonable accommodation is available upon 7 days advance notice. For additional information on ADA call (703) 324-1334 or TTY 711 (Virginia Relay Center).

DESCRIPTION OF THE APPLICATION

As described in the staff report published December 30, 2015, RZ 2014-DR-022 is an application requesting rezoning of 51.97 acres of land from the R-A (Residential-Agriculture) and R-E (Residential Estates) zoning districts to the R-E zoning district to permit a cluster subdivision for 20 single family detached dwelling units. The 20-lot subdivision will have a proposed density of 0.38 dwelling units per acre with approximately 41 percent of the site retained in open space. The average lot size will be 59,618 square feet and the lots will range in size from 52,220 square feet (1.19 acres) to 80,280 square feet (1.84 acres). Access to the proposed development will be provided by extension of Forest Lake Drive, a public street. An existing farm pond and associated stream and adjoining environmentally sensitive land will be preserved, enhanced, and incorporated into the layout of the development.

BACKGROUND

On January 21, 2016, the Planning Commission held a public hearing on the rezoning request. A number of speakers presented testimony covering various issues, including stormwater management concerns (impacts to Walker Lake, downstream erosion of Pond Branch, and erosion problems during construction); protection of trees on neighboring properties; the possibility of cut-through traffic on Forest Lake Drive; and night sky lighting. At the close of the hearing, the Commission deferred a decision on the rezoning to provide time to consider the testimony and to allow an opportunity for the applicant to address the concerns identified during the public hearing. Additionally, the record remained open for submittal of additional comments.

In response to the public comments, the applicant submitted a revised set of proffers dated February 23, 2016, and the GDP General Development Plan (GDP) as revised through February 18, 2016.

Title of GDP:	General Development Plan, RZ 2014-DR-022, Brooks Property
Prepared By:	Christopher Consultants
Original and Revision Dates:	August 28, 2014, as revised through February 18, 2016

A blacklined version of the revised draft proffers, highlighting all of the revisions that have been made since the publication of the staff report, is attached as Attachment 1. A redlined version of the revised GDP is attached as Attachment 2.

ANALYSIS

Proffers

The key changes to the proffers are summarized below:

- Proffer 6 lists the disclosures, restrictions, and commitments that will be contained in future Homeowner's Association (HOA) documents. These provisions cover a broad range of topics including the maintenance of any equestrian trails in the community, making available septic system maintenance information, disclosing the existence of stormwater management facilities and compost soil amendment areas on the individual lots, and informing residents of restrictions related to irrigation systems, lawn fertilization and pest management treatment methods, swimming pools filling, and buildable areas on the individual lots.

- Proffer 7 outlines the maintenance procedures to be followed by the individual homeowners in maintaining the on-lot stormwater management facilities and the alternative on-site sewage systems. The specified reporting requirements supplement those required by the County.

- A provision has been added to Proffer 9 specifically prohibiting the use of "popsicle" style signs either on or off-site of the development.

- A provision has been added to Proffer 10 stating that construction activity will maintain dust control prevention measures in conformance with County Code.

- Proffer 13 clarifies that prior to bond release, the applicant will record a public access easement over any trails not located within the public right-of-way.

- Proffer 14 commits the applicant to work with the Great Falls Trail Blazers to promote equestrian access and use on the property.

- A provision has been added to Proffer 15 clarifying the timing of the closing off of Springvale Road vehicle access to the subject site.

- A provision has been added to Proffer 16 committing the applicant to request a waiver of construction from VDOT regarding the interparcel connection stub between Lots 4 and 5. If granted, the waiver would allow the stub area to remain unimproved.

- Proffer 18 commits that applicant to install Low Impact Development (LID) [stormwater management] facilities on lots bordering the RPA/EQC areas.

- Proffer 19 requires the applicant to provide the HOA with Maintenance documents for the individual stormwater facilities and alternative sewage systems.

- A provision has been added to Proffer 22 requiring the applicant to provide copies of the stream monitoring report to the district supervisor's office, the Walker Woods Lake Community Association, and the two property owners immediately downstream of Outfall A.

- A provision has been added to Proffer 24 stating that the applicant shall install a "stilling basin" at the Forest Lake Drive culvert crossing as part of extension of the roadway.

- Proffer 27 details additional erosion and sedimentation control procedures for each phase of subdivision construction. The proffer requires third-party monitoring and compliance inspection services during the development and construction period activities to ensure that all protective measures remain in-place and are fully functional. Further, the proffer mandates notification of distribution of the monitoring and compliance inspection reports to specified parties.

- A provision has been added to Proffer 28 mandating that exterior lighting for the development be full cut-off and not exceed 1,600 lumens each.

- A provision has been added to Proffer 29 committing the applicant to install water efficient/low water appliances.

- Provisions have been added to Proffer 40 to require an additional bathymetric survey of downstream Walker Woods Lake to determine if any post-road construction impacts to the lake had occurred.

- The provisions of Proffer 45 have been modified to permit deferral of the school contribution from a one-time lump payment due at subdivision plan approval to 20 separate payments due at the issuance of each of the individual residential use permits.

Staff contacted the Fairfax County Public Schools (FCPS) regarding the proposed modification of Proffer 45, the timing of payment of the school contribution. FCPS stated that the standard payment due at subdivision plan approval provision was the preferred verbiage. The proposed revision defers payment of the school contribution and the School District would secure the funds only after the arrival of the new students, not before, allowing no lead time to plan or construct new facilities for the increase in student load.

GDP

The key changes to the GDP occur along the northern boundary of the subject property. In accordance with Public Facilities Manual (PFM) requirements, Sheet 4.1 has been revised to show the off-site trees in the vicinity of the northern property line. The Tree Preservation Schedule on Sheet 5.1 has been amended to reflect inclusion of these trees.

Given the proximity of these off-site trees to the subject property, the proposed limits of clearing and grading, previously co-terminus with the northern property line, have been moved southwards 12 to 14 feet from this property line. Additionally, the western end of the dry swale that is proposed in the vicinity of the northern property line has been angled southward and the limits of clearing and grading for the dry swale and the septic system on proposed Lot 8 were similarly shifted away from the northern property line. The lot lines for proposed Lots 8, 9, and 10 were adjusted accordingly to account for this shift.

Other changes to the GDP include enlargement of the two rain gardens that tie into the southern underground bioretention facility and related revisions to the stormwater calculations.

RECOMMENDATION

Staff recommends approval of RZ 2014-DR-022, subject to the execution of proffers consistent with those contained in Appendix 1.

Staff recommends a waiver of Sect. 6-1308.2D of the Public Facilities Manual (PFM) to allow stormwater management and best management practices within the minimum required setbacks specified in that section.

Staff recommends a waiver of Sect. 6-1308.2G of the PFM to allow the maximum drainage area to a vegetated swale to be greater than two acres.

ATTACHMENTS

1. Blacklined proffers dated February 23, 2016.
2. Redlined General Development Plan dated February 18, 2016

ATTACHMENT 1

Proffered Conditions
Basheer/Edgemoore-Brooks, LLC
RZ 2014-DR-022
January 30, 2015
April 24, 2015
July 8, 2015
November 30, 2015
December 16, 2015
December 30, 2015
February 10, 2016
February 19, 2016
February 23, 2016

Pursuant to Section 15.2-2303(A), Code of Virginia, 1950 as amended, the undersigned Owners and Applicant, in this rezoning proffer that the development of the parcel under consideration and shown on the Fairfax County Tax Map as Tax Map Reference 7-2((1))17 and 23 (hereinafter referred to as the "Property") will be in accordance with the following conditions (the "Proffered Conditions"), if and only if, said rezoning request for the R-E Zoning District is granted. In the event said rezoning request is denied, these Proffered Conditions shall be null and void. The Owners and the Applicant, for themselves, their successors and assigns hereby agree that these Proffered Conditions shall be binding on the future development of the Property unless modified, waived or rescinded in the future by the Board of Supervisors of Fairfax County, Virginia, in accordance with applicable County and State statutory procedures. The Proffered Conditions are:

I. GENERAL

1. Substantial Conformance. Subject to the provisions of Section 18-204 of the Fairfax County Zoning Ordinance (hereinafter referred to as the "Zoning Ordinance"), development of the Property shall be in substantial conformance with the Generalized Development Plan (GDP), prepared by christopher consultants, ltd., dated August 28, 2014, revised through ~~November 30, 2015.~~**February 18, 2016.**

2. Maximum Lot Yield. The development shall consist of a maximum of twenty (20) single family detached units.

3. Minor Modifications. Pursuant to Paragraph 5 of Section 18-204 of the Zoning Ordinance, minor modifications to the GDP may be permitted as determined by the Zoning Administrator.

4. Establishment of Home Owners Association (HOA). Prior to record plat approval, the Applicant shall establish an HOA in accordance with Sect. 2-700 of the Zoning Ordinance. The purpose of the HOA shall be, among other things, establishing the necessary residential covenants governing the use and operation of common open space and other facilities of the approved development, to provide a mechanism for ensuring the ability to complete the maintenance obligations and other provisions noted in these

proffer conditions, including an estimated budget for such common maintenance items, and to establish necessary restrictions and maintenance for any low impact development elements and tree preservation areas located on private lots.

5. Dedication to HOA. At the time of record plat recordation, the open space and common features/amenities not otherwise conveyed or dedicated to the County shall be dedicated to the HOA and maintained by the same.

6. Disclosure. Prior to entering into a contract of sale, prospective purchasers shall be notified in writing by the Applicant of the maintenance responsibility for common area landscaping and any other open space amenities and shall acknowledge receipt of this information in writing.

7. HOA Documents. The HOA governing documents and initial deeds of conveyance shall expressly contain ~~these disclosures.~~ **the disclosure outlined in Proffer 6, as well as the following:**

- **A commitment on the part of the HOA to work closely with the Great Falls Trail Blazers on the maintenance of any equestrian trails in the community,**
- **The requirement that homeowners maintain their own septic systems and that the HOA maintains information on the maintenance protocol for the same,**
- **A disclosure of the fact that some lots have on-lot stormwater management facilities which cannot be altered by individual homeowners,**
- **A disclosure of the fact that the lots have compost soil amendment around the perimeter of each house planted with drought resistant turf grasses.**
- **A restriction that there shall be no on-lot irrigation systems and that the HOA will not install an irrigation system in any HOA open space areas,**
- **A restriction that the on-lot use of lawn fertilization and pest management treatments will be limited to an HOA approved list of environmentally-friendly products and time-of-year application specified by the products for purposes of nutrient reduction and mitigating potential downstream impacts,**
- **A restriction that swimming pools cannot be filled via well water.**
- **Information regarding the buildable area for each lot as shown on Sheet 6 of the GDP and the restriction that there shall be no accessory sheds or storage units constructed on individual private lots.**

8. BMP/Septic System Maintenance. After establishing the HOA pursuant to these proffers, the Applicant shall provide the HOA with written materials describing proper maintenance of the approved BMPs in accordance with the PFM and County guidelines as well as maintenance procedures for the Alternative on-site sewage system which shall then be included in the disclosure information/HOA documents for each homeowner as outlined in Proffer 6. The HOA shall maintain a copy of the maintenance procedures for the Alternative on-site sewage system and provide the same in the HOA documents package distributed to each new homeowner and successive purchasers.

~~7.~~**9.** Signs. The Applicant will comply with the General Provisions of Article 12 of the Zoning Ordinance and the Sign Regulations therein. **No temporary signs (including "popsicle" style paper or cardboard signs), which are prohibited by Article 12 of the Zoning Ordinance and Chapter 7 of Title 33.1, and Chapter 8 of Title 46.2 of the Code of Virginia, shall be placed on or offsite by the Applicant or at the Applicant's direction.** The Applicant shall direct its agents and employees involved with the Property to adhere to this proffer.

~~8.~~**10.** Architectural Design. The architectural design of the dwellings shall be in substantial conformance with the bulk, mass and type and quality of materials and elevations shown on the GDP. The primary building materials, exclusive of trim shall be limited to brick, stone, cementitious siding, shingles or other similar masonry materials. The Applicant reserves the right to add extensions, porches and other structural components appurtenant to the elevations as long as they are limited to the buildable area as depicted on the GDP. Modifications may be made with the final architectural designs provided such modifications are in substantial conformance with the elevations shown on the GDP.

~~9.~~**11.** Peripheral Lot Line Fencing. Any fencing proposed on the perimeter lot line between adjoining property and the subject Property shall be a wooden, four-rail horse paddock style fence painted or stained a dark color, except on the perimeter lot line directly abutting Tax Parcels 0072-01-0033A and 0072-16-0003 said fence shall be of similar style, color, material and treatment as presently installed at Tax Parcel 0072-01-0033A. In the event a lot owner installs a swimming pool, then the fence requirement shall be Ameristar Fence Products Montage series residential ornamental steel fence, in the Majestic Style, 3-rail panel and 6-foot height, or approved equal.

~~10.~~**12.** Construction Phase. While construction is in progress, construction related vehicle traffic shall not commence prior to 7:00 am. The parking of construction vehicles and equipment, including personal vehicles utilized by construction workers, shall occur on the application property. There shall be no construction vehicle parking or staging on the existing paved portion of Lake Forest Drive immediately east of the existing cul-de-sac or on adjacent properties, except to allow for the relocation or installation dry utilities and for purposes of implementing traffic control within the identified work safety zone. The Applicant shall communicate these requirements to all construction vehicle drivers in both English and Spanish.

During development of the subject site, the telephone number of the site superintendent that shall be present on-site during construction shall be provided to the Dranesville District Supervisor's Office.

Construction activity will maintain dust control prevention measures and keep Forest Lake Drive free of sediment and debris, in conformance with the Code of Fairfax County. To the greatest extent possible, noise from construction activity will be minimized, in conformance with the Code of Fairfax County.

Outdoor construction activity shall be limited to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday and 9:00 a.m. and 5:00 p.m. on Saturdays. No outdoor

construction activities shall be permitted on Sundays or on federal holidays. The site superintendent shall notify all employees and subcontractors of these hours of operation and shall ensure that the hours of operation are respected by all employees and subcontractors. Construction hours shall be posted on-site in both English and Spanish. The Applicant shall provide updated construction schedules to the adjacent HOAs and the Dranesville Supervisors Office. This development condition applies to the original construction only and not to future additions and renovations by homeowners.

13. Public Access Easement. Prior to bond release, the Applicant shall cause to be recorded among the land records a public access easement running to the benefit of Fairfax County, in a form acceptable to the County Attorney, over any trails not within the public right-of-way. Such trails shall be maintained by the Applicant.

14. Equestrian Access. The Applicant shall work cooperatively with the Great Falls Trail Blazers to promote equestrian access and use on the Property.

II. TRANSPORTATION

~~11.~~**15.** Connection to Forest Lake Drive. Generally within the temporary turnaround easement associated with the existing temporary cul-de-sac at the end of Forest Lake Drive, the Applicant shall restore the area to grass and the matching of the existing ditch section. Per the Forest Lake deed of subdivision, the temporary turnaround easement will become null and void at such time as dedication and construction of the connection to the west occurs.

At the completion of installation of the stabilized construction entrance from Forest Lake Drive during the initial period of site development activity, the applicant shall cease use of the existing gravel driveway which currently provides ingress and egress to Springvale Road. A temporary barricade shall be installed on the property line at this location along with appropriate signage prohibiting further use.

~~12.~~**16.** Interparcel Connection. At the time of subdivision plat approval, the applicant shall dedicate an interparcel connection between Lots 4 and 5 as shown on the GDP. The interparcel connection shall be constructed as shown on the GDP contemporaneously with the construction of Forest Lake Drive extended into the Property~~. The~~ **unless a waiver of construction is approved by VDOT. The Applicant shall pursue shall a waiver or prior to or concurrent with the filing of the subdivision plan. If a waiver is approved, the Applicant shall, prior to** subdivision plan approval**, shall escrow funds equivalent to that required for construction of the stub street based on Fairfax County's Unit Price Schedule in effect at the time. If a waiver is not approved and the stub connection is constructed, the** applicant shall install a Temporary Barrier at the stub-end of the interparcel connection to prevent unauthorized cut-through traffic. In addition, a sign will be conspicuously placed at this location stating that this area will be the site of a future extension of the road by others. Both the barricade and the sign will remain in place until the future road connection is made.

Prior to entering into any contract of sale with any purchaser, the applicant shall notify all prospective purchasers in writing that this interparcel connection is anticipated. In addition, the HOA documents shall provide written notification that this interparcel connection is anticipated.

III. ENVIRONMENTAL

~~13.~~**17.** Stormwater Management Facilities and Best Management Practices. The Applicant shall provide stormwater management ("SWM") and Best Management Practices ("BMPs") as determined by DPWES in the locations as generally shown on the GDP and in accordance with the requirements of the Stormwater Management Ordinance, the Public Facilities Manual (PFM), and the Chesapeake Bay Preservation Ordinance (CBPO). The requirements for maintaining non-County maintained SWM improvements shall be in a standard maintenance agreement between the County and the Applicant who is the land owner, its successor and assigns. This agreement shall be recorded in the County land records and run with the land. Should any deficiencies in the existing SWM or BMP facilities/improvements be identified by the Stormwater Management Maintenance Division during regular inspections, or when investigating a drainage complaint, then maintenance shall be performed in reasonable fashion and time in accordance with the recorded maintenance agreement. Should future County policy permit all or part of the SWM facilities on the Property to be eligible for County Maintenance, then the Applicant or the successor homeowner's association may request County maintenance for eligible facilities.

18. On-Lot Low Impact Development (LID) Facilities. The Applicant shall install LID facilities on those lots shown on the GDP bordering the Resource Protection Area/Environmental Quality Corridor. Such facilities can include but are not limited to rooftop disconnects, biodiffuser infiltration facilities, and rain gardens. These facilities shall be maintained by the HOA and their presence disclosed to homeowners per Proffer 7.

19. BMP/Septic System Maintenance. After establishing the HOA pursuant to these proffers, the Applicant shall provide the HOA with written materials describing proper maintenance of the approved BMPs in accordance with the PFM and County guidelines as well as maintenance procedures for the Alternative on-site sewage system which shall then be included in the disclosure information/HOA documents for each homeowner as outlined in Proffer 6.

~~14.~~**20.** Stormwater Run-off. The proposed runoff reduction practices shall be designed in accordance with the design criteria outlined in the Virginia Department of Environmental Quality BMP Clearinghouse and additional design requirements outlined in the Fairfax County Public Facilities Manual (PFM). The applicant shall follow the 'Detention Method' methodology for determination of allowable post-development peak rates of runoff for the 1-, 2- and 10-year storm events when addressing adequacy of the downstream receiving system.

The subdivision plan that shows the stormwater outfall/outfalls shall include the following information:

1) Five (5) field surveyed cross-sections of the receiving stream channel in locations determined by the project's submitting civil engineer, subject to DPWES approval, to be most susceptible to erosion problems due to soil type or geometric shape. One (1) of the field surveyed cross sections shall be located immediately upstream of the buffer. These sections shall be provided with permanent monuments on each end of the section, with monument coordinates (horizontal and vertical) provided on plans.

2) Sieve analysis to determine soil classification data of stream bank and bed materials from representative channel materials, including the material with the lowest allowable velocity in the receiving stream reach.

3) A calculation of the allowable average channel velocity at each cross-section using methods in accordance with Chapter 5 of the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992.

~~15.~~**21.** Pre-construction Monitoring of Receiving Stream Channels Prior to approval of the subdivision plan that shows the stormwater outfall, the Applicant shall submit a stream monitoring report to DPWES for review and approval with a courtesy copy to NVSWCD, that contains the following data for each survey section utilized for the adequate outfall analysis:

1) Location of sections and outfall;
2) Cross-section survey data, consisting of a graphical section drawing, coordinates of surveyed points, and the area of the channel below the plane formed by the section monuments;
3) Photograph of each section; and
4) Narrative statement describing the status of the stream channel.

~~16.~~**22.** Post-construction Monitoring of Receiving Stream Channels. The Applicant shall prepare a stream monitoring report in the same manner as the pre-construction monitoring report in Proffer 15 above. This report shall be submitted to DPWES and NVSWCD annually after submission of each pre-construction report, until two (2) years after the development is completed in the drainage area of each outfall (hereinafter referred to as the "control period"), as evidenced by final bond release. **Copies of the submitted report(s) shall be provided to the District Supervisor's office, the Walker Woods Lake Community Association and the two property owners immediately downstream of Outfall A.** All survey data shall be compared graphically and numerically to the original pre-construction submission.

~~17.~~**23.** Criteria for Repair of Outfall Channels: If the stream cross-section (measured vertically from a plane formed by the survey monuments) has not changed by more than an average of 5% or the stream's thalweg (the deepest part of the channel) has not moved in amount greater than three (3) feet or 25% of the stream width (original top-of-bank to top-of-

bank), whichever distance is greater, from the pre-construction survey during the monitoring period, then no repairs shall be required. If the repair criteria described above are exceeded, the Applicant accepts responsibility for corrective restoration and/or stabilization measures, as determined by DPWES. The Applicant shall correct the cause of the problem as well as repair any erosion damage.

~~18.~~**24.** Outfall Channel Design: To the extent possible, as determined by DPWES, restoration and stabilization measure shall incorporate biostabilization or bio-engineering processes to include, but not limited to, stabilization, regarding, or revegetation with native species. **Further, the applicant shall install a "stilling basin" at the Forest Lake Drive culvert crossing as part of the construction of the new roadway.**

~~19.~~**25.** Off-Site Work. Any off-site work required to satisfy Proffers ~~14~~**17** through ~~18~~**20** shall be contingent upon the Applicant obtaining written permission from the respective off-site property owner(s) at no cost to the Applicant, prior to site plan approval. The Applicant shall use best efforts to obtain this permission and if such permission cannot be secured, the Applicant shall provide DPWES with documentation of the efforts to obtain the permission. If permission is not granted, then the applicant shall be relieved of any requirements related to off-site work as required by these proffers.

~~20.~~**26.** Existing Farm Pond. The Applicant shall maintain the pre-development drainage area to the maximum extent possible but in no case change the drainage area by more than 10% of the pre-development drainage area. The applicant shall not reduce the volume of runoff flowing to the existing farm pond. The applicant shall not increase the rate of runoff (cfs) to the existing farm pond.

27. Erosion and Sediment Control. The applicant shall provide, as part of the erosion and sedimentation control plan and the final subdivision plan, construction phasing and sequencing of land disturbing activities for purposes of limiting areas of bare and exposed soil. The erosion and sedimentation control plan shall provide for stabilization measures within each construction phase prior to the land disturbing activities into the next construction phase. The applicant shall provide additional erosion and sedimentation controls measures to include but not be limited to: clean-water diversions integrated with temporary slope drains as part of Phase 1 controls; heavy applications of straw mulch (minimum 2 tons/acre) on the individual lots subsequent back-fill of the foundation; and, use of innovative practices and measures as part of both Phase 1 and 2 controls, such as "Filtrexx Siltsoxx", "Silt-Saver Pipe Stopper" and "Silt Sack". Further, the applicant shall provide additional downstream erosion and sedimentation control measures on those offsite properties provided written permission is obtained and Proffer 25 is satisfied. The applicant shall provide third-party monitoring and compliance inspection services during the development and construction period activities to insure that all protective measures remain in-place and are fully functional. The applicant shall provide the Walker Woods Lake Community Association, the two property owners immediately downstream of Outfall A, and DPWES copies all of the monitoring and compliance inspection reports associated with land-disturbing activity. The applicant shall

include the added measures as part of the Stormwater Pollution Prevention Plan (SWPPP) in compliance with the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Construction Activities (Permit).

~~21.~~**28.** Lighting. ~~There~~**To further the Great Falls policy on Dark Skies, there** shall be no streetlights on the public streets within the development~~.~~ **and any other exterior lighting utilized on the property such as entry sign lighting, door sconces, lamp posts and landscape lighting on individual lots shall be full cut-off, emitting no light above the horizon. Exterior fixtures shall not exceed 1600 lumens (including all lamps) each. No light from exterior lighting fixtures shall produce light trespass or glare onto an adjoining property. These restrictions shall be contained within the HOA documents and the HOA shall be responsible for enforcing any violations of these requirements and ensuring remediation in a timely fashion.**

~~22.~~**29.** Energy Conservation. In support of energy conservation and green building techniques; the Applicant shall select one of the following programs, within its sole discretion at the time of subdivision plan submission.

A. Certification in accordance with the Earthcraft House Program as demonstrated through documentation provided to DPWES and the Environment and Development Review Branch of the Department of Planning of Zoning (EDRB) prior to the issuance of a RUP; or

B. Certification in accordance with the 2012 National Green Building Standard (NGBS) using the ENERGY STAR® Qualified Homes path for energy performance, as demonstrated through documentation submitted to DPWES and EDRB 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 RUP for each dwelling.

As part of either program, the Applicant shall utilize/install water efficient/low water appliances such as toilets, shower heads, bathroom faucets and dishwashers.

~~23.~~**30.** Landscaping. Landscaping shall be generally consistent with the quality, quantity and the locations shown on the GDP and shall be non-invasive, predominantly native species. At the time of planting, actual types, sizes, locations and species of vegetation shall be determined pursuant to more detailed landscape plans submitted at the time of submission of the subdivision plans for review and approval by the Urban Forestry Management Division (UFMD), provided that, to the extent possible, all species are locally common native species. **Notwithstanding that shown on Sheet 7.0 of the GDP, the landscaping on the individual lots shall be in substantial conformance with the type of plantings shown on the typical lot plan on Sheet 9.8 in that there will be a mixture of deciduous shade trees, ornamental trees, evergreen trees, perennials and understory foundation plantings on each lot.** The landscape plan submitted at time of subdivision plan review shall show tree preservation and restored forested areas, in

substantial conformance with that shown on the GDP. The Landscaping and reforestation plan will be subject to the review and approval by the Urban Forestry Management Division (UFMD) of DPWES. Such landscape plans shall provide tree coverage and species diversity consistent with the PFM criteria, as determined by the Urban Forester. The Applicant reserves the right to make minor modifications to such landscaping to reasonably accommodate utilities and other design considerations, as approved by UFMD, provided such relocated landscaping shall retain a generally equivalent number of plantings as shown on the approved GDP.

~~24.~~**31.** Landscape Buffering**.** The Applicant shall provide supplemental landscaping treatment within the proposed tree save area for the benefit of Tax Parcels 0072-01-0033A and 0072-01-0003 to fill "gaps"; and, the Applicant shall include in the HOA documents a restriction that would prohibit future lot owners directly abutting Tax Parcels 0072-01-0033A and 0072-16-0003 from constructing sheds, out-buildings or accessory structures within the rear yards of the proposed lots directly abutting the said Tax Parcels. The Applicant shall consult with the current owners of Tax Parcels 0072-01-0033A and 0072-16-0003, prior to land disturbing activities and development of the Property, with respect to the type of landscape materials to be planted and their respective locations within the buffer area.

~~25.~~**32.** Limits of Clearing and Grading. The Applicant shall conform to the limits of clearing and grading as shown on the GDP, subject to allowances for the installation of utilities and/or trails**,** as determined necessary by the Director of DPWES, as described herein~~.~~ **and stream, outfall, or land stabilization measures as determined necessary by the Director of DPWES.** If it is determined necessary to install utilities ~~and/or~~**,** trails **or stream/land stabilization measures** in areas protected by the limits of clearing and grading as shown on the GDP, they shall be located in the least disruptive manner necessary. A replanting plan shall be developed and implemented, subject to approval by the UFMD, DPWES, for any areas protected by the limits of clearing and grading that must be disturbed for such ~~utilities~~**elements**.

~~26.~~**33.** Tree Preservation. The applicant shall submit a Tree Preservation Plan and Narrative as part of the first and all subsequent subdivision plan submissions. The preservation plan and narrative shall be prepared by a Certified Arborist, a Registered Consulting Arborist or a Professional Landscape Architect, and shall be subject to the review and approval of the UFMD. The tree preservation plan shall include a tree inventory that identifies the location, species, critical root zone, size, crown spread and condition analysis percentage rating for individual trees, living or dead, with trunks 12 inches in diameter and greater (measured at 4 ½ -feet from the base of the trunk or as otherwise allowed in the latest edition of the Guide for Plant Appraisal published by the International Society of Arboriculture) and within 25 feet of the limits of clearing and grading in the undisturbed area. The tree preservation plan shall provide for the preservation of those areas shown for tree preservation, those areas outside of the limits of disturbance shown on the GDP and those additional areas in which trees can be preserved as a result of final engineering. The tree preservation plan and narrative shall include all items specified in PFM 12-0507 and 12-0509. Specific tree preservation activities that will maximize the survivability of

any tree identified to be preserved, such as: crown pruning, root pruning, mulching, fertilization, and others as necessary, determined by the certified arborist shall be included in the plan.

~~27.~~**34.** Tree Preservation Walk-Through. The Applicant shall retain the services of a certified arborist, a Registered Consulting Arborist or a Professional Landscape Architect, and shall have the limits of clearing and grading marked with a continuous line of flagging prior to the walk-through meeting. During the tree-preservation walk-through meeting, the Applicant's certified arborist or landscape architect or designated representative shall walk the limits of clearing and grading with an UFMD, DPWES representative to determine where adjustments to the clearing limits can be made to increase the area of tree preservation, increasing the survivability of trees at the edge of the limits of clearing and grading, and such adjustment shall be implemented. Trees that are identified as dead or dying may be removed as part of the clearing operation. Any tree that is so designated shall be removed using a chain saw and such removal shall be accomplished in a manner that avoids damage to surrounding trees and associated understory vegetation. If a stump must be removed, this shall be done using a stump-grinding machine in a manner causing as little disturbance as possible to adjacent trees and associated understory vegetation and soil conditions.

~~28.~~**35.** Tree Preservation Fencing. All trees shown to be preserved on the tree preservation plan shall be protected by tree protection fence. Tree protection fencing in the form of four (4) foot high, fourteen (14) gauge welded wire attached to six (6) foot steel posts driven eighteen (18) inches into the ground and placed no further than ten (10) feet apart or, super silt fence to the extent that required trenching for super silt fence is done per the root pruning guidelines contained in these proffers. Fencing shall be erected at the limits of clearing and grading as shown on the demolition, and phase I & II erosion and sediment control sheets.

All tree protection fencing shall be installed after the tree preservation walk-through meeting but prior to any clearing and grading activities, including the demolition of any existing structures. The installation of all tree protection fencing shall be performed under the supervision of a certified arborist or professional landscape architect, and accomplished in a manner that does not harm existing vegetation that is to be preserved. Three (3) days prior to the commencement of any clearing, grading or demolition activities, but subsequent to the installation of the tree protection devices, the UFMD, DPWES, shall be notified and given the opportunity to inspect the site to ensure that all tree protection devices have been correctly installed. If it is determined that the fencing has not been installed correctly, no grading or construction activities shall occur until the fencing is installed correctly, as determined by the UFMD, DPWES.

~~29.~~**36.** Root Pruning. The Applicant shall root prune, as needed to comply with the tree preservation requirements of these proffers. Root pruning shall be clearly identified, labeled, and detailed on the erosion and sediment control sheets of the site plan submission. Root pruning shall be accomplished in a manner that protects affected and adjacent vegetation to be preserved, and may include, but not be limited to the following:

• Root pruning shall be done with a trencher or vibratory plow to a minimum depth of 18 inches.
• Root pruning shall take place prior to any clearing and grading, or demolition of structures and in conjunction with the installation of all super silt fence being used as tree protection fence.
• Root pruning shall be conducted with the supervision of a certified arborist.
• An UFMD, DPWES, representative shall be informed when all root pruning and tree protection fence installation is complete.

~~30.~~**37.** Tree Appraisal. The Applicant shall retain a certified arborist or professional landscape architect, to determine the replacement value of all trees 12 inches in diameter or greater located on the Application Property that are inventoried to be saved 25 feet outside and 10 feet inside the proposed limits of clearing and grading, as shown on the Tree Preservation Plan. These trees and their value shall be identified on the Tree Preservation Plan at the time of the first submission of the respective site plan(s). The replacement value shall take into consideration the age, size and condition of these trees and shall be determined by the so-called "Trunk Formula Method" contained in the latest edition of the Guide for Plan Appraisal published by the International Society of Arboriculture, subject to review and approval by UFMD.

At the time of the respective site plan approvals, the Applicant shall post a cash bond or a letter of credit payable to the County of Fairfax to ensure preservation and/or replacement of the trees for which a tree value has been determined in accordance with the paragraph above (the "Bonded Trees") that die or are dying due to unauthorized construction activities. The letter of credit or cash deposit shall be equal to 50% of the replacement value of the Bonded Trees. At any time prior to final bond release for the improvements on the Application Property constructed adjacent to the respective tree save areas, should any Bonded Trees die, be removed, or are determined to be dying by the project arborist and/or UFMD due to unauthorized construction activities, the Applicant shall replace such trees at its expense. The replacement of the trees shall be determined by the Fairfax County Public Facilities Manual and by UFMD. Upon release of the bond for the improvements on the Application Property constructed adjacent to the respective tree save areas, any amount remaining in the tree bonds required by this proffer shall be returned/released to the Applicant.

~~31.~~**38.** Site Monitoring. During any clearing or tree/vegetation/structure removal on the Applicant Property, a representative of the Applicant shall be present to monitor the process and ensure that the activities are conducted as conditioned and as approved by the UFMD. The Applicant shall retain the services of a certified arborist, a Registered Consulting Arborist, or a Professional Landscape Architect to monitor all construction and demolition work and tree preservation efforts in order to ensure conformance with all tree preservation development conditions, and UFMD approvals. The monitoring schedule shall be described and detailed in the Landscaping and Tree Preservation Plan, and reviewed and approved by the UFMD, DPWES.

~~32.~~**39.** Resource Protection Area (RPA) and Environmental Quality Corridor (EQC) Restoration Plan. Specific areas within the RPA/EQC, as agreed upon by the County and Applicant, shall detail restoration measures in accordance with current County requirements and shall include mutually agreed upon bio-engineering techniques where deemed appropriate. This restoration plan shall be reviewed and approved by Urban Forestry Management Division (UFMD). The Applicant shall diligently pursue any Nationwide Permits (NMPs) that may be required by the U.S. Army Corps of Engineers and shall update the County on the progress of those permits throughout the subdivision plan process.

~~33.~~**40.** Walker Woods Lake. The Applicant shall perform ~~a pre-development and a post-development bathymetric survey on the downstream lake, Walker Woods Lake, and~~**three bathymetric surveys on Walker Woods Lake: pre-development, subsequent to base paving and stabilization of Forest Lake Drive extended into the Property, and post-development. Per the second bathymetric survey, if construction activities on the Property are shown to be the proximate cause of sedimentation or other downstream water quality impacts, the Applicant shall perform the appropriate remediation work to correct the impact within 60 days. Per the post development bathymetric survey**, if construction activities on the Property are shown to be the proximate cause of sedimentation or other downstream water quality impacts, the Applicant shall perform the appropriate remediation work to correct the impact prior to bond release. **Since the surveys and any remediation work will be off-site, the ability to satisfy this proffer shall be contingent upon the Applicant obtaining written permission from the respective off-site property owner(s) at no cost to the Applicant. The Applicant shall use best efforts to obtain this permission and if such permission cannot be secured, the Applicant shall provide DPWES with documentation of the efforts to obtain the permission. If permission is not granted, then the applicant shall be relieved of any requirements related to off-site work as required by this proffer.**

~~34.~~**41.** Conservation Easement. ~~The~~**Prior to bond release, the** forested area at the southeast corner of the property not otherwise a part of the EQC/RPA and unaffected by the roadway extension shall be encumbered by a Conservation Easement, to be owned and maintained by the HOA, with general language as follows**:**

FURTHER WITNESSETH, that in consideration of the sum of Ten Dollars ($10.00), cash in hand paid, and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Owner, with the consent and approval of the Trustee and Beneficiary, does convey to the County, Conservation Easements for the purpose of conserving and preserving undisturbed the natural vegetation, topography, habitat and other natural features now existing on and across the Property of Owner, said Easements being more particularly bounded and described as “Conservation Easement” on the Plat attached hereto and incorporated herein. The easements are subject to the following terms and conditions:

1. No use shall be made of, nor shall any improvements be made within, the conservation easement area without prior written authorization from Fairfax County **with the exception of the trail as shown on the north side of the entrance road which shall be field located in coordination with the County Urban Forester with the goal of preserving as many trees over eight inches in diameter as possible**.

2. All existing vegetation in the conservation easement area shall be preserved and protected and no clearing or grading shall be permitted, nor shall the easement area be denuded, defaced or otherwise disturbed without the prior written approval of the appropriate County agency or department.

3. In the event of any violation of this conservation easement, the Owner shall be solely responsible for the restoration of the conservation easement area to its condition as of the execution of this Deed. Further, the County and its agents shall have the right, but not the obligation, to enter upon the property and restore the conservation easement area to the extent the County may deem necessary. The cost of such restoration by the County shall be reimbursed to the County by the Owner, its successors and assigns, upon demand.

~~35.~~**42.** Septic System. Alternative on-site sewage system (AOSS), as approved by the Health Department, will be utilized on each lot.

IV. CONTRIBUTIONS

~~36.~~**43.** Housing Trust Fund. At the time of the first building permit issuance, the Applicant shall contribute a sum equal to one-half of one percent (0.5%) of the projected sales price for each dwelling unit on the Property to the Fairfax County Housing Trust Fund, as determined by the Department of Housing and Community Development in consultation with the Applicant to assist the County in its goal to provide affordable dwellings. The projected sales price shall be based upon the aggregate sales price of all of the units, as if those units were sold at the time of the issuance of the first building permit and is estimated through comparable sales of similar type units.

~~37.~~**44.** Recreation Contribution. At the time of subdivision approval, the Applicant shall contribute the sum of $50,008 to the Fairfax County Park Authority for use at **or in connection with** off-site recreational facilities **that are in** the Dranesville District **and** intended to serve ~~the future residents of the Dranesville District~~**residents within an area generally located north of Route 7 and west of Towlson Road, and south of the Potomac River**, as determined by the Fairfax County Park Authority in consultation with the Dranesville District Supervisor.

~~38.~~**45.** Public Schools. A contribution of $~~10,825~~**11,749** per projected student for the total number of units constructed, based on methodology for calculating the number of

students outlined by the Office of Facilities Planning Services, Fairfax County Public Schools, shall be made to the Board of Supervisors for transfer to Fairfax County Public Schools (FCPS) and designated for capital improvements at the public schools serving the development. The contribution shall be made at the time of, or prior to, ~~subdivision plan approval~~**issuance of each residential use permit**. Following approval of this Application and prior to the Applicant's payment of the amount set forth in this Proffer, if Fairfax County should increase the ratio of students per unit or the amount of the contribution per student, the Applicant shall increase the amount of the contribution for that phase of development to reflect the then-current contribution. In addition, notification shall be given to FCPS when construction is anticipated to commence to assist FCPS by allowing for the timely projection of future students as a part of the Capital Improvement Program.

~~39.~~**46.** Escalation. All monetary contributions required by these proffers, with the exception of the proffer relating to the Housing Trust Fund and the proffer relating to the public school contribution, shall escalate on a yearly basis from the base year of 2015, and change effective each January 1 thereafter, based on the Consumer Price Index as published by the Bureau of Labor Statistics, the U.S. Department of Labor for the Washington-Baltimore, MD-VA-DC-WV Consolidated Metropolitan Statistical Area (the "CPI"), as permitted by Virginia State Code Section 15.2-2303.3.

Successors and Assigns

These proffers shall bind and inure to the benefit of the Applicant and his/her successors and assigns.

Counterparts

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

TITLE OWNERS AND APPLICANTS SIGNATURES TO FOLLOW ON THE NEXT PAGE:

Susan M. Pesner
Co-Trustee of Land Trust Agreement dated March 30, 2014

Name: _____
Co-Owner of 7-2((1))17 and 23

Robert J. Segan
Co-Trustee of Land Trust Agreement dated March 30, 2014

Name: _____
Co-Owner of 7-2((1))17 and 23

Basheer/Edgemoore-Brooks, L.L.C.
A Virginia limited liability company
Contract Purchaser of 7-2((1))17 and 23

By: Basheer-Brooks, L.L.C.
A Virginia limited liability company
Its Sole Member

By:_____
Diane Cox Basheer
Title: Sole Member/Manager

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Document comparison by Workshare Compare on Tuesday, February 23, 2016 8:44:57 AM

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Padding cell	

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GENERAL DEVELOPMENT PLAN
RZ 2014-DR-022
BROOKS PROPERTY

DRANESVILLE DISTRICT
FAIRFAX COUNTY, VIRGINIA

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-14	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER UFMD COMMENTS

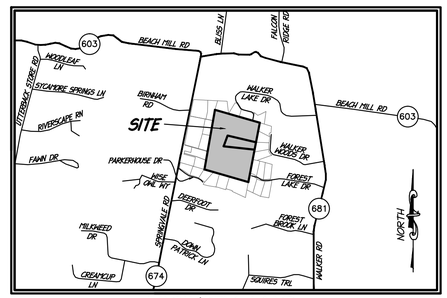
ATTACHMENT 2

christopher consultants
engineering · surveying · land planning
9900 main street (fourth floor) · fairfax, va 22030
phone 703.273.6820 · fax 703.273.7636

COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

ZONING NOTES

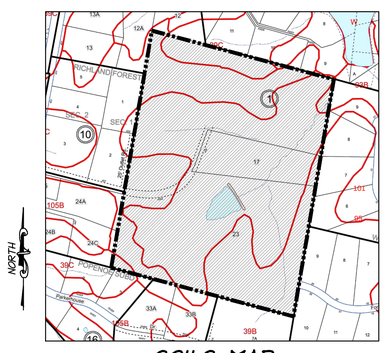
1. THE SUBJECT PROPERTY IS IDENTIFIED AS FAIRFAX COUNTY TAX MAP# 7-2 ((1)), PARCELS 17 AND 23.
2. EXISTING PROPERTY OWNER: SUSAN M. PESNER AND ROBERT J. SEGAN, CO-TRUSTEES.
3. PROPERTY LOCATION: 439 SPRINGVALE RD, GREAT FALLS, VA 22066.
4. SITE AREA: 2,264,016 SF (51.97 AC): THIS AREA IS BASED ON A BOUNDARY SURVEY PREPARED AND CERTIFIED TO BY christopher consultants DATED MARCH 13, 2014. FAIRFAX COUNTY TAX ASSESSMENTS INDICATES THE SITE AREA TO BE 50 ACRES. FOR PURPOSES OF THIS APPLICATION WE ARE USING 51.97 ACRES WHICH IS BASED ON THE RECENT SURVEY WHICH IS CURRENT AND ACCURATE INFORMATION.
5. THE EXISTING ZONING FOR TAX MAP# 7-2 ((1)) PARCEL 17 IS R-A. THE EXISTING ZONING FOR TAX MAP# 7-2 ((1)) PARCEL 23 IS BOTH R-A AND R-E (APPROXIMATELY 0.29 ACRES IS ZONED R-E, AND 46.68 ACRES IS ZONED R-A).
6. EXISTING USE: SINGLE-FAMILY, DETACHED STRUCTURES (YEARS BUILT: 1970 AND 1995). ALL EXISTING STRUCTURES ON SITE WILL BE REMOVED
7. THE PROPOSED ZONING OF THE SUBJECT PROPERTY IS R-E CLUSTER (RESIDENTIAL ESTATE HOUSING DISTRICT, 0.5 DU/AC) TO PERMIT 20 SINGLE-FAMILY DETACHED DWELLING UNITS WITH A PUBLIC STREET. THE AREAS ALONG THE EASTERN PROPERTY LINES AND THE CENTRAL PORTION OF THE PROPERTY WILL BE COMPRISED OF OPEN SPACE / RPA THAT WILL BE PRESERVED AS NATURAL AND SCENIC FEATURES FOR THE DEVELOPMENT, AND A PEDESTRIAN LOOP TRAIL WILL BE INCORPORATED AS AN AMENITY WITHIN THE PROPOSED DEVELOPMENT THAT CONNECTS TO SPRINGVALE ROAD.
8. BOUNDARY AND PHYSICAL IMPROVEMENTS SHOWN HEREON IS BASED ON A CURRENT FIELD SURVEY, BY christopher consultants, LTD., DATED MARCH 13, 2014.
9. TOPOGRAPHIC INFORMATION IS FROM AN AERIAL SURVEY PERFORMED BY MCKENZIE SNYDER, INC. ON JANUARY 13, 2014 AND A FIELD RUN TOPOGRAPHIC SURVEY BY christopher consultants, LTD., BETWEEN MARCH 5 AND MARCH 13, 2014. THE CONTOUR INTERVAL IS TWO (2) FEET.
10. DURING THE PROCESS OF OUR PHYSICAL SURVEY NO INDICATIONS OF ANY GRAVES, OBJECTS OR STRUCTURES MARKING A PLACE OF BURIAL WERE FOUND. NO FURTHER INSPECTION OF THIS PROPERTY HAS BEEN MADE FOR POSSIBLE CEMETERIES.
11. THE LOCATION OF UTILITIES SHOWN HEREON ARE FROM OBSERVED EVIDENCE OF ABOVE GROUND APPURTENANCES ONLY. THE SURVEYOR WAS NOT PROVIDED WITH UNDERGROUND PLANS TO DETERMINE THE LOCATION OF ANY SUBTERRANEAN USES.
12. THE PROPERTY SHOWN HEREON IS LOCATED ON THE FLOOD INSURANCE RATE MAP (FIRM), COMMUNITY PANEL NO. 51059C 0045E, REVISED ON SEPTEMBER 17, 2010. BY GRAPHIC DEPICTION ONLY, THE PROPERTY SHOWN HEREON IS SHOWN IN: FLOOD ZONE 'X,' AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
13. THE SUBJECT PROPERTY IS NOT SERVED BY FAIRFAX COUNTY PUBLIC WATER AND SEWER. THE PROPOSED DEVELOPMENT WILL BE SERVED BY WELL AND SEPTIC.
14. THE SUBJECT PROPERTY IS LOCATED IN THE DRANESVILLE DISTRICT AND THE POND BRANCH WATERSHED OF FAIRFAX COUNTY, VA. REFER TO SHEETS 8.3 AND 8.4 FOR STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICE (BMP) NARRATIVES AND AN OUTFALL STATEMENT.
15. THERE IS NO EVIDENCE OF EXISTING UTILITY EASEMENTS HAVING A WIDTH OF 25 FEET OR MORE ON THE PROPERTY.
16. A WETLAND DELINEATION WAS CONDUCTED BY PASSAGE CREEK ENVIRONMENTAL, VERIFIED BY THE CORPS WITH JURISDICTIONAL DETERMINATION, DATED MAY 27, 2014. THERE ARE JURISDICTIONAL WETLANDS ON THE SUBJECT PROPERTY. THERE IS ALSO RESOURCE PROTECTION (RPA) ON THE PROPERTY, AS SHOWN ON SHEETS 3.1 AND 3.2 OF THIS PLAN SET. THE RPA HAS SCENIC ASSETS AND NATURAL FEATURES THAT WILL BE PROTECTED AND PRESERVED. MINIMAL DISTURBANCE/GRADING WILL BE REQUIRED IN THE RPA TO ESTABLISH A STORMWATER OUTFALL. A SMALL PORTION OF WORK IN THE RPA IS ALSO REQUIRED BY FAIRFAX COUNTY TO REMEDIATE EXISTING HAZARDOUS CONDITIONS SURROUDNING THE EXISTING WET POND IN THE RPA/EQC. SEE NARRATIVE ON SHEET 8.3 FOR THE REQUIRED WET POND IMPROVEMENTS.
17. A PHASE I CULTURAL RESOURCES SURVEY WAS COMPLETED BY ARCHEOLOGICAL TESTING AND CONSULTING, INC.
18. NO ADVERSE EFFECTS TO ADJACENT NEIGHBORING PROPERTIES ARE ANTICIPATED WITH THIS PROJECT. THIS DEVELOPMENT PROPOSAL IS COMPATIBLE WITH THE EXISTING DEVELOPMENT IN THE VICINITY OF THIS SITE.
19. TO THE BEST KNOWLEDGE OF THE ENGINEER AND DEVELOPER, THIS GENERAL DEVELOPMENT PLAN CONFORMS TO ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED STANDARDS, INCLUDING THE ADOPTED COMPREHENSIVE PLAN FOR THE COUNTY, UNLESS OTHERWISE SPECIFICALLY NOTED.
20. THERE IS NO TRAIL REQUIREMENT ON THIS PROPERTY BASED ON THE COUNTYWIDE TRAILS PLAN.
21. THE PUBLIC IMPROVEMENTS ANTICIPATED WITH THIS PROJECT INCLUDE THE EXTENSION OF FOREST LAKE DRIVE FROM OFFSITE ON TO THIS PROPERTY TO SERVE THE PROPOSED DEVELOPMENT. AS WELL, A PEDESTRIAN TRAIL WILL BE INCORPORATED INTO THE PROJECT AS AN AMENITY FEATURE.
22. NOTWITHSTANDING THE IMPROVEMENTS AND TABULATIONS SHOWN ON THIS PLAN, THE APPLICANT RESERVES THE RIGHT TO MAKE MODIFICATIONS TO THE FINAL DESIGN TO COMPLY WITH FINAL ENGINEERING AND NEW CRITERIA AND REGULATIONS WHICH MAY BE ADOPTED BY FAIRFAX COUNTY SUBSEQUENT TO THE SUBMISSION OF THIS APPLICATION, PROVIDED THAT SUCH MODIFICATIONS ARE CONSISTENT WITH THE APPROVED GENERAL DEVELOPMENT PLAN.
23. THE SITE IMPROVEMENTS SHOWN HEREIN ARE PRELIMINARY. FINAL BUILDING FOOTPRINT AND SITE IMPROVEMENTS WILL BE CONFIGURED AT THE TIME OF SITE PLAN APPROVAL, SUBJECT TO MARKET CONDITIONS, BUT SHALL BE IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED GENERAL DEVELOPMENT PLAN.
24. CONSTRUCTION OF THE PROPOSED DEVELOPMENT WILL COMMENCE AS SOON AS NECESSARY APPROVALS ARE OBTAINED, SUBJECT TO MARKET CONDITIONS AND DISCRETION OF THE OWNER.
25. PROPOSED SIGNAGE WILL CONFORM TO ARTICLE 12 OF THE ZONING ORDINANCE. REFER TO SHEET 6.2 FOR ENTRY SIGN LOCATION.
26. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON THE SUBJECT PROPERTY.



VICINITY MAP
SCALE: 1" = 2000'
2000 1000 0 2000 4000
SCALE

SHEET INDEX

1.	COVER SHEET
2.1-2.2	EXISTING CONDITIONS PLAN
3.1-3.2	EXISTING VEGETATION MAP
4.1-4.2	TREE PRESERVATION PLAN
5.1-5.2	TREE PRESERVATION NOTES & DETAILS
6.0-6.3	GENERAL DEVELOPMENT PLAN
7.0-7.2	LANDSCAPE PLAN
7.3	CONCEPTUAL LANDSCAPE BUFFER PLAN
7.4	CONCEPTUAL DRY SWALE LANDSCAPE OPTIONS
8.1	PRE-DEVELOPMENT DRAINAGE DIVIDES
8.2	POST-DEVELOPMENT DRAINAGE DIVIDES
8.3	OVERALL BMP MAP AND NARRATIVE
8.4	VRRM & BMP TREATMENT VOLUME CALCULATIONS
8.5-8.6	SWM CALCULATIONS
8.7	OUTFALL MAP
8.8	CHANNEL CROSS-SECTIONS
9.1	OVERALL CONCEPT LAYOUT WITH ENVIRONMENTAL INFORMATION
9.2	PERIMETER LANDSCAPE BUFFER EXHIBIT
9.3-9.5	RPA RESTORATION CONCEPT PLAN
9.6	OVERALL CONCEPT PLAN
9.7	ENTRANCE CONCEPT ELEVATION & DESIGN IMAGERY
9.8	TYPICAL LOT LANDSCAPE PLANS
9.9-9.10	TYPICAL ARCHITECTURE ELEVATIONS



SOILS MAP
SCALE: 1" = 500'
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SCALE

SOILS KEY

39B	GLENELG SILT LOAM
39C	GLENELG SILT LOAM
93B	SUMERDUCK LOAM
105B	WHEATON-GLENELG COMPLEX
105C	WHEATON-GLENELG COMPLEX

NOTE: SOILS LISTED ARE THOSE WITHIN 500' RADIUS OF SITE BOUNDARIES

WAIVERS, MODIFICATIONS AND EXCEPTIONS

1. A WAIVER IS BEING REQUESTED TO ALLOW STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES WITHIN THE MINIMUM REQUIRED SETBACKS OF 6-1308.2D.
2. A WAIVER IS BEING REQUESTED TO ALLOW THE MAXIMUM DRAINAGE AREA TO A VEGETATED SWALE TO BE GREATER THAN 2 ACRES AND IMPERVIOUS AREA TO BE GREATER THAN 1 ACRE; SECTION 6-1308.26.

APPLICANT/DEVELOPER:
BASHEER-EDGEMOORE-BROOKS, L.L.C.
2071 CHAIN BRIDGE ROAD
SUITE 510
VIENNA, VA 22182

DATE OF FIRST SUBMISSION: AUGUST 28, 2014
DATE OF SECOND SUBMISSION: OCTOBER 2, 2014
DATE OF THIRD SUBMISSION: JANUARY 30, 2015
DATE OF FOURTH SUBMISSION: MARCH 27, 2015
DATE OF FIFTH SUBMISSION: APRIL 24, 2015
DATE OF SIXTH SUBMISSION: JULY 8, 2015
DATE OF SEVENTH SUBMISSION: OCTOBER 19, 2015
DATE OF EIGHTH SUBMISSION: NOVEMBER 30, 2015
DATE OF NINTH SUBMISSION: FEBRUARY 18, 2016
- (INCLUDES REVISIONS BASED ON UFMD COMMENTS DATED 02-10-16 AND COUNTY ENVIRONMENTAL COMMENTS)

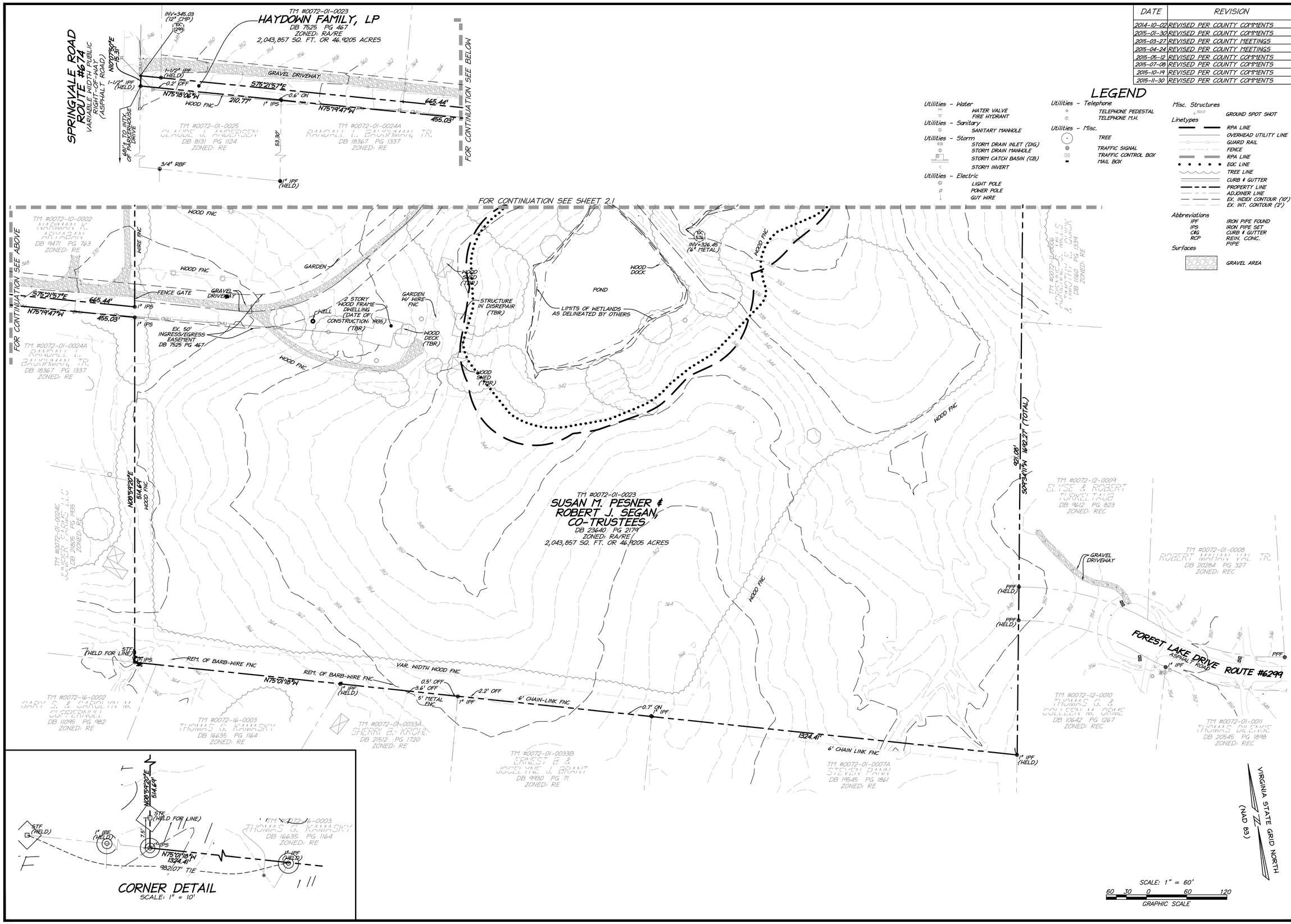
COVER SHEET

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: AS NOTED
DATE: 8/28/14
DESIGN: JR
DRAWN: DL, LB
CHECKED:
SHEET No.
1 OF 9

102267

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS



LEGEND

Utilities - Water
- WATER VALVE
- FIRE HYDRANT

Utilities - Sanitary
- SANITARY MANHOLE

Utilities - Storm
- STORM DRAIN INLET (DIG.)
- STORM DRAIN MANHOLE
- STORM CATCH BASIN (CB)
- STORM INVERT

Utilities - Electric
- LIGHT POLE
- POWER POLE
- GUY WIRE

Utilities - Telephone
- TELEPHONE PEDESTAL
- TELEPHONE M.H.

Utilities - Misc.
- TREE
- TRAFFIC SIGNAL
- TRAFFIC CONTROL BOX
- MAIL BOX

Misc. Structures
- GROUND SPOT SHOT

Linetypes
- RPA LINE
- OVERHEAD UTILITY LINE
- GUARD RAIL
- FENCE
- RPA LINE
- EOC LINE
- TREE LINE
- CURB & GUTTER
- PROPERTY LINE
- ADJOINER LINE
- EX. INDEX CONTOUR (10')
- EX. INT. CONTOUR (2')

Abbreviations

IPF	IRON PIPE FOUND
IPS	IRON PIPE SET
C&G	CURB & GUTTER
RCP	REIN. CONC. PIPE

Surfaces
- GRAVEL AREA

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COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

EXISTING CONDITIONS PLAN

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: AS NOTED
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102267

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
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2015-03-27	REVISED PER COUNTY MEETINGS
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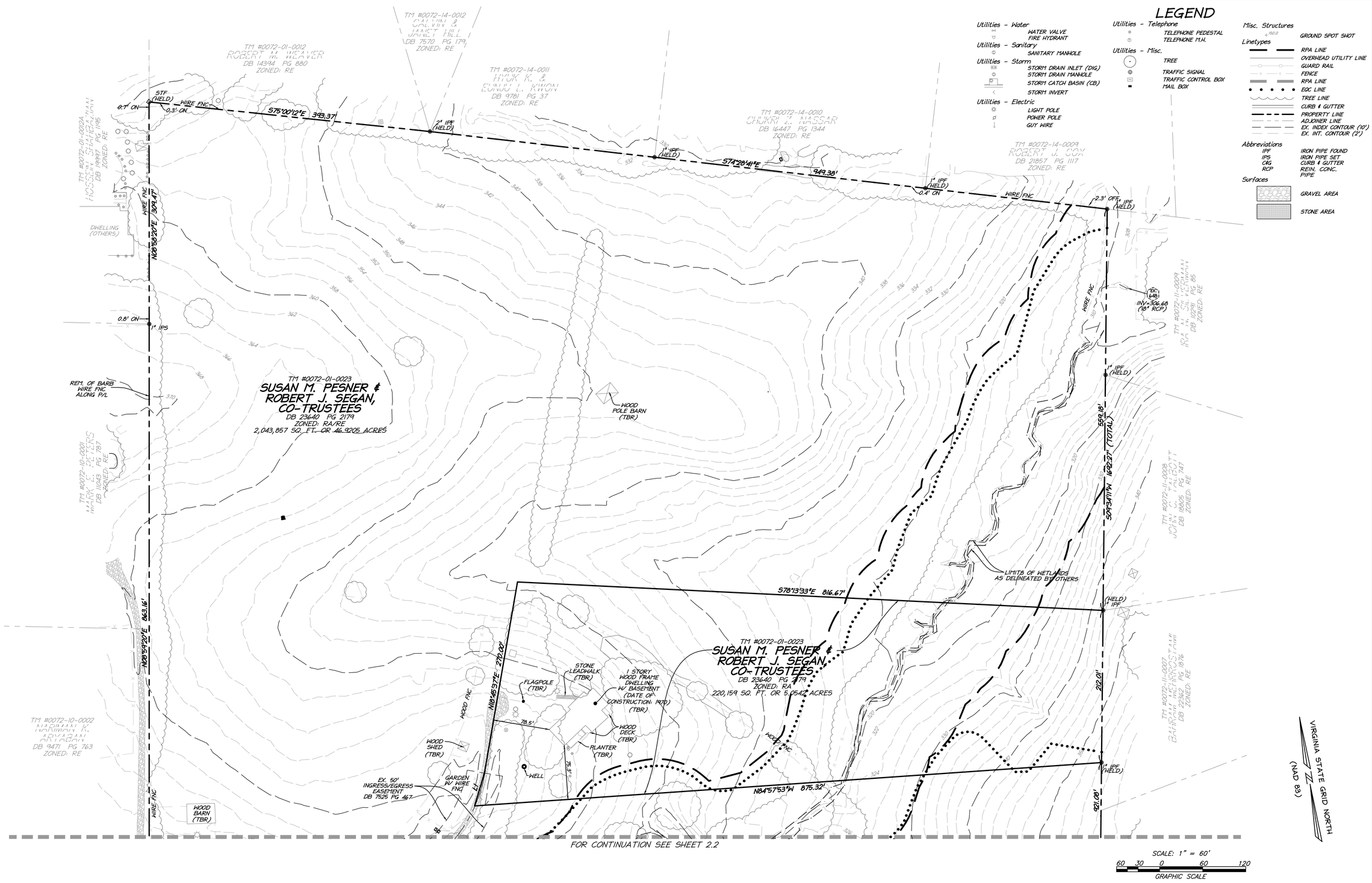

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TABLE 12.3 TREE PRESERVATION TARGET CALCULATIONS AND STATEMENT	
A Pre-development area of existing tree canopy (from existing vegetation map) =	645,231 SF
B Percentage of gross site area covered by existing tree canopy =	28 %
C Percentage of 10-year tree canopy required for site (see Table 12.4) =	30 %
D Percentage of the 10-year tree canopy requirement that should be met through tree preservation =	9 %
E Proposed percentage of canopy requirement that will be met through tree preservation =	450,090 SF 100 %
F Has the Tree Preservation Target minimum been met?	YES

Existing Vegetation Map Designation Cover Type Table

Area	Vegetation and Land Use Cover Type	Specie Composition		Successional Stage	Acreage	General Health and Condition
A	Developed Land	Overstory	None	N/A	0.34	Residential buildings with gravel driveway.
		Understory	None			
		Shrub/Groundcover	None			
B	Maintained Grassland	Overstory	None	intermediate	3.76	Average Health.
		Understory	None			
		Shrub/Groundcover	Maintained Grassland			
C	Open Field	Overstory	None	intermediate	32.09	Average Health. Used in the past for horse pasture.
		Understory	None			
		Shrub/Groundcover	Meadow grasses			
		Invasive	Japanese stilt grass			
D	Upland Forest	Overstory	Prunus serotina, Liriodendron tulipifera, Acer rubrum, Robinia pseudoacacia, Quercus alba	intermediate to climax community	14.97	Overall in good health. Some fallen trees were observed. Trees at the edge of the forest are overgrown with vines. Trees north of existing entrance along western property line in poor health.
		Understory	Sassafras albidum, Diospyros virginiana			
		Shrub/Groundcover	Parthenocissus quinquefolia, Carex spp.			
		Invasive	none			
E	Landscaped Tree Canopy	Overstory	none	intermediate	0.08	Poor Health. Nursery stock apple trees have not fared well with some dead specimens visible. Infestation and hollow trees were observed as well. Heavily pruned.
		Understory	Malus spp.			
		Shrub/Groundcover	Maintained Grassland			
F	Miscellaneus	Overstory	none	intermediate	0.73	Existing pond on site.
		Understory	none			
		Shrub/Groundcover	none			
Total Site Acreage = 51.97 Acres						

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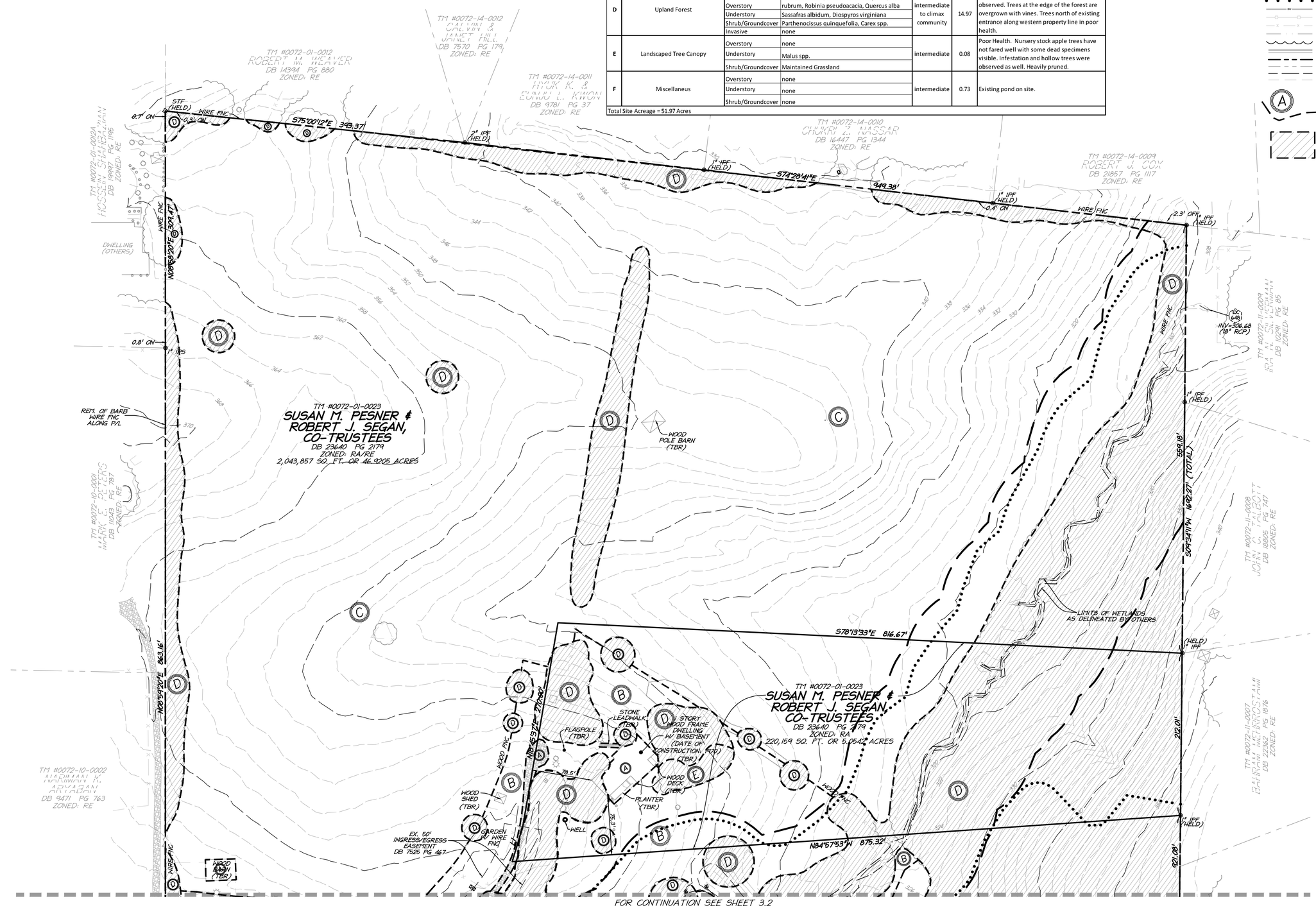
LEGEND

- RPA LINE
- EQC LINE
- OVERHEAD UTILITY LINE
- GUARD RAIL
- FENCE
- DITCH CENTERLINE
- TREE LINE
- CURB & GUTTER
- PROPERTY LINE
- ADJOINER LINE
- EX. INDEX CONTOUR (10')
- EX. INT. CONTOUR (2')
- (A) LIMITS OF EVM DESIGNATION
- EXISTING TREES ON-SITE (±645,231 SF)



FOR CONTINUATION SEE SHEET 3.2

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COMMONWEALTH OF VIRGINIA
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2/18/16
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EXISTING VEGETATION MAP

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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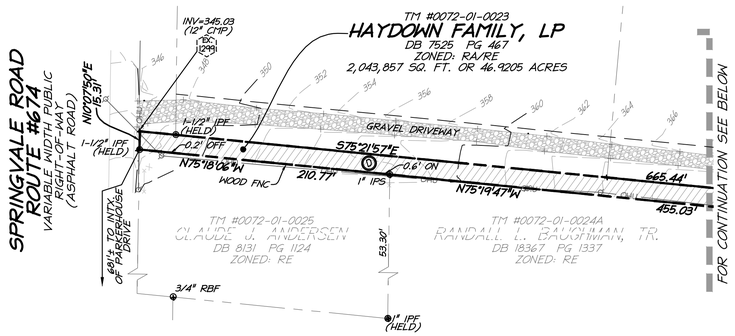

Existing Vegetation Map Designation Cover Type Table

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		Shrub/Groundcover	Maintained Grassland			
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		Understory	Malus spp.			
		Shrub/Groundcover	Maintained Grassland			
F	Miscellaneus	Overstory	none	intermediate	0.73	Existing pond on site.
		Understory	none			
		Shrub/Groundcover	none			

TABLE 12.3 TREE PRESERVATION TARGET CALCULATIONS AND STATEMENT

A Pre-development area of existing tree canopy (from existing vegetation map) =	645,231 SF
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F Has the Tree Preservation Target minimum been met?	YES

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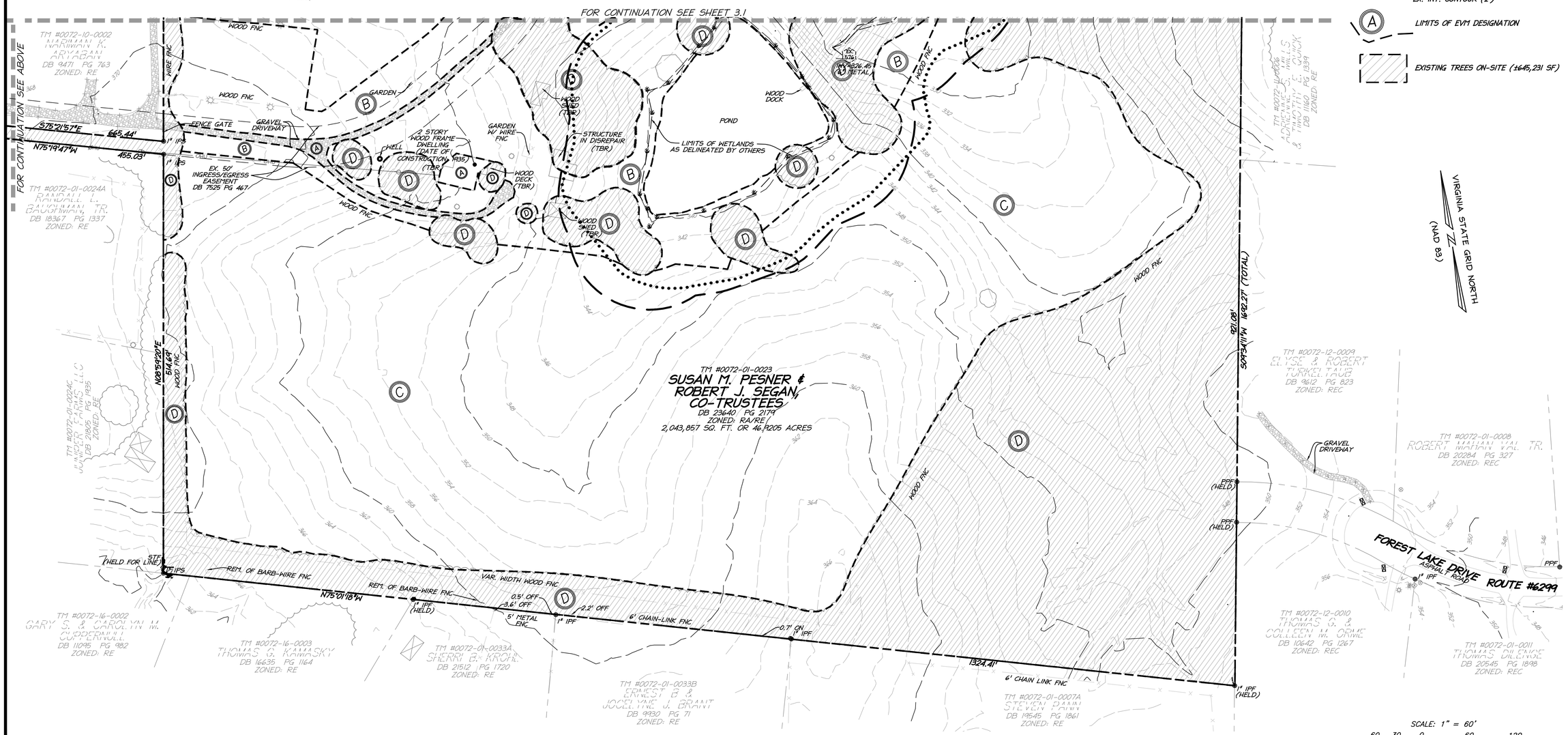

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EXISTING VEGETATION MAP

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BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

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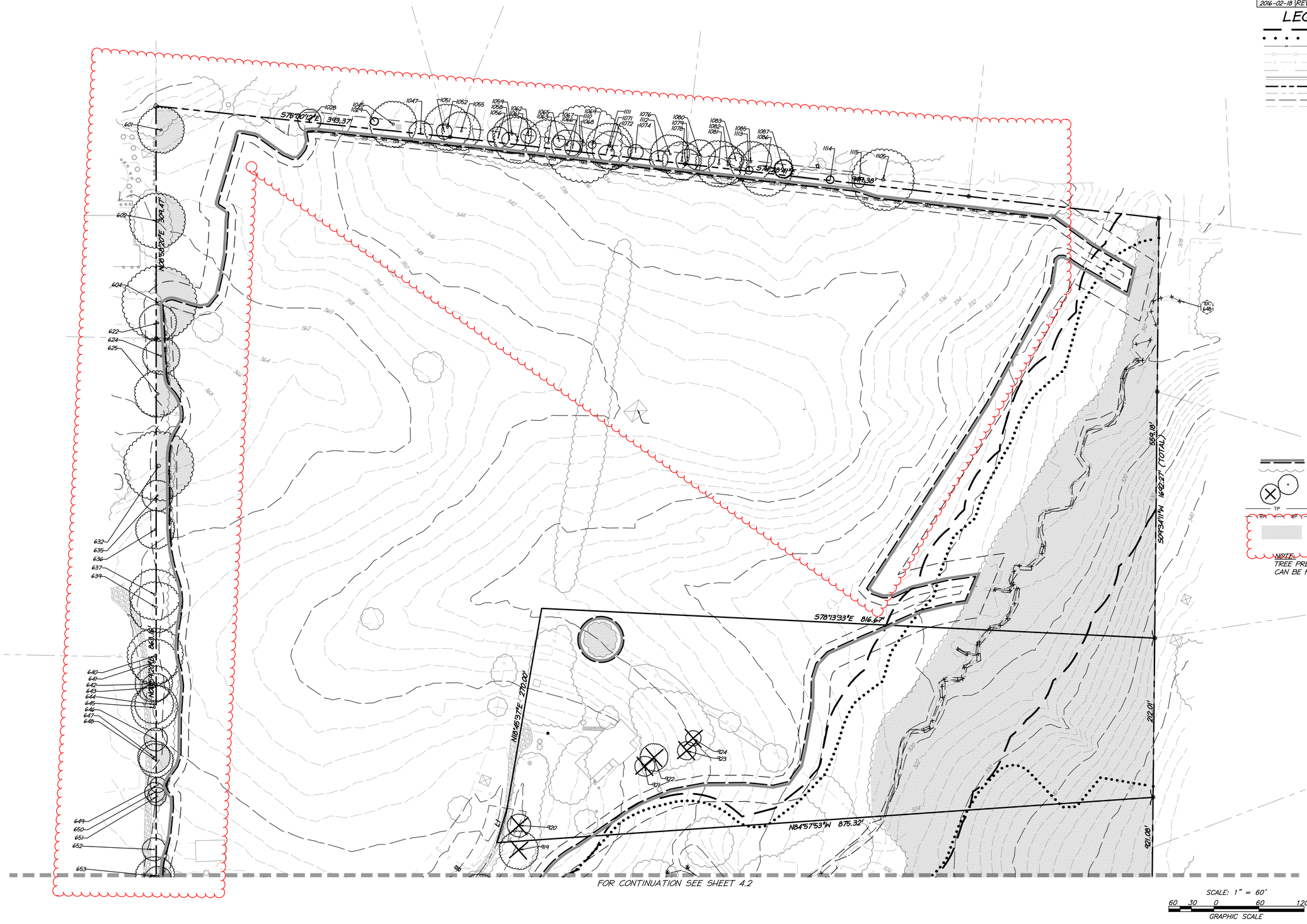

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TREE PRESERVATION PLAN

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

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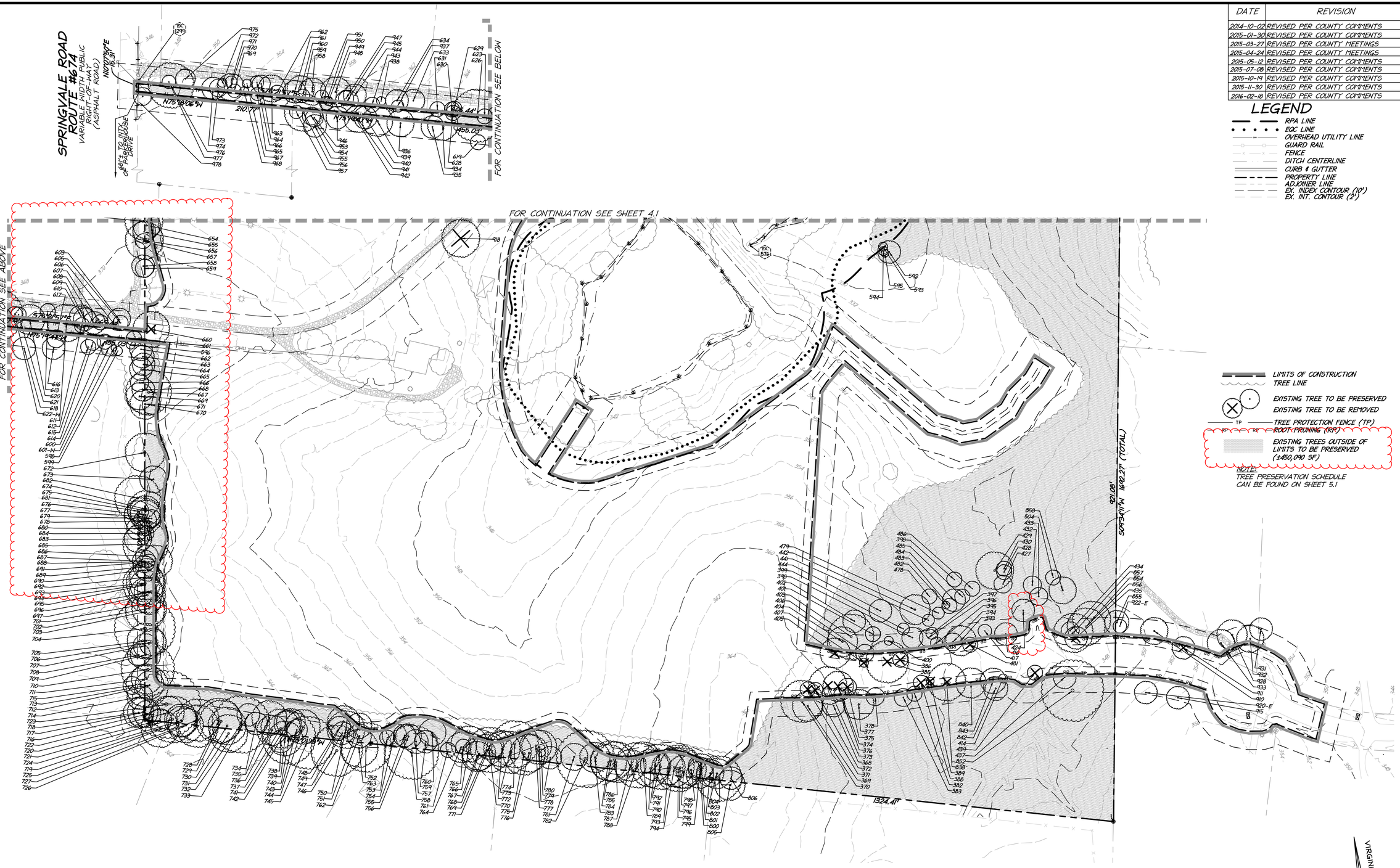

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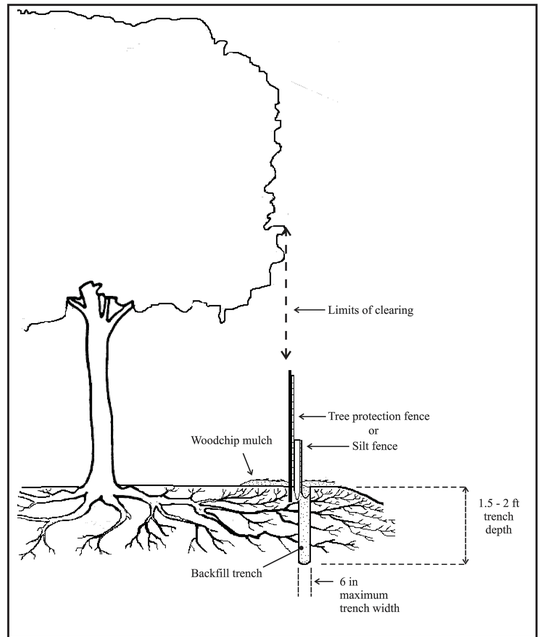
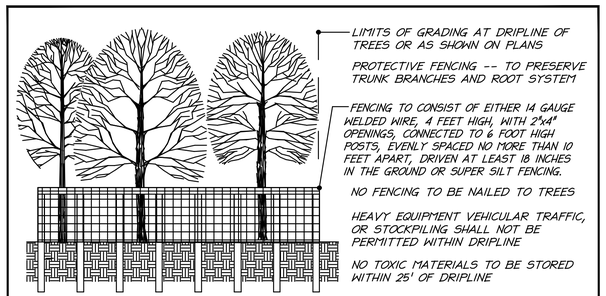
TREE PRESERVATION SCHEDULE

TREE #	BOTANICAL NAME	COMMON NAME	DIAMETER TRUNK (INCHES)	RADIUS CROWN (FEET)	ZONE RADIUS CRITICAL ROOT (FEET)	RATING CONDITION	COMMENTS
368	LIRIODENDRON TULIPIFERA	TULIP POPLAR	28	15	28	65.6	TO BE PRESERVED
369	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	20	30	71.9	TO BE PRESERVED
370	PRUNUS SEROTINA	BLACK CHERRY	18	28	18	87.5	TO BE PRESERVED
371	PRUNUS SEROTINA	BLACK CHERRY	8	10	8	68.8	TO BE REMOVED
372	PRUNUS SEROTINA	BLACK CHERRY	15	10	15	65.6	TO BE REMOVED
373	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	25	30	75	TO BE REMOVED
374	LIRIODENDRON TULIPIFERA	TULIP POPLAR	24	20	24	68.8	TO BE REMOVED
375	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32	12	32	71.9	TO BE REMOVED
376	LIRIODENDRON TULIPIFERA	TULIP POPLAR	14	8	14	71.9	TO BE PRESERVED
377	LIRIODENDRON TULIPIFERA	TULIP POPLAR	32	20	32	78.1	TO BE PRESERVED
378	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	12	30	65.6	TO BE PRESERVED
382	CARYA OVATA	SHAGBARK HICKORY	12	10	12	71.9	TO BE PRESERVED
383	LIRIODENDRON TULIPIFERA	TULIP POPLAR	28	12	28	59.4	TO BE PRESERVED
385	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10	28	10	71.9	TO BE PRESERVED
386	LIRIODENDRON TULIPIFERA	TULIP POPLAR	36	10	36	71.9	TO BE REMOVED
388	CARYA TOMENTOSA	MOCKERNUT HICKORY	12	10	12	71.9	TO BE REMOVED
389	CARYA TOMENTOSA	MOCKERNUT HICKORY	10	5	10	75	TO BE REMOVED
393	PRUNUS SEROTINA	BLACK CHERRY	28	20	28	81.3	TO BE PRESERVED
394	LIRIODENDRON TULIPIFERA	TULIP POPLAR	34	12	34	75	TO BE PRESERVED
395	ILEX OPACA	AMERICAN HOLLY	9	8	9	75	TO BE PRESERVED
396	QUERCUS RUBRA	NORTHERN RED OAK	30	12	30	46.9	TO BE PRESERVED
397	FAGUS GRANDIFOLIA	AMERICAN BEECH	8	8	8	65.6	TO BE PRESERVED
398	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10	14	10	65.6	TO BE PRESERVED
400	FAGUS GRANDIFOLIA	AMERICAN BEECH	8	6	8	75	TO BE PRESERVED
401	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	10	20	59.4	TO BE PRESERVED
403	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	30	30	75	TO BE PRESERVED
404	ACER RUBRUM	RED MAPLE	20	20	20	65.6	TO BE PRESERVED
405	ACER RUBRUM	RED MAPLE	24	20	24	68.8	TO BE REMOVED
406	LIRIODENDRON TULIPIFERA	TULIP POPLAR	26	12	26	71.9	TO BE PRESERVED
407	LIRIODENDRON TULIPIFERA	TULIP POPLAR	8	6	8	40.6	TO BE REMOVED
414	ULMUS AMERICANA	AMERICAN ELM	28	6	28	31.3	TO BE PRESERVED
416	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	15	20	56.2	TO BE PRESERVED
417	LIRIODENDRON TULIPIFERA	TULIP POPLAR	26	6	26	59.4	TO BE PRESERVED
424	LIRIODENDRON TULIPIFERA	TULIP POPLAR	24	15	24	84.4	TO BE REMOVED
433	ACER RUBRUM	RED MAPLE	22	12	22	71.9	TO BE PRESERVED
434	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	12	20	59.8	TO BE PRESERVED
435	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	15	30	65.6	TO BE REMOVED
437	LIRIODENDRON TULIPIFERA	TULIP POPLAR	26	15	26	65.6	TO BE PRESERVED
439	CARYA TOMENTOSA	MOCKERNUT HICKORY	14	10	14	40.6	TO BE REMOVED
481	ACER RUBRUM	RED MAPLE	12	5	12	71.9	TO BE REMOVED
504	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12	10	12	50	TO BE PRESERVED
592	ROBINIA PSEUDOACACIA	BLACK LOCUST	12	15	12	40.6	TO BE PRESERVED
593	ROBINIA PSEUDOACACIA	BLACK LOCUST	8	6	8	40.6	TO BE PRESERVED
594	ROBINIA PSEUDOACACIA	BLACK LOCUST	18	6	18	40.6	TO BE PRESERVED
595	ROBINIA PSEUDOACACIA	BLACK LOCUST	10	5	10	40.6	TO BE PRESERVED
596	PRUNUS SEROTINA	BLACK CHERRY	12	6	12	50	TO BE PRESERVED
598	PRUNUS SEROTINA	BLACK CHERRY	12	4	12	56.2	TO BE PRESERVED
599	PRUNUS SEROTINA	BLACK CHERRY	8	6	8	50	TO BE PRESERVED
600	ULMUS AMERICANA	AMERICAN ELM	11	10	11	50	TO BE PRESERVED
601	ROBINIA PSEUDOACACIA	BLACK LOCUST	13	30	13	37.5	TO BE PRESERVED
601-W	PRUNUS SEROTINA	BLACK CHERRY	10	10	10	50	TO BE PRESERVED
602	PRUNUS SEROTINA	BLACK CHERRY	36	21	36	50	TO BE PRESERVED
603	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12	15	12	59.8	TO BE PRESERVED
604	PRUNUS SEROTINA	BLACK CHERRY	24	48	24	56.3	TO BE PRESERVED
605	PRUNUS SEROTINA	BLACK CHERRY	8	10	8	34.4	TO BE PRESERVED
606	PRUNUS SEROTINA	BLACK CHERRY	8	4	8	34.4	TO BE PRESERVED
607	PRUNUS SEROTINA	BLACK CHERRY	11	10	11	40.6	TO BE PRESERVED
608		STANDING DEAD	48	15	48	25	TO BE PRESERVED
609	QUERCUS FALCATA	S. RED OAK	26	15	26	59.8	TO BE PRESERVED
610	FAGUS GRANDIFOLIA	AMERICAN BEECH	15	15	15	65.6	TO BE PRESERVED
611	QUERCUS ALBA	WHITE OAK	30	25	30	68.8	TO BE PRESERVED
612	PRUNUS SEROTINA	BLACK CHERRY	10	10	10	31.3	TO BE PRESERVED
613	CARYA TOMENTOSA	MOCKERNUT HICKORY	10	10	10	56.2	TO BE PRESERVED
614	PRUNUS SEROTINA	BLACK CHERRY	20	10	20	59.8	TO BE PRESERVED
615	PRUNUS SEROTINA	BLACK CHERRY	10	10	10	56.2	TO BE PRESERVED
616	PRUNUS SEROTINA	BLACK CHERRY	15	15	15	56.2	TO BE PRESERVED
617	PRUNUS SEROTINA	BLACK CHERRY	12	12	12	50	TO BE PRESERVED
618	GLEDITSIA TRIACANTHOS	HONEY LOCUST	14	15	14	65.6	TO BE PRESERVED
619	GLEDITSIA TRIACANTHOS	HONEY LOCUST	16	10	16	59.8	TO BE PRESERVED
620	ACER RUBRUM	RED MAPLE	20	20	20	50	TO BE PRESERVED
621	PRUNUS SEROTINA	BLACK CHERRY	15	10	15	59.8	TO BE PRESERVED
622	ROBINIA PSEUDOACACIA	BLACK LOCUST	14	24	14	46.9	TO BE PRESERVED
622-W	DIOSPYROS VIRGINIANA	COMMON PERSIMMON	13	10	13	59.8	TO BE PRESERVED
623	NYSSA SYLVATICA	BLACK GUM	12	10	12	25	TO BE PRESERVED
624	PRUNUS SEROTINA	BLACK CHERRY	11	24	11	34.4	TO BE PRESERVED
625	PAULOWNIA TOMENTOSA	PRINCESS TREE	21	30	21	56.2	TO BE PRESERVED
626	QUERCUS ALBA	WHITE OAK	35	35	35	75	TO BE PRESERVED
628	QUERCUS FALCATA	S. RED OAK	29	10	29	65.6	TO BE PRESERVED
629	CARYA TOMENTOSA	MOCKERNUT HICKORY	11	10	11	71.8	TO BE PRESERVED
630	ACER RUBRUM	RED MAPLE	11	10	11	56.2	TO BE PRESERVED
631	ACER RUBRUM	RED MAPLE	20	10	20	59.8	TO BE PRESERVED
632	QUERCUS FALCATA	S. RED OAK	39	45	39	59.8	TO BE PRESERVED
633	ACER RUBRUM	RED MAPLE	11	15	11	71.8	TO BE PRESERVED
634	FAGUS GRANDIFOLIA	AMERICAN BEECH	19	15	19	71.8	TO BE PRESERVED
635	PRUNUS SEROTINA	BLACK CHERRY	10	20	10	59.8	TO BE PRESERVED
636	PRUNUS SEROTINA	BLACK CHERRY	24	25	24	59.8	TO BE PRESERVED
637	CARYA TOMENTOSA	MOCKERNUT HICKORY	11	33	11	65.6	TO BE PRESERVED
639	CARYA TOMENTOSA	MOCKERNUT HICKORY	24	33	24	68.7	TO BE PRESERVED
640	ACER RUBRUM	RED MAPLE	56	36	56	75	TO BE PRESERVED
641	ACER RUBRUM	RED MAPLE	30	30	30	71.8	TO BE PRESERVED
642	DIOSPYROS VIRGINIANA	COMMON PERSIMMON	24	24	24	59.4	TO BE PRESERVED
643	ROBINIA PSEUDOACACIA	BLACK LOCUST	8	18	8	46.9	TO BE PRESERVED
644	DIOSPYROS VIRGINIANA	COMMON PERSIMMON	15	25	15	62.5	TO BE PRESERVED
645	DIOSPYROS VIRGINIANA	COMMON PERSIMMON	18	30	18	46.9	TO BE PRESERVED
646	ROBINIA PSEUDOACACIA	BLACK LOCUST	22	15	22	28.1	TO BE PRESERVED
647	ACER RUBRUM	RED MAPLE	21	21	21	65.6	TO BE PRESERVED
648	ROBINIA PSEUDOACACIA	BLACK LOCUST	13	22	13	56.3	TO BE PRESERVED
649	ROBINIA PSEUDOACACIA	BLACK LOCUST	9	10	9	59.4	TO BE PRESERVED
650	CARYA TOMENTOSA	MOCKERNUT HICKORY	10	13	10	46.9	TO BE PRESERVED
651	CARYA TOMENTOSA	MOCKERNUT HICKORY	8	12	8	31.3	TO BE PRESERVED
652	PRUNUS SEROTINA	BLACK CHERRY	10	15	10	62.5	TO BE PRESERVED
653	SASSAFRAS ALBIDUM	SASSAFRAS	9	25	9	31.3	TO BE PRESERVED
654	ROBINIA PSEUDOACACIA	BLACK LOCUST	14	18	14	31.3	TO BE PRESERVED
655	PRUNUS SEROTINA	BLACK CHERRY	17	15	17	62.5	TO BE PRESERVED
656	PRUNUS SEROTINA	BLACK CHERRY	24	25	24	62.5	TO BE PRESERVED
657	ROBINIA PSEUDOACACIA	BLACK LOCUST	8	10	8	28.1	TO BE PRESERVED
658	ROBINIA PSEUDOACACIA	BLACK LOCUST	19	15	19	50	TO BE PRESERVED
659	ROBINIA PSEUDOACACIA	BLACK LOCUST	11	12	11	46.9	TO BE PRESERVED
660	PINUS STROBUS	WHITE PINE	34	24	34	59.4	TO BE REMOVED
661	PRUNUS SEROTINA	BLACK CHERRY	8	10	8	40.6	TO BE PRESERVED
662	PRUNUS SEROTINA	BLACK CHERRY	9	15	9	53.1	TO BE PRESERVED
663	MORUS RUBRA	RED MULBERRY	11	15	11	62.5	TO BE PRESERVED
664	ROBINIA PSEUDOACACIA	BLACK LOCUST	15	15	15	40.6	TO BE PRESERVED
665	PRUNUS SEROTINA	BLACK CHERRY	20	15	20	59.4	TO BE PRESERVED
666	PRUNUS SEROTINA	BLACK CHERRY	13	12	13	78.1	TO BE PRESERVED
667	ACER RUBRUM	RED MAPLE	24	30	24	84.4	TO BE PRESERVED
668	PRUNUS SEROTINA	BLACK CHERRY	8	15	8	81.3	TO BE PRESERVED
669	PRUNUS SEROTINA	BLACK CHERRY	15	18	15	81.3	TO BE PRESERVED
670	PRUNUS SEROTINA	BLACK CHERRY	8	12	8	40.6	TO BE PRESERVED
671	ROBINIA PSEUDOACACIA	BLACK LOCUST	14	20	14	37.5	TO BE PRESERVED
672	NYSSA SYLVATICA	BLACK GUM	16	26	16	62.5	TO BE PRESERVED
673	PINUS STROBUS	WHITE PINE	13	18	13	75	TO BE PRESERVED
674	ACER NEGUNDO	BOXELDER	10	25	10	53.1	TO BE PRESERVED
675	SASSAFRAS ALBIDUM	SASSAFRAS	18	20	18	56.3	TO BE PRESERVED
676	PINUS STROBUS	WHITE PINE	10	20	10	90.6	TO BE PRESERVED
677	SASSAFRAS ALBIDUM	SASSAFRAS	9	25	9	59.4	TO BE PRESERVED
678	SASSAFRAS ALBIDUM	SASSAFRAS	9	15	9	56.3	TO BE PRESERVED
679	PRUNUS SEROTINA	BLACK CHERRY	9	12	9	75	TO BE PRESERVED
680	PRUNUS SEROTINA	BLACK CHERRY	9	15	9	50	TO BE PRESERVED
682	PRUNUS SEROTINA	BLACK CHERRY	25	30	25	65.6	TO BE PRESERVED
683	PRUNUS SEROTINA	BLACK CHERRY	11	18	11	62.5	TO BE PRESERVED
684	UNKNOWN	UNKNOWN	8	10	8	25	TO BE PRESERVED
685	QUERCUS RUBRA	NORTHERN RED OAK	21	30	21	78.1	TO BE PRESERVED
686	SASSAFRAS ALBIDUM	SASSAFRAS	10	15	10	28.1	TO BE PRESERVED
687	SASSAFRAS ALBIDUM	SASSAFRAS	8	15	8	71.9	TO BE PRESERVED
688	ROBINIA PSEUDOACACIA	BLACK LOCUST	8	10	8	56.3	TO BE PRESERVED
689	ROBINIA PSEUDOACACIA	BLACK LOCUST	10	15	10	56.3	TO BE PRESERVED
690	ROBINIA PSEUDOACACIA	BLACK LOCUST	9	15	9	56.3	TO BE PRESERVED
691	LIRIODENDRON TULIPIFERA	TULIP POPLAR	14	22	14	65.6	TO BE PRESERVED
692	PRUNUS SEROTINA	BLACK CHERRY	15	20	15	59.4	TO BE PRESERVED
693	PRUNUS SEROTINA	BLACK CHERRY	12	25	12	62.5	TO BE PRESERVED
694	PRUNUS SEROTINA	BLACK CHERRY	15	28	15	62.5	TO BE PRESERVED
695	PRUNUS SEROTINA	BLACK CHERRY	11	20	11	62.5	TO BE PRESERVED
696	PRUNUS SEROTINA	BLACK CHERRY	9	19	9	59.4	TO BE PRESERVED
697	PRUNUS SEROTINA	BLACK CHERRY	10	24	10	59.4	TO BE PRESERVED
701	ACER RUBRUM	RED MAPLE	8	15	8	68.8	TO BE PRESERVED
702	PRUNUS SEROTINA	BLACK CHERRY	13	23	13	50	TO BE PRESERVED
703	ROBINIA PSEUDOACACIA	BLACK LOCUST	17	26	17	37.5	TO BE PRESERVED
704	LIRIODENDRON TULIPIFERA	TULIP POPLAR	35	40	35	65.6	TO BE PRESERVED
705	LIRIODENDRON TULIPIFERA	TULIP POPLAR	24	24	24	81.3	TO BE PRESERVED
706	ACER RUBRUM	RED MAPLE	16	18	16	62.5	TO BE PRESERVED
707	ACER RUBRUM	RED MAPLE	8	16	8	65.6	TO BE PRESERVED
708	LIRIODENDRON TULIPIFERA	TULIP POPLAR	11	15	11	75	TO BE PRESERVED
709	PRUNUS SEROTINA	BLACK CHERRY	13	20	13	46.9	TO BE PRESERVED
710	LIRIODENDRON TULIPIFERA	TULIP POPLAR	26	35	26	62.5	TO BE PRESERVED
711	PRUNUS SEROTINA	BLACK CHERRY	20	20	20	50	TO BE PRESERVED
712	LIRIODENDRON TULIPIFERA	TULIP POPLAR	27	28	27	65.6	TO BE PRESERVED
713	LIRIODENDRON TULIPIFERA	TULIP POPLAR	15	19	15	62.5	TO BE PRESERVED
714	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10	17	10	84.4	TO BE PRESERVED
715	PRUNUS SEROTINA	BLACK CHERRY	9	12	9	65.6	TO BE PRESERVED
716	LIRIODENDRON TULIPIFERA	TULIP POPLAR	18	18	18	62.5	TO BE PRESERVED
717	LIRIODENDRON TULIPIFERA	TULIP POPLAR	24	20	24	62.5	TO BE PRESERVED
718	LIRIODENDRON TULIPIFERA	TULIP POPLAR	23	20	23	62.5	TO BE PRESERVED
719	PRUNUS SEROTINA	BLACK CHERRY	26	25	26	65.6	TO BE PRESERVED
720	PRUNUS SEROTINA	BLACK CHERRY	8	15	8	62.5	TO BE PRESERVED
721	LIRIODENDRON TULIPIFERA	TULIP POPLAR	29	31	29	81.3	TO BE PRESERVED
722	PRUNUS SEROTINA	BLACK CHERRY	16	22	16	59.4	TO BE PRESERVED
723	PRUNUS SEROTINA	BLACK CHERRY	36	45	36	40.6	TO BE PRESERVED
724	PRUNUS SEROTINA	BLACK CHERRY	11	22	11	34.4	TO BE PRESERVED
725	PRUNUS SEROTINA	BLACK CHERRY	12	20	12	34.4	TO BE PRESERVED
726	PRUNUS SEROTINA	BLACK CHERRY	24	23	24	62.5	TO BE PRESERVED
727	LIRIODENDRON TULIPIFERA	TULIP POPLAR	38	28	38	68.8	TO BE PRESERVED
728	ACER RUBRUM	RED MAPLE	22	30	22	71.9	TO BE PRESERVED
729	ACER RUBRUM	RED MAPLE	20	29	20	71.9	TO BE PRESERVED
730	LIRIODENDRON TULIPIFERA	TULIP POPLAR	17	25	17	68.8	TO BE PRESERVED
731	PRUNUS SEROTINA	BLACK CHERRY	20	25	20	50	TO BE PRESERVED
732	LIRIODENDRON TULIPIFERA	TULIP POPLAR	30	38	30	62.5	TO BE PRESERVED
733	PRUNUS SEROTINA	BLACK CHERRY	10	15	10	46.9	TO BE PRESERVED
734	SASSAFRAS ALBIDUM	SASSAFRAS	8	15	8	59.4	TO BE PRESERVED
735	PRUNUS SEROTINA	BLACK CHERRY	9	23	9	62.5	TO BE PRESERVED
736	LIRIODENDRON TULIPIFERA	TULIP POPLAR	13	20	13	78.1	TO BE PRESERVED
737	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	26	20	46.9	TO BE PRESERVED
738	ROBINIA PSEUDOACACIA	BLACK LOCUST	12	15	12	50	TO BE PRESERVED
739	LIRIODENDRON TULIPIFERA	TULIP POPLAR	18	23	18	59.4	TO BE PRESERVED
740	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33	35	33	59.4	TO BE PRESERVED
741	PRUNUS SEROTINA	BLACK CHERRY	9	18	9	53.1	TO BE PRESERVED
742	PRUNUS SEROTINA	BLACK CHERRY	10	19	10	62.5	TO BE PRESERVED
743	ROBINIA PSEUDOACACIA	BLACK LOCUST	11	14	11	25	TO BE PRESERVED
744	ACER RUBRUM	RED MAPLE	21	23	21	65.6	TO BE PRESERVED
745	LIRIODENDRON TULIPIFERA	TULIP POPLAR	41	35	41	56.3	TO BE PRESERVED
746	LIRIODENDRON TULIPIFERA	TULIP POPLAR	47	34	47	68.8	TO BE PRESERVED
747	SASSAFRAS ALBIDUM	SASSAFRAS	8	15	8	25	TO BE PRESERVED
748	PRUNUS SEROTINA	BLACK CHERRY	10	15	10	62.5	TO BE PRESERVED
749	PRUNUS SEROTINA	BLACK CHERRY	10	21	10	56.3	TO BE PRESERVED
750	ACER RUBRUM	RED MAPLE	16	25	16	53.1	TO BE PRESERVED
751	LIRIODENDRON TULIPIFERA	TULIP POPLAR	11	17	11	71.9	TO BE PRESERVED
752	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33	33	33	62.5	TO BE PRESERVED
753	ROBINIA PSEUDOACACIA	BLACK LOCUST	14	10	14	53.1	TO BE PRESERVED
754	ACER RUBRUM	RED MAPLE	13	16	13	56.3	TO BE PRESERVED
755	ROBINIA PSEUDOACACIA	BLACK LOCUST	18	15	18	50	TO BE PRESERVED
756	ROBINIA PSEUDOACACIA	BLACK LOCUST	17	17	17	50	TO BE PRESERVED
757	ACER RUBRUM	RED MAPLE	8	16	8	62.6	TO BE PRESERVED
758	LIRIODENDRON TULIPIFERA	TULIP POPLAR	40	36	40	75	TO BE PRESERVED
759	ACER RUBRUM	RED MAPLE	8	15	8	43.8	TO BE PRESERVED
760	PRUNUS SEROTINA	BLACK CHERRY	10	18	10	65.6	TO BE PRESERVED
761	UNKNOWN	UNKNOWN	15	10	15	40.6	TO BE PRESERVED
762	ACER RUBRUM	RED MAPLE	11	20	11	65.6	TO BE PRESERVED
763	LIRIODENDRON TULIPIFERA	TULIP POPLAR	22	25	22	62.5	TO BE PRESERVED
765	ACER RUBRUM	RED MAPLE	8	10	8	65.6	TO BE PRESERVED
766	LIRIODENDRON TULIPIFERA	TULIP POPLAR	27	24	27	62.5	TO BE PRESERVED
767	LIRIODENDRON TULIPIFERA	TULIP POPLAR	22	20	22	62.5	TO BE PRESERVED
768	LIRIODENDRON TULIPIFERA	TULIP POPLAR	21	22	21	62.5	TO BE PRESERVED
769	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	21	20	59.8	TO BE PRESERVED
770	LIRIODENDRON TULIPIFERA	TULIP POPLAR	28	30	28	65.6	TO BE PRESERVED
771	ACER RUBRUM	RED MAPLE	13	18	13	65.6	TO BE PRESERVED
772	LIRIODENDRON TULIPIFERA	TULIP POPLAR	17	24	17	65.6	TO BE PRESERVED
773	ACER RUBRUM	RED MAPLE	10	28	10	62.5	TO BE PRESERVED
774	ACER RUBRUM	RED MAPLE	11	31	11	65.6	TO BE PRESERVED
775	PRUNUS SEROTINA	BLACK CHERRY	22	28	22	71.9	TO BE PRESERVED
776	ACER RUBRUM	RED MAPLE	13	25	13	75	TO BE PRESERVED
777	LIRIODENDRON TULIPIFERA	TULIP POPLAR	15	21	15	62.5	TO BE PRESERVED
778	ACER RUBRUM	RED MAPLE	9	23	9	62.5	TO BE PRESERVED
779	ROBINIA PSEUDOACACIA	BLACK LOCUST	10	5	10	34.4	TO BE PRESERVED
780	CARYA TOMENTOSA	MOCKERNUT HICKORY	8	15	8	53.1	TO BE PRESERVED
781	ACER RUBRUM	RED MAPLE	10	18	10	62.5	TO BE PRESERVED
782	ACER RUBRUM	RED MAPLE	21	38	21	56.3	TO BE PRESERVED
783	PRUNUS SEROTINA	BLACK CHERRY	14	20	14	75	TO BE PRESERVED
784	PRUNUS SEROTINA	BLACK CHERRY	19	24	19	50	TO BE PRESERVED
785	LIRIODENDRON TULIPIFERA	TULIP POPLAR	14	27	14	59.4	TO BE PRESERVED
786	LIRIODENDRON TULIPIFERA	TULIP POPLAR	27	27	27	78.1	TO BE PRESERVED
787	LIRIODENDRON TULIPIFERA	TULIP POPLAR	15	21	15	75	TO BE PRESERVED
788	LIRIODENDRON TULIPIFERA	TULIP POPLAR	28	30	28	56.3	TO BE PRESERVED
789	ACER RUBRUM	RED MAPLE	16	21	16	56.3	TO BE PRESERVED
790	LIRIODENDRON TULIPIFERA	TULIP POPLAR	14	25	14	71.9	TO BE PRESERVED
791	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12	20	12	59.4	TO BE PRESERVED
792	LIRIODENDRON TULIPIFERA	TULIP POPLAR	29	30	29	75	TO BE PRESERVED
793	ACER RUBRUM	RED MAPLE	17	22	17	65.6	TO BE PRESERVED
794	LIRIODENDRON TULIPIFERA	TULIP POPLAR	26	26	26	62.5	TO BE PRESERVED
795	LIRIODENDRON TULIPIFERA	TULIP POPLAR	11	31	11	59.4	TO BE PRESERVED
796	LIRIODENDRON TULIPIFERA	TULIP POPLAR	11	27	11	62.5	TO BE PRESERVED
797	LIRIODENDRON TULIPIFERA	TULIP POPLAR	20	22	20	62.5	TO BE PRESERVED
798	LIRIODENDRON TULIPIFERA	TULIP POPLAR	21	20	21	65.6	TO BE PRESERVED
799	LIRIODENDRON TULIPIFERA	TULIP POPLAR	8	18	8	65.6	TO BE PRESERVED
800	SASSAFRAS ALBIDUM	SASSAFRAS	9	16	9	56.3	TO BE PRESERVED
801	ACER RUBRUM	RED MAPLE	9	17	9	71.9	TO BE PRESERVED
802	ACER RUBRUM	RED MAPLE	8	18	8	71.9	TO BE PRESERVED
803	PRUNUS SEROTINA	BLACK CHERRY	8	20	8	53.1	TO BE PRESERVED
804	LIRIODENDRON TULIPIFERA	TULIP POPLAR	24	30	24	71.9	TO BE PRESERVED
805	LIRIODENDRON TULIPIFERA	TULIP POPLAR	22	20	22	62.5	TO BE PRESERVED
806	LIRIODENDRON TULIPIFERA	TULIP POPLAR	9	15	9	68.8	TO BE PRESERVED
838	NYSSA SYLVATICA	BLACK GUM	11	25	11	71.9	TO BE PRESERVED
840	ACER RUBRUM	RED MAPLE	32	20	32	56.3	TO BE PRESERVED
842	CELTIS OCCIDENTALIS	HACKBERRY	9	16	9	65.6	TO BE PRESERVED
843	NYSSA SYLVATICA	BLACK GUM	14	17	14	71.9	TO BE PRESERVED
852	LIRIODENDRON TULIPIFERA	TULIP POPLAR	82	41	82	84.4	TO BE PRESERVED
854	ACER RUBRUM	RED MAPLE	19	25	19	59.4	TO BE PRESERVED
855	FAGUS GRANDIFOLIA	AMERICAN BEECH	9	16	9	71.9	TO BE PRESERVED
856	LIRIODENDRON TULIPIFERA	TULIP POPLAR	27	25	27	65.6	TO BE PRESERVED
857	LIRIODENDRON TULIPIFERA	TULIP POPLAR	29	26	29	56.2	TO BE PRESERVED
858	LIRIODENDRON TULIPIFERA	TULIP POPLAR	23	18	23	59.8	TO BE PRESERVED
910	FAGUS GRANDIFOLIA	AMERICAN BEECH	18	18	18	71.9	TO BE PRESERVED
911	ACER RUBRUM	RED MAPLE	20	15	20	59.8	TO BE REMOVED
915	LIRIODENDRON TULIPIFERA	TULIP POPLAR	33	15	33	75	TO BE PRESERVED
918	ULMUS AMERICANA	AMERICAN ELM	22	25	22	40.6	TO BE REMOVED
919	CASTANEA DENTATA	AMERICAN CHESTNUT	29	25	29	62.5	TO BE REMOVED
920	JUNIPERUS VIRGINIANA	EASTERN REDCEDAR	27	15	27	53.1	TO BE REMOVED
920-E	ACER RUBRUM	RED MAPLE	11	15	11	68.8	TO BE PRESERVED
921	MALUS SPP.	APPLE	16	13	16	50	TO BE REMOVED
922	MALUS SPP.	APPLE	20	18	20	31.3	TO BE REMOVED
922-E	FAGUS GRANDIFOLIA	AMERICA

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 12-0702.1 12-0704.20 Rev. 2-02, 2011 Reprint	ROOT PRUNING	PLATE NO. 7-12	STD. NO.



TREE PROTECTION FENCING DETAIL

TREE PRESERVATION NARRATIVE (AS PER PFM SEC. 12-0509.3B-K)

3A. THE FOLLOWING TREE PRESERVATION NARRATIVE IS PROVIDED TO ACCOMPANY THE TREE PRESERVATION PLAN AS SHOWN ON SHEETS 4.1 AND 4.2.

3B. AS PER A SITE VISIT AUGUST 2014, THERE ARE SOME FALLEN TREES OBSERVED WITHIN THE TREE PRESERVATION AREA ALONG THE EASTERN PROPERTY LINE. WITHIN THE TREE PRESERVATION AREAS, NO WORK OR ACTIVITY IS PROPOSED TO TAKE PLACE.

3C. THERE IS NO EVIDENCE OF ANY HAZARDOUS MATERIALS WITHIN THE FORESTED AREAS ADJACENT TO THE DEVELOPMENT SITE.

3D. IN SOME EXISTING AREAS OF OPEN FIELD ON THE PROPERTY, THERE IS MICROSTEGIUM VIMINEUM (JAPANESE STILTGRASS) THAT IS WELL ESTABLISHED. THERE IS BAMBOO, MULTIFLORA ROSE & AUTUMN OLIVE NEAR THE EXISTING POND. PROFFER 20 ADDRESSES INVASIVE SPECIES MANAGEMENT TREATMENT AND WILL BE SUBMITTED ON SUBSEQUENT SUBDIVISION PLAN SUBMISSION.

3E. THERE ARE NO "HERITAGE", "SPECIMEN", "MEMORIAL" OR "STREET" TREES WITHIN OR ADJACENT TO THE DEVELOPMENT SITE THAT WILL BE ADVERSELY AFFECTED BY THE PROPOSED IMPROVEMENTS.

3F. THERE ARE NO "HERITAGE", "SPECIMEN", "MEMORIAL" OR "STREET" TREES WITHIN OR ADJACENT TO THE DEVELOPMENT SITE (INCLUDING OFF-SITE ON AN ADJACENT PROPERTY) THAT WILL BE ADVERSELY AFFECTED BY THE PROPOSED IMPROVEMENTS.

3G. TREE PRESERVATION PROFFERS ARE BEING SUBMITTED WITH THIS APPLICATION.

3H. THERE ARE NO TRANSPLANTING EFFORTS REQUIRED OR PROPOSED FOR THIS PROJECT.

3I. THE TREE PRESERVATION SCHEDULE ON SHEET 5.1 DESCRIBES WHICH PROCEDURES ARE REQUIRED FOR TREES TO BE PRESERVED OR REMOVED. ROOT PRUNING AND TREE PROTECTION FENCE INSTALLATION SHALL BE COMPLETED DURING E&S PHASE I INSTALLATION. DETAILS AND MAINTENANCE OF E&S CONTROLS/TREE PROTECTION FENCING WILL BE DESCRIBED ON THE E&S SHEETS OF THE APPROVED SUBDIVISION PLAN.

3J. WITHIN THE TREE PRESERVATION AREAS, NO WORK OR ACTIVITY IS PROPOSED TO TAKE PLACE.

- TREE PROTECTION FENCING AND ROOT PRUNING SHALL BE INSTALLED AS PER THE TREE PRESERVATION PLAN AND TREE PRESERVATION NOTES & DETAILS PLAN TO PROTECT VEGETATION TO BE PRESERVED.

3K. TREE PRESERVATION SCHEDULE CONTAINS TREE ANALYSIS SUCH AS TREE IDENTIFICATION AND TREE CONDITIONS AS SHOWN ON SHEET 5.1.

TREE PROTECTION FENCING SIGNAGE

BILINGUAL SIGNS SHALL BE POSTED AND MAINTAINED AT THE LIMITS OF CLEARING AT A MINIMUM OF 50-FOOT INTERVALS.

SIGNS SHALL BE POSTED THROUGHOUT ALL PHASES OF CONSTRUCTION

SIGNS SHALL BE ATTACHED TO THE TREE PROTECTION FENCING AND SHALL NOT BE NAILED OR IN ANY MANNER ATTACHED TO THE TREES OF VEGETATION TO BE PRESERVED.

TREE PROTECTION AREA-
DO NOT ENTER
OFF LIMITS TO CONSTRUCTION
EQUIPMENT, MATERIALS AND WORKERS

ÁREA DE PROTECCIÓN DE
ÁRBOLES-NO ENTRAR
PROHIBIDO EL INGRESO DE EQUIPO,
MATERIALES Y EMPLEADOS DE CONSTRUCCIÓN

GENERAL NOTES:

1. IN LIEU OF MORE STRENOUS SPECIFICATIONS, ALL LANDSCAPE RELATED WORK SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT AND MOST UP-TO-DATE EDITION (AT TIME OF CONSTRUCTION) OF 'LANDSCAPE SPECIFICATION GUIDELINES' AS PRODUCED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF MARYLAND, DISTRICT OF COLUMBIA AND VIRGINIA, GAITHERSBURG, MARYLAND.
2. CONTRACTOR IS RESPONSIBLE FOR CONTACTING MISS UTILITY PRIOR TO BEGINNING ANY WORK.
3. ALL WORK PERFORMED SHALL MEET OR EXCEED THE MOST RECENT INDUSTRY STANDARDS, AS PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA), AMERICAN NATIONAL ARBORIST ASSOCIATION (NAA). IN THE EVENT CULTURAL TREATMENTS PRESCRIBED ARE NOT COVERED BY AN EXISTING STANDARD, ALL WORK PERFORMED SHALL MEET OR EXCEED STANDARDS APPROVED BY THE URBAN FORESTRY MANAGEMENT DIVISION.
4. ALL CONSTRUCTION ACTIVITY BEYOND THE LIMITS OF CLEARING AND GRADING SHOWN ON THE SITE PLAN AND THE TREE PRESERVATION PLAN SHALL BE PROHIBITED UNLESS PREVIOUSLY APPROVED BY THE URBAN FORESTRY BRANCH.
5. THE REQUIREMENTS OF THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL, ARTICLE 12, VEGETATION PRESERVATION AND PLANTING, SHALL BE FOLLOWED.

TREE PRESERVATION NOTES

1. CLEARING LIMITS SHALL BE CLEARLY MARKED IN THE FIELD WITH FLAGGING PRIOR TO BEGINNING OF ANY CLEARING AND GRADING OPERATIONS AND COORDINATED WITH THE URBAN FORESTRY DIVISION.
2. ALL FENCING AND ROOT PRUNING SHALL BE COMPLETE PRIOR TO ANY CLEARING AND GRADING OPERATIONS.
3. TREE PROTECTION FENCING MATERIAL SHALL BE EITHER FOUR (4) FOOT TALL FOURTEEN (14) GAUGE WELDED WIRE ATTACHED TO SIX (6) FOOT TALL, TWO-INCH (2") STEEL U-CHANNEL ANCHOR POSTS DRIVEN EIGHTEEN (18) INCHES INTO THE GROUND PLACED NO FURTHER THAN TEN (10) FEET APART OR SUPER SILT FENCE TO THE EXTENT THAT REQUIRED TRENCHING FOR SUPER SILT FENCE DOES NOT SEVER OR WOUND COMPRESSION ROOTS OF TREES TO BE PRESERVED AS THIS CAN LEAD TO STRUCTURAL FAILURE AND/OR UPROOTING OF TREES. FENCING SHALL BE INSTALLED AT THE LIMITS OF CLEARING AND GRADING AS ADJUSTED PRIOR TO ANY CLEARING AND GRADING OPERATIONS.
4. ROOT PRUNING SHALL BE COMPLETED AT THE LIMITS OF DISTURBANCE AS SHOWN ON TREE PRESERVATION PLAN PRIOR TO CONSTRUCTION. ROOT PRUNING SHALL BE TO THE DEPTH OF EIGHTEEN (18) TO TWENTY-FOUR (24) INCHES AND SHALL BE ACCOMPLISHED BY USING A TRENCHER, VIBRATING PLOW OR BY HAND. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH REMOVED SOIL.
5. BILINGUAL SIGNS SHALL BE INSTALLED EVERY THIRTY (30) FEET ON TREE PROTECTION FENCING WHICH INDICATES "TREE PRESERVATION AREA - KEEP OUT".
6. WHEN EXCAVATING ALL TREE ROOTS GREATER THAN 1 INCH IN DIAMETER THAT ARE EXPOSED AND/OR DAMAGED SHALL BE TRIMMED CLEANLY, AND COVERED WITH ORGANIC MULCH, TOPSOIL, OR OTHER SUITABLE MATERIAL TO PREVENT THE EXPOSED ROOTS FROM DRYING OUT.
7. DURING CLEARING AND GRADING OPERATIONS AND THROUGHOUT CONSTRUCTION, NO ACTIVITY SHALL BE PERMITTED IN TREE SAVE AREAS WITHOUT AUTHORIZATION FROM OWNER, ARBORIST/FORESTER, AND URBAN FORESTRY DIVISION. PRECLUDED ACTIVITIES INCLUDE:
   * FELLING OF TREES INTO PRESERVATION AREAS OR OPERATION OF HEAVY MACHINERY IN SAVE AREAS TO FELL TREES ON THE PERIMETER OF PRESERVATION AREAS.
   * OPERATION OF HEAVY EQUIPMENT OR MACHINERY OF ANY KIND IN PRESERVATION AREAS FOR ANY PURPOSE-INCLUDING REMOVAL OF TREES ADJACENT TO SAVE AREAS.
   * PLACEMENT OF EXCESS SOIL, FILL, OR MATERIALS OF ANY KIND IN PRESERVATION AREAS.
   * PLACEMENT OF ANY CONSTRUCTION MATERIALS OF ANY KIND IN PRESERVATION AREAS.
   * PARKING OR STORING EQUIPMENT OR VEHICLES IN PRESERVATION AREAS.
   * DUMPING CHEMICALS OR CONCRETE WASHOUT IN PRESERVATION AREAS.
   * BURNING OF ANY MATERIAL OR DEBRIS IN PRESERVATION AREAS OR WITHIN 200 FEET OF PRESERVATION AREAS.
   * TRENCHING, GRADING, EXCAVATING FOR ANY PURPOSE IN PRESERVATION AREAS.
   * INSTALLATION OF LANDSCAPING, IRRIGATION, TURF, DRAINAGE SYSTEMS, ETC.
8. ALL EXISTING TRASH AND/OR DEBRIS ON SITE SHALL BE REMOVED AT THE TIME OF DISTURBANCE. INDIVIDUAL TREES AND FORESTED AREAS DESIGNATED TO BE PRESERVED SHALL BE PROTECTED AND MANAGED THAT ENSURES TREE SURVIVAL DURING ALL PHASES OF DEMOLITION, CLEARING AND GRADING, AND CONSTRUCTION. IN ADDITION TO PROTECTING TREES, ALL UNDERSTORY PLANTS, LEAF LITTER AND SOIL CONDITIONS FOUND IN FORESTED AREAS DESIGNATED TO BE LEFT PRESERVED SHALL BE PROTECTED.
9. TREES TO REMAIN LOCATED ALONG THE LIMITS OF CLEARING SHALL BE PRUNED DURING CLEARING OPERATIONS TO AVOID MECHANICAL DAMAGE. THIS SHOULD BE ADMINISTRATED UNDER THE SUPERVISION OF THE PROJECT ARBORIST.
   ANY DAMAGE INFLICTED TO THE ABOVE OR BELOW-GROUND PORTIONS OF THE TREES SHOWED TO BE PRESERVED SHALL BE REPAIRED IMMEDIATELY.
10. ALL PRUNING SHALL CONFORM TO ANSI A300-2001 PRUNING STANDARDS. DISEASED LIMBS SHALL BE REMOVED OR TREATED AT THE DISCRETION OF THE ARBORIST. WHILE PRUNING, THE ARBORIST SHALL MAKE NOTE OF ANY CONDITIONS WHICH AFFECT THE HEALTH OR CONDITION OF THE TREE AND RECOMMEND CORRECTIVE TREATMENT FOR THESE CONDITIONS. VINE REMOVAL SHALL BE INCLUDED IN ALL PRUNING ACTIVITIES. UNDER NO CIRCUMSTANCES SHALL THE INTERIOR OF TREES BE STRIPPED OF FOLIAGE, SUCKERS, EPICORMIC BRANCHING, OR OTHER LIVE GROWTH. INTERIOR GROWTH MAY BE THINNED AS NECESSARY TO REMOVE BRANCHES DAMAGED DURING OPERATIONS. DEBRIS FROM PRUNING SHALL BE CHIPPED AND DEPOSITED INTO THE TREE SAVE AREA AND SPREAD BY HAND TO A UNIFORM THICKNESS OR BE REMOVED FROM SITE.
11. TREES BEING REMOVED SHALL NOT BE FELLED, PUSHED OR PULLED INTO TREE PRESERVATION AREAS. EQUIPMENT OPERATORS SHALL NOT CLEAN ANY PART OF THEIR EQUIPMENT BY SLAMMING AGAINST THE TRUNKS OF TREES TO BE RETAINED.
12. TREES ON THE EDGE OF THE LIMITS OF CLEARING SHALL BE CUT DOWN BY HAND WITH A CHAIN SAW. REMAINING STUMPS SHALL EITHER BE LEFT IN PLACE OR GROUND DOWN WITH A STUMP GRINDER.
13. PROJECT ARBORIST SHALL MONITOR THE CONSTRUCTION AND TREE PRESERVATION ACTIVITIES TO ENSURE PLAN IMPLEMENTATION.
14. ALL ACTIVITIES IN TREE PRESERVATION ACTIVITY SCHEDULE SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF CERTIFIED ARBORIST.

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COMMONWEALTH OF VIRGINIA
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TREE PRESERVATION
NOTES & DETAILS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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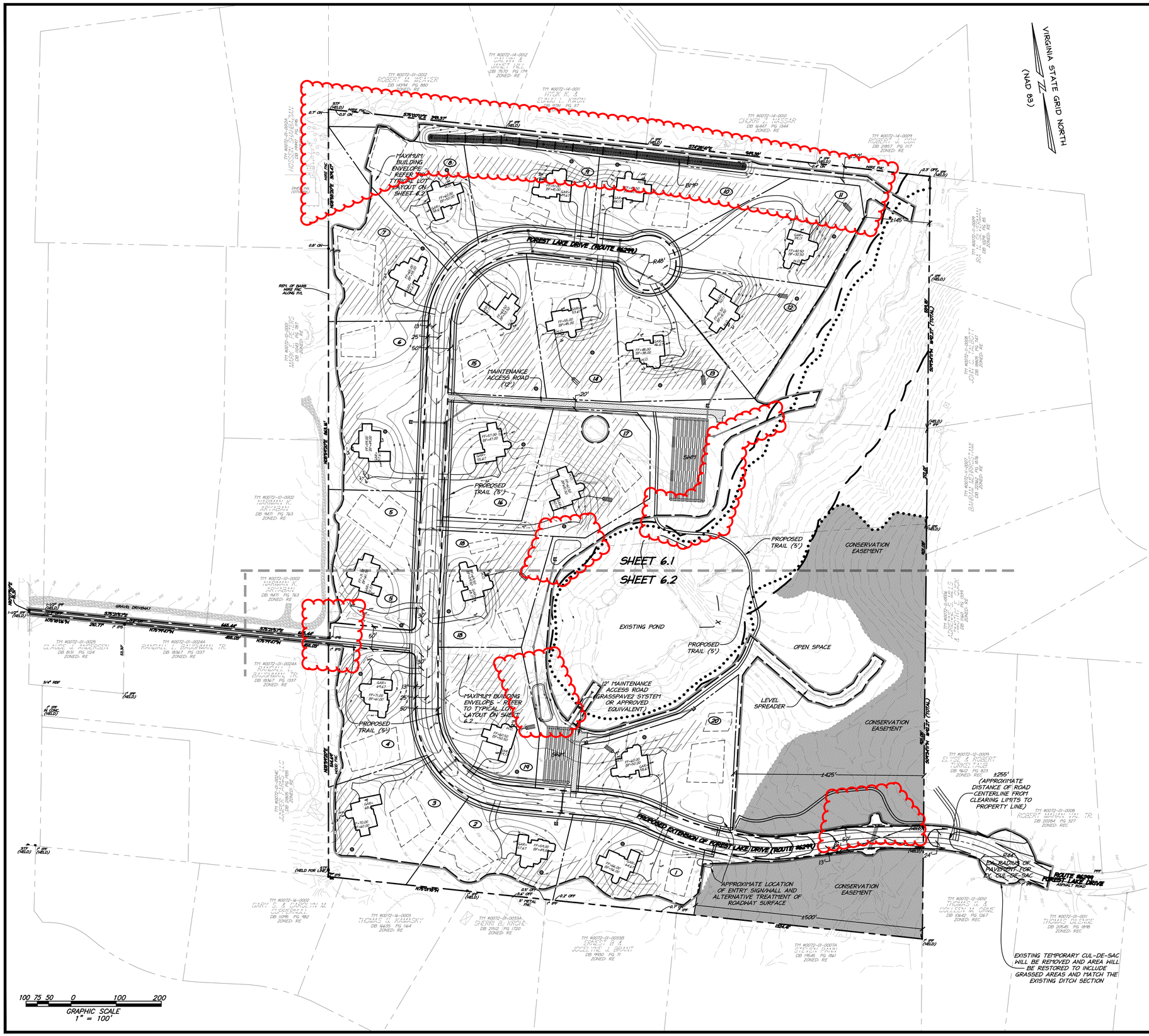

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- POTENTIAL DEVELOPABLE AREA AVAILABLE FOR OPTIONAL DECKS, PATIO IMPROVEMENTS, GAZEBO, ETC. (EXCLUDES SHEDS, STORAGE OR ACCESSORY STRUCTURES ON ALL PORTIONS OF LOTS - DETAILS TO BE DETERMINED ON FINAL SUBDIVISION PLAN)
- PROPOSED DRAINFIELD (APPROXIMATE LOCATION)
- PROPOSED WELL (APPROXIMATE LOCATION)

ZONING TABULATION REQUIREMENTS
R-E CLUSTER

ZONING REGULATIONS REQUIREMENTS:

LOT SIZE REQUIREMENTS:
MINIMUM LOT AREA: 52,000 SF
MINIMUM LOT WIDTH: INTERIOR LOT - NO REQUIREMENT
CORNER LOT - 175 FEET

BULK REGULATION REQUIREMENTS:
MAX BUILDING HEIGHT: SINGLE FAMILY DWELLINGS - 35'
MINIMUM YARDS: FRONT 30'
SIDE 15', BUT A TOTAL MINIMUM OF 40'
BACK 25'

DENSITY:
MAXIMUM 0.5 DU/AC FOR SUBDIVISIONS AS A RESULT OF A PROFFERED REZONING FROM A DISTRICT THAT ALLOWS A PERMITTED MAX DENSITY OF LESS THAN ONE (1) DWELLING UNIT PER TWO (2) ACRES

OPEN SPACE: 30%

TREE COVER: 30%

PARKING: TWO (2) SPACES PER UNIT FOR LOTS WITH FRONTAGE ON A PUBLIC STREET (2x20=40)

PROPOSED DEVELOPMENT TABULATIONS

PROPERTY AREA:	2,264,016 SF (±51.97 AC)
MAXIMUM BUILDING HEIGHT	35 FEET
MINIMUM YARD SETBACKS	FRONT - 30' SIDE - 15', BUT A TOTAL MINIMUM OF 40' BACK - 25'
DENSITY	± 0.38 DU/AC (20 SFD UNITS PROPOSED)
OPEN SPACE	± 936,446 SF ± 41%
TREE COVER	±± 698,856 SF ± 31%
PARKING	2 SPACES PER UNIT (2x20=40)

#INCLUDES TREE PRESERVATION AND PROPOSED PLANTINGS.

NOTES:
1. THE AVERAGE LOT SIZE IS ±58,817 SF. THE LOT SIZES RANGE FROM ±52,040 SF TO ±80,280 SF. THERE IS NO AVERAGE LOT SIZE REQUIREMENT IN THE R-E DISTRICT.
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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

GENERAL DEVELOPMENT PLAN

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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R-E CLUSTER

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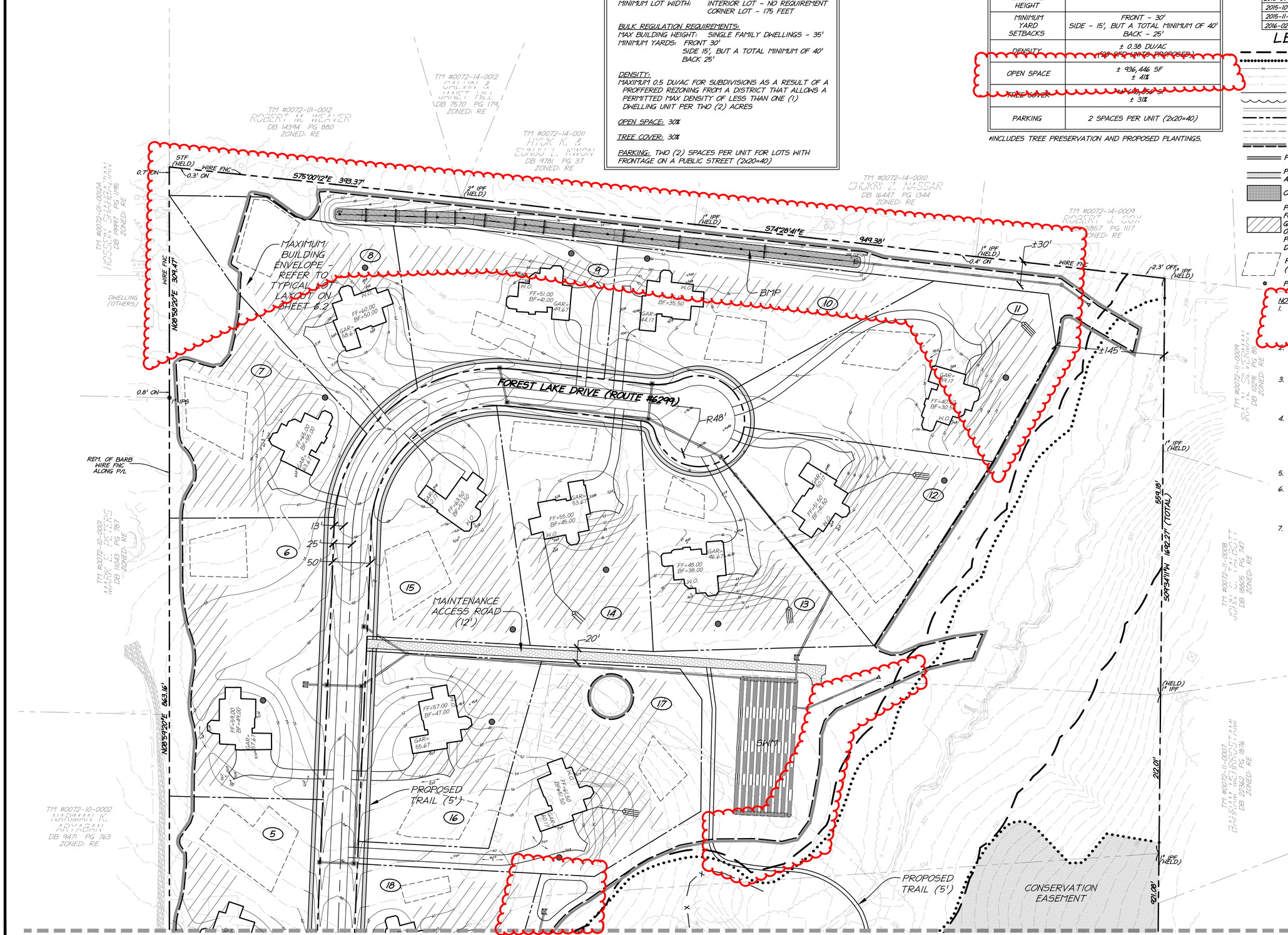

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COMMONWEALTH OF VIRGINIA
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Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
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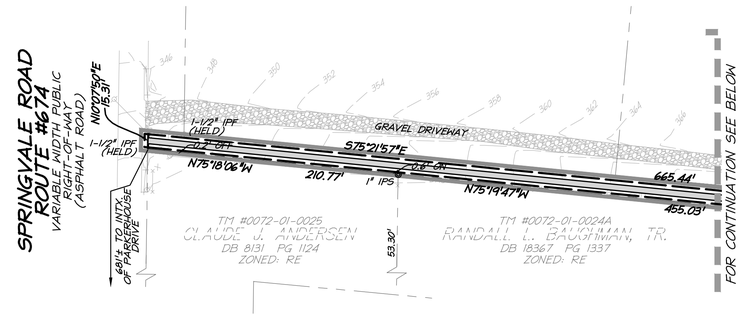

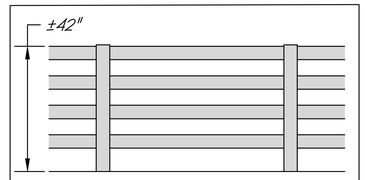

TYPICAL FENCE ELEVATION
FENCE SHALL BE IN GENERAL CONFORMANCE BASED ON CONVERSATIONS WITH ADJACENT PROPERTY OWNERS (NOT TO SCALE)

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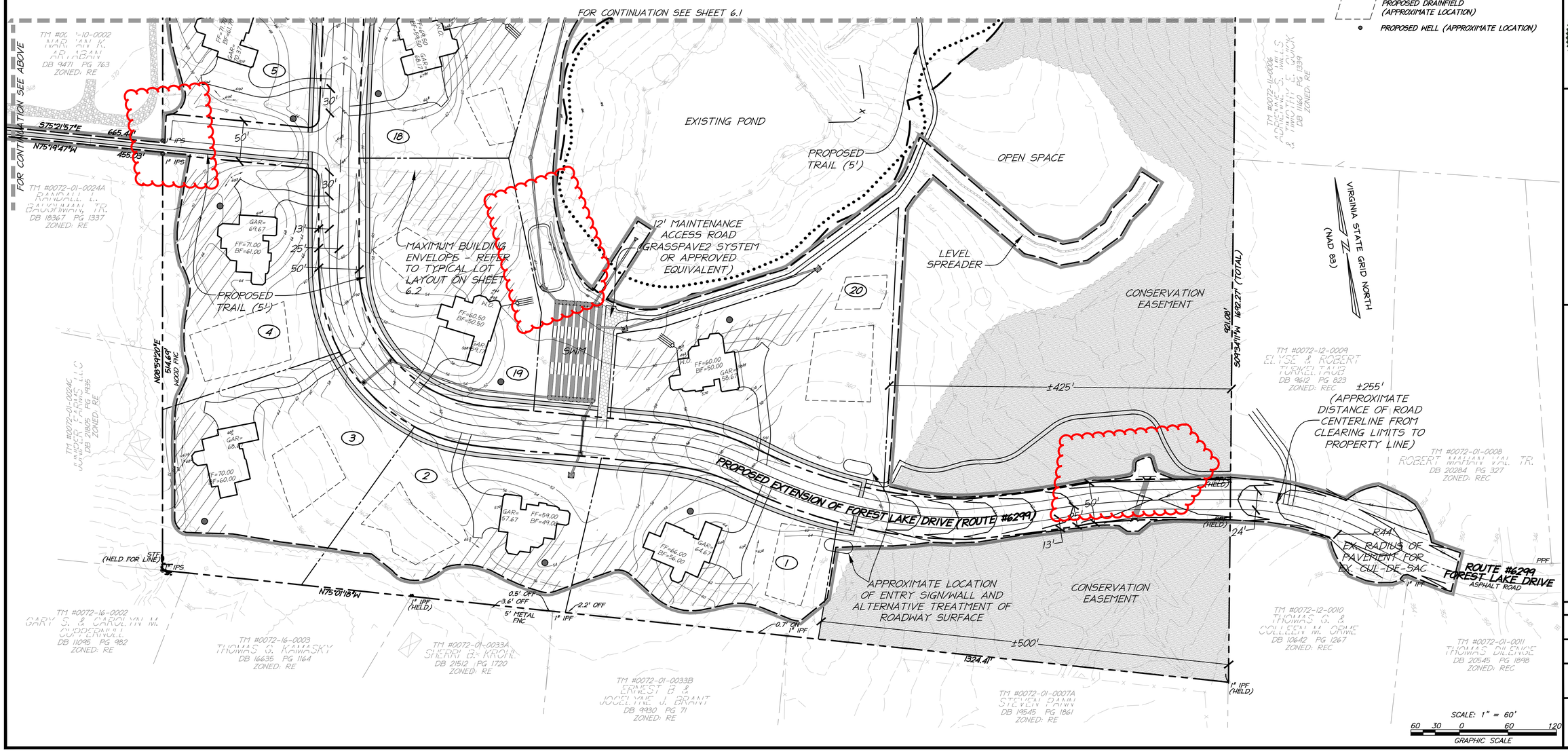

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GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

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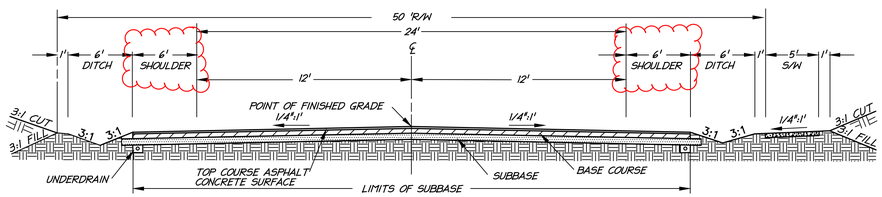
FOREST LAKE DRIVE EXTENSION TYPICAL SECTION

N.T.S.



NOTE:

1. PROPOSED ROADWAY SHALL BE IN CONFORMANCE WITH FIGURE 1.5 ON PAGE B (1) - 14 OF APPENDIX B (1) OF THE VDOT ROAD DESIGN MANUAL.

2. PARKING SHALL BE PROHIBITED ON ONE SIDE OF THE STREET. PROPER SIGNAGE AND NOTATION RESTRICTING PARKING SHALL BE SHOWN ON THE FINAL CONSTRUCTION DRAWINGS.

B(1)-8

GEOMETRIC DESIGN STANDARDS FOR RESIDENTIAL AND MIXED USE SUBDIVISION STREETS (GS- SSAR)
TABLE 2 – SHOULDER AND DITCH SECTION

PROJECTED TRAFFIC VOLUME (ADT)	MINIMUM DESIGN SPEED (MPH) (NOT POSTED SPEED)	HORIZONTAL AND VERTICAL CONTROLS Maximum 2:1 Cut or Fill Slope					SHOULDER AND DITCH ROADWAYS Minimum ditch width (front slope) should be 4 feet or greater, based on slopes of 3:1 or flatter (Gentler slopes promote homeowner maintenance of ditches)			
		CURVE DATA		MAXIMUM % GRADE	MINIMUM SIGHT DISTANCE		MINIMUM PAVEMENT WIDTH			MIN. TOTAL WIDTH OF SHOULDER (8) (9)
		MINIMUM CENTERLINE RADIUS (4)	SUPER-ELEV.		STOPPING (2)	INTER-SECTION (3)	NO PARKING (5)	PARKING 1 SIDE (5)	PARKING BOTH SIDES (5)	
UP TO 2000	25	200'	NONE	NOTE (6)	155'	280'	24' (1) (11)	24' (1)	29' (1)	6'
2001 TO 4000	30	335'	NONE	NOTE (7)	200'	335'	26' (10)	31' (10)	36' (10)	8'

Notes:

For streets with volumes over 4000 or serving heavy commercial or Industrial traffic; use the appropriate geometric design standard. (see VDOT's Road Design Manual)

The roadway with the highest volume will govern the sight distance.

Right of Way requirements can be found in Section B-4.1 Right Of Way

For volumes 2001 – 4000 vpd, design criteria for the Collector functional class was utilized to determine minimum design values.

Lower design speeds (and street widths) may be utilized provided they are designed in accordance with the AASHTO Green Book or AASHTO's Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT<400). The designer should coordinate with VDOT in advance of design (e.g. sketch plan stage) if this alternative criteria is being utilized.

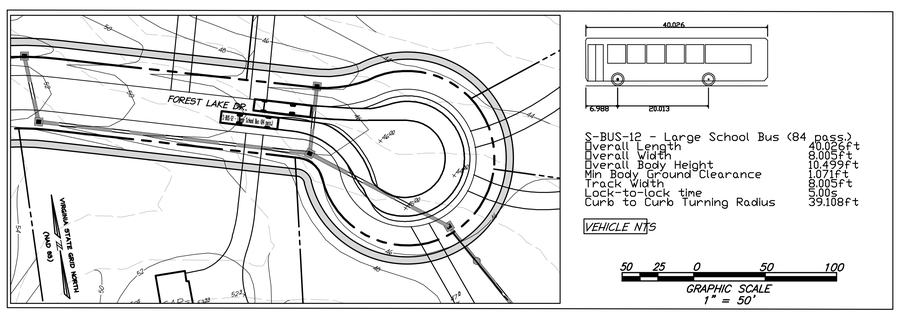
If 20 mph minimum design speed is utilized, a 20 mph advisory speed limit sign shall be posted along with any other horizontal or vertical curve warning signs as warranted.

An engineering speed study sealed and signed by a licensed professional engineer, using VDOT's standard speed study report, must be provided by the developer and approved by VDOT for any roads posted at other than the statutory speed limit and planned for acceptance into the state system.

1. If the Local Street has 1 point of access and ADT>400 vpd, then the roadway width must meet design values (2001 TO 4000 vpd).
2. 2011AASHTO Green Book Chapter 3 (Page 3-4, Table 3-1)*
3. 2011AASHTO Green Book Chapter 9 (Page 9-38, Table 9-6). For grades greater than 3%, the time gap must be adjusted and required sight distance recalculated.
4. 2011 AASHTO Green Book Chapter 3 (Page 3-55, Table 3-13b)
5. Clear zone width for UP TO 2000 vpd is 7' and clear zone values for 2001 TO 4000 vpd is 10'.
6. 2011 AASHTO Green Book Chapter 5 (Page 5-12)
7. 2011 AASHTO Green Book Chapter 6 (Page 6-12)
8. 2011 AASHTO Green Book Chapter 5 (Page 5-6, Table 5-5)
9. Add an additional 3' if guardrail is required.
10. Lane widths may vary between 10'-12' feet for collectors with 2001-4000 ADT. Widths shown may be decreased by 2 feet (26 feet to 24 feet), (31 feet to 29 feet) and (36 feet to 34 feet) based upon engineering judgment subject to VDOT approval.
11. For 0-400 ADT and "No Parking" ONLY minimum pavement width may be reduced from 24 feet to 18 feet and shoulder width may be reduced in accordance with Note 8 above.

* Rev. 7/12

TABLE 2 - SHOULDER AND DITCH SECTION STREET



SCHOOL BUS TURNING MOVEMENT ANALYSIS-CULDESAC

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GDP
ROAD SECTIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: AS NOTED
DATE: 8/28/14
DESIGN: JR
DRAWN: DL
CHECKED:
SHEET No.
6.3 OF 9

102267

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
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2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER COUNTY COMMENTS

LEGEND

EXISTING TREE TO BE PRESERVED

PROPOSED VEGETATION

PROPOSED VEGETATION IS SHOWN AS A MIXTURE OF DECIDUOUS AND EVERGREEN SPECIES IN GENERAL LOCATIONS THAT IS SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING. A MIXTURE OF CALIPER SIZES WILL BE UTILIZED UPON FINAL SPECIES SELECTION AND AVAILABLE NURSERY STOCK.

LEGEND

- RPA LINE
- EGC LINE
- OVERHEAD UTILITY LINE
- FENCE
- ROAD CENTERLINE
- PROPERTY LINE
- ADJOINER LINE
- EX. INDEX CONTOUR (10')
- EX. INT. CONTOUR (2')
- PROPOSED TRAIL
- PROPOSED MAINTENANCE ACCESS ROAD
- PROPOSED DRAINFIELD (APPROXIMATE LOCATION)
- PROPOSED WELL (APPROXIMATE LOCATION)

NOTES:

1. THE PROPOSED PUBLIC ROAD SHOWN ON THIS PLAN WILL BE DESIGNED AS A DITCH SECTION ROAD (AS SHOWN ON THIS PLAN).
2. TRAIL LOCATION IS APPROXIMATE AND FINAL LOCATION IS SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING.
3. WELL AND DRAINFIELD LOCATIONS ARE SHOWN APPROXIMATELY AND FINAL LOCATIONS ARE SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING.
4. A PROFFER WITH THIS GDP WILL INCLUDE THE FOLLOWING PARAMETERS FOR AN INVASIVE SPECIES MANAGEMENT PLAN TO BE COMPLETED AT TIME OF FINAL SUBDIVISION PLAN:
   - TARGETED SPECIES FOR SUPPRESION AND MANAGEMENT
   - LOCATION OF THE TARGETED AREAS REQUIRED FOR TREATMENT AND MANAGEMENT
   - METHOD(S) OF CONTROL AND MANAGEMENT
   - SCHEDULE OF TREATMENTS
   - DISPOSAL OF DEBRIS
   - CHEMICAL APPLICATIONS MUST BE PERFORMED UNDER THE DIRECT SUPERVISION OF A VIRGINIA CERTIFIED PESTICIDE APPLICATOR
   - DURATION OF MANAGEMENT PLAN
   - MONTHLY MONITORING REPORTS SENT TO URBAN FORESTRY MANAGEMENT DIVISION

VIRGINIA STATE GRID NORTH (NAD 83)

100 75 50 0 100 200
GRAPHIC SCALE 1" = 100'

STUDIO39

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
02/18/16
LANDSCAPE ARCHITECT

LANDSCAPE PLAN

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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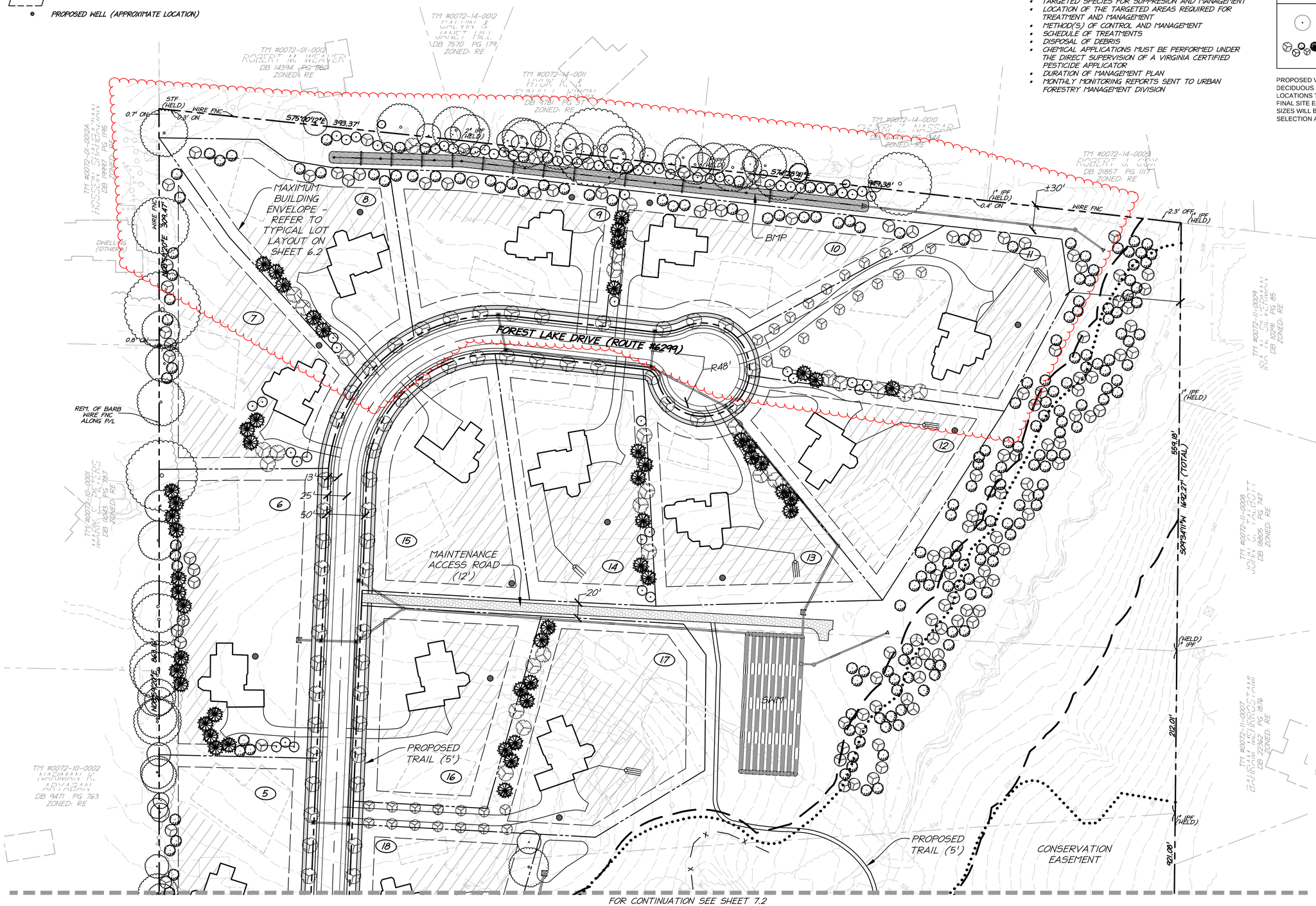

FOR CONTINUATION SEE SHEET 7.2

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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
02/18/16
LANDSCAPE ARCHITECT

LANDSCAPE PLAN

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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2. TRAIL LOCATION IS APPROXIMATE AND FINAL LOCATION IS SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING.
3. TRAIL WILL BE FIELD LOCATED AT SOUTHEAST CORNER OF PROPERTY IN ORDER TO PRESERVE EXISTING VEGETATION.
4. WELL AND DRAINFIELD LOCATIONS ARE SHOWN APPROXIMATELY AND FINAL LOCATIONS ARE SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING.
5. A PROFFER WITH THIS GDP WILL INCLUDE THE FOLLOWING PARAMETERS FOR AN INVASIVE SPECIES MANAGEMENT PLAN TO BE COMPLETED AT TIME OF FINAL SUBDIVISION PLAN:
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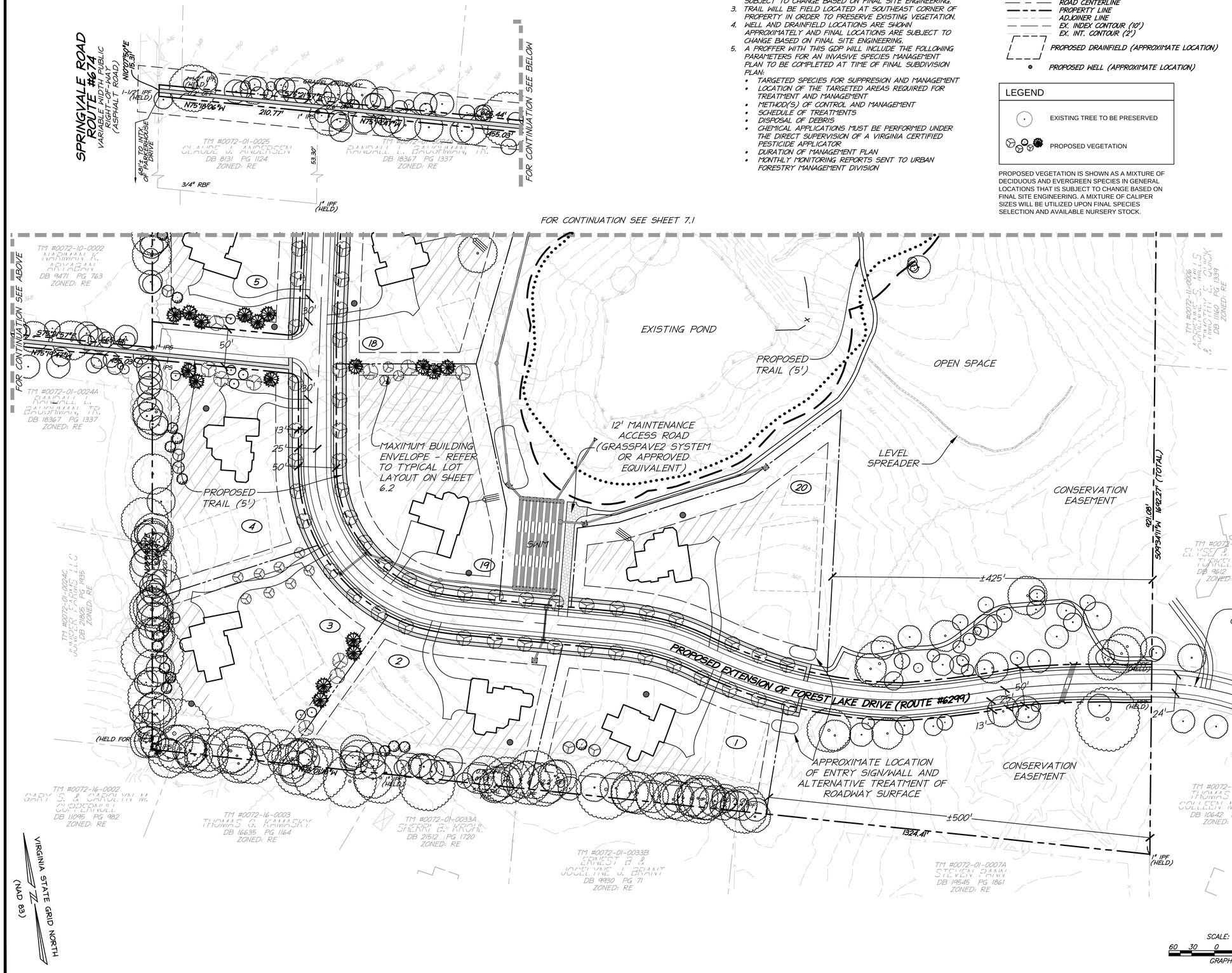
10 YEAR TREE CANOPY CALCULATIONS

A	TREE PRESERVATION TARGET AND STATEMENT	TOTALS
A1	Pre-development area of existing tree canopy (SF)	645,231
A2	Percentage of gross site area covered by existing canopy (A1/B1)	0
A3	Percentage of 10-year tree canopy required for the site	0
A4	Percentage of the 10-year tree canopy requirement that should be met through tree perservation	0
A5	Proposed percentage of canopy requirement that will be met through tree preservation (C10/B7)	0
A6	Has the tree preservation target minimum been met?	Yes
A7	If A6 is no, then a request to deviate from the Tree Preservation Target shall be provided on the plan that states one or more of the justifications listed in 12-0507.3 along with a narrative that provides a site-specific explanation of why	N/A
B	**TREE CANOPY REQUIREMENT**	
B1	Identify gross site area (SF)	2,264,016
B2	Subtract area dedicated to parks and road frontage (SF)	0
B3	Subtract area exemptions (SF)	0
B4	Adjusted gross site area (B1 - B2) (SF)	2,264,016
B5	Identify site's zoning and/or use	R-E Cluster
B6	Percentage of 10-year tree canopy required	30%
B7	Area of 10-year tree canopy required (B4 x B6) (SF)	679,205
B8	Modification of 10-year tree requirements requested?	No
B9	If B8 yes, then list pain sheet where modification request is located	N/A
C	**TREE PRESERVATION**	
C1	Tree preservation target area	193,569
C2	Total canopy area meeting standards of 12-0400	325,106
C3	C2 x 1.25	437,625
C4	Total canopy area provided by unique or valuable forest or woodland communities	0
C5	C4 x 1.5	0
C6	Total of canopy area provided by "Heritage", "Memorial", "Specimen", or "Street Trees"	0
C7	C6 x 1.5 to 3.0	0
C8	Canopy area of trees within Resource Protection Areas and 100-year floodplains	113,106
C9	C8 x 1.0	113,106
C10	Total of C3, C5, C7, and C9	550,731
D	**TREE PLANTING**	
D1	Area of canopy to be met through tree planting (B7-C10)	128,474
D2	Area of canopy planted for air quality benefits	0
D3	D2 x 1.5	0
D4	Area of canopy planted for energy conservation	0
D5	D4 x 1.5	0
D6	Area of canopy planted for water quality benefits	0
D7	D6 x 1.25	0
D8	Area of canopy planted for wildlife benefits	98,750
D9	D8 x 1.5	148,125
D10	Area of canopy provided by native trees	0
D11	D10 x 1.5	0
D12	Area of canopy provided by improved cultivars and varieties	0
D13	D12 x 1.25	0
D14	Area of canopy provided through tree seedlings	0
D15	D14 x 1.0	0
D16	Percentage of D14 represented by D15	0
D17	Total of canopy area provided through tree planting	148,125
D18	Is an off-site planting relief requested?	No
D19	Tree bank or Tree Fund?	No
D20	Canopy area requested to be provided through off-site banking or tree fund	0
D21	Amount to be deposited into the Tree Preservation and Planting Fund	0
E	**TOTAL 10-YEAR TREE CANOPY PROVIDED**	
E1	Total of canopy area provided through tree preservation (C10)	550,731
E2	Total of canopy area provided through tree planting (D17)	148,125
E3	Total of canopy area provided through off-site mechanism (D19)	0
E4	Total of 10-year Tree Canopy Provided (E1+E2+E3)	698,856



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COMMONWEALTH OF VIRGINIA
JOSEPH J. PLUMPE
No.000802
02/18/16
LANDSCAPE ARCHITECT

LANDSCAPE PLAN

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01

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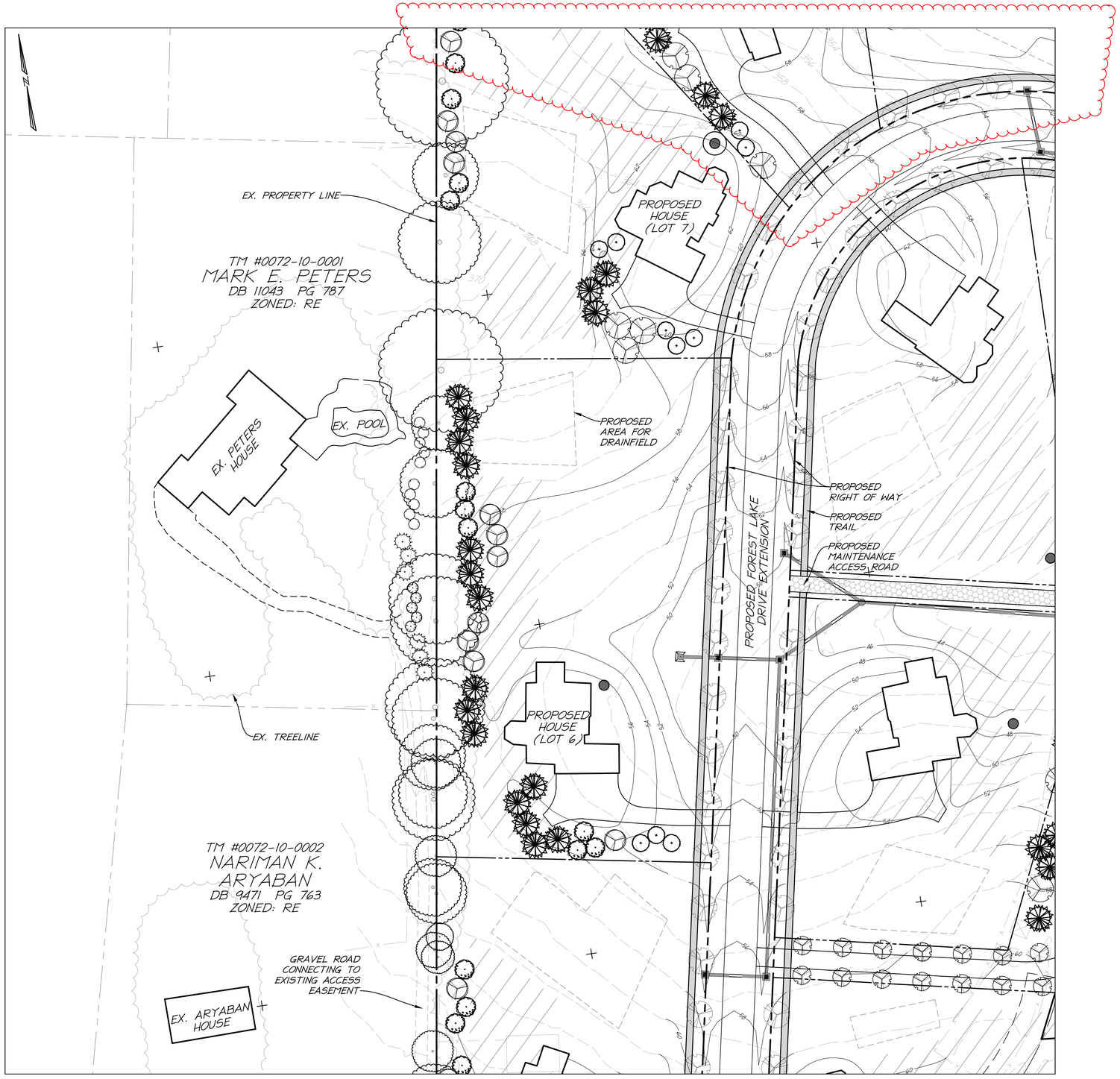

PROPOSED PLANT LIST

(THIS LIST IS SUBJECT TO CHANGE BASED ON SPECIES AVAILABILITY AT THE TIME OF FINAL SITE PLAN AND MAY INCLUDE BUT SHOULD NOT BE LIMITED TO THE FOLLOWING SPECIES:)

ACER RUBRUM
(RED MAPLE)

CERCIS CANADENSIS
(EASTERN REDBUD)

ILEX x NELLIE STEVENS
(NELLIE STEVENS HOLLY)

ILEX OPACA
(AMERICAN HOLLY)

JUNIPERUS VIRGINIANA
(EASTERN RED CEDAR)

MAGNOLIA VIRGINIANA
(SWEETBAY MAGNOLIA)

QUERCUS PALUSTRIS
(PIN OAK)

VIBURNUM DENTATUM
(ARROWWOOD VIBURNUM)

NOTE:

1. THE PURPOSE OF THIS EXHIBIT IS TO HIGHLIGHT EXISTING AND PROPOSED LANDSCAPE SCREENING ALONG THE PETERS PROPERTY AND THE BROOKS PROPERTY BOUNDARY.
2. PROPOSED VEGETATION IS SHOWN AS A MIXTURE OF DECIDUOUS AND EVERGREEN SPECIES IN GENERAL LOCATIONS THAT IS SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING. A MIXTURE OF CALIPER SIZES WILL BE UTILIZED UPON FINAL SPECIES SELECTION AND AVAILABLE NURSERY STOCK.
3. BASE INFORMATION FOR BROOKS PROPERTY SHOWN ON THIS EXHIBIT IS BASED ON A BOUNDARY SURVEY PREPARED AND CERTIFIED BY christopher consultants ltd. DATED MARCH 13, 2014.
4. OFF-SITE BASE INFORMATION IS APPROXIMATE AND BASED ON AVAILABLE IMAGERY FROM GOOGLE MAPS DATED SEPTEMBER 18, 2015.
5. THIS IS A CONCEPT SKETCH AND IS SUBJECT TO CHANGE BASED ON COOPERATION WITH ADJOINING PROPERTY OWNERS.

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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

CONCEPTUAL LANDSCAPE BUFFER PLAN

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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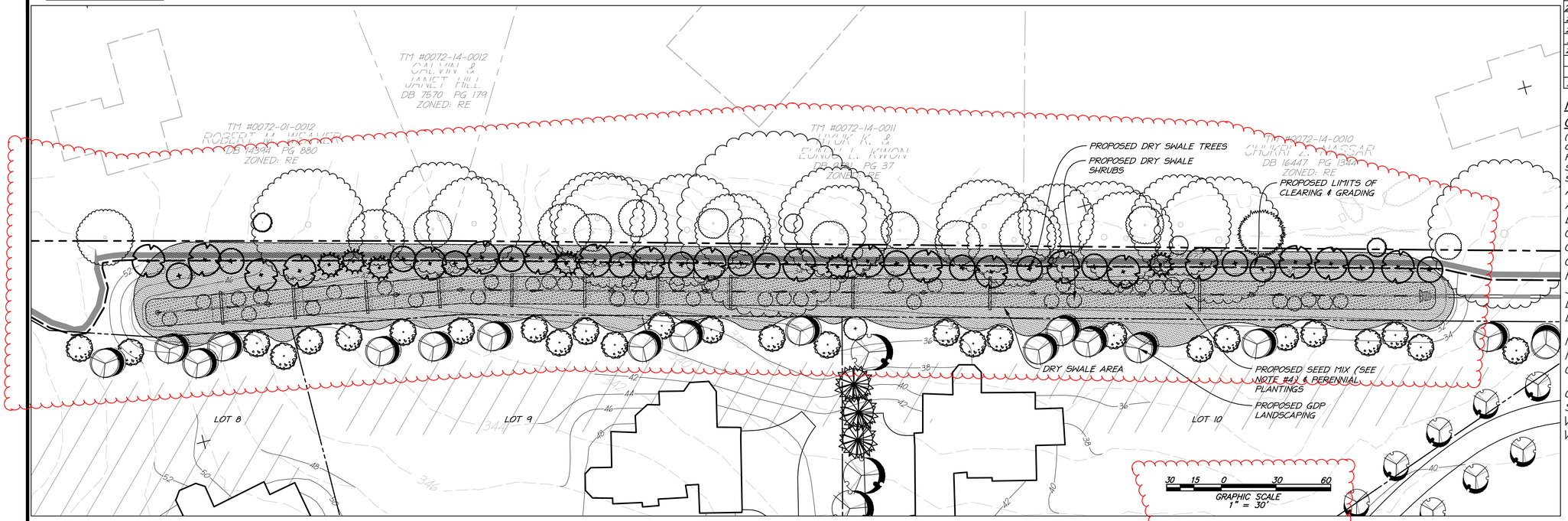
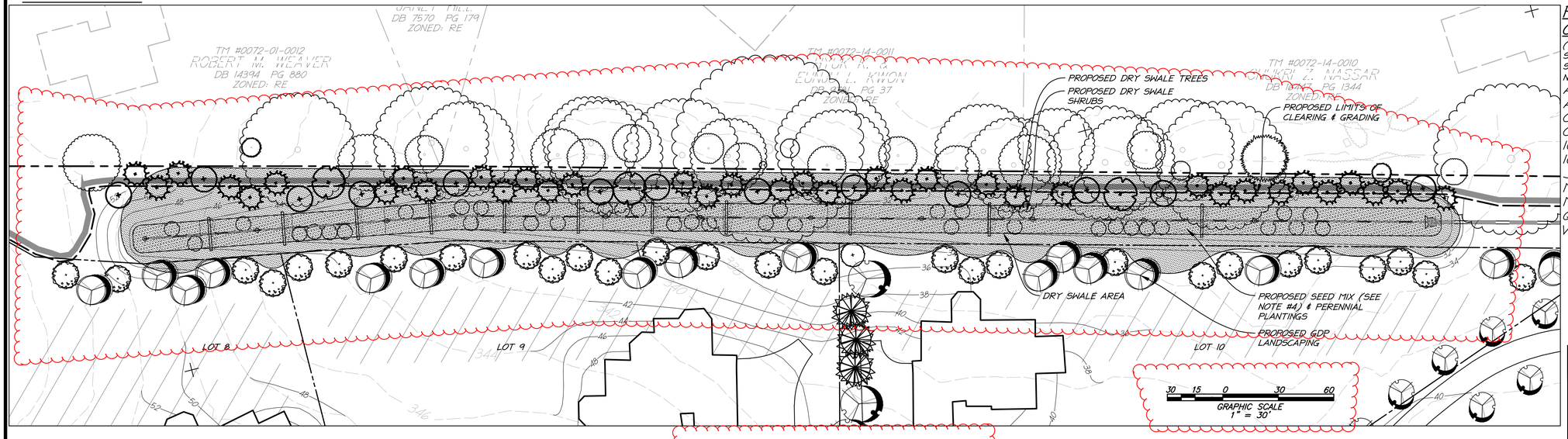
OPTION 1



OPTION 2



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PROPOSED PLANT LIST OPTION 1

(THIS LIST IS SUBJECT TO CHANGE BASED ON SPECIES AVAILABILITY AT THE TIME OF FINAL SITE PLAN AND MAY INCLUDE BUT SHOULD NOT BE LIMITED TO THE FOLLOWING SPECIES:)

- AL – AMELANCHIER LAEVIS (SERVICEBERRY)
- AR – ACER RUBRUM (RED MAPLE)
- BN – BETULA NIGRA (RIVERBIRCH)
- CC – CERCIS CANADENSIS (REDBUD)
- CA – CLETHRA ALNIFOLIA (S.PEPPERBUSH)
- CN – CORNUS AMOMUM (SILKY DOGWOOD)
- FM – FOTHERGILLA GARDENII (FOTHERGILLA)
- JV – JUNIPERUS VIRGINIANA (E. RED CEDAR)
- LB – LINDERA BENZOIN (SPICEBUSH)
- LS – LIQUIDAMBAR STYRACIFLUA (SWTGUM)
- MV – MAGNOLIA VIRGINIANA (S. MAGNOLIA)
- NS – NYSSA SYLVATICA (BLACK GUM)
- QB – QUERCUS BICOLOR-(SWAMP WHITE OAK)
- QP – QUERCUS PALUSTRIS (PIN OAK)
- SC – SAMBUCUS CANADENSIS (ELDERBRY)
- VA – VACCINIUM ARBOREUM (SPARKLEBRY)
- VD – VIBURNUM DENTATUM (A.VIBURNUM)

PROPOSED PLANT LIST OPTION 2

(THIS LIST IS SUBJECT TO CHANGE BASED ON SPECIES AVAILABILITY AT THE TIME OF FINAL SITE PLAN AND MAY INCLUDE BUT SHOULD NOT BE LIMITED TO THE FOLLOWING SPECIES:)

- AL – AMELANCHIER LAEVIS (SERVICEBERRY)
- AR – ACER RUBRUM (RED MAPLE)
- CR – CARPINUS CAROLINIANA (A.HORNBEAM)
- CC – CERCIS CANADENSIS (REDBUD)
- IG – ILEX GLABRA (INKBERRY HOLLY)
- IO – ILEX OPACA (AMER. HOLLY)
- JV – JUNIPERUS VIRGINIANA (E. RED CEDAR)
- MV – MAGNOLIA VIRGINIANA (S. MAGNOLIA)
- MC – MYRICA CERIFERA (S.WAX MYRTLE)
- QB – QUERCUS BICOLOR-(SWAMP WHITE OAK)
- VA – VACCINIUM ARBOREUM (SPARKLEBRY)

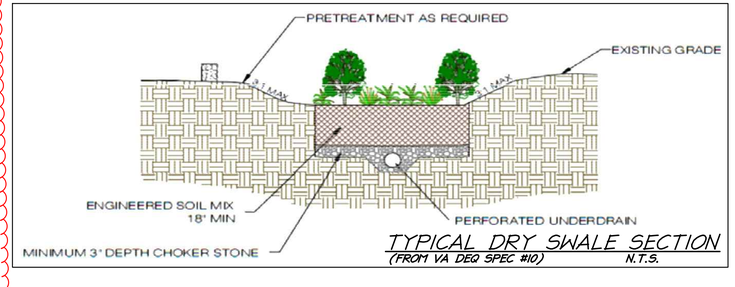
NOTES:

1. THE PURPOSE OF THESE DRY SWALE CONCEPTS IS TO OFFER TWO OPTIONS FOR PROPOSED LANDSCAPING WITHIN THE DRY SWALE ALONG THE NORTHERN BROOKS PROPERTY BOUNDARY: OPTION ONE PROPOSES A VARIETY OF NATIVE HARDWOOD SPECIES AND OPTION TWO PROPOSES MORE EVERGREEN SPECIES. ALL DRY SWALE PLANTING SHALL CONFORM TO FFX. CO. PFM SECTION 6-1308.9G(3) AND VA DEQ SPECIFICATION #10.
2. PROPOSED VEGETATION IS SHOWN AS A MIXTURE OF DECIDUOUS AND EVERGREEN SPECIES IN GENERAL LOCATIONS THAT ARE SUBJECT TO CHANGE BASED ON FINAL SITE ENGINEERING. A MIXTURE OF CALIPER SIZES WILL BE UTILIZED UPON FINAL SPECIES SELECTION AND AVAILABLE NURSERY STOCK.
3. THIS IS A CONCEPT SKETCH AND IS SUBJECT TO CHANGE.
4. PER PHONE CALL WITH AN ERNST CONSERVATION SEEDS, INC. REPRESENTATIVE, ERNMX-117 AND ERNMX-177 ARE RECOMMENDED SEED MIXES FOR ESTABLISHMENT OF A DRY SWALE BASE LAYER.
5. ALL PROPOSED LANDSCAPING SHALL BE IN COOPERATION WITH ADJOINING PROPERTY OWNERS.

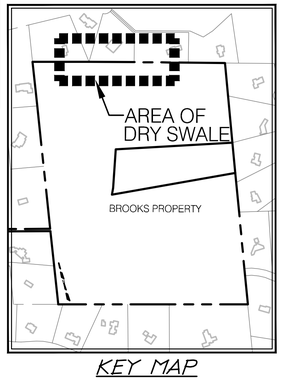
DRY SWALE LANDSCAPE REQUIREMENTS

(AS PER PFM SEC. 6-1308.9G(4) AND VIRGINIA DEQ STORMWATER DESIGN SPECIFICATION NO. 10)

DRY SWALE AREA (SF):	10,593
REQUIRED COVERAGE	
TREES (10%) (SF)	1,059
SHRUBS (20%) (SF)	2,119
PERENNIALS (70%) (SF)	7,415
TOTAL REQUIRED COVERAGE (SF):	10,593
PROVIDED COVERAGE	
TREES (10%) (SF)	
±10 TWO INCH CALIPER CATEGORY II TREES (100 SF EACH)	1,000
SHRUBS (20%) (SF)	
±40 SHRUBS (50 SF EACH)	2,000
PERENNIALS (70%) (SF)	7,415
TOTAL PROVIDED COVERAGE (TO MEET REQ'M) (SF):	10,415
APPROX. ADD'L LANDSCAPING PROVIDED IN THESE CONCEPTS (SF)	36,608
TOTAL APPROX. PROVIDED COVERAGE (AS SHOWN) (SF):	47,023



TYPICAL DRY SWALE SECTION
(FROM VA DEQ SPEC #10) N.T.S.



KEY MAP
SCALE 1"=500'

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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

CONCEPTUAL DRY SWALE LANDSCAPE OPTIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

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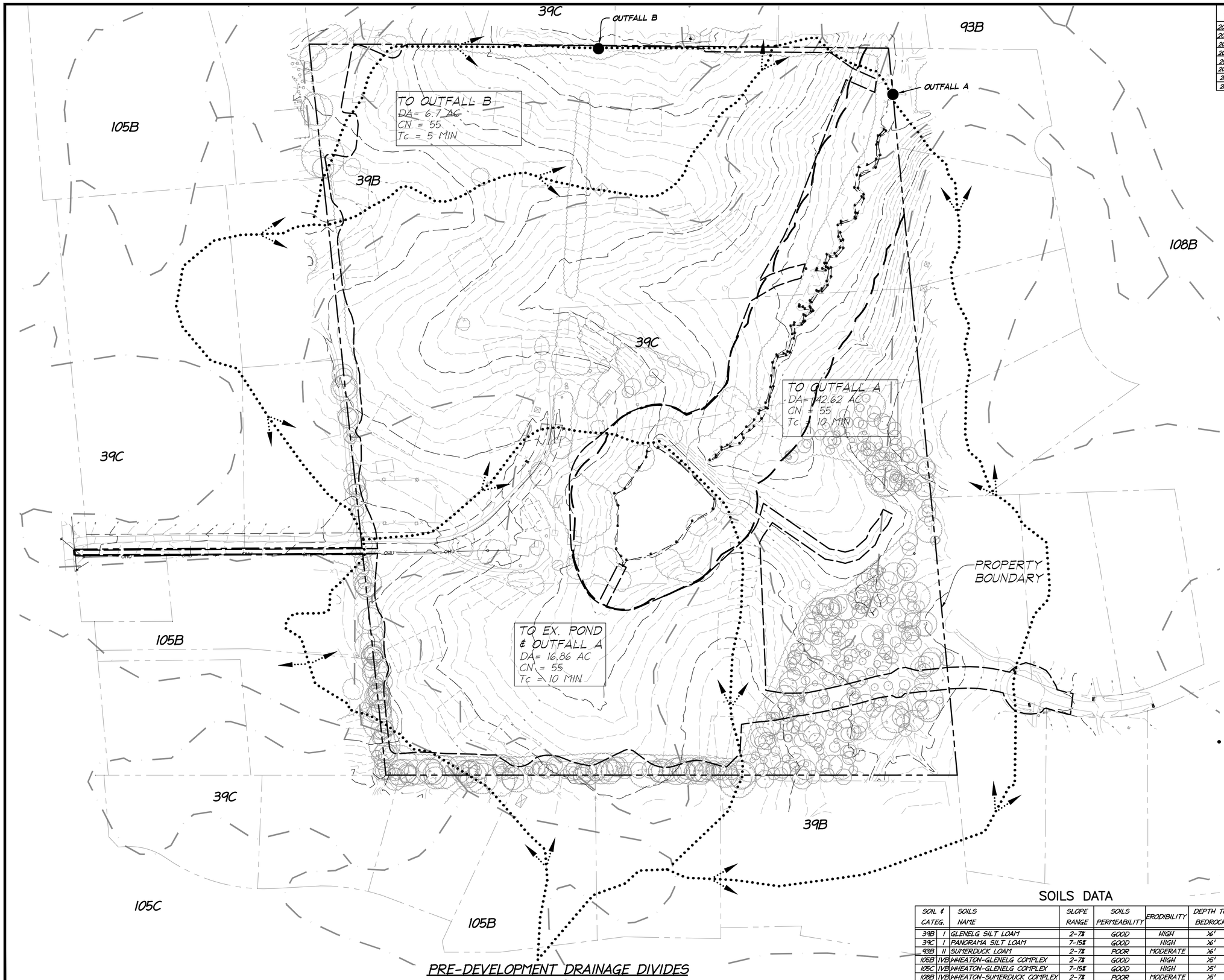

PRE-DEVELOPMENT DRAINAGE DIVIDES

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NOTES:

1. DRAINAGE DIVIDES, DRAINAGE AREAS, CN-VALUES, AND SWM/BMP CONTROL MEASURES (TYPE/LOCATION) SHOWN ARE PRELIMINARY AND ARE SUBJECT TO CHANGE DURING FINAL ENGINEERING. THE INFORMATION SHOWN HEREON IS A CONCEPTUAL DESIGN TO PRESENT AN OPTION FOR MEETING VARRM REQUIREMENTS & STORMWATER CHANNEL & FLOOD PROTECTION CRITERIA. FINAL DESIGN WILL BE ENGINEERED TO MEET WATER QUALITY AND CHANNEL AND FLOOD PROTECTION REQUIREMENTS (CHAPTER 124-4 OF COUNTY CODE).

LEGEND

25C	SOIL CATEGORY
	SOIL LINE
	PRE-DEVELOPED DRAINAGE DIVIDE
	COUNTY RPA LINE
	SITE AREA FOR SWM & BMP CALCULATIONS

SOILS DATA

SOIL & CATEG.		SOILS NAME	SLOPE RANGE	SOILS PERMEABILITY	ERODIBILITY	DEPTH TO BEDROCK
39B	I	GLENELG SILT LOAM	2-7%	GOOD	HIGH	>6'
39C	I	PANORAMA SILT LOAM	7-15%	GOOD	HIGH	>6'
93B	II	SUMERDUCK LOAM	2-7%	POOR	MODERATE	>6'
105B	IVB	WHEATON-GLENELG COMPLEX	2-7%	GOOD	HIGH	>5'
105C	IVB	WHEATON-GLENELG COMPLEX	7-15%	GOOD	HIGH	>5'
108B	IVB	WHEATON-SUMERDUCK COMPLEX	2-7%	POOR	MODERATE	>5'

100 50 0 100 200

HORIZONTAL GRAPHIC SCALE
1" = 100'

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COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

PRE-DEVELOPMENT DRAINAGE DIVIDES

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01

SCALE: 1" = 100'

DATE: 8/28/14

DESIGN: JES
DRAWN: JES
CHECKED: ES

SHEET No.

8.1 OF 9

102267

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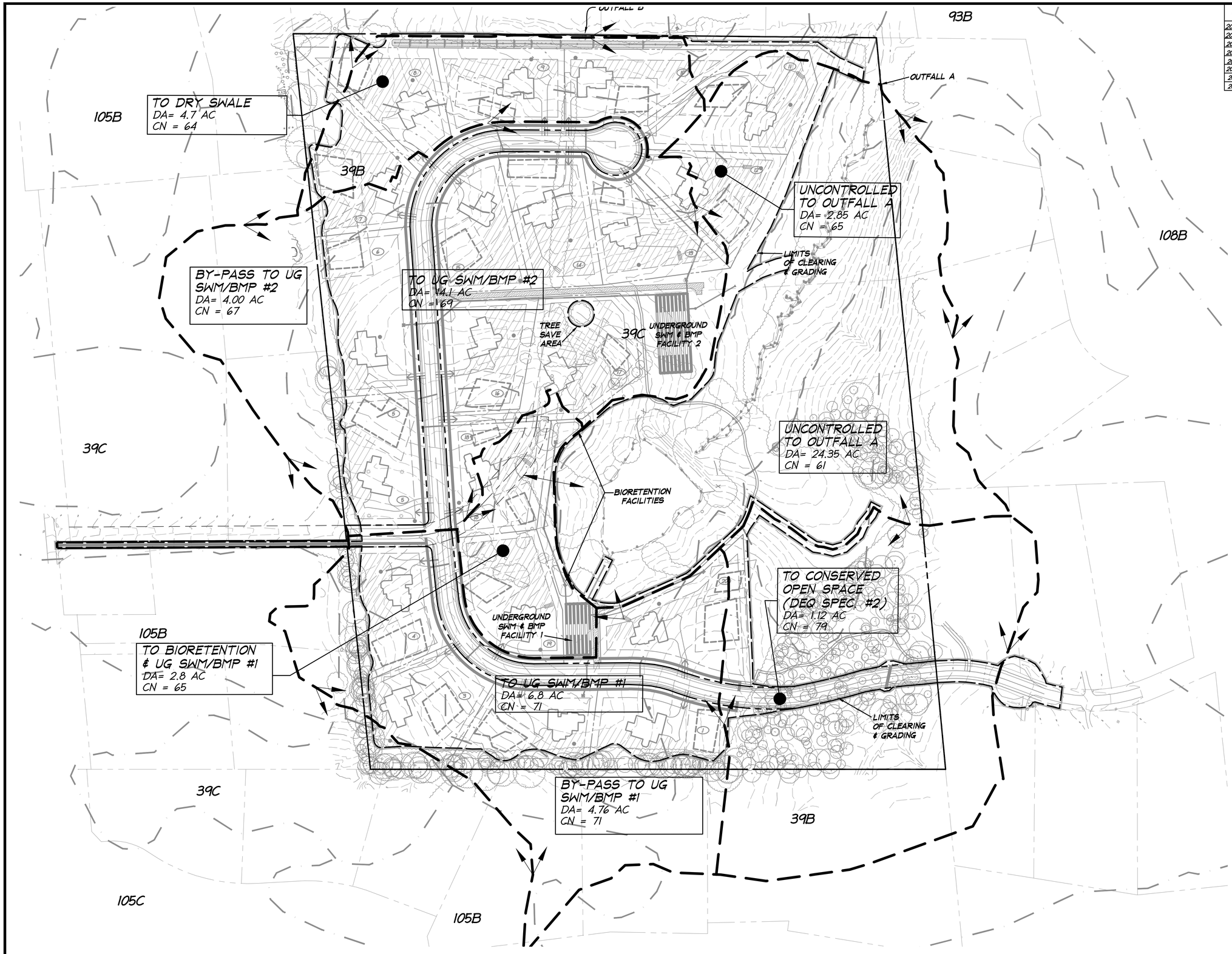

POST-DEVELOPMENT DRAINAGE DIVIDES

SCALE: 1" = 100'

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS

NOTES:

1. DRAINAGE DIVIDES, DRAINAGE AREAS, CN-VALUES, AND SWM/BMP CONTROL MEASURES (TYPE/LOCATION) SHOWN ARE PRELIMINARY AND ARE SUBJECT TO CHANGE DURING FINAL ENGINEERING. THE INFORMATION SHOWN HEREON IS A CONCEPTUAL DESIGN TO PRESENT AN OPTION FOR MEETING VARRM REQUIREMENTS & STORMWATER CHANNEL & FLOOD PROTECTION CRITERIA. FINAL DESIGN WILL BE ENGINEERED TO MEET WATER QUALITY AND CHANNEL AND FLOOD PROTECTION REQUIREMENTS (CHAPTER 124-4 OF COUNTY CODE).

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11-30-15
PROFESSIONAL ENGINEER

POST-DEVELOPMENT DRAINAGE DIVIDES

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01

SCALE: 1" = 100'

DATE: 8/28/14

DESIGN: JES
DRAWN: JES
CHECKED: ES

SHEET No.

8.2 OF 9

102267

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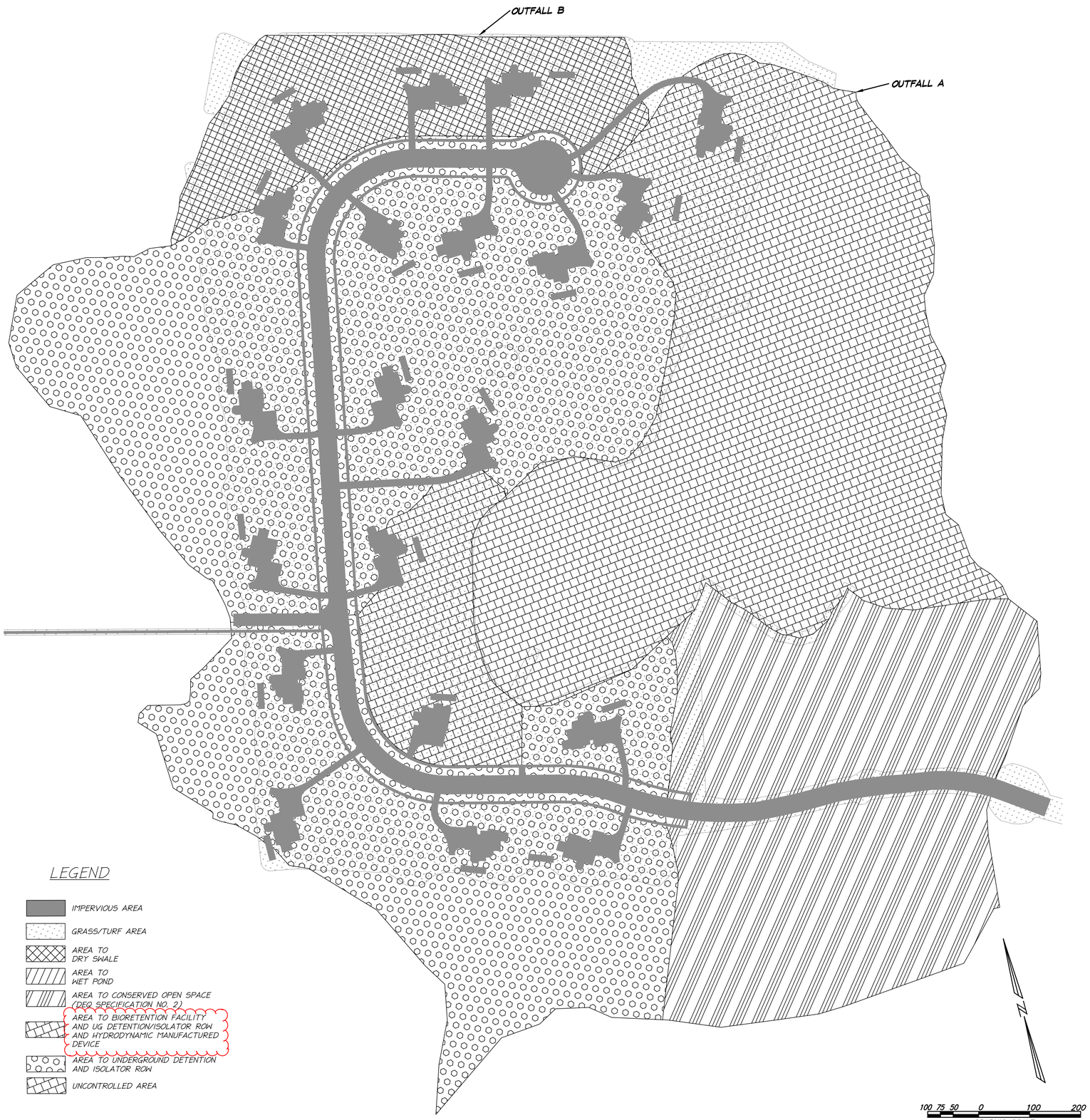

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
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2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER COUNTY COMMENTS

STORMWATER MANAGEMENT / WATER QUALITY NARRATIVE:

WATER QUANTITY AND QUALITY TREATMENT OF STORMWATER RUNOFF FROM THE SUBJECT SITE IS PROVIDED BY A DRY SWALE, TWO (2) BIORETENTION FACILITIES, AN AREA OF SHEET FLOW TO CONSERVED OPEN SPACE, AND TWO (2) ON-SITE UNDERGROUND STORMWATER DETENTION SYSTEMS WITH ISOLATOR ROWS THAT BOTH DRAIN TO TWO (2) HYDRODYNAMIC MANUFACTURED DEVICES FOR FINAL WATER QUALITY TREATMENT PRIOR TO OUTFALLING. THE LAYOUT OF THESE FACILITIES IS SHOWN ON SHEET 8.2. THE GOAL OF THIS LAYOUT IS TO MEET THE REQUIREMENTS FOR STORMWATER QUANTITY AND QUALITY TREATMENT AS OUTLINED IN THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL (PFM) AND CHAPTER 124 OF THE COUNTY CODE. THE "OVERALL BMP MAP" ON THIS SHEET DEPICTS THE OVERALL DRAINAGE AREAS TO EACH BMP FACILITY AS WELL AS THE LAND COVER CONDITIONS FOR THE SUBJECT SITE (WITHIN THE PROPOSED LIMITS OF DISTURBANCE). SHEETS 8.1 AND 8.2 OF THIS APPLICATION SHOW THE PRE-DEVELOPMENT AND POST-DEVELOPMENT DRAINAGE DIVIDES AS WELL AS THE HYDROLOGIC SOIL ZONES ACROSS THE SUBJECT SITE. THE HYDROLOGIC INFORMATION (CN-VALUES, DRAINAGE AREAS, T_C, etc.) SHOWN ON SHEETS 8.1 AND 8.2 WAS USED TO CREATE A HYDROLOGIC MODEL OF SITE RUNOFF USING THE NRCS HYDROLOGY METHODS OUTLINED IN 6-0802 OF THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL (PFM).

~~THE ON-SITE UNDERGROUND DETENTION FACILITIES WITH ISOLATOR ROWS SHALL~~ AND HYDRODYNAMIC MANUFACTURED DEVICES SHALL BE DESIGNED IN ACCORDANCE WITH THE FAIRFAX COUNTY PFM REQUIREMENTS FOR DETENTION ~~FACILITIES AND THE MANUFACTURER'S GUIDELINES. FINAL CONSTRUCTION PLANS SHALL INCLUDE THE MANUFACTURER'S~~ INSTALLATION AND MAINTENANCE RECOMMENDATIONS, INCLUDING THE INTERVALS FOR INSPECTIONS AND ROUTINE MAINTENANCE.

THE ON-SITE DRY SWALE IS DESIGNED IN ACCORDANCE WITH THE "VIRIGINIA STORMWATER DESIGN SPECIFICATION NO. 10 - DRY SWALES" AND THE FAIRFAX COUNTY PFM MODIFICATIONS. THE DRY SWALE IS DESIGNED TO PROVIDE LEVEL 1 TREATMENT.

THE ON-SITE BIORETENTION FACILITIES SHALL BE DESIGNED IN ACCORDANCE WITH THE "VIRGINIA STORMWATER DESIGN SPECIFICATION NO. 9 - BIORETENTION" ~~AND THE FAIRFAX~~ COUNTY PFM MODIFICATIONS. THE BIORETENTION FACILITIES SHALL BE DESIGNED TO PROVIDE LEVEL 2 TREATMENT.

THE ON-SITE SHEET FLOW TO CONSERVED OPEN SPACE SHALL BE DESIGNED IN ACCORDANCE WITH THE "VIRGINIA STORMWATER DESIGN SPECIFICATION NO. 2 - SHEET FLOW TO A VEGETATED FILTER STRIP OR CONSERVED OPEN SPACE" AND THE FAIRFAX COUNTY PFM MODIFICATIONS.

IN ACCORDANCE WITH THE VIRGINIA RUNOFF REDUCTION METHOD (VARRM) FOR NEW DEVELOPMENT (AS SHOWN IN THE SPREADSHEETS ON SHEET 8.4 OF THIS APPLICATION, THE COMBINATION OF BMP SYSTEMS ON-SITE EXCEED THE REQUIRED PHOSPHORUS LOAD REDUCTION BY 0.3 LB/YR.

CHANNEL PROTECTION NARRATIVE:

THE SUBJECT SITE DISCHARGES CONCENTRATED STORMWATER RUNOFF TO TWO OUTFALL STUDY POINTS. THE "OVERALL BMP MAP" ON THIS SHEET INDICATES THE LOCATION OF THE STUDY POINTS. THE CHANNEL PROTECTION REQUIREMENTS FOR THE SUBJECT SITE ARE MET VIA THE "DETENTION METHOD". THE PROPOSED DEVELOPMENT PROVIDES SUFFICIENT DETENTION SUCH THAT THE POST-DEVELOPMENT PEAK FLOWS FOR THE 1-YEAR 24-HOUR STORM EVENT, THE 2-YEAR 24-HOUR STORM EVENT AND THE 10-YEAR 24-HOUR STORM EVENT ARE BELOW THE ALLOWABLE RELEASE RATES THAT WERE DETERMINED USING THE METHOD OUTLINED IN SECTION 124-4-4(b)(3)A OF THE VIRGINIA STORMWATER ORDINANCE (SEE SUPPORTING ALLOWABLE RELEASE RATE COMPUTATIONS ON SHEET 8.5 OF THIS EXHIBIT).

AREAS OF THE SUBJECT SITE RELEASING SHEET FLOW WERE EVALUATED FOR POTENTIAL IMPACTS ON DOWN-GRADIENT PROPERTIES AND THERE IS NO ANTICIPATED INCREASE IN VOLUME OF SHEET FLOW THAT WOULD CAUSE OR CONTRIBUTE TO EROSION, SEDIMENTATION, OR FLOODING OF DOWN GRADIENT PROPERTIES OR RESOURCES.

FLOOD PROTECTION NARRATIVE:

IN ACCORDANCE WITH THE "DETENTION METHOD" OUTLINED IN 124-4-4(c)(4) OF THE VIRGINIA STORMWATER ORDINANCE AND SECTION 6-0203.4A OF THE FAIRFAX COUNTY PFM, THE DOWNSTREAM REVIEW ANALYSIS IS LIMITED TO PROVIDING CROSS-SECTIONS SHOWING A DEFINED CHANNEL AND CHECKING FOR FLOODING OF EXISTING BUILDINGS OR DWELLINGS FROM THE 100-YEAR STORM EVENT. THE EXTENT OF REVIEW EXTENDS TO A POINT THAT IS AT LEAST 150 FEET DOWNSTREAM OF A POINT WHERE THE DRAINAGE AREA IS 360 ACRES OR GREATER IN ACCORDANCE WITH SECTION 6-0203.2 OF THE PFM. SEE SHEETS 8.7 AND 8.8 FOR AN OUTFALL REVIEW AND NARRATIVE.

~~EXISTING RESOURCE PROTECTION AREA/ENVIRONMENTAL QUALITY CORRIDOR IMPROVEMENTS:~~

THERE IS AN EXISTING FARM POND LOCATED ON THE SUBJECT PROPERTY WITHIN THE EXISTING RESOURCE PROTECTION AREA (RPA)/ENVIRONMENTAL QUALITY CORRIDOR (EQC). PURSUANT TO THE ENGINEERING INVESTIGATION PERFORMED BY GEOTECHNICAL SOLUTIONS, INC. (GSI), DATED OCTOBER 5, 2015 AND ATTACHED ON SHEET 8.6, THE EXISTING DAM STRUCTURE IS MOSTLY STABLE. IN ACCORDANCE WITH THE GSI'S RECOMMENDATIONS, THE FOLLOWING IMPROVEMENTS WILL BE REQUIRED WITH THIS PROPOSED DEVELOPMENT:

- EXISTING BAMBOO VEGETATION EMERGING FROM THE UPSTREAM SLOPE IN THE SOUTHEASTERN HALF OF THE DAM EMBANKMENT NEAR THE NORMAL POOL ELEVATION MUST BE REMOVED IN ITS ENTIRETY. SINCE BAMBOO IS AN AGRESSIVE SPREADING PLANT THROUGH ROOT GROWTH, THE REMOVAL OF THE ROOT SYSTEM SHALL BE OBSERVED BY A QUALIFIED SOILS TECHNICIAN OR ENGINEER UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OF RECORD. LIMITED SURFICIAL FILL MAY BE NECESSARY FOLLOWING REMOVAL OF THE ROOT SYSTEM. THE LIMITED FILL PLACEMENT SHALL BE OBSERVED AND TESTED BY A QUALIFIED SOILS TECHNICIAN.
- ROUTINE REPAIR OF THE DOWNSTREAM HALF OF THE EXISTING EMERGENCY SPILLWAY THAT IS DOCUMENTED TO SHOW SIGNS OF EROSION.

OVERLAND RELIEF NARRATIVE:

STORMWATER RUNOFF THAT EXCEEDS THE DESIGN CAPACITY OF THE PROPOSED STORMWATER FACILITIES (10-YEAR STORM) WILL FLOW OVERLAND IN ACCORDANCE WITH THE OVERLAND RELIEF PATH FLOW ARROWS SHOWN ON SHEET 8.2. OVERLAND FLOWS WILL BE CHECKED TO ENSURE THAT NO DOWNSTREAM BUILDINGS OR STRUCTURES CONSTRUCTED UNDER AN APPROVED BUILDING PERMIT WILL BE DAMAGED OR FLOODED AS A RESULT OF THE PROPOSED DEVELOPMENT.

NOTES:

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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No. 33635
2/18/16
PROFESSIONAL ENGINEER

OVERALL BMP MAP AND NARRATIVE

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: 1" = 100'
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No. 8.3 OF 9

102267

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Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014
To be used w/ DRAFT 2013 BMP Standards and Specifications
Site Data

Project Name: Brooks Property
Date: February 18, 2015

data input cells
calculation cells
constant values

VARRM SUMMARY:

1. Post-Development Project & Land Cover Information

Constants

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

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	0.00	0.00	0.00	0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	26.19	0.00	0.06	26.25
Impervious Cover (acres)	0.00	* 6.68	0.00	0.00	6.68
				Total	32.93

* INCLUDES 12,500 SQ.FT OF ADDITIONAL IMPERVIOUS AREA OR 625 SQ. FT. PER LOT

Rv Coefficients

	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

Forest/Open Space Cover (acres)	0.00		
Weighted Rv(forest)	0.00		
% Forest	0%		
Managed Turf Cover (acres)	26.25		
Weighted Rv(turf)	0.20		
% Managed Turf	80%		
Impervious Cover (acres)	6.68		
Rv(impervious)	0.95		
% Impervious	20%		
Total Site Area (acres)	32.93		
Site Rv	0.35		
Post-Development Treatment Volume (acre-ft)	0.97		
Post-Development Treatment Volume (cubic feet)	42,094		
Post_Development Load (TP) (lb/yr)	26.45	Post_Development Load (TN) (lb/yr)	189.20
Total Load (TP) Reduction Required (lb/yr)	12.95		

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	7.47	0.00	0.00	7.47	0.20
Impervious Cover (acres)	0.00	2.00	0.00	0.00	2.00	0.95
				Total	9.47	

Post Development Treatment Volume (cf) 12320

6. Bioretention

6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40		0	0	0	25	0.00	0.00	0.00	0.00	None
	turf acres draining to bioretention	40% runoff volume reduction	0.40		0	0	0	25	0.00	0.00	0.00	0.00	None
6.b. Bioretention #2 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.20	0	552	138	50	0.00	0.43	0.39	0.04	14. Manufactured Device
	turf acres draining to bioretention	80% runoff volume reduction	0.80	1.53	0	889	222	50	0.00	0.70	0.63	0.07	14. Manufactured Device

14. Manufactured BMP

14. Isolator Row	impervious acres draining to device	0% runoff volume reduction	0.00	1.80	138	0	6345	40	0.04	3.90	1.58	2.36	~~Tot. Wet Swale #1~~ HYRDRODYNAMIC MANUFACTURED DEVICES
	turf acres draining to device	0% runoff volume reduction	0.00	5.94	222	0	4535	40	0.07	2.71	1.11	1.67	~~Tot. Wet Swale #1~~

10. ~~Wet Swale (Special Plain)~~

HYRDRODYNAMIC MANUFACTURED DEVICES	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	6,345	0	6345	20	2.36	0.00	0.47	1.89	
~~Tot. Wet Swale #1 (Spec #14)~~	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	4,535	0	4535	20	1.67	0.00	0.33	1.33	

TOTAL IMPERVIOUS COVER TREATED (ac)	2.00
TOTAL TURF AREA TREATED (ac)	7.47

AREA CHECK OK.

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	3.49
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	4.51

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	11.97
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	20.05

Drainage Area B

Drainage Area B Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	10.36	0.00	0.00	10.36	0.20
Impervious Cover (acres)	0.00	3.01	0.00	0.00	3.01	0.95
				Total	13.37	

Post Development Treatment Volume (cf) 17901

14. Manufactured BMP

14. Isolator Row	impervious acres draining to device	0% runoff volume reduction	0.00	3.01	0	0	10380	40	0.00	6.51	2.61	3.91	~~Tot. Wet Swale #1~~ HYRDRODYNAMIC MANUFACTURED DEVICES
	turf acres draining to device	0% runoff volume reduction	0.00	10.36	0	0	7521	40	0.00	4.72	1.89	2.83	~~Tot. Wet Swale #1~~

10. ~~Wet Swale (Special Plain)~~

HYRDRODYNAMIC MANUFACTURED DEVICES	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.00	10,380	0	10380	20	3.91	0.00	0.78	3.13	
~~Tot. Wet Swale #1 (Spec #14)~~	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.00	7,521	0	7521	20	2.83	0.00	0.57	2.27	

TOTAL IMPERVIOUS COVER TREATED (ac)	3.01
TOTAL TURF AREA TREATED (ac)	10.36

AREA CHECK OK.

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	5.84
TOTAL PHOSPHORUS REMOVAL IN D.A. B (lb/yr)	5.84

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. B	20.09
TOTAL NITROGEN REMOVAL IN D.A. B (lb/yr)	20.09

Drainage Area C

Drainage Area C Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	3.96	0.00	0.06	4.02	0.20
Impervious Cover (acres)	0.00	0.63	0.00	0.00	0.63	0.95
				Total	4.65	

Post Development Treatment Volume (cf) 5102

5. Dry Swale

5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.63	0	869	1304	20	0.00	1.36	0.71	0.65	
	turf acres draining to dry swale	40% runoff volume reduction	0.40	4.02	0	1172	1758	20	0.00	1.84	0.96	0.88	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.63
TOTAL TURF AREA TREATED (ac)	4.02

AREA CHECK OK.

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. C	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. C (lb/yr)	1.66

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. C	0.00
TOTAL NITROGEN REMOVAL IN D.A. C (lb/yr)	22.91

Drainage Area D

Drainage Area D Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.96	0.00	0.00	0.96	0.20
Impervious Cover (acres)	0.00	0.56	0.00	0.00	0.56	0.95
				Total	1.52	

Post Development Treatment Volume (cf) 2628

9. Sheetflow to Filter/Open Space

9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.56	0	1448	483	0	0.00	1.21	0.91	0.30	
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.96	0	523	174	0	0.00	0.44	0.33	0.11	

TOTAL IMPERVIOUS COVER TREATED (ac)	0.56
TOTAL TURF AREA TREATED (ac)	0.96

AREA CHECK OK.

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. D (lb/yr)	1.24

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. D	0.00
TOTAL NITROGEN REMOVAL IN D.A. D (lb/yr)	11.80

* NOTE: THIS DESIGN IS PRELIMINARY AND SUBJECT TO CHANGE AT THE TIME OF FINAL ENGINEERING. THE PHOSPHORUS LOAD REDUCTION IS SUBJECT TO CHANGE AT FINAL DESIGN. THE FINAL ENGINEERING DESIGN WILL MEET THE MINIMUM REQUIREMENTS OF CHAPTER 124-4 FOR NEW DEVELOPMENT PROJECTS BY EXCEEDING THE MINIMUM REQUIRED PHOSPHORUS LOAD REDUCTION.

Site Results

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	2.00	3.01	0.63	0.56	0.00	OK.
IMPERVIOUS COVER TREATED	2.00	3.01	0.63	0.56	0.00	OK.
TURF AREA	7.47	10.36	4.02	0.96	0.00	OK.
TURF AREA TREATED	7.47	10.36	4.02	0.96	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Phosphorus

TOTAL TREATMENT VOLUME (cf)	42,094
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	12.95
RUNOFF REDUCTION (cf)	5452
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	13.25
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	13.19
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 0.3 LB/YEAR!!

Nitrogen (for information purposes)

TOTAL TREATMENT VOLUME (cf)	42,094
RUNOFF REDUCTION (cf)	5452
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	74.85
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	114.35

Drainage Area A

		A soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	7.47	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	2.00	0.00	0.00
	CN	98	98	98	98
				Weighted CN	S
				69	4.49

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ (in) with no Runoff Reduction	0.46	0.76	1.64
$RV_{Developed}$ (in) with Runoff Reduction	0.43	0.72	1.80
Adjusted CN	68	68	68

Drainage Area B

		A soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	10.36	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	3.01	0.00	0.00
	CN	98	98	98	98
				Weighted CN	S
				69	4.49

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ (in) with no Runoff Reduction	0.46	0.76	1.64
$RV_{Developed}$ (in) with Runoff Reduction	0.48	0.76	1.84
Adjusted CN	69	69	69

Drainage Area C

		A soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	3.96	0.00	0.06
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.63	0.00	0.00
	CN	98	98	98	98
				Weighted CN	S
				66	5.15

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ (in) with no Runoff Reduction	0.37	0.63	1.62
$RV_{Developed}$ (in) with Runoff Reduction	0.25	0.51	1.50
Adjusted CN	62	63	64

Drainage Area D

		A soils	B Soils	C Soils	D Soils
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.96	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.56	0.00	0.00
	CN	98	98	98	98
				Weighted CN	S
				75	3.33

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER COUNTY COMMENTS

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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No. 33635
2/18/16
PROFESSIONAL ENGINEER

VRRM & BMP TREATMENT VOLUME CALCULATIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: N/A
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No.
8.4 OF 9

102267

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ALLOWABLE RELEASE RATE CALCULATIONS:

PRE-DEVELOPMENT					RV and Q		
DRAINAGE AREA:	DESCRIPTION	AREA (Ac.)	CN	WEIGHTED CN	1-yr	2-yr	10-yr
Area 1A, Ashburn Overlook	IMPERVIOUS	0.15	98				
	OPEN SPACE AREA (C SOILS)	1.71	74				
	OPEN SPACE AREA (D SOILS)	1.12	80				
	WOODED AREA (C SOILS)	2.72	70				
	WOODED AREA (D SOILS)	3.89	77				
	TOTAL	9.59		75	23258	34590	74391
					6.76	10.52	23.60
Area 1B, VDOT Improvements	IMPERVIOUS	1.04	98				
	OPEN SPACE AREA (D SOILS)	3.75	80				
	WOODED AREA (D SOILS)	5.87	77				
	TOTAL	10.66		80	35201	49826	98889
					8.42	12.20	24.72
Area 1C, Adjacent Property Bypass	IMPERVIOUS	0.02	98				
	OPEN SPACE AREA (D SOILS)	0.78	80				
	WOODED AREA (D SOILS)	0.03	77				
	TOTAL	0.83		80	2741	3879	7700
					0.66	0.95	1.93
POST-DEVELOPMENT							
DRAINAGE AREA:	DESCRIPTION	AREA (Ac.)	CN	WEIGHTED CN			
Area 1A, Ashburn Overlook	IMPERVIOUS	4.35	98				
	OPEN SPACE AREA (C SOILS)	2.36	74				
	OPEN SPACE AREA (D SOILS)	2.88	80				
	TOTAL	9.59		87	43609	58184	104484
					21.56	28.58	50.10
Area 1B, VDOT Improvements	IMPERVIOUS	2.90	98				
	OPEN SPACE AREA (D SOILS)	2.15	80				
	WOODED AREA (D SOILS)	5.61	77				
	TOTAL	10.66		83	39126	53941	102430
					19.50	26.72	50.08

PRE-DEVELOPMENT (FORESTED)	RV and Q

1-YR - Area 1A
$Q_{DEVELOPED} \leq$ I.F. * {($Q_{PRE\text{-}DEVELOPED}$ * $RV_{PRE\text{-}DEVELOPED}$) / $RV_{DEVELOPED}$}
Q_1 < 0.8 * (6.76 cfs * 23,258 cf) / 43,609 cf
Q_1 < 2.88 cfs

1-YR - Area 1B
$Q_{DEVELOPED} \leq$ I.F. * {($Q_{PRE\text{-}DEVELOPED}$ * $RV_{PRE\text{-}DEVELOPED}$) / $RV_{DEVELOPED}$}
Q_1 < 1.0 * (8.42 cfs * 35,201 cf) / 39,126 cf
Q_1 < 7.58 cfs

1-YR - Area 1B	**Q_1 = .66 cfs**

1-YR = Combined Q1 from 1A, 1B and 1C

1-YR	11.12 cfs
2-YR*	
10-YR*	

* from Hydraflow

POST-DEVELOPMENT DRAINAGE AREA SUMMARY:

POST-DEVELOPMENT				
DRAINAGE AREA:	DESCRIPTION	AREA (Ac.)	CN	WEIGHTED CN
ON-SITE TO BIORETENTION (& EX. POND)	GRASS AREA (B SOILS)	2.53	61	
	IMPERVIOUS	0.27	98	
		2.80		65
ON-SITE TO UG SWM/BMP 1 (& EX. POND	IMPERVIOUS	1.79	98	
	GRASS AREA (B SOILS)	4.96	61	
	TOTAL	6.75		71
ON-SITE UNCONTROLLED TO EX. POND	GRASS AREA (B SOILS)	0.11	61	
	TOTAL	0.11		61
BY-PASS TO EX. POND	1 ACRE LOTS (B SOILS)	5.94	68	
	1 ACRE LOTS (D SOILS)	1.49	84	
	TOTAL	7.43		71
ON-SITE TO UG SWM/BMP 2	IMPERVIOUS	4.20	98	
	GRASS AREA (B SOILS)	9.90	61	
	TOTAL	14.10		72
ON-SITE TO DRY SWALE	IMPERVIOUS	0.60	98	
	GRASS AREA (B SOILS)	4.04	61	
	GRASS AREA (D SOILS)	0.06	80	
	TOTAL	4.70		66
TO CONSERVED OPEN SPACE	IMPERVIOUS	0.55	98	
	GRASS AREA (B SOILS)	10.95	61	
	TOTAL	11.50		63
UNCONTROLLED TO OUTFALL 1	IMPERVIOUS	0.30	98	
	GRASS AREA (B SOILS)	2.34	61	
	TOTAL	2.64		65
BY-PASS TO OUTFALL 1	1 ACRE LOTS (B SOILS)	14.97	68	
	1 ACRE LOTS (C SOILS)	0.35	79	
	TOTAL	15.32		66

NOTES:
1. STORMWATER FACILITIES SHALL BE DESIGNED TO ACCOMODATE 625 sf OF ADDITIONAL IMPERVIOUS AREA ON EACH LOT FOR FUTURE IMPROVEMENTS BY FUTURE PROPERTY OWNERS.

NOTES:
1. DRAINAGE DIVIDES, DRAINAGE AREAS, CN-VALUES, AND SWM/BMP CONTROL MEASURES (TYPE/LOCATION) SHOWN ARE PRELIMINARY AND ARE SUBJECT TO CHANGE DURING FINAL ENGINEERING. THE INFORMATION SHOWN HEREON IS A CONCEPTUAL DESIGN TO PRESENT AN OPTION FOR MEETING WATER QUALITY, STORMWATER CHANNEL & FLOOD PROTECTION CRITERIA. FINAL DESIGN WILL BE ENGINEERED TO MEET WATER QUALITY AND CHANNEL AND FLOOD PROTECTION REQUIREMENTS (CHAPTER 124-4 OF COUNTY CODE).

POST-DEVELOPED SUMMARY:

Hydrograph Return Period Recap

1

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs) 1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Hydrograph Description
1	SCS Runoff	-------	0.483	3.452	-------	-------	28.46	-------	-------	-------	FORESTED ON-SITE TO OUTFALL
2	SCS Runoff	-------	5.974	14.30	-------	-------	51.88	-------	-------	-------	BY-PASS TO OUTFALL A
3	SCS Runoff	-------	0.118	0.562	-------	-------	4.452	-------	-------	-------	FORESTED ON-SITE TO OUTFALL
4	SCS Runoff	-------	0.250	0.434	-------	-------	1.121	-------	-------	-------	BY-PASS TO OUTFALL B
7	SCS Runoff	-------	13.28	24.39	-------	-------	66.42	-------	-------	-------	(ALLOWABLE) ON-SITE TO OUTFA
8	SCS Runoff	-------	5.065	8.751	-------	-------	22.42	-------	-------	-------	(ALLOWABLE) ON-SITE TO OUTFA
12	SCS Runoff	-------	1.371	2.712	-------	-------	8.105	-------	-------	-------	ON-SITE TO BIORETENTION 1
13	SCS Runoff	-------	5.430	10.54	-------	-------	25.44	-------	-------	-------	ON-SITE TO UG SWM/BMP 1
14	SCS Runoff	-------	3.067	5.157	-------	-------	12.85	-------	-------	-------	BY-PASS TO UG SWM/BMP 1
15	Combine	12, 13, 14	10.13	17.27	-------	-------	44.18	-------	-------	-------	COMBINED TO UG SWM/BMP 1
17	Reservoir	15	0.240	0.932	-------	-------	11.35	-------	-------	-------	UG SWM/BMP 1
19	SCS Runoff	-------	11.05	19.10	-------	-------	48.94	-------	-------	-------	ON-SITE TO UG SWM/BMP 2
20	SCS Runoff	-------	1.641	3.140	-------	-------	9.019	-------	-------	-------	BY-PASS TO UG SWM/BMP 2
21	Combine	19, 20	12.16	21.29	-------	-------	56.20	-------	-------	-------	COMBINED TO UG SWM/BMP 2
23	Reservoir	21	0.238	0.362	-------	-------	4.950	-------	-------	-------	UG SWM/BMP 2
25	SCS Runoff	-------	1.200	2.503	-------	-------	7.845	-------	-------	-------	ON-SITE TO CONSERVED OPEN S
27	SCS Runoff	-------	1.396	2.761	-------	-------	8.250	-------	-------	-------	ON-SITE UNCONTROLLED TO OUT
28	SCS Runoff	-------	3.497	9.685	-------	-------	39.41	-------	-------	-------	OFF-SITE UNCONTROLLED TO OU
30	Combine	17, 23, 25, 27, 28,	4.849	12.78	-------	-------	54.08	-------	-------	-------	OUTFALL A
32	SCS Runoff	-------	2.526	4.791	-------	-------	13.70	-------	-------	-------	ON-SITE TO DRY SWALE
33	SCS Runoff	-------	0.016	0.068	-------	-------	0.327	-------	-------	-------	BY-PASS TO DRY SWALE
34	Combine	32, 33	2.539	4.853	-------	-------	14.03	-------	-------	-------	COMBINED TO DRY SWALE
36	Reservoir	34	0.100	0.330	-------	-------	3.136	-------	-------	-------	DRY SWALE

Proj. file: BROOKS PROPERTY.gpw — Wednesday, 10 / 14 / 2015

ALLOWABLE RELEASE RATE SUMMARY:

PEAK FLOWS FROM THE 1-YEAR, 2-YEAR AND 10-YEAR STORM EVENTS HAVE BEEN DETAINED ON-SITE BELOW ALLOWABLE RELEASE RATES (CALCULATED ON THIS SHEET) IN ACCORDANCE WITH THE DETENTION METHOD (124-4-4(d) OF THE COUNTY CODE).

UNDERGROUND DETENTION & DRY SWALE VOLUME REPORTS:

Pond Report

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Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Pond No. 1 - UG SWM/BMP 1

Pond Data

UG Chambers -Invert elev. = 341.00 ft , Rise x Span = 6.00 x 6.00 ft , Barrel Len = 120.00 ft , No. Barrels = 7 , Slope = 0.00% , Headers = Yes
Encasement -Invert elev. = 337.00 ft , Width = 9.00 ft, Height = 10.00 ft , Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	337.00	n/a	0	0
1.00	338.00	n/a	3,477	3,477
2.00	339.00	n/a	3,479	6,955
3.00	340.00	n/a	3,479	10,434
4.00	341.00	n/a	3,479	13,912
5.00	342.00	n/a	5,276	19,189
6.00	343.00	n/a	6,465	25,654
7.00	344.00	n/a	6,893	32,547
8.00	345.00	n/a	6,892	39,439
9.00	346.00	n/a	6,465	45,903
10.00	347.00	n/a	5,271	51,175

Culvert / Orifice Structures

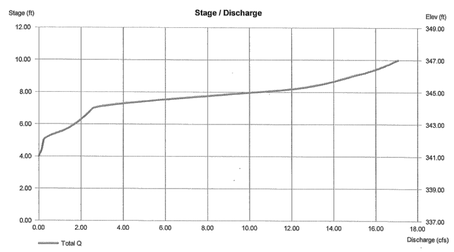
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	8.00	0.00
Span (in)	= 18.00	3.00	8.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 340.50	341.00	342.00	0.00
Length (ft)	= 130.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.00	3.00	0.00	0.00
Crest El. (ft)	= 346.00	344.00	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (rc) and submergence (s).



Pond Report

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Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Pond No. 3 - UG SWM/BMP 2

Pond Data

UG Chambers -Invert elev. = 323.00 ft , Rise x Span = 6.00 x 6.00 ft , Barrel Len = 180.00 ft , No. Barrels = 8 , Slope = 0.00% , Headers = Yes
Encasement -Invert elev. = 321.00 ft , Width = 9.00 ft, Height = 9.00 ft , Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	321.00	n/a	0	0
0.90	321.90	n/a	5,129	5,129
1.80	322.80	n/a	5,134	10,263
2.70	323.70	n/a	6,887	17,150
3.60	324.60	n/a	9,138	26,288
4.50	325.50	n/a	9,981	36,269
5.40	326.40	n/a	10,249	46,518
6.30	327.30	n/a	10,036	56,554
7.20	328.20	n/a	9,264	65,818
8.10	329.10	n/a	7,261	73,079
9.00	330.00	n/a	5,134	78,213

Culvert / Orifice Structures

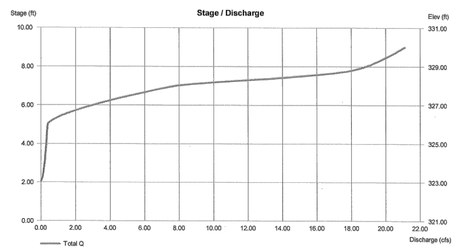
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	0.00	0.00
Span (in)	= 18.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 323.00	323.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 6.00	1.00	0.00	0.00
Crest El. (ft)	= 328.00	326.00	0.00	0.00
Weir Coeff.	= 2.60	2.60	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (rc) and submergence (s).



Pond Report

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Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Pond No. 5 - DRY SWALE

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 328.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	328.00	1,322	0	0
1.00	329.00	4,922	2,931	2,931
2.00	330.00	10,000	7,312	10,243

Culvert / Orifice Structures

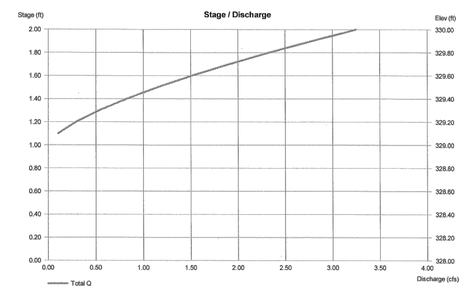
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	0.00	0.00	0.00
Span (in)	= 18.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 324.00	0.00	0.00	0.00
Length (ft)	= 430.00	0.00	0.00	0.00
Slope (%)	= 5.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.25	0.00	0.00	0.00
Crest El. (ft)	= 329.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (rc) and submergence (s).



DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS

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COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

SWM COMPUTATIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: N/A
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No. 8.5 OF 9

102267

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DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
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2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS

GEOTECHNICAL ENGINEER ASSESSMENT OF EX. FARM POND

Geotechnical Solutions, Inc.

Geotechnical Engineering
Environmental Consulting • Construction Materials

October 5, 2015

Mr. Mark Fields
Director, Land Development & Acquisitions
BASHEER/EDGEMOORE PROPERTIES, LLC
2071 Chain Bridge Road, Suite 510
Vienna, VA 22182

GSI Project No. GP-14977

Reference: Dam Embankment Observations
Brooks Property
Fairfax County, Virginia

Dear Mr. Fields:

As requested, Geotechnical Solutions, Inc. (GSI) has completed a reconnaissance of the existing dam embankment at the Brooks Property project located in Fairfax County, Virginia.

Background

We understand the subject property is currently known as Haydown Farm and consists of two (2) parcels totaling approximately 51.97 acres. The site is located east of Springvale Road in Fairfax County, VA 22066. The site is located just north of the intersection of Springvale Road and Parkerhouse Drive. The property is located in a primarily residential area. Surrounding property uses include single-family residential development on all sides. Based on the conceptual site layout plans prepared by Christopher Consultants, Ltd., dated April 24, 2015, the site is planned for the development of 20 single homes with all associated paved roadways, SWM pond, and site underground utilities. The existing farm pond, which is centrally located on the property, is to remain.

Observations

A GSI Professional Geologist performed a site reconnaissance of the existing dam embankment on May 12, 2015 to assess the superficial conditions along the exposed portions of the dam. Several photographs of the observed site conditions are attached. A steel probe was utilized to assess the relative strength of the embankment soils at various locations.

The upper portion of emergency spillway located at the northwest end of the dam embankment appears to be in good condition as shown in Figure 1. However, an erosion channel approximately 2 feet wide and 4 to 6 inches deep was observed in the downstream half of the emergency spillway (Figure 2).

3859 Centerview Drive, Suite 160, Chantilly, VA 20151 • 703-657-0014 • F: 703-657-0666 • www.geotechnical-solutions.com

The upstream slope of the dam embankment (Figures 1 and 3) appear to be stable. Probes along the upstream slope appear to indicate firm soil conditions. The thick grassy vegetation at the normal pool elevation appears to limit erosion of the embankment due to wave action. However, new bamboo shoots are emerging from the upstream slope in the southeastern half of the dam embankment near the normal pool elevation. This new vegetation may provide conduits for water seepage through the dam if not maintained properly.

The downstream slope of the dam embankment (Figures 4, 5, and 6) appear to be stable. Probes along the downstream slope appear to indicate firm soil conditions. Seeps or wet areas along the toe of the dam embankment were not observed, except within 2 to 3 feet around the principal spillway for the pond (Figures 7, 8 and 9). Additionally, no water appeared to be seeping or flowing from the principal spillway pipe. A valve for controlling the flow of water through the principal spillway was not observed on the upstream side of the dam and, if present is likely below the water surface. The central and southeastern portions of the downstream embankment are covered with dense bamboo. The roots of this vegetation may provide conduits for water seepage through the dam if not maintained properly.

Conclusions and Recommendations

Based on our observations, the existing dam embankment appears for the most part to be structurally stable. However, the existing bamboo vegetation must be removed in its entirety from the dam and its vicinity. Since bamboo is an aggressive spreading plant through root growth, the removal of the root system should be observed by a qualified soils technician or engineer under the supervision of the geotechnical engineer of record. Limited surficial fill may be necessary following removal of the root system. This limited fill placement should be observed and tested by a qualified soils technician.

We thank you for your confidence in our services. We will remain available for future consultation during the design and construction phases of the project. Should you have any questions regarding the content of this report, please do not hesitate to call us at (703) 657-0014.

Respectfully submitted,
GEOTECHNICAL SOLUTIONS, INC.

COMMONWEALTH OF VIRGINIA
SAMIR A. ALQUTRI
Lic. No. 031076
OCT 05 2015
PROFESSIONAL ENGINEER

James T. Kline, P.G.
Project Manager

Samir A. Alqutri, P.E.
Principal Engineer

Attachments: Dam Photographs

Geotechnical Solutions, Inc.

1-YR POST-DEVELOPED HYDROGRAPH

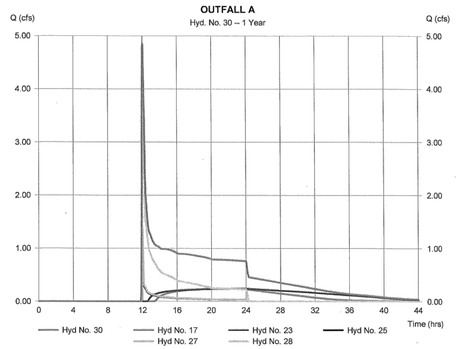
Hydrograph Report 24

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Hyd. No. 30

OUTFALL A

Hydrograph type	= Combine	Peak discharge	= 4.849 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 59,326 cuft
Inflow hyds.	= 17, 23, 25, 27, 28	Contrib. drain. area	= 30.050 ac



2-YR POST-DEVELOPED HYDROGRAPH

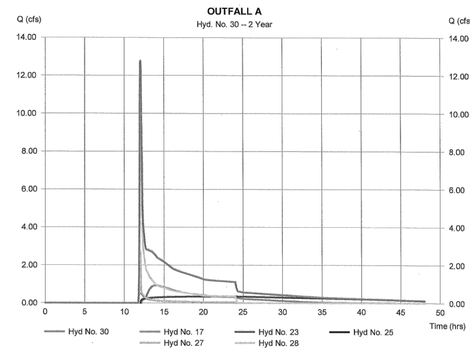
Hydrograph Report 49

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Hyd. No. 30

OUTFALL A

Hydrograph type	= Combine	Peak discharge	= 12.78 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 1 min	Hyd. volume	= 113,962 cuft
Inflow hyds.	= 17, 23, 25, 27, 28	Contrib. drain. area	= 30.050 ac



10-YR POST-DEVELOPED HYDROGRAPH

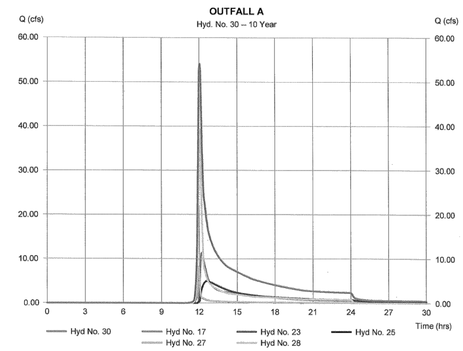
Hydrograph Report 73

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2015 by Autodesk, Inc. v10.4 — Wednesday, 10 / 14 / 2015

Hyd. No. 30

OUTFALL A

Hydrograph type	= Combine	Peak discharge	= 54.08 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 339,958 cuft
Inflow hyds.	= 17, 23, 25, 27, 28	Contrib. drain. area	= 30.050 ac



MINIMUM STORMWATER INFORMATION FOR REZONING, SPECIAL EXCEPTION, SPECIAL PERMIT AND DEVELOPMENT PLAN APPLICATIONS

The following information is required to be shown or provided in all zoning applications; or a waiver request of the submission requirement with justification shall be attached. Note: Waivers will be acted upon separately. Failure to adequately address the required submission information may result in a delay in processing this application.

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (8-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)
Development Plans PRC District (16-302.2 & 4L)
FDP - P Districts (except PRC) 916-502.1F & 1Q)
Special Exceptions (9-011 2J & 2L)
Commercial Revitalization Districts (9-622 2A (12)&(14))
PRC Plan (16-303 1E & 10)
Amendments (18-202 10F & 10I)

☑ 1. Plat is at a minimum scale of 1"=50' (unless it is depicted on one sheet with a minimum scale of 1"=100).

☑ 2. A graphic depicting the stormwater management facility(ies) and limits of clearing and grading to accommodate the stormwater management facility(ies), storm drainage pipe systems and outlet protection, pond spillways, access roads, site outfalls, energy dissipation devices, and stream stabilization measures as shown on Sheet 8.2

☑ 3. Provide: (SEE THIS SHEET FOR TABLE)

Facility Name/ Type & No.	On-Site area served (acres)	Off-Site are served (acres)	Drainage area (acres)	Footprint area (sf.)	Storage Volume (cf.)	If pond, dam height (ft.)
(e.g., dry pond A. infil. trench, underground vault, etc.)						
					Totals:	

☑ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 8.2
Pond inlet and outlet pipe systems are shown on Sheet 8.2

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 6.1, 6.2 AND 8.2
Type of maintenance access road surface noted on the plat is ____(asphalt, geoblock, [gravel] etc.)

☑ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 4.1-4.2 & 7.1-7.2

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 8.3

☑ 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point which is at least 100 times the site area or which has a drainage area of at least one square mile (640 acres) is provided on Sheet 8.7

☑ 9. A description of how the outfall requirements, including known changes to contributing drainage areas (i.e. drainage diversions), of the Public Facilities Manual will be satisfied is provided on Sheet 8.3 & 8.7

☑ 10. Existing topography with maximum contour intervals of two (2) feet and a note as to whether it is an air survey or field run is provided on Sheets: 2.1 & 2.2

☐ 11. A submission waiver is requested for _____

☐ 12. Stormwater management is not required because _____

Revised 2-21-2006

FACILITY NAME/TYPE & NUMBER	ONSITE AREA SERVED (AC.)	OFFSITE AREA SERVED (AC.)	DRAINAGE AREA (AC.)	FOOTPRINT AREA (S.F.)	STORAGE VOLUME (C.F.)	IF POND, DAM HEIGHT (FT.)
ISOLATOR ROW	14.10	4.00	18.10	12,960	78,213	N/A
ISOLATOR ROW	9.56	4.76	14.32	7,600	51,175	N/A
DRY SWALE	4.51	0.17	4.68	10,000	10,243	N/A
TOTALS:	28.17	8.93	37.1	30,560	139,631	

NOTES:
1. DRAINAGE DIVIDES, DRAINAGE AREAS, CN-VALUES, AND SWM/BMP CONTROL MEASURES (TYPE/LOCATION) SHOWN ARE PRELIMINARY AND ARE SUBJECT TO CHANGE DURING FINAL ENGINEERING. THE INFORMATION SHOWN HEREON IS A CONCEPTUAL DESIGN TO PRESENT AN OPTION FOR MEETING WATER QUALITY, STORMWATER CHANNEL & FLOOD PROTECTION CRITERIA. FINAL DESIGN WILL BE ENGINEERED TO MEET WATER QUALITY AND CHANNEL AND FLOOD PROTECTION REQUIREMENTS (CHAPTER 124-4 OF COUNTY CODE).

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COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

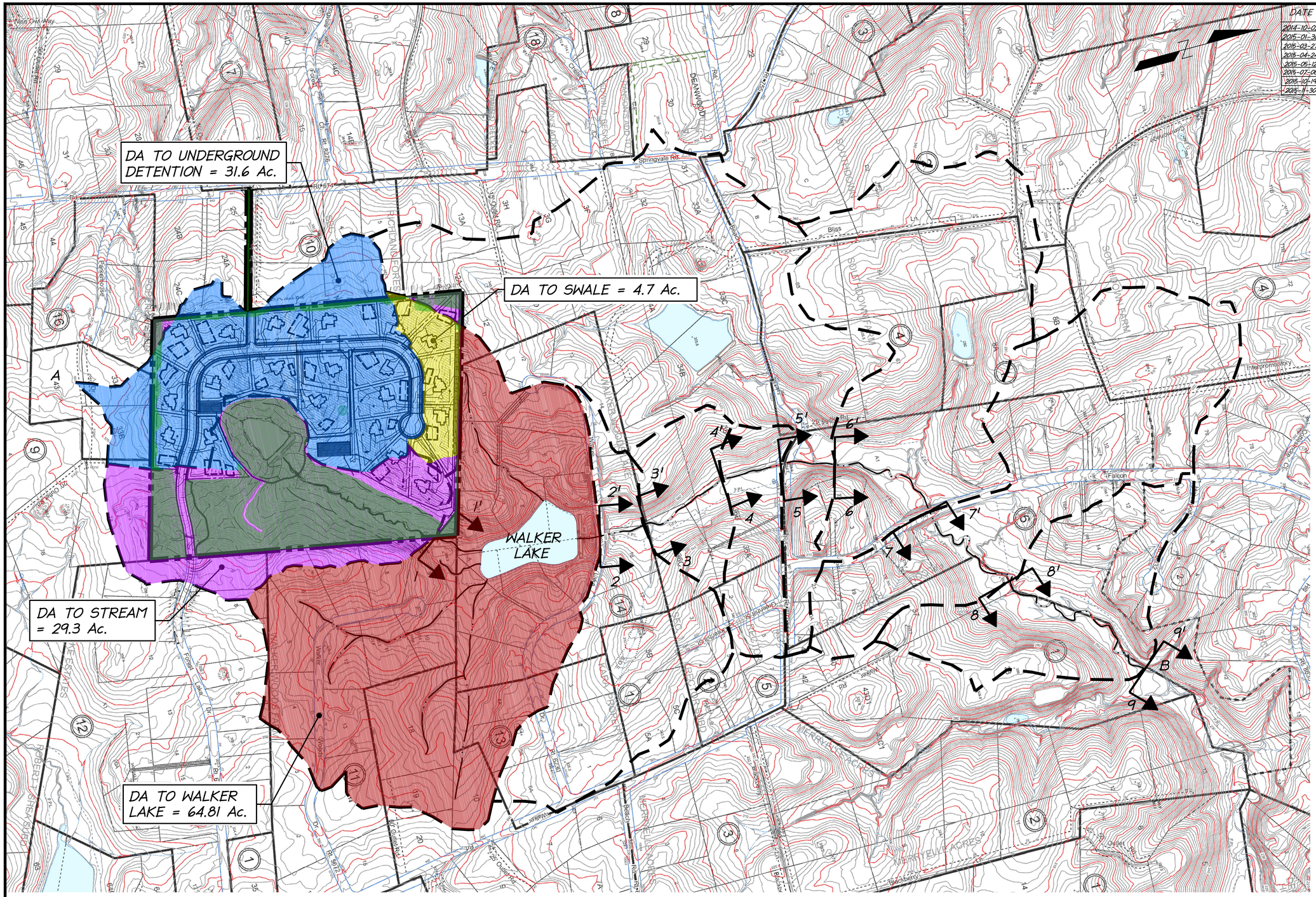
SWM COMPUTATIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: 1" = 100'
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No. 8.6 OF 9

102267

P:\Projects\13171\001\01\102267 GDP\8.6-SWM COMPUTATIONS.dwg, 11/30/2015 10:58:36 AM, jackscanlon, 1:1, christopher consultants, ltd.



DISTANCE FROM POINT A (TOP OF DRAINAGE SHED) TO POINT B (CROSS SECTION 9 LOCATION) = 1.4 mi

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS

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COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

OUTFALL MAP

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

ADEQUATE OUTFALL NARRATIVE:

THE SUBJECT SITE CONSISTS OF 31.79 ACRES AND DRAINS TO THE NORTHEAST, DISCHARGING CONCENTRATED RUNOFF TO AN UNNAMED TRIBUTARY IN THE POND BRANCH WATERSHED. STORM WATER ENTERING THIS UNNAMED TRIBUTARY TRAVELS DOWNSTREAM APPROXIMATELY 1.7 MILES AND OUTFALLS INTO THE POTOMAC RIVER.

FLOOD AND CHANNEL PROTECTION COMPLIANCE HAS BEEN OUTLINED IN THE NARRATIVES INCLUDED ON SHEETS 8.3 AND 8.5-8.6 OF THIS PLAN. IN ACCORDANCE WITH THE DETENTION METHOD, DOWNSTREAM ANALYSIS IS LIMITED TO PROVIDING CROSS-SECTIONS TO SHOW A DEFINED CHANNEL. A DEFINED CHANNEL IS SHOWN FOR THE EXTENT OF REVIEW BY THE CROSS-SECTIONS INCLUDED ON SHEET 8.8 OF THIS PLAN, CROSS SECTION LOCATIONS ARE INDICATED ON THIS SHEET. 100-YEAR FLOWS HAVE BEEN CHECKED THROUGH THE CROSS-SECTIONS SHOWN TO VERIFY THAT EXISTING DWELLINGS OR BUILDINGS DOWNSTREAM WILL NOT BE FLOODED OR ADVERSELY IMPACTED BY THE 100-YEAR STORM EVENT FOR THE EXTENT OF REVIEW.

THEREFORE, IT IS THE ENGINEER'S OPINION THAT ADEQUATE OUTFALL REQUIREMENTS FOR THE SUBJECT PROJECT HAVE FOUND TO BE MET BY THE PROPOSED SYSTEM.

GRAPHIC SCALE

-250 0 125 250 500 1000

(IN FEET)
1 inch = 250 ft.

PROJECT NO: 13171.001.01
SCALE: 1" = 250'
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No. 8.7 OF 9

102267

P:\Projects\13171\001\102267 GDP\8.7-OUTFALL MAP.dwg, 11/30/2015 10:58:16 AM, jackscanlon, 1:1, christopher consultants, ltd.

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS

DOWNSTREAM CHANNEL CROSS SECTIONS

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Tuesday, Sep 30 2014

Cross Section 1-1

User-defined		Highlighted	
Invert Elev (ft)	= 306.56	Depth (ft)	= 1.17
Slope (%)	= 1.10	Q (cfs)	= 33.15
N-Value	= 0.024	Area (sqft)	= 7.57
		Velocity (ft/s)	= 4.38
Calculations		Wetted Perim (ft)	= 13.28
Compute by:	Known Q	Crit Depth, Yc (ft)	= 1.18
Known Q (cfs)	= 33.15	Top Width (ft)	= 12.94
		EGL (ft)	= 1.47

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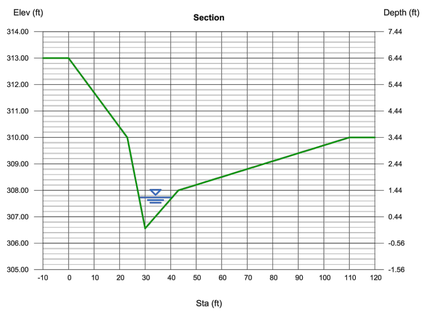

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 2-2

User-defined		Highlighted	
Invert Elev (ft)	= 280.74	Depth (ft)	= 2.81
Slope (%)	= 1.00	Q (cfs)	= 120.01
N-Value	= 0.030	Area (sqft)	= 17.88
		Velocity (ft/s)	= 6.71
Calculations		Wetted Perim (ft)	= 11.30
Compute by:	Known Q	Crit Depth, Yc (ft)	= 2.54
Known Q (cfs)	= 120.01	Top Width (ft)	= 8.73
		EGL (ft)	= 3.51

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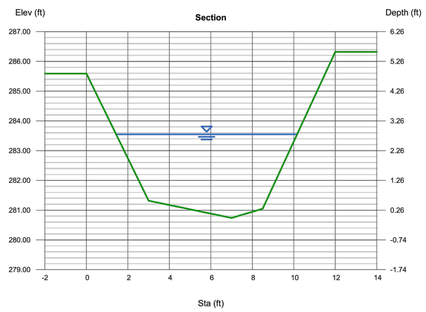

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 3-3

User-defined		Highlighted	
Invert Elev (ft)	= 280.74	Depth (ft)	= 2.84
Slope (%)	= 1.77	Q (cfs)	= 163.56
N-Value	= 0.030	Area (sqft)	= 18.15
		Velocity (ft/s)	= 9.01
Calculations		Wetted Perim (ft)	= 11.37
Compute by:	Known Q	Crit Depth, Yc (ft)	= 3.00
Known Q (cfs)	= 163.56	Top Width (ft)	= 8.77
		EGL (ft)	= 4.10

(Sta, El, n)-(Sta, El, n)...
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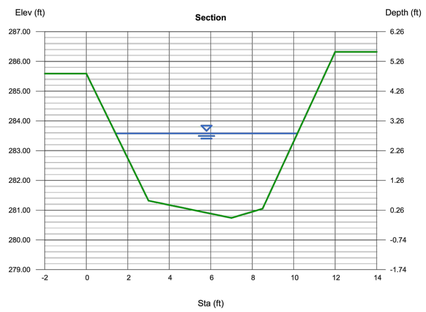

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 4-4

User-defined		Highlighted	
Invert Elev (ft)	= 274.48	Depth (ft)	= 3.33
Slope (%)	= 1.60	Q (cfs)	= 201.86
N-Value	= 0.030	Area (sqft)	= 22.34
		Velocity (ft/s)	= 9.03
Calculations		Wetted Perim (ft)	= 12.85
Compute by:	Known Q	Crit Depth, Yc (ft)	= 3.45
Known Q (cfs)	= 201.86	Top Width (ft)	= 10.09
		EGL (ft)	= 4.60

(Sta, El, n)-(Sta, El, n)...
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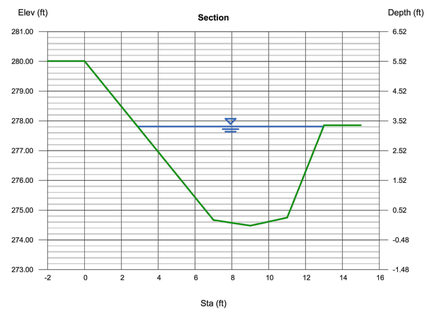

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 5-5

User-defined		Highlighted	
Invert Elev (ft)	= 269.20	Depth (ft)	= 3.72
Slope (%)	= 0.60	Q (cfs)	= 209.33
N-Value	= 0.030	Area (sqft)	= 33.33
		Velocity (ft/s)	= 6.28
Calculations		Wetted Perim (ft)	= 15.89
Compute by:	Known Q	Crit Depth, Yc (ft)	= 3.07
Known Q (cfs)	= 209.33	Top Width (ft)	= 13.11
		EGL (ft)	= 4.33

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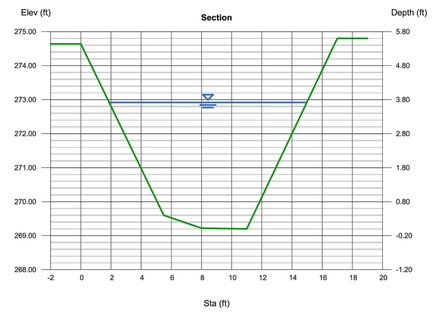

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 6-6

User-defined		Highlighted	
Invert Elev (ft)	= 264.24	Depth (ft)	= 2.68
Slope (%)	= 1.70	Q (cfs)	= 286.80
N-Value	= 0.030	Area (sqft)	= 30.26
		Velocity (ft/s)	= 9.48
Calculations		Wetted Perim (ft)	= 16.99
Compute by:	Known Q	Crit Depth, Yc (ft)	= 2.96
Known Q (cfs)	= 286.80	Top Width (ft)	= 15.39
		EGL (ft)	= 4.08

(Sta, El, n)-(Sta, El, n)...
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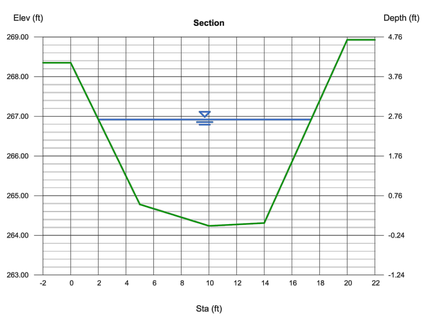

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 7-7

User-defined		Highlighted	
Invert Elev (ft)	= 257.22	Depth (ft)	= 2.37
Slope (%)	= 2.50	Q (cfs)	= 329.70
N-Value	= 0.030	Area (sqft)	= 31.31
		Velocity (ft/s)	= 10.53
Calculations		Wetted Perim (ft)	= 20.01
Compute by:	Known Q	Crit Depth, Yc (ft)	= 2.84
Known Q (cfs)	= 329.70	Top Width (ft)	= 18.50
		EGL (ft)	= 4.09

(Sta, El, n)-(Sta, El, n)...
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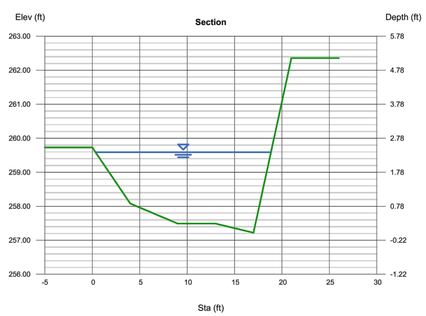

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 8-8

User-defined		Highlighted	
Invert Elev (ft)	= 247.53	Depth (ft)	= 2.85
Slope (%)	= 0.60	Q (cfs)	= 386.60
N-Value	= 0.030	Area (sqft)	= 59.93
		Velocity (ft/s)	= 6.45
Calculations		Wetted Perim (ft)	= 27.43
Compute by:	Known Q	Crit Depth, Yc (ft)	= 2.39
Known Q (cfs)	= 386.60	Top Width (ft)	= 25.58
		EGL (ft)	= 3.50

(Sta, El, n)-(Sta, El, n)...
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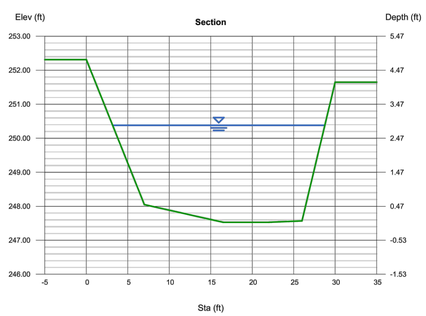

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. — Monday, Sep 29 2014

Cross Section 9-9

User-defined		Highlighted	
Invert Elev (ft)	= 236.64	Depth (ft)	= 2.42
Slope (%)	= 1.80	Q (cfs)	= 399.52
N-Value	= 0.030	Area (sqft)	= 41.00
		Velocity (ft/s)	= 9.74
Calculations		Wetted Perim (ft)	= 23.03
Compute by:	Known Q	Crit Depth, Yc (ft)	= 2.74
Known Q (cfs)	= 399.52	Top Width (ft)	= 21.34
		EGL (ft)	= 3.90

(Sta, El, n)-(Sta, El, n)...
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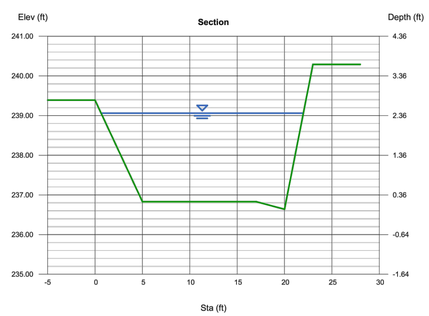

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phone 703.273.6820 · fax 703.273.7636

COMMONWEALTH OF VIRGINIA
JOHN E. SCANLON
Lic. No. 052136
11-30-15
PROFESSIONAL ENGINEER

CHANNEL CROSS SECTIONS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: N.T.S.
DATE: 8/28/14
DESIGN: JES
DRAWN: JES
CHECKED: ES
SHEET No.
8.8 OF 9

102267

P:\Projects\13171\001\01\02267 GDP\8.8-CHANNEL CROSS-SECTIONS.dwg, 11/30/2015 11:01:20 AM, jackscanlon, 1:1, christopher consultants, Inc.

DATE	REVISION
2014-10-02	REVISED PER COUNTY COMMENTS
2015-01-30	REVISED PER COUNTY COMMENTS
2015-03-27	REVISED PER COUNTY MEETINGS
2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER COUNTY COMMENTS

LEGEND

- EX. BOUNDARY
- EX. CONTOUR
- EX. TREE LINE
- ENVIRONMENTAL QUALITY CORRIDOR (EQC) (AS DEFINED BY THE FAIRFAX COUNTY COMPREHENSIVE PLAN)
- RESOURCE PROTECTION AREA (RPA)
- TREE PRESERVATION
- OPEN SPACE
- CONSERVATION EASEMENT

GDP LAYOUT TABULATIONS			
Total Lot Area (20 Lots):	± 1,176,336 SF	± 27.00 AC	± 51.96 %
Total ROW Area:	± 151,234 SF	± 3.47 AC	± 6.68 %
Total Open Space Area:	± 936,446 SF	± 21.50 AC	± 41.36 %
TOTAL SITE AREA:	2,264,016 SF	51.97 AC	

Total Tree Preservation:	± 550,731 SF	± 12.64 AC
Total Conservation Easement:	± 298,718 SF	± 6.86 AC

Tree Preservation & Conservation Easement calculations include multipliers as specified in Table 12.10 found on Sheet 7.2

NOTES:

1. BASE INFORMATION SHOWN ON THIS EXHIBIT IS BASED ON A BOUNDARY SURVEY PREPARED AND CERTIFIED BY christopher consultants DATED MARCH 13, 2014.
2. THIS CONCEPT SKETCH AND YIELD IS SUBJECT TO CHANGE BASED ON FINAL ENGINEERING.
3. TREE REMOVAL AND/OR LAND DISTURBANCE LIMITS ARE SUBJECT TO CHANGE BASED ON FINAL ENGINEERING.

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COMMONWEALTH OF VIRGINIA
JOHN C. LEVTOV
Lic. No.33635
2/18/16
PROFESSIONAL ENGINEER

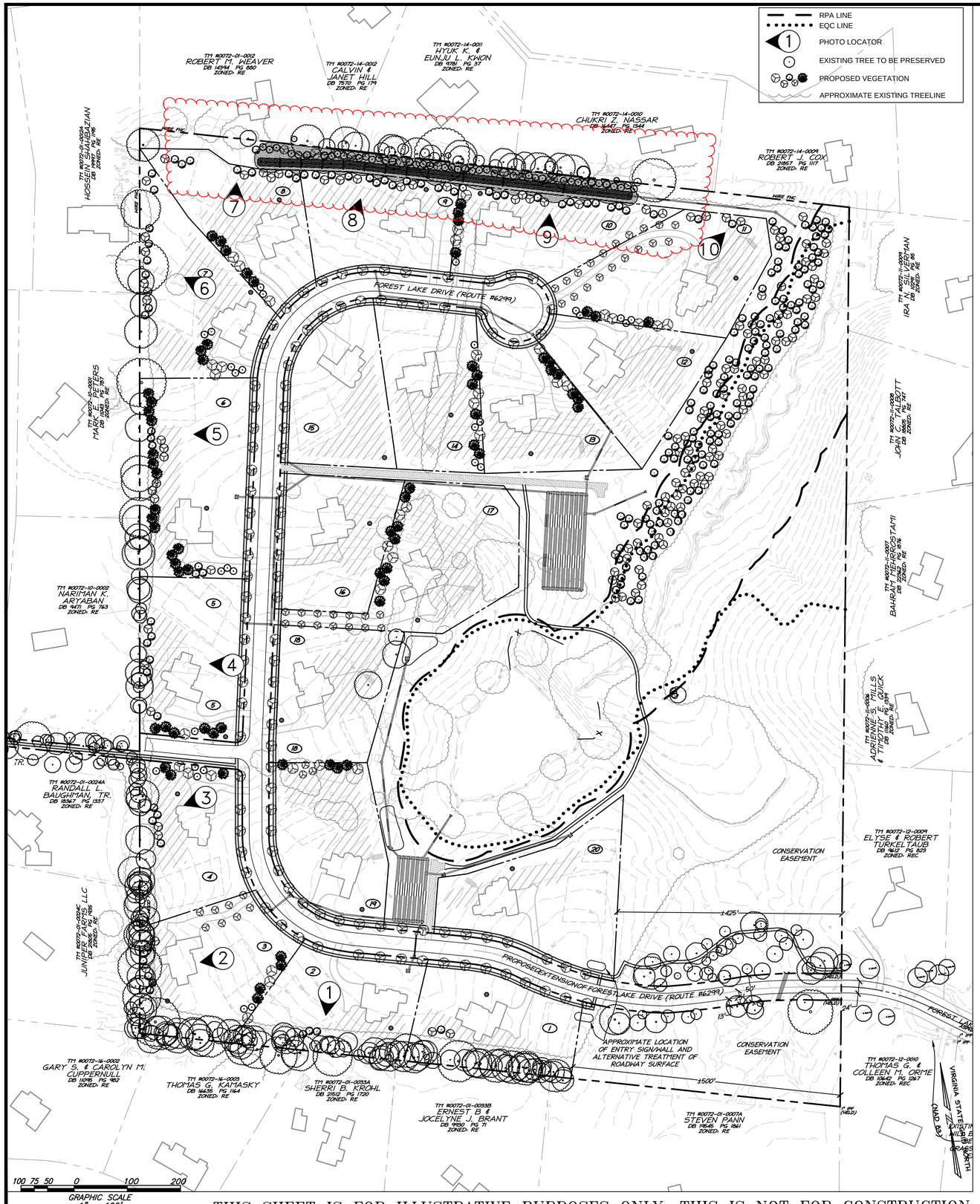
OVERALL CONCEPT LAYOUT WITH ENVIRONMENTAL INFORMATION

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE:
DATE: 8/28/14
DESIGN:
DRAWN:
CHECKED:
SHEET No. 9.1 OF 9

THIS SHEET IS FOR ILLUSTRATIVE PURPOSES ONLY. THIS IS NOT FOR CONSTRUCTION.

102267



THIS SHEET IS FOR ILLUSTRATIVE PURPOSES ONLY. THIS IS NOT FOR CONSTRUCTION.

Note: The purpose of this exhibit is to depict general conditions along the perimeter of the Brooks Property and highlight opportunities to enhance buffer areas. The proposed plantings would be comprised of overstory and understory tree species. The intent of the proposed plan is not to fully screen the perimeter, but to supplement the existing vegetation and provide a transition to the neighboring properties without compromising privacy. This exhibit is associated with GDP #RZ 2014-DR-022 and is conceptual in nature and should act as a guide for final site plan purposes.

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2015-10-19	REVISED PER COUNTY COMMENTS
2015-11-30	REVISED PER COUNTY COMMENTS
2016-02-18	REVISED PER COUNTY COMMENTS

PHOTO LOCATION 1

PHOTO LOCATION 6

PHOTO LOCATION 2

PHOTO LOCATION 7

PHOTO LOCATION 3

PHOTO LOCATION 8

PHOTO LOCATION 4

PHOTO LOCATION 9

PHOTO LOCATION 5

PHOTO LOCATION 10

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COMMONWEALTH OF VIRGINIA
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PERIMETER LANDSCAPE BUFFER EXHIBIT

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
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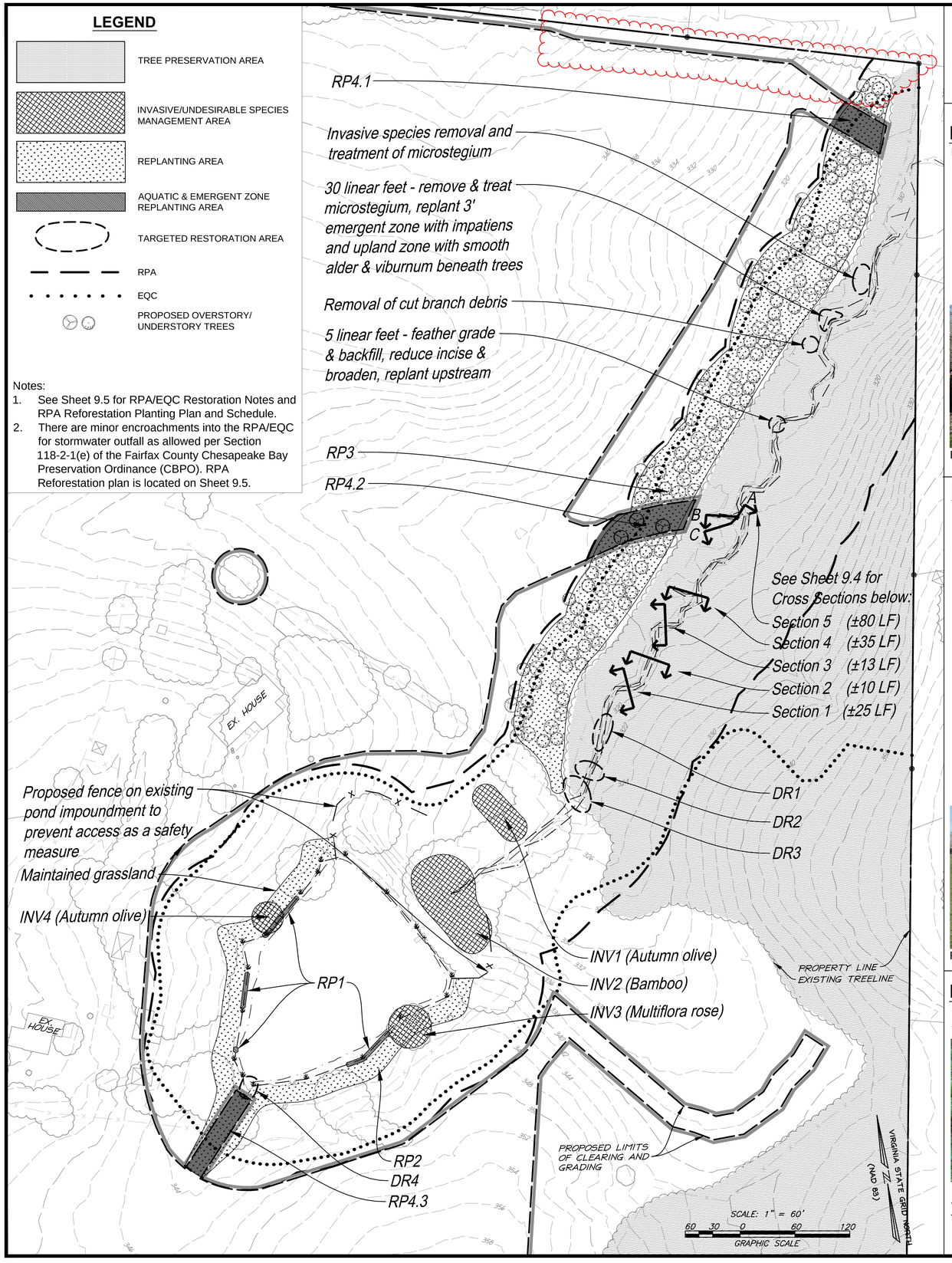
102267

LEGEND

- TREE PRESERVATION AREA
- INVASIVE/UNDESIRABLE SPECIES MANAGEMENT AREA
- REPLANTING AREA
- AQUATIC & EMERGENT ZONE REPLANTING AREA
- TARGETED RESTORATION AREA
- RPA
- EQC
- PROPOSED OVERSTORY/ UNDERSTORY TREES

Notes:

1. See Sheet 9.5 for RPA/EQC Restoration Notes and RPA Reforestation Planting Plan and Schedule.
2. There are minor encroachments into the RPA/EQC for stormwater outfall as allowed per Section 118-2-1(e) of the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). RPA Reforestation plan is located on Sheet 9.5.



Note: The purpose of this concept plan is to depict areas on the Brooks Property within the RPA/EQC that are proposed to be restored, remediated and enhanced. The specified restoration areas are: the existing pond edge, areas of erosion along the perennial stream downstream from the existing pond, and areas of invasive vegetation management within the RPA/EQC. This plan is conceptual in nature and should act as a guide for final subdivision plan purposes. All applicable codes shall be followed for approval of these restoration efforts.

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INVASIVE/UNDESIRABLE SPECIES MANAGEMENT

Invasive/Undesirable Species Management to include but not be limited to:

- mechanical removal techniques of bamboo, russian olive, multiflora rose, greenbriar, nepalese browntop, invasive grasses, etc. (regular maintenance schedule to be established at time of final site plan, including several seasons for eradication)
- chemical treatment of invasives where necessary under the supervision of VA Certified Pesticide Applicator (perform treatment in late June/July)
- supplemental planting with native species
- PFM Sections 12-0404 and 12-0516 shall be followed

A proffer is provided with this GDP and includes the following parameters for an invasive species management plan:

- Targeted species for suppression and management
- Location of the targeted areas required for treatment and management
- Method(s) of control and management
- Schedule of treatments
- Disposal of debris
- Chemical applications must be performed under the direct supervision of a Virginia Certified Pesticide Applicator
- Duration of management plan
- Monthly monitoring reports sent to Urban Forestry Management Division

INV 1

INV 2

INV 3

INV 4

REPLANTING

Replanting to include but not be limited to:

- **RP1** -
  - Area of RP1: ±800 SF (±165 LF)
  - a 5' wide zone (containing a 2' aquatic zone and a 3' emergent zone)
  - replace existing turfgrass with aquatic shelf planting
  - replant 2' zone with species such as blue flag, yellow flag and cardinal flower (±1,000 bareroot, tuber or plugs placed @ 6" O.C.)
  - replant 3' zone with species such as redosier dogwood & buttonbush (±700 quarts placed @ 10" O.C.)
  - use goose-netting around the pond perimeter until plants establish
  - plant in late winter
- **RP2** -
  - Area of RP2: ±16,500 SF (0.38 Ac) (±725 LF)
  - a 20' wide replanting area containing amended topsoil for water infiltration with plantings to trap silt and improve water quality (not to be mowed to prevent access as a safety measure)
  - clear & grub area to be planted, compact soil to stabilize, amend topsoil as necessary
  - plant with native meadow grass mix (±5.7 lbs) (ERNMX-178 or equivalent @ 15 lbs/Ac)
- **RP3** -
  - Area of RP3: ±50,000 SF (±800 LF)
  - overstory and understory trees to supplement existing meadow
  - replant with trees at approximately 2:1 understory to overstory trees per 1,000 SF (approximately 100 understory & 50 overstory trees proposed) (and as specified on the GDP Landscape Plan)
  - supplement grass with native meadow grass mix (See Sheet 9.5 for Recommended Riparian Grass Mixes)
  - remove existing fence at treeline
- **RP4.1, RP4.2, RP4.3** -
  - Area of RP4.1, RP4.2, RP4.3: ±6,900 SF (0.16 Ac)
  - overstory & understory trees, shrubs, seedlings and native groundcover proposed as per PFM 12-0516.4 & CBPO Section 118-3-3(f)
  - see Sheet 9.5 for RPA Reforestation Plans and Planting Schedule

RP 1

RP 2

RP 3

DEBRIS REMOVAL

The below photos show debris removal areas that include lifting pipe pieces out of the RPA areas using mimimal disturbance.

DR 1
- Remove cast iron pipe
- ±6" diam., ±20 LF

DR 2
- Remove concrete pipe
- ±18" diam., ±3 LF

DR 3
- Remove fence & concrete pipe
- ±1' diam., ±3 LF

DR 4
- Remove pipe 15' back from water's edge and recover bank with on-site dirt to match existing grade

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COMMONWEALTH OF VIRGINIA
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2/18/16
PROFESSIONAL ENGINEER

RPA/EQC RESTORATION CONCEPT PLAN

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: AS NOTED
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9.3 OF 9

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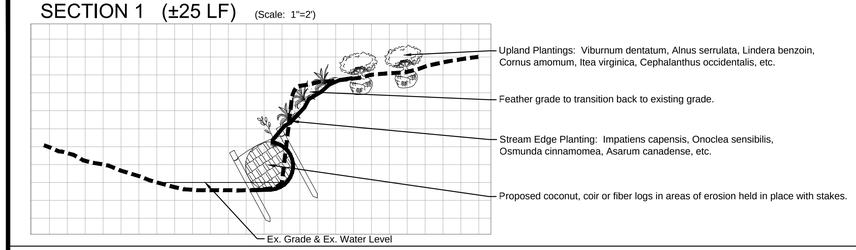
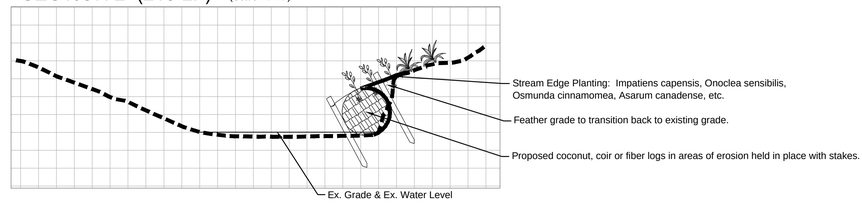
SECTION 1 (±25 LF) (Scale: 1"=2')



SECTION 2 (±15 LF) (Scale: 1"=2')



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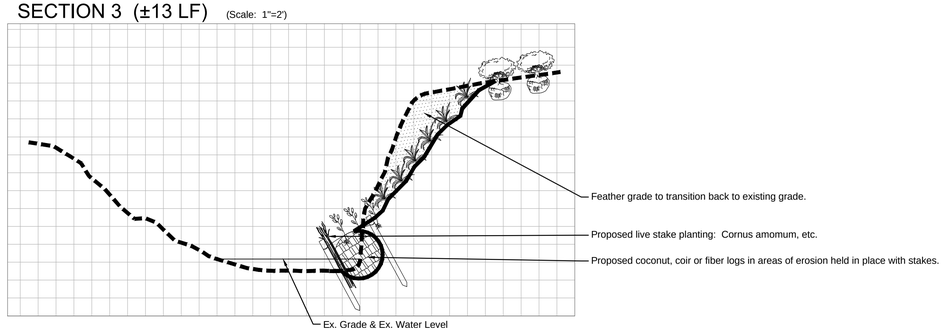
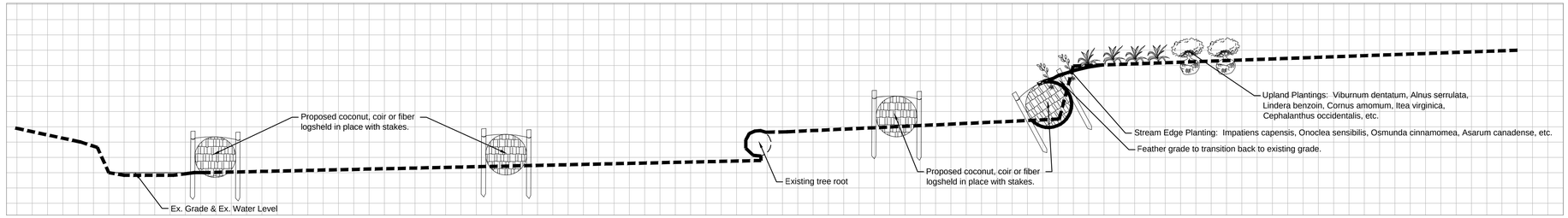
SECTION 3 (±13 LF) (Scale: 1"=2')



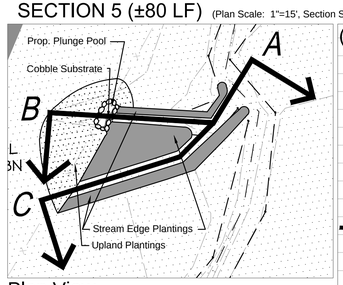
NOTES:

1. THESE STREAM RESTORATION CROSS SECTIONS ARE BASED ON PLAN SECTIONS ON SHEET 9.3.
2. THESE CROSS SECTIONS PROPOSE STREAMBANK RESTORATION SOLUTIONS TO MITIGATE FURTHER DETERIORATION OF THE CURRENT STREAMBACK. THESE CROSS SECTIONS ARE CONCEPTUAL IN NATURE AND SHOULD ACT AS A GUIDE FOR FINAL SITE PLAN PURPOSES.
3. EACH GRID SQUARE IS SHOWN AT 6"X6".

SECTION 4 (±35 LF) (Scale: 1"=2')



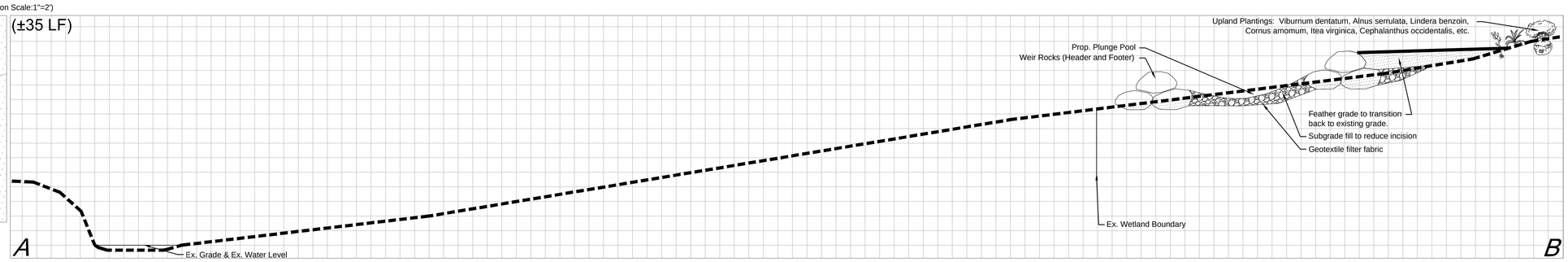
SECTION 5 (±80 LF) (Plan Scale: 1"=15', Section Scale:1"=2')



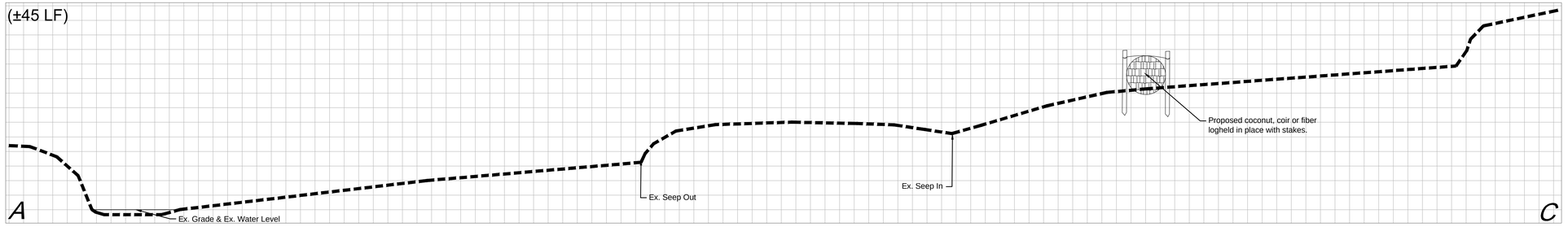
Plan View

0 7.5 15 30

(±35 LF)



(±45 LF)



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COMMONWEALTH OF VIRGINIA
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11-30-15
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RPA RESTORATION CONCEPT PLAN

GENERAL DEVELOPMENT PLAN

BROOKS PROPERTY

FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
SCALE: AS NOTED
DATE: 8/28/14
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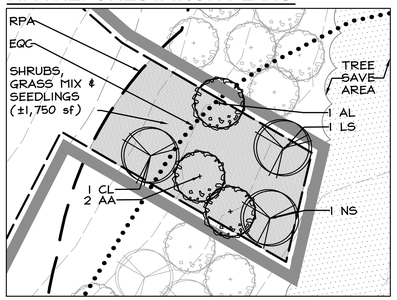
RPA/EQC RESTORATION NOTES

1. All restoration and remediation proposed within the Resource Protection Area (RPA) and Environmental Quality Corridor (EQC) is provided to demonstrate to reviewing agencies that efforts taken will result in improving and enhancing the RPA/EQC through replanting, debris removal and invasive/undesirable species management, including the removal of invasive species and noxious weeds (as defined by Section 118-1-6(r) of the CBPO).
2. There are minor encroachments into the RPA/EQC for stormwater outfall as allowed per Section 118-2-1(e) of the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). Replanting to mitigate this disturbance shall abide by the most current specifications within the Fairfax County Public Facilities Manual (PFM), specifically section 12-0516, Chapter 118 of the Chesapeake Bay Preservation Ordinance, and the "Riparian Buffers Modification and Mitigation Guidance Manual" as published by the Division of Chesapeake Bay Local Assistance, Virginia Department of Conservation and Recreation (DCR) and is provided on this page and Sheet 9.3.
3. The plant lists provided on this sheet from DCR and the PFM depict representative species allowable to plant within the RPA per the sources listed above. The plant lists on this page are recommendations and are not all-inclusive. Actual plant list and quantities are subject to availability and seasonal installation needs during final site plan and planting stages.
4. Appropriate nationwide permits from USACOE will be applied to any activity occurring within the RPA.
5. All areas of reseeding shall be cleared of all existing perennial groundcover and grubbed to a depth of six to twelve inches, free of stumps, roots, trash or debris. The area shall be compacted to the least extent necessary to stabilize the site. Only tracked mechanical equipment shall be used when working within the RPA/EQC. The surface layer shall be made to meet the following standards to a minimum depth of six inches either by amending the existing soils or by the addition of top soil meeting the following specifications:
   A. Imported Topsoil
      a. Loamy, friable soil, containing a minimum of 2.0 percent by dry weight organic matter; free from subsoil, refuse, roots, heavy or stiff clay, stones larger than 25mm (1 in.), noxious seeds, sticks, brush, litter, and other deleterious substances; suitable for the germination of seeds and the support of vegetative growth. The pH value shall be between 5.5 and 6.5.
      b. Soil Texture: loam soil eith the following particle size distribution:

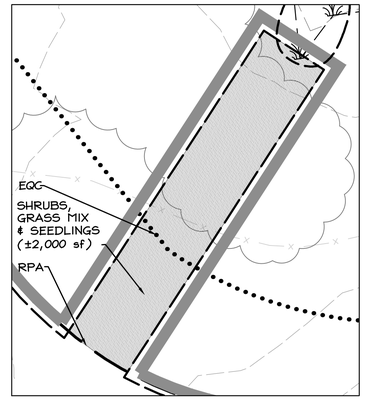
Approximate Particle Distribution Imported Topsoil	
Gravel	Less than 10%
Coarse to medium sand	30-65%
Fine sand	5-20%
Very fine sand	0-20%
Silt	15-25%
Clay	15-25%

   B. Existing Topsoil
      c. Existing topsoil from the site may be used if it meets the requirements for imported topsoil or if approved by a landscape architect or certified arborist with concurrence from the UFMD. Provided a minimum of one soil sample with accompanying soil test report for each topsoil type found at the site.
6. Monitoring of RPA/EQC plantings should occur during the growing season and at least once during the 1st, 2nd, 3rd and 5th growing seasons. If installation of material is reported to under perform based on standards set forth during the final subdivision process as recorded in monitoring reports, monitoring shall be required for each consecutive year until two annual sequential reports indicate that all criteria has been successfully satisfied and that corrective actions were successful. Monitoring reports should note the condition of the material, whether adequate watering is being maintained, and whether there are any pests, noxious species or diseases present that threaten the health and vigor of the materials planted. If any deficiencies are noted, a recommendation for corrective action should also be made.
7. Invasive species management will follow either a 5-year monitoring program or shall be completed up until bond release, whichever comes first (or as agreed upon with UFMD during the final subdivision plan process).

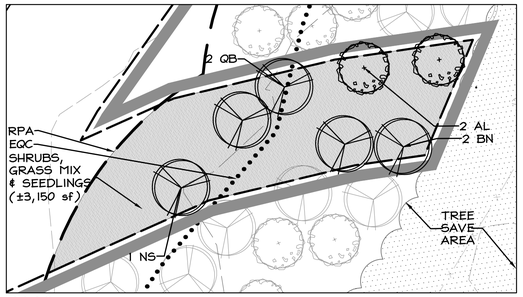
RPA REFORESTATION PLANS



RP 4.1



RP 4.3



RP 4.2

20 10 0 20 40
GRAPHIC SCALE
SCALE: 1" = 20'

VIRGINIA STATE GRID NORTH (NAD 83)

REFORESTATION REQUIREMENTS WITHIN THE RESOURCE PROTECTION AREA

	PFM 12-0516.4			CBPO SECTION 118-3-3(F)		
	REQUIRED		PROVIDED	REQUIRED		PROVIDED
	DESCRIPTION	AMOUNT	AMOUNT	DESCRIPTION	AMOUNT	AMOUNT
OVERSTORY TREES	25% OF DISTURBED AREA	1,725 SF TREE CANOPY	1,850 SF (SEE PLANTING SCHEDULE ON THIS SHEET)	200 PER ACRE	32	32 (8 B&B and 24 SEEDLINGS)
UNDERSTORY TREES				400 PER ACRE	63	63 (5 B&B and 58 SEEDLINGS)
SHRUBS	25 PER 1000 SF	173	173	1,089 PER ACRE	173	173
SEEDLINGS	10 PER 1000 SF	69	69	NOT APPLICABLE		82
GROUND COVER	AREA WITHIN RPA	6,900 SF	6,900 SF	AREA WITHIN RPA	6,900 SF	6,900 SF

RPA PLANTING SCHEDULE

(DISTURBED AREA WITHIN RPA = ±6,900 SF, ±0.16 AC)

KEY	QTY	BOTANICAL NAME	COMMON NAME	STOCK SIZE CALIPER	STOCK SIZE HEIGHT	STOCK TYPE	CANOPY PER TREE (SF)	TOTAL COVER (SF)	COMMENTS
DECIDUOUS TREES - CATEGORY IV									
LS	1	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	2" MIN.	N/A	B&B	200	200	NATIVE
QB	2	QUERCUS BICOLOR	SWAMP WHITE OAK	2" MIN.	N/A	B&B	200	400	NATIVE
DECIDUOUS TREES - CATEGORY III									
BN	2	BETULUS NIGRA	RIVER BIRCH	2" MIN.	N/A	B&B	150	300	NATIVE
CL	1	CELTIS OCCIDENTALIS	HACKBERRY	2" MIN.	N/A	B&B	150	150	NATIVE
NS	2	NYSSA SYLVATICA	BLACK GUM	2" MIN.	N/A	B&B	150	300	NATIVE
DECIDUOUS TREES - CATEGORY II									
AA	2	AMELANCHIER ARBOREA	DOWNEY SERVICEBERRY	2" MIN.	N/A	B&B	100	200	NATIVE
AL	3	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	2" MIN.	N/A	B&B	100	300	NATIVE
SHRUBS									
AM	17	ARONIA MELANOCARPA	BLACK CHOKECHERRY	N/A	18" MIN.	CONTAINER	0	0	NATIVE
CS	26	CORNUS STOLONIFERA	RED TWIG DOGWOOD	N/A	18" MIN.	CONTAINER	0	0	NATIVE
IG	26	ILEX GLABRA	INKBERRY HOLLY	N/A	18" MIN.	CONTAINER	0	0	NATIVE
IV	26	ILEX VERTICILLATA	WINTERBERRY HOLLY	N/A	18" MIN.	CONTAINER	0	0	NATIVE
IT	26	ITEA VIRGINICA	VIRGINIA SWEETSPIRE	N/A	18" MIN.	CONTAINER	0	0	NATIVE
VD	26	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	N/A	18" MIN.	CONTAINER	0	0	NATIVE
VP	26	VIBURNUM PRUNIFOLIUM	BLACKHAW VIBURNUM	N/A	18" MIN.	CONTAINER	0	0	NATIVE
GRASS MIX									
VSS	6,900	ERNMX-178	RIPARIAN BUFFER MIX	N/A	N/A	SEED	0	2.4 LB.	15 LB. PER ACRE
SEEDLINGS-OVERSTORY TREES*									
	6	CARYA TOMENTOSA	MOCKERNUT HICKORY	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	6	PRUNUS SEROTINA	BLACK CHERRY	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	6	QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	6	QUERCUS IMBRICATA	SHINGLE OAK	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
SEEDLINGS-UNDERSTORY TREES*									
	10	CERCIS CANADENSIS	REDBUD	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	10	CELTIS LAEVIGATA	SUGAR HACKBERRY	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	10	CHIONANTHUS VIRGINICUS	FRINGETREE	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	10	CRATAEGUS CRUS-GALLI	COCKSPUR HAWTHORN	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	9	ILEX OPACA	AMERICAN HOLLY	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
	9	SAMBUCUS CANADENSIS	ELDERBERRY	N/A	N/A	BAREROOT	0	0	SEE NOTE 2
							TOTAL:	1,850	

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RPA REFORESTATION NOTES

1. THE RPA PLANTING SCHEDULE ON THIS SHEET SHOWS ALL REQUIRED QUANTITIES OF TREES, SHRUBS, SEEDLINGS AND RIPARIAN GRASS MIX THAT ARE REQUIRED TO BE PLANTED AS PER THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL (PFM) AND CHAPTER 118 OF THE CHESAPEAKE BAY PRESERVATION ORDINANCE.
2. THE QUANTITY, DENSITY AND SPECIES FOR ALL SHRUBS & SEEDLINGS SHALL BE EVENLY DISTRIBUTED THROUGHOUT THE PROPOSED SHRUB & SEEDLING REFORESTION AREA (HATCHED AREA). ALL REQUIRED QUANTITIES OF SHRUBS AND SEEDLINGS ARE AS LISTED IN THE RPA PLANTING SCHEDULE. SEEDLINGS SHALL BE AT LEAST THREE YEARS OLD AND 12 INCHES IN HEIGHT AND PLANTED AT A DENSITY OF APPROXIMATELY 400 SEEDLINGS PER ACRE. SHRUBS SHALL BE AS SPECIFIED IN THE RPA PLANTING SCHEDULE.
3. A RIPARIAN GRASS SEED MIX SHALL BE APPLIED TO THE ENTIRE DISTURBED AREA WITHIN THE RPA, AS NOTED IN THE RPA PLANTING SCHEDULE.
4. ALL PROPOSED REFORESTATION SHALL CONFORM TO THE MOST CURRENT EDITION OF THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL (PFM), SPECIFICALLY SECTIONS 6-1311.2 AND 12-0515, AS WELL AS CHAPTER 118 OF THE CHESAPEAKE BAY PRESERVATION ORDINANCE.
5. PLANTING STOCK SHALL BE HEALTHY AND FREE FROM INSECT AND DISEASE PESTS AND HAVE A SINGLE LEADER. THE ROOT SYSTEM IS TO BE WELL DEVELOPED, FIBROUS, AND KEPT MOIST UNTIL PLANTED.
6. PLANT SEEDLINGS BETWEEN MARCH 1 AND MAY 15, AND NOVEMBER 15 AND DECEMBER 15 UNLESS OTHERWISE APPROVED BY THE DIRECTOR.
7. IN AREAS OF COMPACTED SOIL OR FILL, THE SOIL THROUGHOUT THE AREA SHALL BE AMENDED WITH 3-6 INCHES OF ORGANIC MATTER AND THOROUGHLY TILLED TO A DEPTH OF 12 INCHES BEFORE PLANTING. AFTER THE SOIL HAS BEEN PREPARED AND ALLOWED TO SETTLE, THE SEEDLINGS MAY BE PLANTED USING THE DIBBLE BAR, SHOVEL OR AUGER METHOD.

RECOMMENDED RIPARIAN GRASS MIXES

The below seed mix lists are provided as an overview to potential seed mixes for riparian sites. These lists are conceptual in nature and are subject to change based on final site plan design and approval, availability at time of planting and seasonal availability.

1. Periodically moist with ephemeral inundation.

ERNMX-178 Riparian Buffer Mix

% of Mix	Latin Name	Common Name
5	Andropogon gerardii	Big Bluestem 'Niagra'
2	Asclepias syriaca	Common Milkweed
1	Baptisia australis	Blue False Indigo
10	Carex vulpinoidea	Fox Sedge
6	Chamaecrista fasciculata	Partridge Pea
4	Cornus amomum	Silky Dogwood
2	Desmodium canadense	Showy Tick Trefoil
6	Elymus riparius	Riverbank Wild Rye
6	Elymus virginicus	VA Wild Rye
2	Eupatorium fistulosum	Joe Pye Weed
2	Eupatorium maculatum	Spotted Joe Pye Weed
2	Eupatorium perfoliatum	Boneset
1	Euthamia graminifolia	Grass Leaved Goldenrod
5	Heliopsis helianthoides	Ox Eye Sunflower
2	Juncus effusus	Soft Rush
2	Monarda fistulosa	Wild Bergamot
8	Panicum clandestinum	Deer Tongue
4	Panicum virgatum	Switchgrass 'Shelter'
2	Penstemon digitalis	Tall White Beard Tongue
2	Rhus typhina	Staghorn Sumac
2	Rudbekia hirta	Black Eyed Susan
8	Schizachyrium scoparium	Little Bluestem
4	Sorghastrum nutans	Indiangrass
6	Verbena hastata	Blue Vervain
1	Vernonia gigantea	Giant Ironweed
5	Viburnum dentatum	Arrow Wood
100	Total	

Apply this mix at 15 lbs/acre.

2. Chronically moist with periodic inundation or drying out.

Fairfax County VA Partially Shaded Wet Meadow Mix

% of Mix	Latin Name	Common Name	Cultivar/ Ecotype
7	Carex squarrosa	Squarrose Sedge	VA
8	Carex vulpinoidea	Fox Sedge	PA
20	Chasmanthium latifolium	River Oats	WV/VA
4	Cinna arundinacea	Wood Reedgrass	PA
15	Elymus virginicus	Virginia Wildrye	Suther (NC)
1	Eupatorium fistulosum	Joe Pye Weed	PA
1	Eupatorium perfoliatum	Boneset	PA
2	Heliopsis helianthoides	Ox-Eye Sunflower	PA
2	Juncus tenuis	Path Rush	NC or PA
10	Panicum anceps	Beaked Panicgrass	SC
20	Panicum clandestinum	Deertongue	'Tioga'
10	Panicum rigidulum	Redtop Panicgrass	NC
100	Total		

Apply this mix at 20 lbs/acre with a cover crop of 30 lbs/acre grain rye.

3. Chronically moist to periodically inundated with no drying out.

Fairfax County VA Partially Shaded Wetland Mix

% of Mix	Latin Name	Common Name	Cultivar/ Ecotype
6	Carex lupulina	Hop Sedge	PA
8	Carex lurida	Lurid Sedge	NC/VA or NC
4	Carex squarrosa	Squarrose Sedge	VA
26	Carex vulpinoidea	Fox Sedge	PA
4	Cinna arundinacea	Wood Reedgrass	PA
16	Elymus virginicus	Virginia Wildrye	Suther (NC)
1	Eupatorium fistulosum	Joe Pye Weed	PA
1	Eupatorium perfoliatum	Boneset	PA
2	Lobelia siphilitica	Blue Lobelia	PA
2	Onoclea sensibilis	Sensitive Fern	PA
22	Panicum rigidulum	Redtop Panicgrass	NC
1	Rhexia virginica	Virginia Meadowbeauty	NC
1	Saururus cernuus	Lizard's Tail	NC
2	Scirpus cyperinus	Woolgrass	PA
4	Verbena hastata	Blue Vervain	PA
100	Total		

Apply this mix at 20 lbs/acre with a cover crop of 30 lbs/acre grain rye.
Add 1 to 10 lbs/acre Peltandra virginica. (Do not store this seed for lor

RECOMMENDED RIPARIAN BUFFER PLANTS

SOURCE: RIPARIAN BUFFERS MODIFICATION & MITIGATION GUIDANCE MANUAL BY DCR CHESAPEAKE BAY LOCAL ASSISTANCE, 2006.

Appendix A - Plant Lists

APPENDIX A - PLANT LISTS

These lists are suggestions for recommended plants and are not to be construed as exclusive lists. There are many other suitable plants for riparian buffer planting. These lists are a place to start.

MEDIUM TO LARGE DECIDUOUS CANOPY TREES

Red maple - Acer rubrum
Acer saccharum - Silver maple
Betula lenta - Black birch
River birch - Betula nigra
Shagbark hickory - Carya ovata-
Mockernut hickory - Carya tomentosa
Hackberry - Celtis occidentalis
Washington hawthorn - Craetagus phaenopyrum
Persimmon - Diospyros virginiana
American Beech - Fagus grandifolia
White ash - Fraxinus americana
Green ash - Fraxinus pennsylvanica
Water locust - Gleditisia aquatica-
Black walnut - Juglans nigra
Sweetgum - Liquidamber straciflua
Tulip poplar - Liriodendron tulipifera
Water tupelo - Nyssa aquatica
Black gum - Nyssa sylvatica
Sourwood - Oxydendron arboreum
Sycamore - Platanus occidentalis
Cottonwood poplar - Populus deltoids
Swamp cottonwood - Populus heterophylla
Black cherry - Prunis serotina
Swamp white oak - Quercus bicolor
Shingle oak - Quercus imbricata
Laurel oak - Quercus laurifolia
Overcup oak - Quercus lyrata-
Swamp chestnut oak - Quercus michauxii
Water oak - Quercus nigra
Pin oak - Quercus palustris
Willow oak - Quercus phellos
Shumard oak - Quercus shumardii
Swamp willow, Black willow - Salix nigra
Weeping willow - Salix babylonica
American basswood - Tilia Americana

SMALL CANOPY/UNDERSTORY TREES

Red buckeye - Aesculus pavia
Smooth alder - Alnus serrulata
Serviceberry - Amelanchier canadensis
Devil's walkingstick - Aralia spinosa
Pawpaw - Asimia triloba
American hornbeam- Carpinus caroliniana
Sugar hackberry - Celtis laevigata
Redbud, Judas tree - Cercis canadensis
Fringetree - Chionanthus virginicus
Dogwood - Cornus florida
Cockspur hawthorn - Crataegus crus-galli
Green hawthorn - Crataegus viridis
Parsley hawthorne - Crataegus marshalli
Swamp cyrilla - Cyrilla racemosa
Two-winged Silverbell - Halesia diptera
American holly – Ilex opaca
Possumhaw - Ilex deciduas
Spicebush - Lindera benzoin
Sweetbay Magnolia - Magnolia virginiana
Eastern hophornbeam - Ostrya virginiana
Sourwood - Oxydendron arboreum
Elderberry - Sambucus canadensis
Sassafras - Sassafras albidum
Sparkleberry - Vaccinium arboreum
Nannyberry - Viburnum lentago

Appendix A - Plant Lists

EVERGREEN TREES

American holly - Ilex opaca
Eastern red cedar - Juniperus virginiana
Southern magnolia - Magnolia grandiflora
Shortleaf pine - Pinus echinata
Pitch pine - Pinus rigida
Eastern white pine - Pinus strobus
Loblolly pine - Pinus taeda
Virginia pine - Pinus virginiana
Darlington oak - Quercus laurifolia
Darlingtonia
Live oak - Quercus virginiana

EVERGREEN SHRUBS

Inkberry holly - Ilex glabra
Common juniper - Juniperus communis
Shore juniper - Juniperus conferta
Southern wax myrtle - Myrica cerifera
Bayberry - Myrica pennsylvanica
Swamp azalea - Rhododendrona viscosum
Farkleberry - Vaccinium arboreum

LARGE SHRUBS

Alder - Alnus serrulata
False indigo - Amorpha fruiticosa
Red chokeberry - Aronia arbutifolia
American beautyberry - Calicarpa americana
Eastern sweetshrub -Calycanthus floridus
Buttonbush - Cephalanthus occidentalis
Silky dogwood - Cornus amonum
Greystem dogwood - Cornus racemosa
Red twig dogwood - Cornus stolonifera
Witch hazel - Hammamelis virginiana
Wild hydrangea - Hydrangea arborescens
Oakleaf hydrangea - Hydrangea quercifolia
Winterberry holly - Ilex verticilata
Yaupon holly - Ilex vomitoria
Virginia sweetspire - Itea virginica
Fetterbush/ Sweetbells - Leucothoe racemosa
Fetterbush - Lyonia lucida
Male-berry - Lyonia ligustrina
Southern wax myrtle - Myrica cerifera
Bayberry - Myrica pennsylvanica
Common ninebark - Physocarpus opulifolius
Choke cherry - Prunus virginiana
Swamp azalea - Rhododendrona viscosum
Smooth sumac - Rhus glabra
Allegheny blackberry - Rubus allegheniensis
Pussy willow - Salix discolor
Silky willow - Salix sericea
Elderberry - Sambucus canadensis
American snowbell - Styrax americanus
Highbush blueberry - Vaccinium corybosum
Arrowwood viburnum - Viburnum dentatum
Swamphaw Viburnum - Viburnum nudum
Blackhaw viburnum - Viburnum prunifolium

Appendix A - Plant Lists

SMALL SHRUBS

-
Obovate serviceberry - Amelanchier obovalis
Black chokecherry - Aronia melanocarpa
Sweet pepperbush - Clethra alnifolia
Sweet fern - Comptonia peregrina
Strawberry bush - Euonymus americanus
Fothergilla - Fothergilla gardenii
Black huckleberry - Gaylussacia baccata
Dangleberry - Gaylussacia frondosa
Wild hydrangea - Hydrangea arborescens
Oakleaf hydrangea - Hydrangea quercifolia
Mountain laurel - Kalmia latifolia
Staggerbush - Lyonia mariana
Shrubby cinquefoil - Potentilla fruticosa
Beach plum - Prunus maritime
Sand blackberry - Rubus cuneifolius
Bankers willow - Salix cottettii
White meadowsweet - Spiraea alba
Meadowsweet - Spiraea latifolia
Steeplebush - Spiraea tomentosa
Common snowberry - Symphoricarpos albus
Coralberry - Symphocarpos orbiculatus
Lowbush blueberry - Vaccinium angustifolium
Maple-leaved viburnum - Vaccinium
acerifolium
Adam's needle - Yucca filamentosa

NATIVE GRASSES

Big Bluestem - Andropogon gerardi
Broomsedge - Andropogon virginicus
Indian woodoats - Chasmanthium latifolium
Coastal panic grass - Panicum amarum
Switch grass - Panicum virgatum
Little bluestem - Schizachyrium scoparium
Indian grass - Sorghastrum nutans
Eastern gama grass - Tripsacum dactyloides

HERBACEOUS PLANTS

Black-eyed Susan - Rudbeckia fulgida
Cardinal Flower - Lobelia cardinalis
Coralbells - Heuchera Americana
Creeping Phlox - Phlox stolonifera
Crested Iris - Iris cristata
Foamflower - Tiarella cordifolia
Goldenrod - Solidago Canadensis
Great Blue Lobelia - Lobelia siphilitica
Green and Gold - Crysogonum virginianum
Ironweed - Vernonia noveboracensis
Jack-in-the-Pulpit - Arisaema triphyllum
Joe-Pye Weed - Eupatorium purpureum
Mayapple - Podophyllum peltatum
Mistflower - Eupatorium coelestinum
Mouse-ear Coreopsis - Coreopsis auriculata
New York Aster - Aster novi-belgii
Pink Turtlehead - Chelone lyonii
Purple Coneflower - Echinacea purpurea
Small Solomon's Seal - Polygonatum biflorum
Swamp Milkweed - Asclepias incarnata
Sweet Flag - Acorus americanus
Tall Gayfeather - Liatris scarios
Three-toothed Cinquefoil -Potentilla tridentata
Tickseed - Coreopsis grandiflora
Virginia Bluebells - Mertensia virginica
Virginia Blue flag - Iris virginica
Wild Columbine - Aquilegia Canadensis
Woodland Phlox - Phlox divaricata

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL CHAPTER 12-000

TABLE 12.17 TREE SELECTION AND CANOPY COVER GUIDE- *NATIVE TREES*

BOTANICAL NAME	COMMON NAME
DECIDUOUS TREES - CATEGORY IV	
ACER RUBRUM	RED MAPLE
CARYA CORDIFORMIS	BITTERNUT HICKORY
CARYA GLABRA	PIGNUT HICKORY
CARYA ILLINOENSIS	PECAN
CARYA OVATA	SHAGBARK HICKORY
CARYA TOMENTOSA	MOCKERNUT HICKORY
FAGUS AMERICANA	AMERICAN BEECH
LIQUIDAMBAR STYRACIFLUA	SWEETGUM
LIRIODENDRON TULIPIFERA	TULIP POPLAR
PLATANUS OCCIDENTALIS	SYCAMORE
QUERCUS ALBA	WHITE OAK
QUERCUS BICOLOR	SWAMP WHITE OAK
QUERCUS FALCATA	SOUTHERN RED OAK
QUERCUS PALUSTRIS	PIN OAK
QUERCUS PRINUS	CHESTNUT OAK
QUERCUS PHELLOS	WILLOW OAK
QUERCUS RUBRA	RED OAK
QUERCUS STELLATA	POST OAK
QUERCUS VELUTINA	BLACK OAK
TILIA AMERICANA	AMERICAN LINDEN, BASSWOOD
DECIDUOUS TREES - CATEGORY III	
BETULA NIGRA	RIVER BIRCH
CELTIS OCCIDENTALIS	HACKBERRY
DIOSPYROS VIRGINIANA	PERSIMMON
JUGLANS NIGRA	BLACK WALNUT
MACLURA POMIFERA	OSAGE ORANGE (MALE)
MAGNOLIA ACUMINATA	BIGLEAF MAGNOLIA
NYSSA SYLVATICA	BLACK GUM
SALIX NIGRA	BLACK WILLOW
TAXODIUM DISTICHUM	BALD CYPRESS
DECIDUOUS TREES - CATEGORY II	
AMELANCHIER ARBOREA	DOWNEY SERVICEBERRY
AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY
ASIMINA TRILOBA	PAW PAW
CARPINUS CAROLINIANA	AMERICAN HORNBEAM
CASTENEA PUMILA	ALLEGHENY CHINKAPIN
CERCIS CANADENSIS	EASTERN REDBUD
CHIONANTHUS VIRGINICUS	FRINGETREE
CORNUS FLORIDA	FLOWERING DOGWOOD
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA
OSTRYA VIRGINIANA	EASTERN HOPHORNBEAM
OXYDENDRUM ARBOREUM	SOURWOOD
SASSAFRAS ALBIDUM	SASSAFRAS
EVERGREEN TREES - CATEGORY IV	
PINUS RIGIDA	PITCH PINE
PINUS TAEDA	LOBLOLLY PINE
PINUS VIRGINIANA	VIRGINIA PINE
EVERGREEN TREES - CATEGORY III	
PICEA ECHINATA	SHORTLEAF PINE
EVERGREEN TREES - CATEGORY II	
ILEX OPACA	AMERICAN HOLLY
JUNIPERUS VIRGINIANA	EASTERN RED CEDAR
TSUGA CANADENSIS	CANADIAN HEMLOCK

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RPA RESTORATION CONCEPT PLAN-NOTES AND PLANTING LISTS

GENERAL DEVELOPMENT PLAN
BROOKS PROPERTY
FAIRFAX COUNTY, VIRGINIA

PROJECT NO: 13171.001.01
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DATE: 8/28/14
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SHEET No. 9.5 OF 9

102267

DATE	REVISION
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2015-04-24	REVISED PER COUNTY MEETINGS
2015-05-12	REVISED PER COUNTY COMMENTS
2015-07-08	REVISED PER COUNTY COMMENTS
2015-10-19	REVISED PER COUNTY COMMENTS
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Scale: 1" = 100'-0"
0 50' 100' 200'

NORTH

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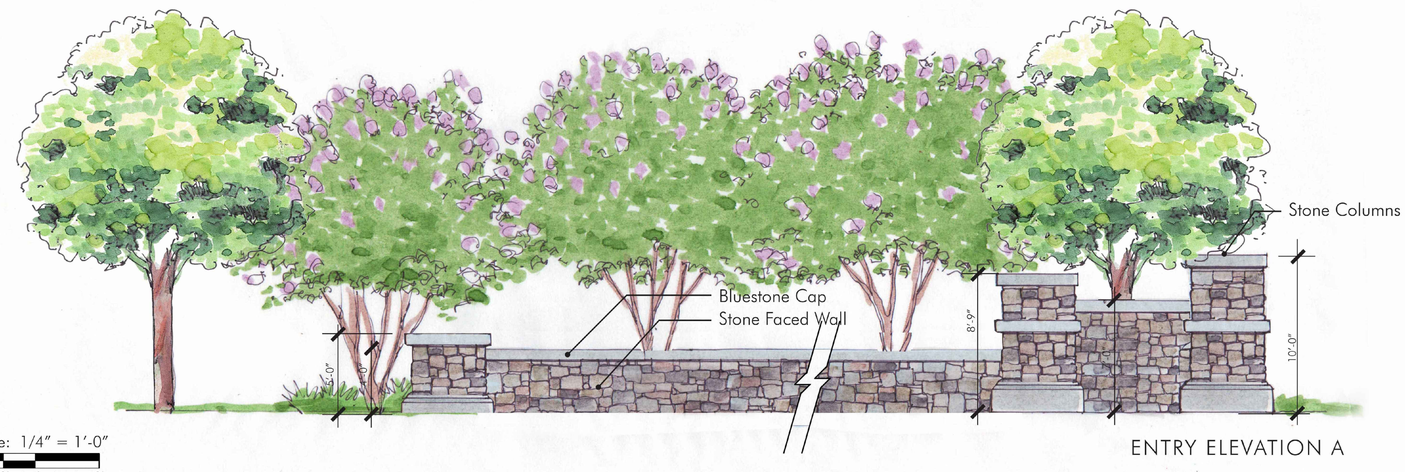

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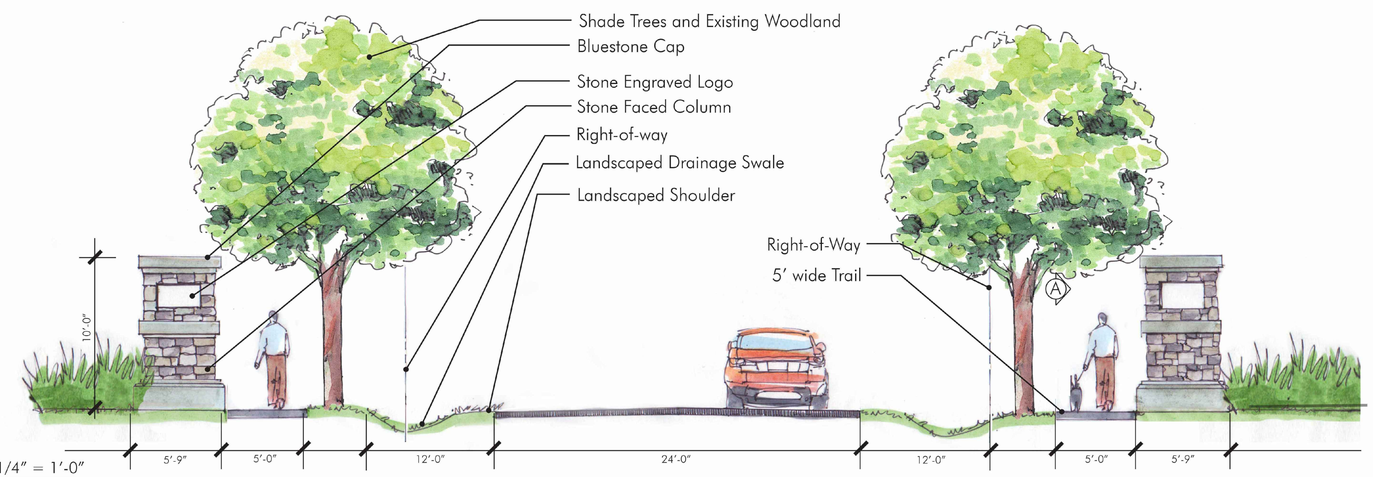
ENTRY ELEVATION A



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ENTRY ELEVATION B

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STUDIO39 Landscape Architecture, P.C. 6416 Grovedale Drive, Suite 100-A Alexandria, Virginia 22310 703.719.6500 www.studio39.com

LANDSCAPE ARCHITECTURE ■ PLANNING ■ URBAN DESIGN ■ GRAPHIC DESIGN

NOVEMBER 30, 2015

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Scale: 1/4" = 1'-0"
0 2' 4' 8'

TYPICAL LOT PLAN A: SHORT DRIVEWAY

Scale: 1/4" = 1'-0"
0 2' 4' 8'

TYPICAL LOT PLAN B: LONG DRIVEWAY

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TYPICAL LOT LANDSCAPE PLANS

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TYPICAL LOT LANDSCAPE PLANS

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TYPICAL ARCHITECTURE ELEVATIONS

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