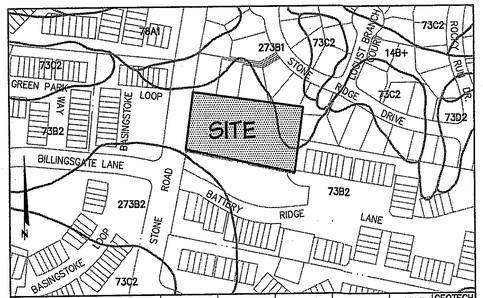
CONCEPTUAL / FINAL DEVELOPMENT PLAN

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

RZ 2011-SU-006



SOIL #	SERIES NAME	FOUNDATION SUPPORT	SUBSURFACE DRAINAGE	SLOPE STABILITY	EROSION POTENTIAL	PROBLEM CLASS	GEOTECH REPORT REQ'D
73B2	PENN (sil)	GOOD	MARGINAL	GOOD	HIGH	C	NO
27B1	READINGTON	GOOD	MARGINAL	GOOD	MODERATE	B	NO

SOILS MAP/DATA
SCALE : 1" = 250'

BLENDED DENSITY CALCULATIONS

	PARCEL 61	PARCEL 61C	TOTAL
AREA	0.95204 Ac	0.95049 Ac	1.90253 Ac

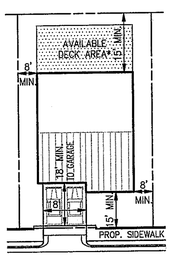
LOW END @ 2 = 1.90098 + @ 5 = 4.762 = 6.66298 LOTS
HIGH END @ 3 = 2.85147 + @ 8 = 7.61632 = 10.46779 LOTS

PROPOSED DENSITY

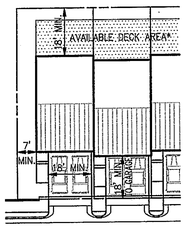
4 LOTS =	6 LOTS =	10 LOTS =
4.208 DU/Ac	6.302 DU/Ac	5.256 DU/Ac

"BLENDED" LOW END
6.66298 LOTS ÷ 1.90253 Ac = 3.502 DU/Ac

"BLENDED" HIGH END
10.46779 LOTS ÷ 1.90253 Ac = 5.502 DU/Ac



DETACHED UNITS



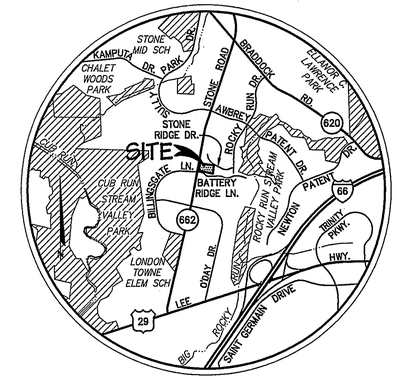
ATTACHED UNITS

TYPICAL LOT LAYOUTS
SCALE : 1" = 30'

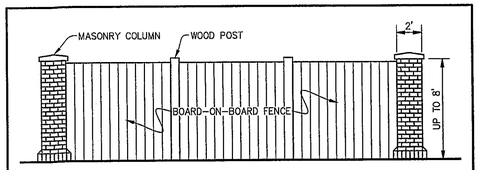
*NOTE : DECKS ARE TO BE SET BACK AT LEAST FIVE (5) FEET FROM PROPERTY LINE(S)

NOTES

1. THE PROPERTY DELINEATED ON THIS PLAN IS LOCATED ON FAIRFAX COUNTY TAX ASSESSMENT MAP NUMBER 54-3((2))61 & 61C. THE SITE IS CURRENTLY ZONED R-1 & WSPOD. THE PROPOSED ZONES ARE PDH-8 & WSPOD.
2. AMONG THE LAND RECORDS OF FAIRFAX COUNTY, VIRGINIA, THE PROPERTY HEREON IS CURRENTLY UNDER THE OWNERSHIP OF:
   - PARCEL 61 – MARK W. SPUNGIN IN DEED BOOK 18000 AT PAGE 210
   - PARCEL 61C – DALE L. & THELMA A. KEENER IN DEED BOOK 18200 AT PAGE 1692
3. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A FIELD RUN SURVEY PREPARED BY CHARLES P. JOHNSON & ASSOCIATES, DATED NOVEMBER 2010. CONTOUR INTERVAL EQUALS TWO FEET NGVD 1929.
4. THERE ARE NO 100-YEAR FLOODPLAINS ON-SITE. NO FLOODPLAIN OR DRAINAGE STUDIES ARE REQUIRED FOR THIS PROJECT.
5. THERE ARE NO RESOURCE PROTECTION AREAS (RPAs) OR ENVIRONMENTAL QUALITY CORRIDORS (EQCs) ON THIS SITE. A WATER QUALITY IMPACT ASSESSMENT WILL NOT BE REQUIRED.
6. TO THE BEST OF OUR KNOWLEDGE, THE SITE HAS NO SCENIC ASSETS OR NATURAL FEATURES DESERVING OF PROTECTION AND PRESERVATION.
7. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO KNOWN GRAVES, OBJECTS, OR STRUCTURES MARKING A PLACE OF BURIAL.
8. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITY EASEMENTS HAVING A WIDTH OF 25 FEET OR GREATER, NOR ANY MAJOR UNDERGROUND UTILITY EASEMENTS LOCATED WITHIN THE SITE.
9. ANY EXISTING WELLS ON-SITE ARE TO BE CAPPED AND ABANDONED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS.
10. SEE SHEETS 2 AND 6 FOR A DESCRIPTION OF THE EXISTING VEGETATION.
11. EXISTING STRUCTURES ARE TO BE REMOVED. THE EXISTING DWELLINGS WERE CONSTRUCTED IN 1960 (PARCEL 61) AND 1963 (PARCEL 61C).
12. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO HAZARDOUS OR TOXIC SUBSTANCES AS SET FORTH IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 116.4, 302.4, AND 355; ALL HAZARDOUS WASTE AS SET FORTH IN COMMONWEALTH OF VIRGINIA/DEPARTMENT OF WASTE MANAGEMENT VR 672-10-1 – VIRGINIA HAZARDOUS WASTE MANAGEMENT REGULATIONS; AND/OR PETROLEUM PRODUCTS AS DEFINED IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 280; TO BE GENERATED, UTILIZED, STORED, TREATED, AND/OR DISPOSED OF ON-SITE AND THE SIZE AND CONTENTS OF ANY EXISTING OR PROPOSED STORAGE TANKS OR CONTAINERS.
13. THE SUBJECT SITE LIES WITHIN THE WATER SUPPLY PROTECTION OVERLAY DISTRICT.
14. THERE ARE NO AFFORDABLE DWELLING UNITS (ADUs) REQUIRED FOR THIS PROJECT.
15. NO DENSITY REDUCTIONS ARE REQUIRED BY ZONING ORDINANCE SECTION 2-308.
16. IN ACCORDANCE WITH THE ADOPTED COMPREHENSIVE PLAN, THE PROPOSED DEVELOPMENT WILL PROVIDE RESIDENTIAL DEVELOPMENT AT 5.26 DWELLING UNITS PER ACRE AND WILL CONFORM TO ALL APPLICABLE ORDINANCES, REGULATIONS, AND ADOPTED STANDARDS EXCEPT AS NOTED BELOW :
    - A WAIVER OF THE MINIMUM DISTRICT SIZE OF TWO ACRES IS HEREBY REQUESTED
    - A DEVIATION FROM THE REQUIRED TREE PRESERVATION TARGET AREA IS HEREBY REQUESTED
    - A MODIFICATION IS HEREBY REQUESTED TO ALLOW UP TO AN 8-FOOT HIGH SOLID WOOD FENCE AS SET FORTH IN ZONING ORDINANCE §10-104.3.H
17. PUBLIC WATER SERVICE IS TO BE PROVIDED BY AN EXISTING 8" MAIN LOCATED IN BATTERY RIDGE LANE. PUBLIC SEWER SERVICE IS TO BE PROVIDED BY AN EXISTING 8" MAIN LOCATED NEAR BATTERY RIDGE LANE.
18. PARKING SPACES WILL BE PROVIDED AS GENERALLY SHOWN ON THE PLAN. THE NUMBER OF PARKING SPACES MAY BE INCREASED OR DECREASED FROM THAT NUMBER REPRESENTED IN THAT TABULATION AS LONG AS THE MINIMUM NUMBER OF SPACES IS PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 11 OF THE ZONING ORDINANCE.
19. THERE ARE NO RECREATIONAL FACILITIES PROPOSED WITH THIS DEVELOPMENT.
20. A SEATING AREA IS BEING PROPOSED AS A SPECIAL AMENITY FOR THIS DEVELOPMENT.
21. A DEVELOPMENT SCHEDULE HAS NOT BEEN DETERMINED AT THIS TIME.
22. SEE SHEET 9 FOR ARCHITECTURAL ELEVATIONS.
23. A TRAIL IS NOT REQUIRED FOR THIS PROJECT PER THE FAIRFAX COUNTY TRAILS PLAN.
24. PARCEL "A" WILL BE CONVEYED TO A HOMEOWNERS ASSOCIATION FOR OWNERSHIP AND MAINTENANCE.
25. MINOR MODIFICATIONS TO THE BUILDING FOOTPRINTS, LOT AREAS, DIMENSIONS, UTILITY LAYOUT, AND LIMITS OF CLEARING AND GRADING MAY OCCUR WITH THE FINAL ENGINEERING DESIGN, IN SUBSTANTIAL CONFORMANCE WITH THE CDP/FDP, PROVIDED SUCH ARE IN ACCORDANCE WITH THE MINOR MODIFICATIONS PROVISION IN SECTION 16-403 OF THE ZONING ORDINANCE.



VICINITY MAP
SCALE : 1" = 2000'



TYPICAL WOOD FENCE W/COLUMNS
SCALE : 1" = 5'

REVISIONS		
NO.	SHEET NUMBER AND REVISION DESCRIPTION	DATE
1.	(1) REVISED SITE TABS & TYPICAL LOT DETAIL, ADDED DENSITY CALCULATIONS (3) REVISED LAYOUT FOR LOTS 1-6, REMOVED R/W DED., ADJUSTED RAIN GARDEN FOOTPRINT (4) REV. LANDSCAPING, TREE COVER CALCS & DEVIATION LETTER (5&6) REVISED TREES TO BE PRESERVED/REMOVED (7) REVISED OUTFALL CALCULATIONS & NARRATIVE (8&9) NEW SHEETS	7-14-11
2.	(1) REVISED SITE TABS, ADDED MODIFICATION REQUEST, ADDED FENCE DETAIL (3) ADDED 2ND SEATING AREA, REVISED RAIN GARDEN, REVISED FENCE HEIGHTS (4) REV. LANDSCAPING, TREE COVER CALCS & DEVIATION LETTER (7&8) REVISED OUTFALL CALCULATIONS & NARRATIVES	8-17-11

NO CHANGES, OTHER THAN THOSE SPECIFIED ABOVE, HAVE BEEN MADE TO THIS PLAN FROM WHAT WAS PREVIOUSLY SUBMITTED OR APPROVED.

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

- ☒ 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 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 3.
- ☒ 3. Provide :

Facility Name/ Type & No.	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
Bioretention Filter	1.30±	0	1.30±	4,650±	1,260±	N/A

- ☒ 4. Onsite drainage channels, outfalls, and pipe systems are shown on Sheet 3. Pond inlet and outlet pipe systems are shown on Sheet 3.
- ☒ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 3. Type of maintenance access road surface noted on the plat is subject to review at final plans.
- ☒ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 4.
- ☒ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 7.
- ☒ 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.
- ☒ 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 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 1 & 2.
- ☐ 11. A submission waiver is requested for N/A
- ☐ 12. Stormwater management is not required because N/A

SITE TABULATIONS

SITE AREA :	
LOT AREA	37,849ϕ (0.869 Ac)
PARCEL "A"	45,025ϕ (1.034 Ac)
TOTAL	82,874ϕ (1.903 Ac)

PDH-8 ZONE

	REQUIRED	PROVIDED
NUMBER OF UNITS	---	6 SINGLE-FAMILY DETACHED + 4 SINGLE-FAMILY ATTACHED (10 TOTAL UNITS)
MAXIMUM DENSITY	8 DU/AC *	5.256 DU/AC *
MINIMUM LOT AREA SINGLE-FAMILY DETACHED SINGLE-FAMILY ATTACHED	 N/R N/R	 4,500ϕ ± 1,900ϕ ±
AVERAGE LOT AREA SINGLE-FAMILY DETACHED SINGLE-FAMILY ATTACHED	 N/R N/R	 4,800ϕ ± 2,240ϕ ±
MAXIMUM BUILDING HEIGHT	N/R	40'
MINIMUM YARDS	N/R	SEE DETAIL ON THIS SHEET
OPEN SPACE	25%	27%±
PARKING	SFD – 3 spaces/unit (18 spaces) SFA – 2.7 spaces/unit (11 spaces) = 29 total spaces	20 garage spaces + 20 driveway spaces + 8 surface spaces = 48 total spaces (4.8 spaces/unit)

* SEE DENSITY CALCULATIONS

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED ~~10-18-2011~~
Date of (BOS) (PC) Approval 10-18-2011
Sheet 1 of 9

COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
Lic. No. 018450
8-17-11
PROFESSIONAL ENGINEER

RECEIVED
Department of Planning & Zoning
AUG 18 2011
Zoning Evaluation Division

DEVELOPER
LANDMARK ATLANTIC
2700 SOUTH NELSON STREET
ARLINGTON, VIRGINIA 22206
(703)998-5200

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2 EXISTING CONDITIONS PLAN & VEGETATION MAP
3 CONCEPTUAL/FINAL DEVELOPMENT PLAN
4 CONCEPTUAL LANDSCAPE PLAN
5 TREE PRESERVATION PLAN
6 TREE PRESERVATION INVENTORY
7 & 8 OUTFALL ANALYSIS
9 ARCHITECTURAL ELEVATIONS

CPJ Associates
Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
3959 PENDER DRIVE SUITE 210 FAIRFAX, VIRGINIA 22030 (703)385-7555
SILVER SPRING, MD FAX(703)273-8595

DATE : APRIL 7, 2011
REVISED : JULY 14, 2011
AUGUST 17, 2011

STONE ROAD PROPERTY

FILE # 10-506

Plotted: 8/17/11 14:35 Acad Dwg: N:\10506\DWG\00-FD001.DWG

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED ~~10-18-2011~~
Date of (BOS) (PC) Approval 10-18-2011

Sheet 2 of 9

LEGEND

- EXISTING ZONING BOUNDARY
- 402 EXISTING CONTOUR
- 400 EXISTING INDEX CONTOUR
- EXISTING TREELINE
- EX. SAN. SEWER & EASEMENT
- EX. STORM DRAIN & EASEMENT
- EX. WATERMAIN & EASEMENT
- OHW EXISTING UTILITY LINE & POLE
- G EXISTING UNDERGROUND GAS LINE
- EXISTING STREET LIGHT
- 21,000 VPD VEHICLES PER DAY COUNT

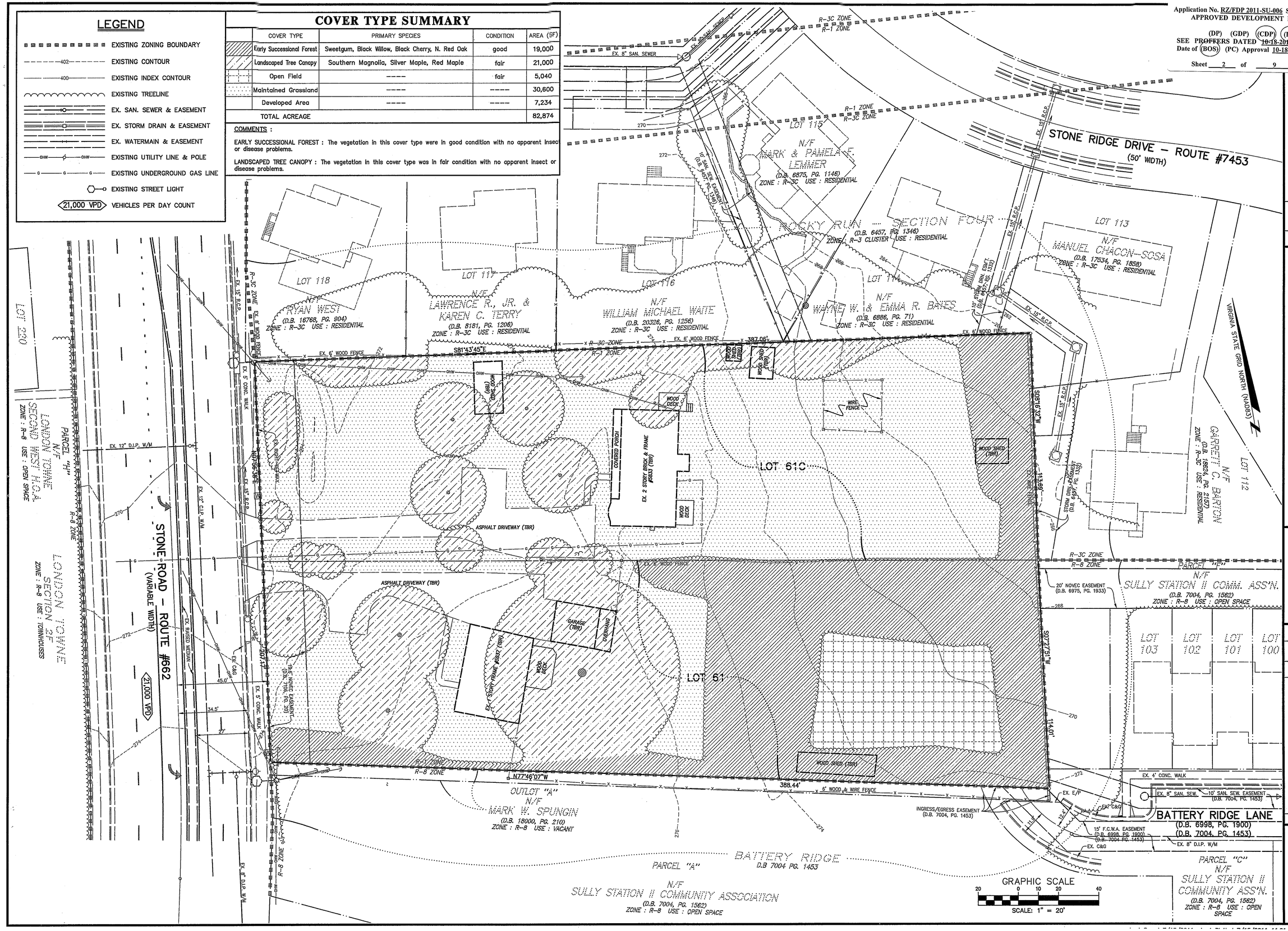
COVER TYPE SUMMARY

COVER TYPE	PRIMARY SPECIES	CONDITION	AREA (SF)
Early Successional Forest	Sweetgum, Black Willow, Black Cherry, N. Red Oak	good	19,000
Landscaped Tree Canopy	Southern Magnolia, Silver Maple, Red Maple	fair	21,000
Open Field	----	fair	5,040
Maintained Grassland	----	----	30,600
Developed Area	----	----	7,234
TOTAL ACREAGE			82,874

COMMENTS :

EARLY SUCCESSIONAL FOREST : The vegetation in this cover type were in good condition with no apparent insec or disease problems.

LANDSCAPED TREE CANOPY : The vegetation in this cover type was in fair condition with no apparent insect or disease problems.



NO.	DATE	REVISION PRIOR TO APPROVAL

CPJ Associates
Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
3959 PENDER DRIVE SUITE 210 FAIRFAX, VIRGINIA 22030 (703)385-7555
SILVER SPRING, MD FAX(703)273-8595

EXISTING CONDITIONS PLAN & VEGETATION MAP

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
Lic. No. 018450
7-15-11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROV.	DATE
	REVISIONS			

DESIGN KJV	DRAFT KJV		
	APPROVED HMF		
	DATE APR. 2011	SCALE HORIZ. 1" = 20' VERT.	

SHEET 2 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP

RZ 2011-SU-006

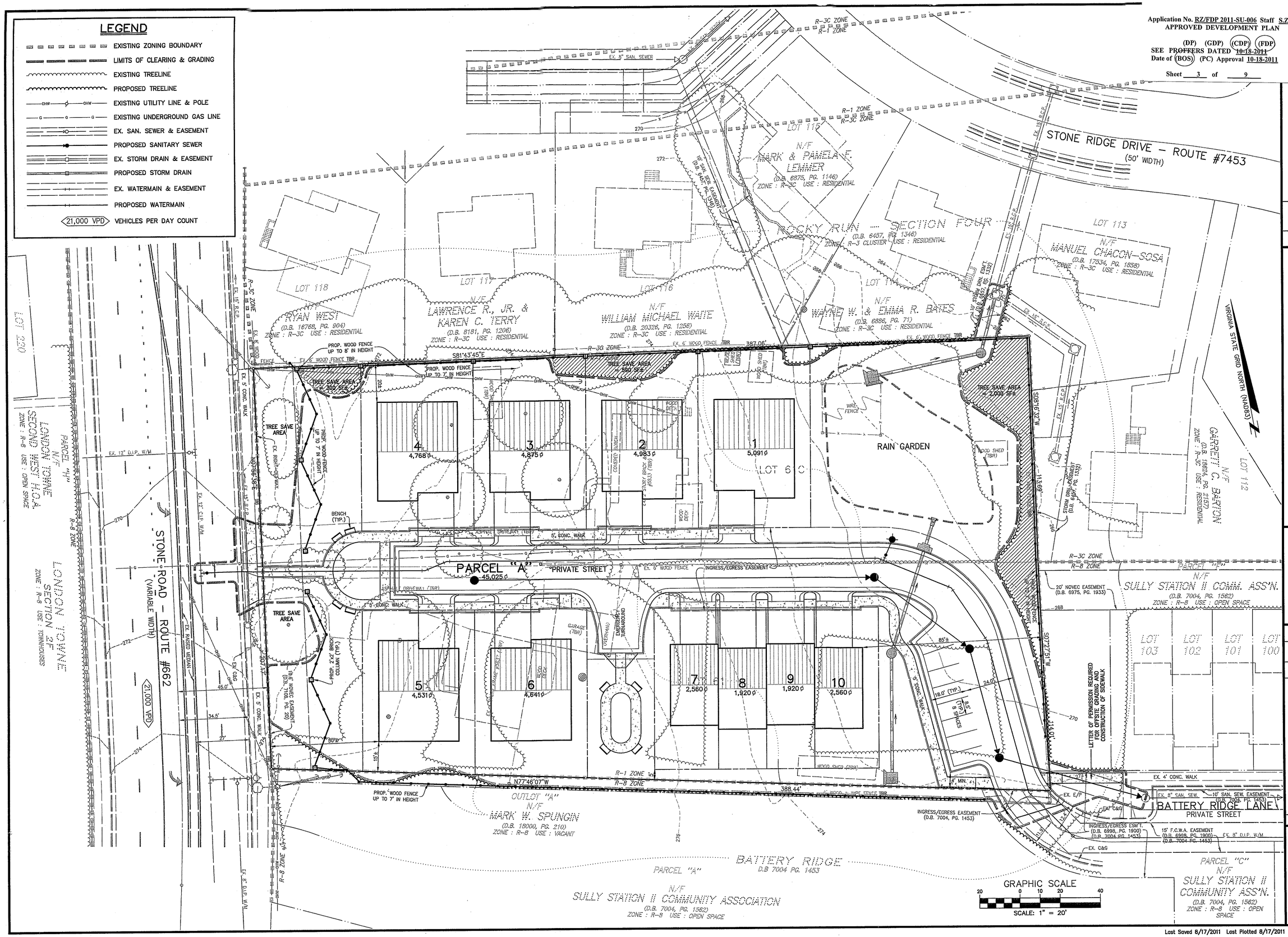
Attached Xrefs: 00-R0301/00-R0401/00-F0500

kvastal

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED ~~10-18-2011~~
Date of (BOS) (PC) Approval 10-18-2011

Sheet 3 of 9



NO.	DATE	REVISION PRIOR TO APPROVAL
2.	8-17-11	ADDED 2ND SEATING AREA, REV. RAIN GARDEN, REV. FENCE HEIGHTS (KJV)
1.	7-14-11	REVISED LAYOUT FOR LOTS 1-6, REMOVED R/W DEDICATION, ADJUSTED RAIN GARDEN FOOTPRINT (KJV)

CPJ Associates
Charles P. Johnson & Associates, Inc.
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SILVER SPRING, MD FAX(703)273-6595

CONCEPTUAL/FINAL DEVELOPMENT PLAN

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

RZ 2011-SU-006

COMMONWEALTH OF VIRGINIA PAUL B. JOHNSON Lic. No. 018450 8-17-11 PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROVD	DATE
	REVISIONS			

DESIGN KJV | DRAFT KJV | APPROVED HMF | DATE APR. 2011 | SCALE HORIZ: 1" = 20' VERT: ---

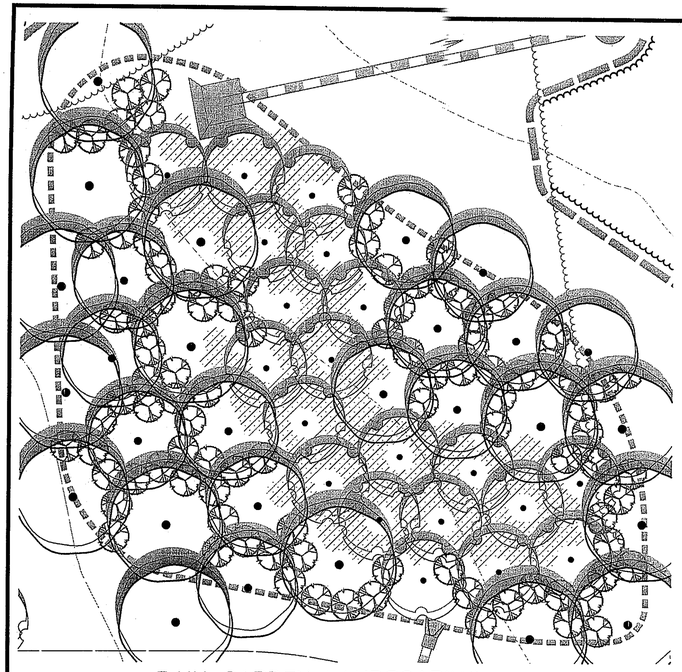
SHEET 3 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP

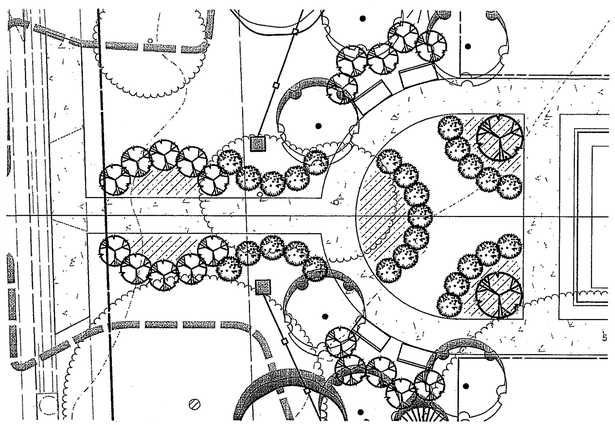
Attached Xrefs: 00-F0700/00-F0500/00-R0301/00-R0401

Last Saved 8/17/2011 Last Plotted 8/17/2011 2:45 PM Sheet N:\10506\DWG\00-F0401



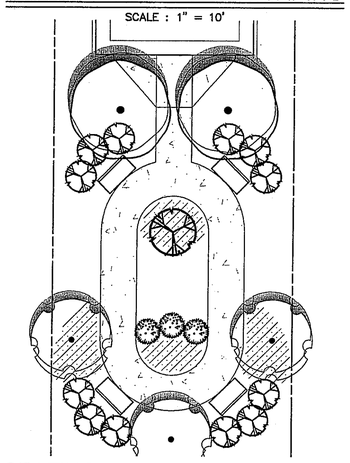
RAIN GARDEN LANDSCAPING

SCALE : 1" = 10'



SEATING AREA LANDSCAPING

SCALE : 1" = 10'



SEATING AREA LANDSCAPING

SCALE : 1" = 10'

Table 12.10 10-YEAR TREE CANOPY CALCULATION WORKSHEET

A. Tree Preservation Target Calculations and Statement (Table 12.3)

A	Pre-development area of existing tree canopy	40,000 SF
B	Percentage of gross site area covered by existing tree canopy	48.3 %
C	Percentage of 10-year canopy required for site	20 %
D	*Percentage of 10-year canopy requirement that should be met through tree preservation*	48.3 %
E	*Proposed percentage of canopy requirement that will be met through tree preservation*	21.8 %
F	Has the Tree Preservation Target minimum been met?	NO
G	If no, provide sheet number where deviation request is located	SHEET 4

B. Tree Canopy Requirement

1	Identify gross site area	82,874 SF
2	Subtract area dedicated to road frontage and parks	0 SF
3	Subtract area of exemptions	0 SF
4	*Adjusted gross site area (B1 - B2 - B3)*	*82,874 SF*
5	Identify site's zoning and/or use	PDH-8
6	*Percentage of 10-year canopy required*	*20 %*
7	*Area of 10-year canopy required (B4 x B6)*	*16,575 SF*
8	Is a modification of canopy requirements being requested?	NO
9	If B8 is yes, provide sheet number where modification request is located	N/A

C. Tree Preservation

1	*Tree Preservation Target Area*	*8,000 SF*
2	Total canopy area meeting standards of §12-0200	2,890 SF
3	x 1.25	3,613 SF
4	Total canopy area of unique or valuable forest or woodland communities	0 SF
5	x 1.50	0 SF
6	Total canopy area of Heritage, Memorial, Specimen or Street Trees	0 SF
7	x 1.5 to 3.0	0 SF
8	Canopy area of trees within Resource Protection Areas and 100-year floodplains	0 SF
9	x 1.0	0 SF
10	*Total of C3, C5, C7, and C9*	*3,613 SF*

D. Tree Planting

1	*Area of canopy to be met through tree planting (B7 - C10)*	*12,962 SF*
2	Area of canopy to be planted for air quality or wildlife benefits	11,000 SF
3	x 1.50	16,500 SF
4	Area of canopy to be planted for energy conservation	0 SF
5	x 1.50	0 SF
6	Area of canopy to be planted for water quality benefits	0 SF
7	x 1.25	0 SF
8	Area of canopy provided by native trees	0 SF
9	x 1.50	0 SF
10	Area of canopy provided by improved cultivars and varieties	0 SF
11	25% credit	0 SF
12	Area of canopy provided by other trees	1,750 SF
	x 1.0	1,750 SF
13	Area of canopy provided through tree seedlings	0 SF
	x 1.0	0 SF
14	Area of canopy provided through native shrubs or woody seed mix	0 SF
	x 1.0	0 SF
15	Percentage of line D13 represented by line D14 (must not exceed 33% of D13)	0 %
16	*Total of canopy area to be provided through tree planting*	*18,250 SF*
17	Is offsite planting relief requested?	NO
18	Tree Bank or Tree Fund?	N/A
19	Canopy area requested to be provided through offsite banking or tree fund	0 SF
20	Amount to be deposited into the Tree Preservation and Planting Fund	0

E. Total of 10-year Tree Canopy Provided

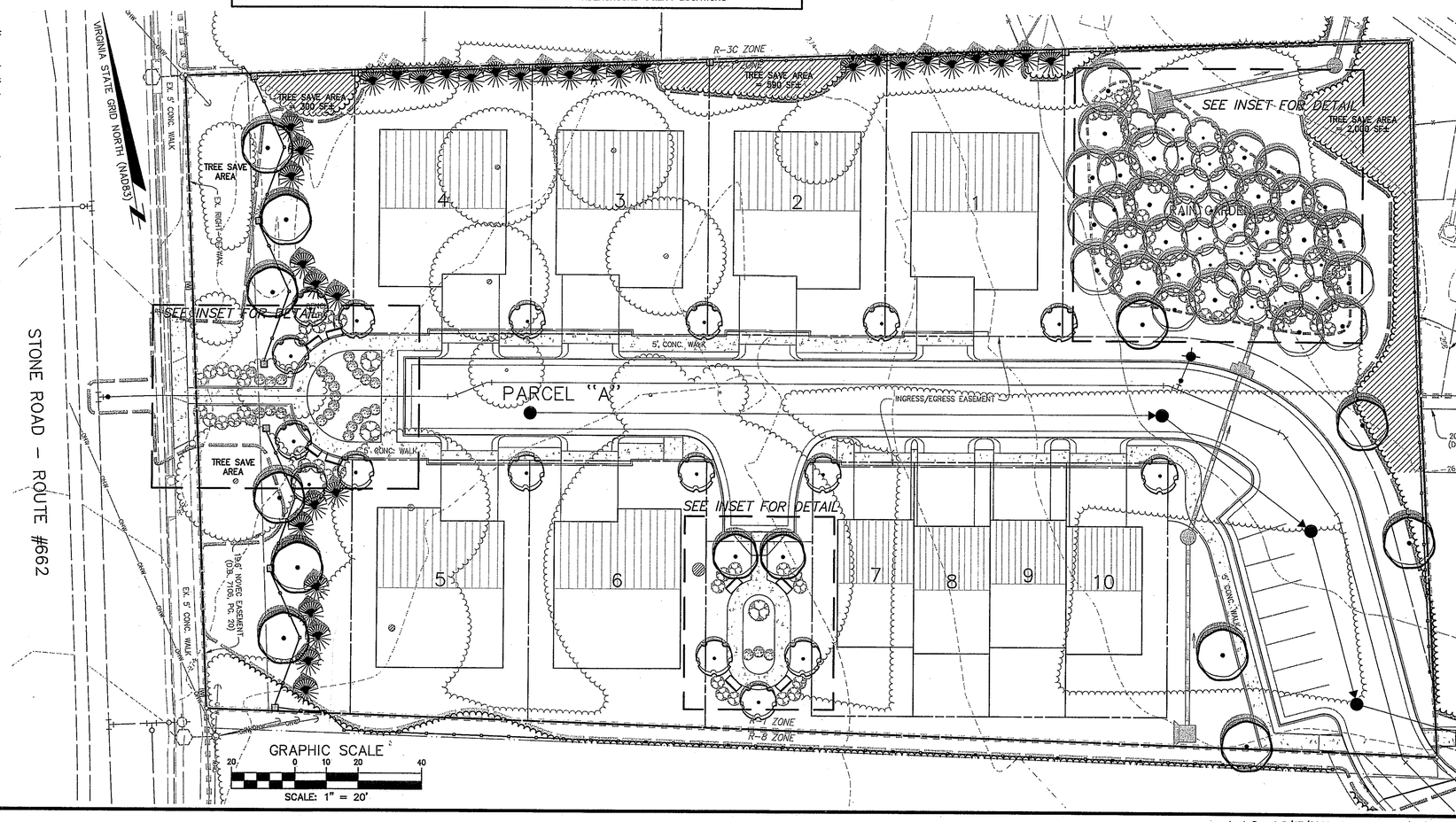
1	Total canopy area provided through tree preservation (C10)	3,613 SF
2	Total canopy area provided through tree planting (D16)	18,250 SF
3	Total canopy area provided through offsite mechanism (D19)	N/A SF
4	*Total 10-year tree canopy provided*	*21,863 SF*

Total 10-year tree canopy provided (% of net site area) 26 %

LEGEND

- CAT. III & IV SHADE TREE (2" CAL.) *(E.G. RED MAPLE, WILLOW OAK, RIVER BIRCH, BEECH)*
- CAT. I & II EVERGREEN TREE (8' HGT.) *(E.G. ARBORVITAE, ATLANTIC WHITE-CEDAR)*
- CAT. II ORNAMENTAL TREE (2" CAL.) *(E.G. SERVICEBERRY, SWEETBAY MAGNOLIA)*
- MEDIUM–LARGE DECIDUOUS SHRUB
- SMALL EVERGREEN SHRUB
- GROUNDCOVER AND/OR PERENNIALS

LANDSCAPING IS CONCEPTUAL IN NATURE. FINAL LOCATIONS AND SPECIES ARE TO BE DETERMINED WITH FINAL SITE PLAN. NATIVE AND/OR DESIRABLE SPECIES WILL BE USED WHERE POSSIBLE. TREE LOCATIONS AND SIZES MAY VARY WITH FINAL OVERHEAD & UNDERGROUND UTILITY LOCATIONS



CPJ Associates — Charles P. Johnson & Associates, Inc.
Planners Engineers Landscape Architects Surveyors Environmental Services
3959 Pender Drive, Suite 210 • Fairfax, VA 22030 • 703-385-7555 • Fax: 703-273-8595

August 17, 2011

Fairfax County
Urban Forest Management Division
12055 Government Center Parkway
Fairfax, Virginia 22035

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 10-18-2011
Date of (BOS) (PC) Approval 10-18-2011
Sheet 4 of 9

Attention: Mr. Mike Knapp

Re: Stone Road Property

Dear Mr. Knapp:

The purpose of this letter is to request a deviation from the Tree Preservation Target Area requirement of PFM § 12-0507. It is our belief that this deviation request meets the conditions allowed under PFM § 12-0507.3A(1).

If the development were to meet the required target area of 8,000 square feet, or more than what is proposed to be saved with this plan, it would preclude the development of the density allowed by the Zoning Ordinance. The tree cover is most dense in the southeastern corner of the site; at the point of access to the project. Roughly half of the existing tree canopy of the site can be categorized as Landscaped Tree Canopy, as shown on the Existing Vegetation Map on Sheet 2. Because the locations of these trees are scattered across a large portion of the site, it would require multiple lots to be removed in order to save another 4,387 square feet of tree cover to reach the Target Area. One large silver maple in less than ideal condition covers 7,200 square feet by itself near the middle of the site. The plan as shown has a total tree preservation area of 4,113 square feet. This does not include 1,700 square feet of tree canopy (2,125 square feet with 10-year credit) to be saved within the existing utility easement along Stone Road, which cannot be counted toward the site's total tree preservation area.

Clearing and grading for this development has been minimized to only what is necessary, preserving several on-site trees along the northern and eastern boundaries.

The remainder of the ten-year Tree Canopy Requirement of 20% will be achieved with landscaping which will be of better quality and species than much of the vegetation currently occupying the site, the total of which will be in excess of the Requirement. Most of these trees will be located along Stone Road and the proposed private street extension, as well as in the proposed rain garden.

If you have any questions or concerns, please do not hesitate to contact me at 703-385-7555 or kvestal@cpja.com

Sincerely,

Kenneth J. Vestal, L. L. A.

N:\10506\wp\Planning\Tree Preservation Target Area.doc

Silver Spring, MD • Gaithersburg, MD • Frederick, MD • Eastern Shore, MD • Fairfax, VA

NO.	DATE	REVISION PRIOR TO APPROVAL
2.	8-17-11	REV. LANDSCAPING, TREE COVER CALCS & DEVIATION LETTER (KJV)
1.	7-14-11	REVISED LANDSCAPING, TREE COVER CALCS & DEVIATION LETTER (KJV)

CPJ Associates — Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
3959 PENDER DRIVE SUITE 210 FAIRFAX, VIRGINIA 22030 (703)385-7555
SILVER SPRING, MD FAX(703)273-8595

CONCEPTUAL LANDSCAPE PLAN

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

RZ 2011-SU-006

COMMONWEALTH OF VIRGINIA — PAUL B. JOHNSON — Lic. No. 016450 — 8-17-11 — PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROV	DATE
	REVISIONS			

DESIGN KJV	DRAFT KJV	APPROVED HMF	DATE APR. 2011
SCALE HORIZ: 1" = 20' VERT:			

SHEET 4 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP

Attached Xrefs: 00-F0700/00-F0500/00-R0301/00-R0401

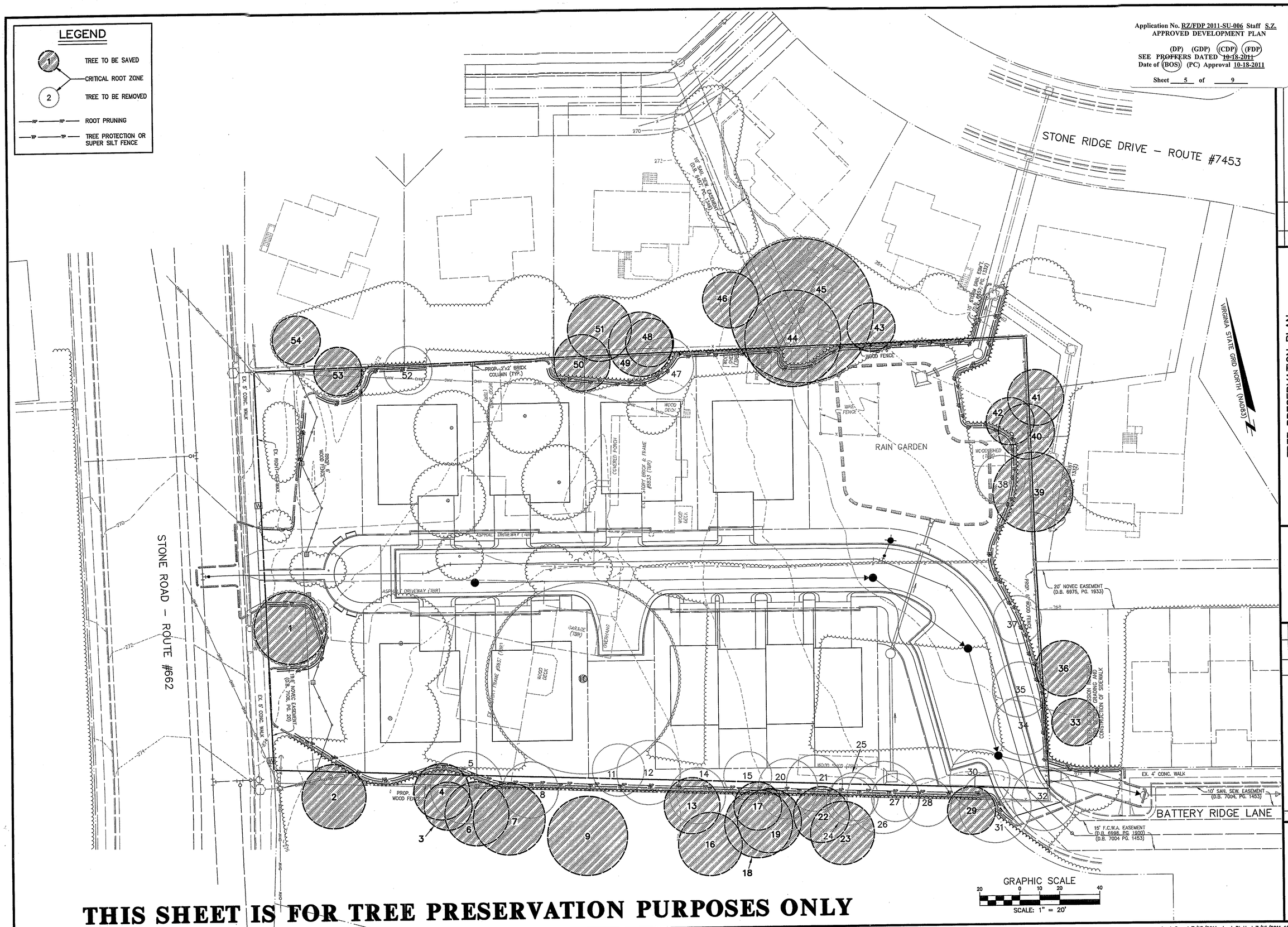
Last Saved 8/17/2011 Last Plotted 8/17/2011 3:03 PM Sheet N:\10506\DWG\00-F6601

kvestal

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED ~~10-18-2011~~
Date of (BOS) (PC) Approval 10-18-2011

Sheet 5 of 9



THIS SHEET IS FOR TREE PRESERVATION PURPOSES ONLY

NO.	DATE	REVISION PRIOR TO APPROVAL
1.	7-14-11	REVISED TREES TO BE PRESERVED/REMOVED (KJW)

CPJ Associates
Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
3959 PENDER DRIVE SUITE 210 FAIRFAX, VIRGINIA 22030 (703)385-7555
SILVER SPRING, MD FAX(703)273-8595

TREE PRESERVATION PLAN

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
Lic. No. 018450
7-15-11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	BY	APPROD.	DATE
	REVISIONS			

DESIGN	DRAFT	APPROVED	DATE
BLM	BLM	HMF	APR. 2011

SCALE: HORIZ: 1" = 20' VERT: —

SHEET	OF
5	9

PRJ NO: 10-506
TYPE: CDP/FDP

Last Saved 7/15/2011 Last Plotted 7/15/2011 10:50 AM Sheet N:\10506\DWG\00-F6B01

TREE INVENTORY AND ACTIVITIES SPREADSHEET

Tree #	COMMON NAME	SCIENTIFIC BINOMIAL	DBH(in)	CONDITION	COMMENTS	STATUS	ACTIVITIES: ROOT PRUNE	MULCH	TREE FENCE	PRUNE	FERTILIZE	CABLE	CAMBISTAT	TREAT PESTS
1	Red Maple	Acer rubrum	18	75	Inclusive bark, limb dieback, broken limbs, girdling roots	Preserve	X	X	X	X				
2	Northern Red Oak	Quercus rubra	16	71	Offsite - Dual leaders, inclusive bark, buttressing roots, limb dieback, uneven canopy, vines growing at the base of the tree	Preserve	X	X	X	X				
3	Black Oak	Quercus velutina	12	71	Offsite - Large growth at the base of the trunk, large vine growing up the trunk, limb dieback, one sided growth, sparse canopy	Preserve	X	X	X	X				
4	Black Oak	Quercus velutina	14	78	Offsite - Large vine growing up the trunk, sparse canopy	Preserve	X	X	X	X				
5	White Oak	Quercus alba	18	65	Offsite - One sided growth, tree leaning towards the site, limb dieback. Removal recommended with owner's permission.	Remove								
6	Northern Red Oak	Quercus rubra	16	69	Offsite - Epicormic sprouting, girdling roots, inclusive bark, poor form, small canopy	Preserve	X	X	X	X				
7	Northern Red Oak	Quercus rubra	18	75	Offsite - Buttressing roots, girdling roots, limb dieback, large broken limb	Preserve	X	X	X	X				
8	Sweetgum	Liquidambar styraciflua	14	65	Offsite - Uneven growth, poor branching & form, limb dieback, broken limbs, growing against metal fence. Removal recommended with owner's permission.	Remove								
9	Northern Red Oak	Quercus rubra	20	71	Offsite - Poor form, inclusive bark, limb dieback, Trunk jogs out of place near the canopy, uneven canopy, epicormic sprouting	Preserve	X	X	X	X				
10	Silver Maple	Acer saccharinum	48	68	Inclusive bark, poor branch connections, poor branching, limb dieback, epicormic sprouting	Remove								
11	Black Oak	Quercus velutina	13	87	Large vine growing up the trunk of the tree, limb dieback	Remove								
12	Sweetgum	Liquidambar styraciflua	16	65	Assessed as Hazardous. Severely leaning tree, large vine growing up the trunk, cable inserted into trunk	Remove								
13	Ash	Fraxinus americana	14	78	Offsite - Poor form, crooked trunk with numerous jogs, inclusive bark, uneven canopy	Preserve	X	X	X	X				
14	Sweetgum	Liquidambar styraciflua	12	78	Offsite - Epicormic sprouting, uneven canopy. Removal recommended with owner's permission.	Remove								
15	Sweetgum	Liquidambar styraciflua	12	78	Limb dieback, small uneven canopy	Remove								
16	Northern Red Oak	Quercus rubra	16	71	Offsite - Dual leaders, poor form, uneven canopy, hole at the base of the trunk, curve in the trunk	Preserve	X	X	X					
17	Sweetgum	Liquidambar styraciflua	12	79	Offsite - Curved trunk, uneven canopy, poor form	Preserve	X	X	X	X				
18	Sweetgum	Liquidambar styraciflua	14	72	Offsite - Small canopy, secondary leader dead, inclusive bark	Preserve	X	X	X	X				
19	Sweetgum	Liquidambar styraciflua	16	84	Offsite - Large vine growing up the trunk, limb dieback, uneven canopy	Preserve	X	X	X	X				
20	Sweetgum	Liquidambar styraciflua	15	81	Limb dieback, crowding uneven canopy	Remove								
21	Sweetgum	Liquidambar styraciflua	14	81	One sided canopy, broken limbs	Remove								
22	Sweetgum	Liquidambar styraciflua	12	84	Offsite - Broken limbs, sparse canopy, limb dieback	Preserve	X	X	X	X				
23	Sweetgum	Liquidambar styraciflua	16	84	Offsite - Limb dieback, sparse canopy	Preserve	X	X	X					
24	Sweetgum	Liquidambar styraciflua	12	79	Offsite - Large vine growing up the trunk, limb dieback, sparse canopy. Removal recommended with owner's permission.	Remove								
25	Sweetgum	Liquidambar styraciflua	12	69	Offsite - Secondary leader growing at an angle, uneven canopy, limb dieback, vines beginning to grow up trunk of tree. Removal recommended with owner's permission.	Remove								
26	Northern Red Oak	Quercus rubra	18	71	Offsite- Epicormic sprouting, uneven canopy. Removal recommended with owner's permission.	Remove								
27	American Beech	Fagus grandifolia	12	62	Growing into adjacent Sweetgum, inclusive bark, broken limbs, limbs growing towards the ground, epicormic sprouting.	Remove								
28	Sweetgum	Liquidambar styraciflua	12	71	Offsite - Uneven canopy, trunk near the crown is beginning to grow at an angle. Removal recommended with owner's permission.	Remove								
29	Northern Red Oak	Quercus rubra	12	75	Offsite - Limb dieback, sparse canopy, epicormic sprouting	Preserve	X	X	X					
30	Sweetgum	Liquidambar styraciflua	15	78	Vines growing up the trunk, uneven canopy, limb dieback	Remove								
31	Northern Red Oak	Quercus rubra	18	72	Offsite - Large vine growing up the trunk of the tree, limb dieback, sparse canopy	Remove								
32	Northern Red Oak	Quercus rubra	16	75	Asphalt covering one side of the root zone, broken limbs, limb dieback	Remove								
33	White Pine	Pinus strobus	12	79	Offsite - Limb dieback on one side, broken limbs	Preserve	X	X	X	X				
34	White Pine	Pinus strobus	15	84	Limb dieback on fence side	Remove								
35	White Pine	Pinus strobus	14	84	Limb dieback on fence side	Remove								
36	White Pine	Pinus strobus	14	79	Offsite - Slight curve in the trunk, broken limbs, limb dieback	Preserve	X	X	X	X'				
37	White Pine	Pinus strobus	12	84	Limb dieback on fence side	Remove								
38	White Ash	Fraxinus americana	12	71	Multi trunk, limb dieback, epicormic sprouting, chain inserted in trunk	Remove								
39	Northern Red Oak	Quercus rubra	20	81	Offsite - Ivy growing up trunk, limb dieback, inclusive bark	Preserve	X	X	X					
40	Black Birch	Betula lenta	14	78	Poor form, epicormic sprouting, limb dieback, trunk of the tree has multiple jogs, inclusive bark	Preserve	X	X	X	X				
41	Sweetgum	Liquidambar styraciflua	16	71	Multi-trunk, sparse canopy, limb dieback, broken limbs, inclusive bark, poor form	Preserve	X	X	X	X				
42	Black Willow	Salix nigra	12	71	Dual trunk, poor form, epicormic sprouting, uneven canopy	Preserve	X	X	X	X				
43	Black Birch	Betula lenta	12	69	Offsite - poor form, poor pruning techniques used, epicormic sprouting	Preserve	X	X	X	X				
44	Northern Red Oak	Quercus rubra	24	78	Offsite - limb dieback, broken limbs	Preserve	X	X	X	X				
45	White Oak	Quercus alba	36	69	Offsite - triple trunk, sparse canopy, limb dieback, limbs growing into the ground	Preserve	X	X	X	X				
46	Bigtooth Aspen	Populus grandidentata	14	69	Offsite - Crack near base of the trunk, sparse canopy	Preserve	X	X	X	X				
47	Sweetgum	Liquidambar styraciflua	14	78	Broken limbs, uneven canopy, limb dieback	Remove								
48	Sweetgum	Liquidambar styraciflua	12	71	Offsite - dual trunk, poor form, limb dieback	Preserve	X		X					
49	Bigtooth Aspen	Populus grandidentata	16	69	Offsite - Pieces of bark missing from trunk, limb dieback	Preserve	X		X					
50	Sweetgum	Liquidambar styraciflua	14	71	Multi trunk, growing into overhead power lines, leaning	Preserve	X	X	X	X				
51	Sweetgum	Liquidambar styraciflua	16	75	Offsite - large broken limb, limbs growing toward ground, uneven canopy	Preserve	X		X					
52	Bigtooth Aspen	Populus grandidentata	12	81	Offsite - Uneven canopy, growing against the fence	Remove								
53	Ash	Fraxinus americana	12	79	Large vine growing up the trunk, limb dieback, inclusive bark	Preserve	X	X	X	X				
54	Red Maple	Acer rubrum	12	85	Offsite - Inclusive bark	Preserve	X		X					

TREE APPRAISAL SPREADSHEET (TRUNK FORMULA METHOD)

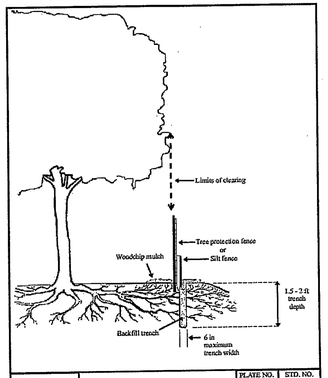
Tree #	COMMON NAME	SCIENTIFIC BINOMIAL	SPECIES RATING	DBH(in)	CONDITION	SITE	CONTRIBUTION	PLACEMENT	LOCATION	STATUS	Appraised Trunk Area TA in2	Tree Trunk Area Increase TA incr	Basic Tree Cost	Appraised Value Trunk Formula Method
1	Red Maple	Acer rubrum	75	18	75	70	70	50	63	Preserve	254.34	234.34	19075.5	$6,795.65
2	Northern Red Oak	Quercus rubra	70	16	71	70	70	70	70	Preserve	200.96	180.96	15072	$5,243.55
3	Black Oak	Quercus velutina	80	12	71	70	65	60	65	Preserve	113.04	93.04	8478	$3,130.08
4	Black Oak	Quercus velutina	80	14	78	70	70	50	63	Preserve	153.86	133.86	11539.5	$4,560.41
6	Northern Red Oak	Quercus rubra	70	16	69	70	65	60	65	Preserve	200.96	180.96	15072	$4,731.85
7	Northern Red Oak	Quercus rubra	70	18	75	70	70	60	67	Preserve	254.34	234.34	19075.5	$6,676.43
9	Northern Red Oak	Quercus rubra	85	20	71	70	60	65	65	Preserve	314	294	23550	$9,238.08
13	Ash	Fraxinus americana	65	14	78	70	70	60	67	Preserve	153.86	133.86	11539.5	$3,900.35
16	Northern Red Oak	Quercus rubra	70	16	71	70	60	65	65	Preserve	200.96	180.96	15072	$4,869.01
17	Sweetgum	Liquidambar styraciflua	70	12	79	70	65	50	62	Preserve	113.04	93.04	8478	$2,891.14
18	Sweetgum	Liquidambar styraciflua	70	14	72	70	65	50	62	Preserve	153.86	133.86	11539.5	$3,586.48
19	Sweetgum	Liquidambar styraciflua	70	16	84	70	65	50	62	Preserve	200.96	180.96	15072	$5,465.11
22	Sweetgum	Liquidambar styraciflua	70	12	84	70	68	65	68	Preserve	113.04	93.04	8478	$3,373.23
23	Sweetgum	Liquidambar styraciflua	70	16	84	70	65	70	68	Preserve	200.96	180.96	15072	$6,055.93
29	Northern Red Oak	Quercus rubra	70	12	75	70	75	70	72	Preserve	113.04	93.04	8478	$3,189.85
33	White Pine	Pinus strobus	60	12	79	70	80	75	75	Preserve	113.04	93.04	8478	$3,013.93
36	White Pine	Pinus strobus	60	14	79	70	80	75	75	Preserve	153.86	133.86	11539.5	$4,102.29
39	Northern Red Oak	Quercus rubra	70	20	81	70	75	70	72	Preserve	314	294	23550	$9,569.54
40	Black Birch	Betula lenta	75	14	78	70	75	65	70	Preserve	153.86	133.86	11539.5	$4,725.43
41	Sweetgum	Liquidambar styraciflua	70	16	71	70	75	70	72	Preserve	200.96	180.96	15072	$5,368.40
42	Black Willow	Salix nigra	60	12	71	70	60	50	60	Preserve	113.04	93.04	8478	$2,166.98
43	Black Birch	Betula lenta	75	12	69	70	65	70	68	Preserve	113.04	93.04	8478	$2,998.03
44	Northern Red Oak	Quercus rubra	70	24	78	70	70	45	62	Preserve	452.16	432.16	33912	$11,418.17
45	White Oak	Quercus alba	85	36	69	70	80	50	67	Preserve	1017.36	997.36	76302	$29,834.08
46	Bigtooth Aspen	Populus grandidentata	40	14	69	70	75	70	72	Preserve	153.86	133.86	11539.5	$2,282.51
48	Sweetgum	Liquidambar styraciflua	70	12	71	70	75	65	70	Preserve	113.04	93.04	8478	$2,949.50
49	Bigtooth Aspen	Populus grandidentata	40	16	69	70	75	65	70	Preserve	200.96	180.96	15072	$2,911.91
50	Sweetgum	Liquidambar styraciflua	70	14	71	70	60	45	58	Preserve	153.86	133.86	11539.5	$3,345.49
51	Sweetgum	Liquidambar styraciflua	70	16	75	70	75	70	72	Preserve	200.96	180.96	15072	$5,670.84
53	Ash	Fraxinus americana	65	12	79	70	70	45	62	Preserve	113.04	93.04	8478	$2,684.63
54	Red Maple	Acer rubrum	75	12	85	70	75	75	73	Preserve	113.04	93.04	8478	$3,963.47
													TOTAL	$170,712.32

Tree appraisal value determined by the Trunk Formula Method as outlined in the latest edition of *The Guide for Plant Appraisal* published by the International Society of Arboriculture(ISA) .

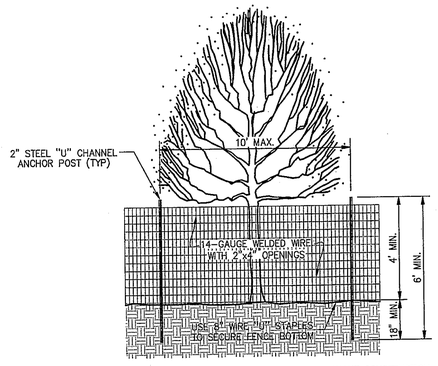
The cost figures applied for Replacement Tree Cost, Installed Tree Cost and Unit Tree Cost are referenced in the 2007 edition of *The Mid-Atlantic Species Rating Guide* published by the Mid Atlantic Chapter of the ISA.

prepared by Rebecca Mitchell ISA Certified Arborist MA-4668A

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 12-0702.1 Rev. 10-06	ROOT PRUNING	PLATE NO. 7-12	STD. NO.



NOTE : TREE PROTECTION FENCING SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION

TREE PROTECTION FENCE DETAIL

NOT TO SCALE

TREE PRESERVATION NARRATIVE:

Trees as referred to in this document are considered those trees that are protected by limits of clearing and grading and shown for preservation on approved plans.

1. **Flagging/ Site Layout:** Prior to requesting a pre-construction meeting, the contractor is responsible for flagging the limits of clearing and grading. These limits shall not exceed that shown on the approved plans

2. **Pre-Construction Meeting:** After clearing limits have been staked a meeting shall be requested by the contractor to walk with owner or owner's designated representative, arborist/forester hired by owner, site superintendant, clearing contractor and UFMD, DPWES representative to make minor adjustments as necessary to observe trees listed in tree preservation activity schedule. Additional preservation activities will be coordinated with the Urban Forestry Division at this time.

3. **Tree Protection Approval:** Selective tree removals, root pruning, and tree protection fence installation should be completed prior to any demolition or land clearing operations. An UFMD, DPWES, representative shall be contacted a minimum of three (3) days prior to any site clearing, grading or demolition activities are to begin, to inspect the site to insure that the tree protection has been installed.

4. **Protection of Existing Understory Vegetation and Soil Conditions in Tree Preservation Areas:** All tree preservation-related work occurring in or adjacent to tree preservation areas shall be accomplished in a manner that minimizes damage to vegetation to be preserved in the lower canopy environment, and to the existing top soil and leaf litter layers that provide nourishment and protection to that vegetation. Any removal of any vegetation or soil disturbance in tree preservation areas including the removal of plant species that may be perceived as noxious or invasive, such as poison ivy, greenbrier, multi-floral rose, etc. shall be subject to the review and approval of UFMD, DPWES

5. **Use of Equipment:** Except as qualified herein, the use of motorized equipment in tree preservation areas will be limited to hand-operated equipment such as chainsaws, wheel barrows, rake and shovels. Any work that requires the use of motorized equipment, such as tree transplanting spades, skid loaders, tractors, trucks, stump-grinders, etc., or any accessory or attachment connected to this type of equipment shall not occur unless pre-approved by UFMD.

6. **Root Pruning:** Tree preservation Areas shall be root pruned along the limits of clearing adjacent to significant trees 20" dbh and greater or as noted by the project arborist in the Tree Inventory and Activity Schedule. Root pruning shall be a minimum of 18" deep and shall be accomplished using a small walk behind trencher or air spade. The root pruning trench shall be backfilled immediately. Silt fence/super silt fence installation utilizing walk behind trencher can be substituted for root pruning.

7. **Mulching:** Trees indicated will be mulched with wood chips generated from on site clearing or tree removal and pruning operations when possible. Shredded hardwood mulch from offsite maybe utilized if approved by project arborist. Mulch shall be apread in a uniform depth of three (3") inches by hand. Mulch shall be placed in an areas as indicated on approved plans or extending in a swath fifteen feet wide along the Limit of Disturbance adjacent to indicated trees at minimum.

8. **Tree Protection Fencing:** Tree Preservation Areas shall be protected by fencing in the form of four (4) foot high, fourteen (14) gauge welded wire attached to six (6) foot steel t-bar posts driven eighteen (18) inches into the ground at maximum ten (10) foot spacing. Super-Silt fencing can be substituted for tree protection fencing as approved by UFMD. Fencing shall be erected at the limits of clearing and grading as shown on the demolition, and erosion and sediment control sheets. The installation of all tree protection fence types should be performed under the supervision of a certified arborist, and accomplished in a manner that does not harm existing vegetation that is to be preserved. Tree protection fencing shall be made clearly visible to all construction personnel. Bilingual signs stating "TREE PRESERVATION AREA – KEEP OUT" shall be affixed to the tree preservation fence at least every 30 feet, and five (5) working days prior to the commencement of any clearing, grading, or demolition activities, but subsequent to the installation of the tree protection devices including fencing. UFMD and the district supervisor staff shall be notified and given the opportunity to inspect the site to assure 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 UFMD.

9. **Tree Protection Maintenance:** Fencing shall be maintained in an upright position for the duration of the project. Tree protection fencing that is damaged as a result of land clearing operations shall be repaired prior to the end of the workday that the damage occurred.

10. **Pruning:** All pruning shall conform to current ANSI A300-2001 pruning standards. Trees designated for pruning shall be crown cleaned of deadwood 2" and greater unless otherwise specified by the project arborist. The interior of trees shall not be stripped of live tissue, suckers, or epicormic branches. Damaged, crossing, and rubbing branches may be removed at the arborist's discretion. Debris from pruning operations may be chipped and deposited into the Tree Preservation Areas and spread by hand to a uniform depth or be removed from the site.

11. **Site Monitoring**: During any clearing or tree/vegetation structure removal or transplantation of vegetation on the subject site, a representative of the applicant shall be present to monitor the process and ensure that the activities are conducted as approved by UFMD. The applicant should retain the services of a certified arborist to monitor all construction work and tree preservation efforts in order to ensure conformance with all tree preservation conditions, and UFMD approvals. Monitoring inspections to ensure compliance with tree preservation plans and other jurisdictional requirements shall be conducted daily during initial site clearing operations, weekly through the erosion and sediment control phase, weekly for four weeks there after and monthly for 12 months. The district supervisor shall be notified of the name and contact information of the Applicant's representative responsible for site monitoring at the tree preservation walk-through meeting.

NOTE: AS STATED BY SECTION 12–0507.1B IN THE PUBLIC FACILITIES MANUAL, DEAD TREES AND TREES THAT REPRESENT A POTENTIAL HAZARD TO HUMAN HEALTH AND PROPERTY WHICH ARE 12 INCHES IN DIAMETER OR GREATER THAT RESIDE IN ONE OF THE TWO FOLLOWING AREAS WILL BE IDENTIFIED IN THE TREE INVENTORY.

AREA 1. 100 FEET FROM THE PROPOSED LIMITS OF CLEARING AND GRADING WITHIN THE UNDISTURBED AREA.

AREA 2. 10 FEET FROM THE PROPOSED LIMITS OF CLEARING AND GRADING WITHIN THE DISTURBED AREA.

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 10-18-2011
Date of (BOS) (PC) Approval 10-18-2011
Sheet 6 of 9

THIS SHEET IS FOR TREE PRESERVATION PURPOSES ONLY

TREE PRESERVATION INVENTORY

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

NO.	DATE	REVISION
1.	7-14-11	REVISED TREES TO BE PRESERVED/REMOVED (KJV)

CPJ Associates
Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
3959 PENDER DRIVE SUITE 210 FAIRFAX, VIRGINIA 22030 (703)385-7555
SILVER SPRING, MD FAX(703)273-8595

COMMONWEALTH OF VIRGINIA PAUL B. JOHNSON Lic. No. 018450 7-15-11 PROFESSIONAL ENGINEER

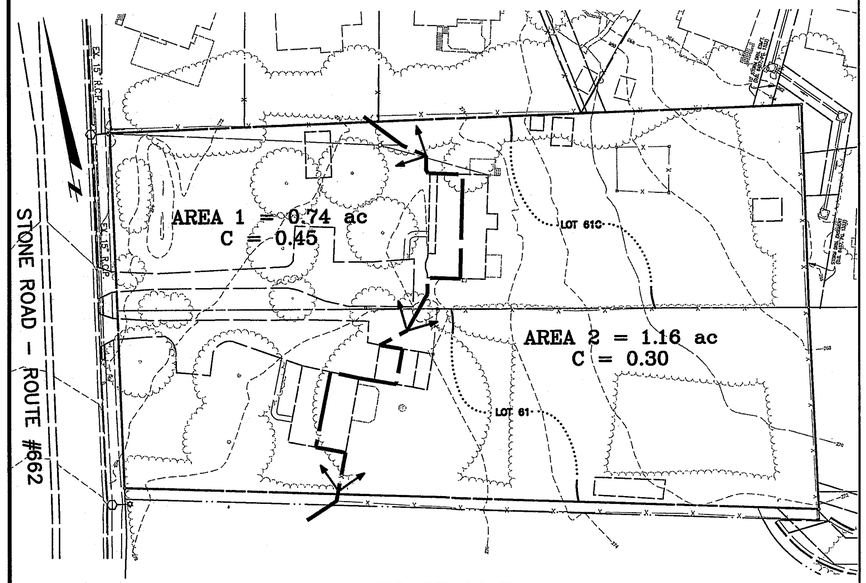
NO.	DESCRIPTION	REVISIONS	REVIEW BY	APPROVD	DATE

DESIGN	DRAFT	DATE
BLM	BLM	APR. 2011
APPROVED		SCALE
HMF		HORIZ: — VERT: —

SHEET 6 OF 9

PRJ NO: 10-506

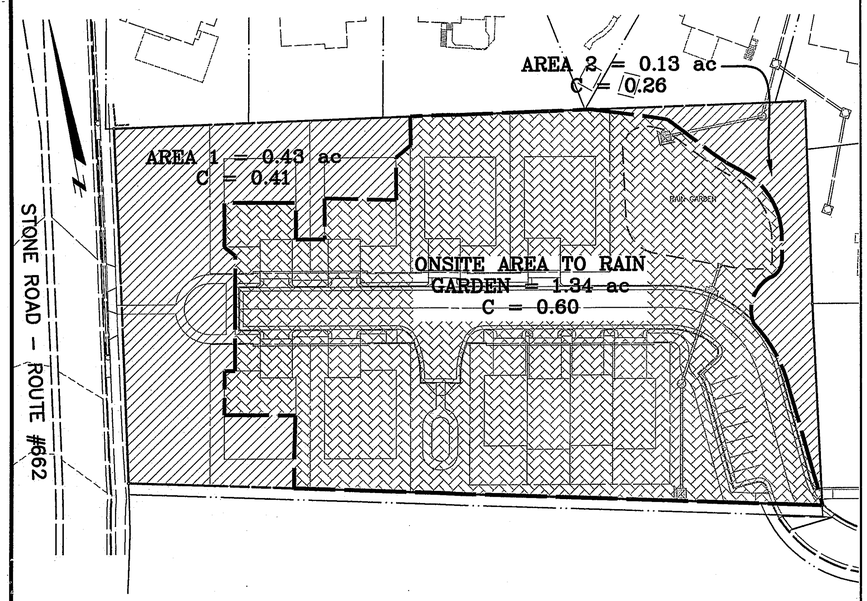
TYPE: CDP/FDP



PRE-DEVELOPMENT DRAINAGE MAP

SCALE : 1" = 40'

GRAPHIC SCALE
40 0 20 40 80
SCALE: 1" = 40'



POST-DEVELOPMENT DRAINAGE MAP

SCALE : 1" = 40'

GRAPHIC SCALE
40 0 20 40 80
SCALE: 1" = 40'

LEGEND

- ONSITE AREA TO PROPOSED BIO-RETENTION FILTER (B1 & B2)
- ONSITE AREA UNCONTROLLED (B3)
- EXISTING CLOSED STORM SEWER SYSTEM

OUTFALL NARRATIVE

THE PROPERTY CONSISTS OF 1.90 ACRES, ON WHICH 6 DETACHED & 4 ATTACHED SINGLE-FAMILY UNITS, A PRIVATE STREET, AND RELATED UTILITIES ARE PROPOSED. HALF OF THE EXISTING SITE IS WOODED. THERE ARE TWO EXISTING HOUSES AND ASPHALT DRIVEWAYS ON THE SITE WHICH ARE TO BE REMOVED. THE SITE HAS SLOPES THAT VARY FROM 2% TO 4%.

THE SITE'S EXISTING STORMWATER RUNOFF SHEET FLOWS IN TWO DIFFERENT DIRECTIONS. AREA 1 (0.74 ACRES) SHEET FLOWS INTO AN EXISTING CLOSED STORM SEWER SYSTEM ALONG STONE ROAD (ROUTE #662) TO THE WEST OF THE SITE. AREA 2 (1.16 ACRES) SHEET FLOWS TOWARDS THE EAST INTO AN EXISTING CLOSED STORM SEWER SYSTEM LOCATED IN ROCKY RUN SECTIONS 3 & 4 (SEE FAIRFAX COUNTY PLAN #s 3919-SD-004-2 & 3919-SD-003-3). THIS EXISTING STORM SEWER SYSTEM DRAINS INTO AN EXISTING DRY POND AND ULTIMATELY DISCHARGES RUNOFF INTO A MAJOR 100-YR FLOODPLAIN FOR BIG ROCKY RUN TO THE EAST OF THE SITE.

Pre-Development Condition

A1=	0.74 Ac.		C=	0.45					
Q2=	0.74	x	0.45	x	5.45	=	1.81	cfs	
Q10=	0.74	x	0.45	x	7.27	=	2.42	cfs	
A2=	1.16 Ac.		C=	0.30					
Q2=	1.16	x	0.3	x	5.45	=	1.90	cfs	
Q10=	1.16	x	0.3	x	7.27	=	2.53	cfs	

TOTAL EXISTING FLOW FROM THE SITE

A = 1.90 Ac.

	A1		A2				
Q2=	1.81	+	1.90	=	3.71	cfs	
Q10=	2.42	+	2.53	=	4.95	cfs	

AFTER THE DEVELOPMENT IS COMPLETED, THE DRAINAGE PATTERN WILL BE SIMILAR TO THE EXISTING DRAINAGE PATTERN. THE TOTAL PROPOSED FLOW FROM THE SITE WILL BE REDUCED (SEE POST-DEVELOPMENT CONDITION COMPUTATION BELOW). MOST OF THE SITE'S RUNOFF (1.34 ACRES) WILL BE COLLECTED INTO A PROPOSED ONSITE CLOSED STORM SEWER SYSTEM AND DISCHARGED INTO A PROPOSED ONSITE BIORETENTION FILTER. RUNOFF FROM AREA 1 (0.43 ACRES) WILL CONTINUE TO SHEET FLOW INTO STONE ROAD (ROUTE #662). THIS FLOW WILL BE REDUCED DUE TO LESS AREA DRAINING TO IT. THE PROPOSED FLOW FROM THE SITE IS AS FOLLOWS:

Post-Development Condition

A1=	0.43 Ac.		C=	0.41					
Q2=	0.43	x	0.41	x	5.45	=	0.96	cfs	
Q10=	0.43	x	0.41	x	7.27	=	1.28	cfs	
A2=	0.13 Ac.		C=	0.26					
Q2=	0.13	x	0.26	x	5.45	=	0.18	cfs	
Q10=	0.13	x	0.26	x	7.27	=	0.25	cfs	

THE BIORETENTION FILTER WILL RELEASE APPROXIMATELY 0.80 CFS FOR THE 2-YR AND 1.2 CFS FOR THE 10-YR STORMS RESPECTIVELY. THESE RELEASE RATES MAY CHANGE WITH THE FINAL ENGINEERING DESIGN, BUT THE TOTAL RUNOFF FROM THE SUBJECT SITE WILL BE BELOW PRE-DEVELOPMENT LEVELS.

TOTAL PROPOSED FLOW FROM THE SITE

A = 1.90 Ac.

	A1		A2		RAIN GARDEN			
Q2=	0.96	+	0.18	+	0.8	=	1.95	cfs
Q10=	1.28	+	0.25	+	1.2	=	2.73	cfs

THE REMAINING UNCONTROLLED AREA FROM AREA 2 (0.13 ACRES) WILL CONTINUE TO SHEET FLOW TOWARDS THE EAST INTO THE EXISTING YARD INLET (EX. STR. # 13) ON ADJACENT LOT 12. THE PROPOSED BIORETENTION FILTER WILL DISCHARGE RUNOFF INTO THE SAME EXISTING STORM SEWER SYSTEM AT EXISTING STRUCTURE #11 (SEE OFFSITE DRAINAGE MAP THIS SHEET). THE EXISTING STORM SEWER SYSTEM HAS BEEN ANALYZED AND FOUND TO HAVE ADEQUATE CAPACITY TO HANDLE THE RUNOFF FROM THE SUBJECT SITE (SEE EXISTING STORM DRAIN DESIGN COMPUTATION THIS SHEET). THIS EXISTING STORM SEWER SYSTEM CONTINUES TO DISCHARGE RUNOFF INTO THE EXISTING MAJOR 100-YR FLOODPLAIN TO THE EAST OF THE SITE.

THE SITE IS LOCATED WITHIN CUB RUN WATERSHED. THE OVERALL DRAINAGE MAP SHOWN ON SHEET 8 DEPICTS THE DRAINAGE AREA WHERE THE EXISTING STORM SEWER SYSTEM OUTFALLS TO THE EXISTING MAJOR FLOODPLAIN FOR BIG ROCKY RUN SUBWATERSHED AT POINT "A". AT THIS POINT, THE TOTAL DRAINAGE AREA IS APPROXIMATELY 4,780 ACRES, WHICH IS MUCH GREATER THAN 100 TIMES OF THE SITE'S AREA (1.90 ACRES).

SINCE THE FLOWS FROM THE SITE WILL BE REDUCED, THE DEVELOPMENT WILL NOT HAVE AN ADVERSE IMPACT ON DOWNSTREAM PROPERTIES. IT IS THEREFORE THE ENGINEER'S OPINION THAT AN ADEQUATE OUTFALL EXISTS FOR THIS PROJECT.

STORMWATER MANAGEMENT AND BMP SUMMARY

STORMWATER MANAGEMENT WILL BE PROVIDED BY MEANS OF AN ONSITE BIORETENTION FILTER WITH STONE STORAGE UNDERNEATH. THE FILTER WILL REDUCE THE POST-DEVELOPMENT PEAK FLOWS FROM THE SITE TO LESS THAN THE PRE-DEVELOPMENT PEAK FLOWS (SEE SHEET 8 FOR BIORETENTION FILTER PRELIMINARY DESIGN).

ADDITIONALLY, THE BIORETENTION FILTER WILL PROVIDE A MINIMUM OF 50% BMPs, WHICH MEETS THE REQUIRED 50% BMPs (SEE BMP COMPS THIS SHEET).

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 10-18-2011
Date of (BOS) (PC) Approval 10-18-2011

Sheet 7 of 9

OFFSITE DRAINAGE MAP

SCALE : 1" = 200'

GRAPHIC SCALE
200 0 100 200 400
SCALE: 1" = 200'

PRELIMINARY BMP COMPUTATIONS

Part 1: List all of the Subareas and "C" Factors used in the BMP Computations

Subarea Designation and Description (1)	"C" (2)	Acres (3)
B1 - Onsite to Rain Garden	0.60	1.302
B2 - Onsite to Rain Garden	0.90	0.038
B3 - Onsite Uncontrolled	0.35	0.565

Part 3: Compute the Total Phosphorus Removal for the Site

Subarea Designation (1)	BMP Type (2)	Removal Eff. (%) (3)		Area Ratio (4)		"C" Factor Ratio (5)		Product (6)
B1	Rain Garden	65	X	0.68	X	1.13	=	50.05
B2	By-Passed	0	X	0.02	X	1.70	=	0.00
B3	Uncontrolled	0	X	0.30	X	0.66	=	0.00
							(a) Total =	50.05

NOTES :
1. THESE AREAS AND COMPUTATIONS ARE PRELIMINARY AND MAY BE ADJUSTED WITH THE FINAL ENGINEERING PLANS.
2. THE SITE IS WITHIN A WATER SUPPLY PROTECTION OVERLAY DISTRICT AND IS SUBJECT TO A 50% PHOSPHOROUS REMOVAL EFFICIENCY.

EXISTING STORM DRAIN DESIGN COMPUTATIONS

FROM	TO	DRAIN. AREA (ACRES)	RUNOFF COEF. C	C x A INCR.	C x A ACCUM	TIME OF CONCENTRATION: tc TO PIPE (min.)	TIME IN PIPE (sec.)	TIME	I	Q (cfs): INCR (c.f.s.)	Q (cfs): ACCUM (c.f.s.)	DESIGN (AS-BUILT): PIPE DIA. In	SLOPE P/Pl	"n"	MAX Q (c.f.s.)	VEL Fl/Sec	PROFILE (AS-BUILT): LENGTH Ft	FALL Ft	UPPER INV	LOWER INV
EX. 13	EX. 12	0.13	0.25	0.03	0.03			5	7.27	0.24	0.24	FROM THE SITE								
		0.09	0.45	0.04	0.07			5	7.27	0.29	0.53	15	0.0533	0.013	14.95	5.11	55.50	2.96	259.18	256.22
EX. 12	EX. 11	0.08	0.45	0.04	0.11			5	7.27	0.26	0.79	15	0.0101	0.013	6.51	3.33	47.50	0.48	255.64	255.36
EX. 11	EX. 10	0.37	0.45	0.17	0.28			5	7.27	1.21	3.20	15	0.0122	0.013	7.15	5.58	73.00	0.89	255.11	254.22
EX. 10	EX. 9	0.59	0.45	0.27	0.54			5	7.27	1.93	5.13	15	0.0332	0.013	11.80	9.12	34.00	1.13	254.07	252.94
EX. 9	EX. 8	0.26	0.45	0.12	0.66			5	7.27	0.85	5.98	15	0.0471	0.013	14.05	10.86	112.00	5.28	252.64	247.36
EX. 8	EX. 7	0.47	0.45	0.21	0.87			5	7.27	1.54	7.52	21	0.0063	0.013	12.62	5.50	136.00	0.86	246.75	245.89
EX. 7	EX. 6	0.76	0.45	0.34	1.21			5	7.27	2.49	10.01	24	0.0311	0.013	39.99	10.29	98.00	3.05	245.57	242.52
EX. 6	EX. 5	0.64	0.45	0.29	1.50			5	7.27	2.09	12.10	24	0.0087	0.013	21.18	7.00	71.00	0.62	244.41	243.79
EX. 5	EX. 3	1.29	0.45	0.58	2.08			10	5.92	3.44	13.51	24	0.0262	0.013	36.67	10.60	107.00	2.80	243.62	240.82
EX. 3	EX. 1	--	--	0.26	2.34			10	5.92	1.54	15.05	24	0.0360	0.013	43.03	12.30	139.00	5.01	238.70	233.69
EX. 1	EX. A10	0.98	0.45	0.44	2.78			10	5.92	2.61	17.66	30	0.0045	0.013	27.65	5.96	151.25	0.73	233.10	232.37
EX. A10	EX. A8	11.99	0.42	5.04	7.82			10	5.92	29.81	47.48	33	0.0161	0.013	67.18	12.19	83.40	1.34	231.66	230.32
EX. A8	EX. A7	0.62	0.45	0.28	8.10			10	5.92	1.65	49.13	30	0.0319	0.013	73.35	15.96	146.30	4.66	230.07	225.41
EX. A7	EX. A6	--	--	0.00	8.10			10	5.92	0.00	49.13	33	0.0114	0.013	56.56	10.83	338.00	3.85	224.77	220.92
EX. A6	EX. A5	--	--	0.00	8.10			10	5.92	0.00	49.13	33	0.0134	0.013	61.25	11.53	53.90	0.72	220.51	219.79

NO.	DATE	REVISION	PRIOR TO APPROVAL
2.	8-17-11	REVISED OUTFALL CALCULATIONS & NARRATIVE (MW)	
1.	7-14-11	REVISED OUTFALL CALCULATIONS & NARRATIVE (MW)	

CPJ Associates
Charles P. Johnson & Associates, Inc.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS
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SILVER SPRING, MD FAX(703)273-8595

OUTFALL ANALYSIS

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

RZ 2011-SU-006

COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
Lic. No. 018450
8-17-11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROV.	DATE
	REVISIONS			

DESIGN KW | DRAFT MW | APPROVED ATO | DATE APR. 2011 | SCALE HORIZ: AS SHOWN VERT: ---

SHEET 7 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP

Attached Xrefs: gis/00-F0700/00-F0500/00-R0301/00-R0401

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Last Saved 8/17/2011 Last Plotted 8/17/2011 2:48 PM Sheet N:\10506\DWG\00-F2401

RAIN GARDEN #1

Total Site Area	A	=	1.90 ac	
Drainage Area to Rain Garden #1	A_{rg}	=	1.34 ac	
Total Impervious Area to Rain Garden	A_i	=	0.64 ac	c= 0.60
	c	=		(for the site)
	Q_{10}	=	5.80 cfs	(for rain garden)

Treatment Volume — 1 in per impervious acre (3630 ft³)
Treatment Volume — 1 in per impervious acre
Water Quality Volume — WQ_v = 2324 cf

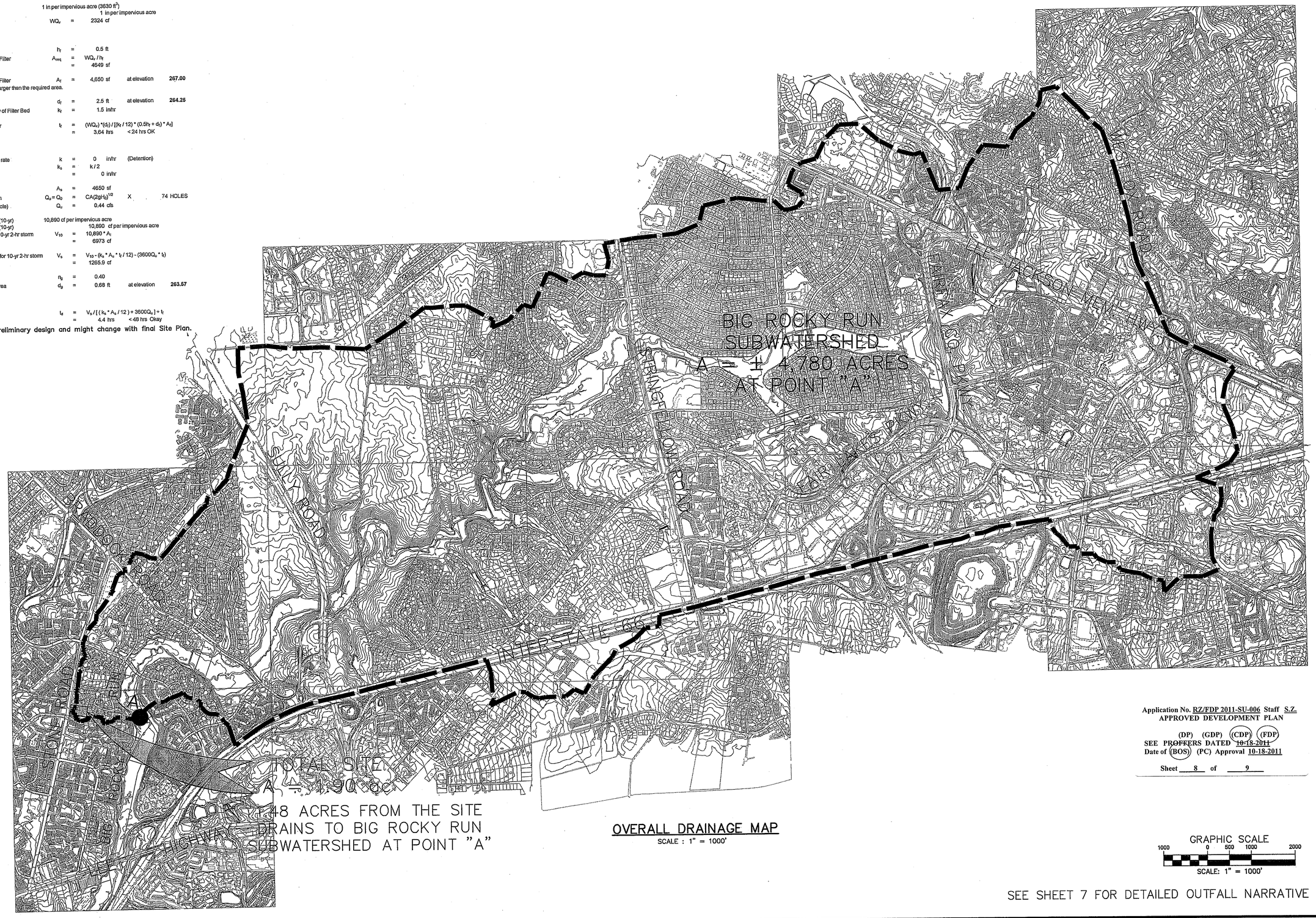
Filter Bed Design

Max. Ponding Depth	h_f	=	0.5 ft		
Required Surface Area of Filter	A_{req}	=	WQ_v / h_f		
		=	4649 sf		
Provided Surface Area of Filter	A_f	=	4,650 sf	at elevation	**267.00**
Provided surface area is larger then the required area.					
Depth of Filter	d_f	=	2.5 ft	at elevation	**264.25**
Coefficient of Permeability of Filter Bed	k_f	=	1.5 in/hr		
Drain time through the filter	t_f	=	$(WQ_v) * (d_f) / [(k_f / 12) * (0.5h_f + d_f) * A_f]$		
		=	3.64 hrs	< 24 hrs OK	

Gravel Storage Design

Field measured infiltration rate	k	=	0 in/hr	(Detention)	
Design infiltration rate	k_s	=	k / 2		
Design infiltration rate		=	0 in/hr		
Area of the soil bed	A_s	=	4650 sf		
Outflow through underdrain	$Q_u = Q_0$	=	$CA(2gH_0)^{1/2}$	X	74 HOLES
(C=0.6, A = Area of 5/8" hole)	Q_u	=	0.44 cfs		
under drain 70' long					
Total storm runoff volume (10-yr)	10,890 cf per impervious acre				
Total storm runoff volume (10-yr)			10,890 cf per impervious acre		
Design storm volume for 10-yr 2-hr storm	V_{10}	=	$10{,}890 * A_i$		
		=	6973 cf		
Required storage volume for 10-yr 2-hr storm	V_s	=	$V_{10} - (k_s * A_s * t_f / 12) - (3600Q_u * t_f)$		
		=	1265.9 cf		
Porosity of gravel	n_g	=	0.40		
Depth of gravel storage area	d_g	=	0.68 ft	at elevation	**263.57**
Drain time for facility	t_d	=	$V_s / [(k_s * A_s / 12) + 3600Q_u] + t_f$		
		=	4.4 hrs	< 48 hrs Okay	

Note: This is a preliminary design and might change with final Site Plan.



OVERALL DRAINAGE MAP
SCALE : 1" = 1000'

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED ~~10-18-2011~~
Date of (BOS) (PC) Approval 10-18-2011

Sheet 8 of 9

GRAPHIC SCALE
1000 0 500 1000 2000
SCALE: 1" = 1000'

SEE SHEET 7 FOR DETAILED OUTFALL NARRATIVE

NO.	DATE	REVISION PRIOR TO APPROVAL
2.	8-17-11	REVISED OUTFALL CALCULATIONS & NARRATIVE (MW)
1.	7-14-11	NEW SHEET

CPJ Associates
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OUTFALL ANALYSIS

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

RZ 2011-SU-006

COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
Lic. No. 018450
8-17-11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVISIONS	REVIEW BY	APPROV. DATE

DESIGN MW	DRAFT MW	APPROVED ATO	DATE JULY 2011
SCALE HORIZ. 1" = 1000' VERT: ----			

SHEET 8 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP

Attached Xrefs: gis/00-F0700/00-F0500/00-R0301/00-R0401

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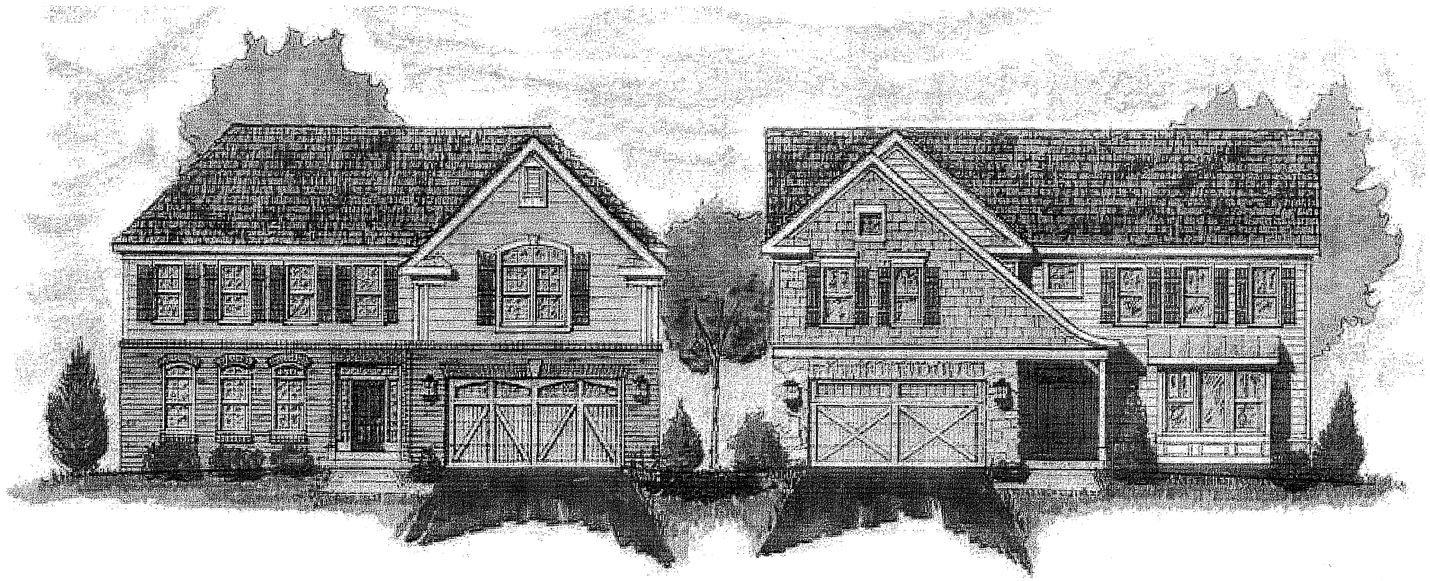
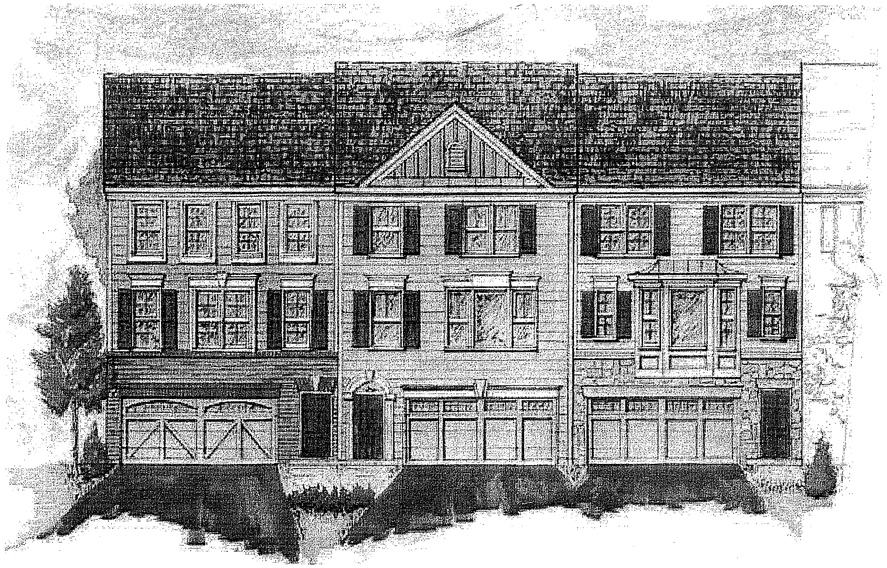


LOTS 1–6



LOTS 7–10

Application No. RZ/FDP 2011-SU-006 Staff S.Z.
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 10-18-2011
Date of (BOS) (PC) Approval 10-18-2011

Sheet 9 of 9

THIS SHEET IS FOR ILLUSTRATIVE PURPOSES ONLY

ARCHITECTURAL ELEVATIONS

STONE ROAD PROPERTY

SULLY DISTRICT
FAIRFAX COUNTY, VIRGINIA

NO.	DATE	REVISION PRIOR TO APPROVAL
1.	7-14-11	NEW SHEET (KJV)

CPJ Associates
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COMMONWEALTH OF VIRGINIA
PAUL B. JOHNSON
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7-15-11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	REVIEW BY	APPROVD. DATE
	REVISIONS		

DESIGN KJW | DRAFT KJW | APPROVED HMF | DATE JULY 2011 | SCALE HORIZ: --- VERT: ---

SHEET 9 OF 9

PRJ NO: 10-506

TYPE: CDP/FDP