TREE INVENTORY AND CONDITION ANALYSIS

TREE KEY	BOTANICAL NAME/COMMON NAME	SIZE DBH (IN.)*	CRZ** RADIUS (FT.)	CONDITION %***	CANOPY POSITION	CROWN DENSITY %	AVERAGE CROWN SPREAD D (FT.)	FINAL STATUS	ROOT PRUNE	MULCH	FERTILIZE	PRUNE	TREAT PESTS	OTHER	PROBLEMS	COMMENTS
1	Quercus spp./Oak	16	16		Co-dominant	45	22	P								Good condition
2	Acer rubrum/Red Maple	12	12		Co-dominant	45	20	R								Good condition
3	Dead							R								
4	Quercus spp./Oak	30	30		Co-dominant			R							Few dead branches	Very good
4A	Pinus virginiana/Virginia Pine/Virginia Pine	12	12	15	Co-dominant	10	20	R							Many dead branches	Poor
5	Quercus spp./Oak	16	16		Co-dominant	45	20	P	X	X						Good condition
5A	Dead	12	12					R								
5B	Quercus spp./Oak	12	12		Co-dominant	40	15	P	X	X	X					Good condition
5C	Quercus spp./Oak	12	12		Co-dominant	40	20	P	X	X	X				One sided branches	Fair condition
5D	Quercus spp./Oak	24	24		Co-dominant	45	25	P		X						
6	Quercus spp./Oak	21	21		Co-dominant	50	22	P	X	X						Excellent condition
6A	Quercus spp./Oak	24	24		Co-dominant	45	20	P	X	X						Good condition
6B	Quercus spp./Oak	18	18		Co-dominant	35	20	P	X	X						Good condition
6C	Quercus spp./Oak	24	24		Co-dominant	40	30	P	X						No lower branches	Fair condition
6D	Quercus spp./Oak	12	14		Co-dominant	35	30	P			X				Twin trunk, [illegible], no lower branches	Fair condition
7	Quercus spp./Oak	18	14		Co-dominant	35	28	P		X					Some broken branches	Good condition
7A	Quercus spp./Oak	27	27		Co-dominant	35	30	P	X	X						Good condition
8	Quercus spp./Oak	12	12		Co-dominant	45	18	P								Good condition
9	Quercus spp./Oak	12	12		Co-dominant	35	18	R								Good condition
10	Quercus spp./Oak	16	16		Co-dominant	40	20	R								Good condition
11	Quercus spp./Oak	18	18		Co-dominant	45	22	R		X						Good condition
12	Dead							RWP								
12A	Quercus spp./Oak	18	14		Co-dominant			R								Excellent condition
13	Quercus spp./Oak	16	16		Co-dominant			P		X					Some broken branches	Fair condition
14	Quercus spp./Oak	12	12		Co-dominant			P							Top main leader broken; some broken branches	Fair condition
14A								R								
15	Quercus spp./Oak	16	16		Dominant			P		X					Branches at top part only, trunk damage with [illegible]	Poor condition
16	Quercus spp./Oak	12	12		Dominant			R							Crooked leader on top, no lower branches; one sided branches	Fair condition
17	Quercus spp./Oak	18	18					P								Good condition
17A	Acer rubrum/Red Maple	12	12					P								Good condition
18	Liriodendron tulipifera/Tulip Poplar	18	18					P		X						Good condition
18A	Quercus spp./Oak	18	18					P		X						Good condition
19	Quercus spp./Oak	15	15					P		X						Good condition
20	Quercus spp./Oak	21	21					R								Good condition
21	Quercus spp./Oak	12	12					R								Good condition
22	Liriodendron tulipifera/Tulip Poplar	24	24					P								Good condition
23	Quercus spp./Oak	18	18					P								Good condition
24	Carya spp./Hickory	12	12		Co-dominant	10	10	P								Poor condition
25	Quercus spp./Oak	27	27					P								Good condition
26	Quercus spp./Oak	12	12					R								Excellent condition
27	Liquidambar styraciflua/Sweet Gum	12	12					R								Good condition
27A								R								
28	Quercus spp./Oak	12	12					P								Good condition
29	Dead	16	16					P								
29A	Quercus spp./Oak	21	21		Co-dominant	40	40	R							No lower and middle branches	Fair condition
30	Quercus spp./Oak	18	18					R		X						Good condition
30A	Dead							RWP								
30B	Quercus spp./Oak	18	18		Co-dominant	25	20	R		X					No lower and middle branches	Poor condition
30C	Quercus spp./Oak	12	12		Co-dominant	35	20	P		X					No lower and middle branches	Fair condition
31	Quercus spp./Oak	12	12		Co-dominant	50	20	P							Stretched/twisted branches along [illegible]	Fair condition
32	Quercus spp./Oak	15	15		Co-dominant	20	20	R							Broken trunk partly	Fair condition
33A	Acer spp./Maple	18	14		Co-dominant	25	20	P							No lower and middle branches	Poor condition
33B	Quercus spp./Oak	18	18		Co-dominant	25	30	P		X					No lower and middle branches	Fair condition
33C	Acer spp./Maple	20	20		Co-dominant	40	20	P		X						Good condition
33	Quercus spp./Oak	16	16					P								Good condition
34	Dead							RWP		X						
35	Dead							RWP								
36	Quercus spp./Oak	18	18					P								Good condition
37	Dead							RWP								
38	Quercus spp./Oak	12	12					R								Good condition
39	Liriodendron tulipifera/Tulip Poplar	18	18					P								Good condition
40	Liriodendron tulipifera/Tulip Poplar	12	12					P								Good condition
41	Quercus spp./Oak	18	18					P								Good condition
42	Quercus spp./Oak	24	24					P								Good condition
43	Quercus spp./Oak	18	14					POS								Good condition
44	Quercus spp./Oak	24	21					P								Excellent condition
45	Quercus spp./Oak	12	12		Co-dominant			P							Crooked leader on top, no lower branches	Good condition
46	Quercus spp./Oak	12	12					R							Some broken branches	Good condition
47								POS								
48	Quercus spp./Oak	18	18					P								Good condition
49	Liriodendron tulipifera/Tulip Poplar	18	18					P								Good condition
50	Pinus virginiana/Virginia Pine/Virginia Pine	12	12					P								Good condition
50A	Quercus spp./Oak	16	16		Co-dominant			P								Good condition
50B	Dead	12	12					P								Good condition
50C	Quercus spp./Oak	6	6		Co-dominant			P								Good condition
50D	Pinus virginiana/Virginia Pine/Virginia Pine	12	12		Co-dominant	20	18	P							Peeling bark, crooked trunk, one side branches	Dying
50E	Quercus spp./Oak	16	16					P								Good condition
51	Quercus spp./Oak	15	15					P								Good condition
51A	Quercus spp./Oak	12	12					P		X						Good condition
51B	Quercus spp./Oak	14	14			60	20	P		X						Good condition
52	Pinus virginiana/Virginia Pine/Virginia Pine	12	12			65	18	P								Good condition
52A	Quercus spp./Oak	16	14					P							Twin	Good condition
52B	Quercus spp./Oak	16	14					P							Twin	Good condition
53	Dead							RWP								
53A	Pinus virginiana/Virginia Pine/Virginia Pine	12	12					P								
53B	Quercus spp./Oak	21	21					P								
53C	Quercus spp./Oak	12	12					P								
54	Quercus spp./Oak	16	16		Co-dominant			P		X					Crooked trunk, one sided branches	Fair condition
55	Quercus spp./Oak	12	12					R							Lower broken branches	Good condition
56	Dead							RWP								
57	Quercus spp./Oak	18	14					P							One sided branches	Good condition
58	Liriodendron tulipifera/Tulip Poplar	18	14					P		X						Good condition
59	Robinia pseudoacacia/Black Locust	16	14					P								Good condition
60	Quercus spp./Oak	24	21					P								Good condition
61	Liriodendron tulipifera/Tulip Poplar	18	14					P								Good condition
62	Quercus spp./Oak	16	14					P								Good condition
63	Quercus spp./Oak	16	14					P								Good condition
64	Quercus spp./Oak	18	14		Co-dominant			P							Co-dominant trunk	Excellent condition
65	Liriodendron tulipifera/Tulip Poplar	18	14					P		X						Good condition
66	Quercus spp./Oak	12	12					P								Good condition
67	Liriodendron tulipifera/Tulip Poplar	18	14					P								Good condition
68	Dead							RWP								Good condition
69	Liriodendron tulipifera/Tulip Poplar	12	12					P		X						Good condition
69A	Quercus spp./Oak	18	14					P								Good condition
70	Quercus spp./Oak	16	14					R								Good condition
71	Quercus spp./Oak	12	12		Co-dominant			R							No lower branches	Fair condition
71A	Quercus spp./Oak							POS								Good condition
71B								R								
71C								R								
72	Quercus spp./Oak	16	15					P								Good condition
73	Quercus spp./Oak	12	12					R								Good condition
73A	Quercus spp./Oak															
74	Quercus spp./Oak	12	12			70	18	R							Fully half trunk [illegible]	Fair condition
75	Quercus spp./Oak	21	24					R								Good condition
76	Quercus spp./Oak	18	14					POS							Twin	Good condition
77	Quercus spp./Oak	12	12					P							Crooked leader	Excellent condition
77A	Quercus spp./Oak	16	15					P								Good condition
78	Quercus spp./Oak	21	21					P							Co-dominant trunk, leaning	Excellent condition
78A	Quercus spp./Oak	16	14					R							Twin	Good condition
78B	Quercus spp./Oak	12	12					P								Good condition
78C	Liriodendron tulipifera/Tulip Poplar	15	15					P								Good condition
79	Dead	18	14					P		X						Good condition
80	Pinus virginiana/Virginia Pine/Virginia Pine	16	16					R								Good condition
81	Quercus spp./Oak	18	15					R								
81A								R								
82	Prunus spp./Cherry	12	12					P								Good condition
83	Quercus spp./Oak	12	12					R								Good condition
84	Liriodendron tulipifera/Tulip Poplar	15	14			50	25	P								Fair condition
84A	Quercus spp./Oak	18	14					P								Good condition
85	Quercus spp./Oak	12	12					P		X						Good condition
86	Quercus spp./Oak	18	14					P								Good condition
87	Quercus spp./Oak	16	16					P							Several lower branches, one side branches	Good condition
88	Quercus spp./Oak	18	15					P								Good condition
89	Liriodendron tulipifera/Tulip Poplar	16	16					P								Good condition
90	Liriodendron tulipifera/Tulip Poplar	21	21					R								Good condition
92	Liriodendron tulipifera/Tulip Poplar	21	21					POS							No lower branches, entire upper broken branches	Good condition

TREE INVENTORY AND CONDITION ANALYSIS

TREE KEY	BOTANICAL NAME/COMMON NAME	RPZ DBH (IN.)*	CRZ** RADIUS (FT.)	CONDITION %***	CANOPY POSITION	CROWN DENSITY %	AVERAGE CROWN SPREAD D (FT.)	FINAL STATUS	ROOT PRUNE	MULCH	FERTILIZE	PRUNE	TREAT PESTS	OTHER	PROBLEMS	COMMENTS
93	Quercus spp./Oak	16	16		Co-dominant			P								Good condition
94	Acer rubrum/Red Maple	12	12					R								Good condition
95	Quercus spp./Oak	12	12		Co-dominant			R								Good condition
96	Quercus spp./Oak	18	18		Co-dominant			R							Co-dominant leader; crooked leader	Good condition
97	Quercus spp./Oak	12	12					R								Good condition
98	Liriodendron tulipifera/Tulip Poplar	15	15					P								Good condition
99	Liriodendron tulipifera/Tulip Poplar	15	15					P								Good condition
100	Quercus spp./Oak	18	18					R								Good condition
101	Quercus spp./Oak	16	16					P								Good condition
102	Liriodendron tulipifera/Tulip Poplar	15	15					P								Good condition
103	Quercus spp./Oak	18	18					R								Good condition
104	Quercus spp./Oak	33	33					R								Good condition
105	Quercus spp./Oak	15	15					R								Good condition
106	Quercus spp./Oak	16	16		Co-dominant			R								Good condition
107	Dead							R								
108	Quercus spp./Oak	16	16					R								Good condition
109	Quercus spp./Oak	18	16					R								Good condition
110	Quercus spp./Oak	21	21					P								Good condition
111	Quercus spp./Oak	30	30					R								Excellent condition
112	Acer rubrum/Red Maple	12	12					R								
113	Liriodendron tulipifera/Tulip Poplar	15	15					R								Good condition
113A								R								
114	Quercus spp./Oak	24	24					P	X	X					One sided branches; some broken branches	Good condition
115	Quercus spp./Oak	27	27					P		X						Excellent condition
116	Quercus spp./Oak	12	12					P	X	X						Good condition
117	Quercus spp./Oak	21	21		Dominant			P		X					Some lower broken branches	Excellent condition
118	Quercus spp./Oak	21	21					P								Good condition
119	Quercus spp./Oak	24	24					P								Good condition
120	Quercus spp./Oak	18	18					P								Good condition
121	Liriodendron tulipifera/Tulip Poplar	12	12					P								Good condition
122	Liriodendron tulipifera/Tulip Poplar	12	12					P								Good condition
123	Liriodendron tulipifera/Tulip Poplar	12	12					P								Good condition
124	Liquidambar styraciflua/Sweet Gum	12	12					P	X	X						Good condition
125	Quercus spp./Oak	12	12					R								Good condition
126	Prunus spp./Black Cherry	12	12		Co-dominant			P							Leaning	Good condition
127	Quercus spp./Oak	15	15		Co-dominant			P		X					One sided branches; some lower broken branches	Good condition
128	Liriodendron tulipifera/Tulip Poplar	12	12					P								Good condition
129	Quercus spp./Oak	12	12					P		X						Good condition
130	Quercus spp./Oak	21	24					P	X	X						Good condition
131	Quercus spp./Oak	12	12					R								Good condition
132	Quercus spp./Oak	15	15					R								Good condition
133	Quercus spp./Oak	21	21					R								Good condition
134	Quercus spp./Oak	12	12					R								Good condition
135	Quercus spp./Oak	18	18					R								Good condition
136	Liquidambar styraciflua/Sweet Gum	12	12					R								Good condition
137	Quercus spp./Oak	21	21					R								Good condition
138	Quercus spp./Oak	24	24					P		X	X					Good condition
139	Acer rubrum/Red Maple	12	12					P		X	X					Good condition
140	Quercus spp./Oak	12	12					P		X	X					Good condition
141	Quercus spp./Oak	12	12		Co-dominant			R							One sided branches; some lower broken branches	Fair condition
142	Liriodendron tulipifera/Tulip Poplar	12	12		Co-dominant			R							One sided branches;	Good condition
143	Quercus spp./Oak	18	18		Co-dominant			P		X					Crooked leader	Fair condition
144	Acer rubrum/Red Maple	12	12					R								Good condition

LEGEND:

- TBD : POTENTIAL HAZARD, STATUS TO BE DETERMINED IN CONSULTATION WITH THE UFMD.
- P : PRESERVE
- R : REMOVE
- POS : PRESERVE OFF-SITE
- RWP : REMOVE WITH PERMISSION FROM THE UFMD. TREE IS WITHIN UNDISTURBED AREA BUT CONDITIONS WARRANT ITS REMOVAL.
- X : CONDUCT ACTIVITY INDICATED
- * : DBH/DIAMETER BREAST HEIGHT AS MEASURED 4.5 FEET ABOVE GROUND.
- ** : CRZ/CRITICAL ROOT ZONE (ONE FOOT OF RADIUS FOR EVERY INCH OF TREE DIAMETER. CRZ FOR TREES WITH MULTIPLE STEMS ARE CALCULATED BASED ON THE DIAMETER OF A TREE WITH A BASAL AREA EQUIVALENT TO THE SUM OF THE BASAL AREAS FOR ALL STEMS MEASURED.
- *** : CONDITION RATINGS ARE PROVIDED AS PERCENTAGES BASED ON METHODS OUTLINED IN THE LATEST EDITION OF THE GUIDE FOR PLANT APPRAISAL PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.

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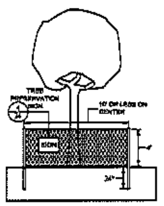
COMMONWEALTH OF VIRGINIA — LANDSCAPE ARCHITECT — [illegible] Lic. No. 3[illegible]

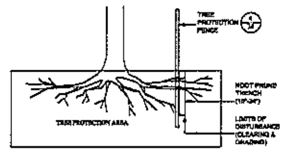
TREE INVENTORY AND CONDITION ANALYSIS
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

BC REVISIONS: MAY 22, 2013
APPLICANT
DESIGNED BY: PLR
DRAFTED BY: CAD
CHECKED BY: PLR
DATE: JANUARY 2013
SCALE: HOR. N/A VERT. N/A
SHEET 9 OF 15
CO. NO.
CAD NAME: C11562TPP-INV
LAYOUT: TPP-INV
FILE NO. 11562.01-00

- PRIOR TO ANY CONSTRUCTION ACTIVITY, ALL INDIVIDUAL AND GROUPS OF TREES MARKED FOR PRESERVATION SHALL BE PROTECTED WITH TREE PROTECTION FENCING.
- TREE PROTECTION FENCE SHALL BE POSITIONED DIRECTLY IN THE ROOT PRUNING TRENCH AND BACKFILLED FOR STABILITY OR JUST OUTSIDE THE TRENCH WITHIN THE DISTURBED AREA.
- TREE PROTECTION FENCING SHALL CONSIST OF FOUR FOOT 14-GUAGE WELDED WIRE FENCE ATTACHED TO SIX FOOT TALL T-POSTS DRIVEN 18 INCHES INTO THE GROUND. POSTS SHALL BE NO FURTHER THAN 10 FEET APART.
- WHERE APPROPRIATE, BASED ON EROSION AND SEDIMENT CONTROL PLANS, SUPER SILT FENCE MAY BE USED AS TREE PROTECTION FENCING WITH THE APPROVAL OF FAIRFAX COUNTY.
- TREE PROTECTION FENCING SHALL BE MADE CLEARLY VISIBLE TO ALL CONSTRUCTION PERSONNEL. SIGNS, IN ENGLISH AND SPANISH, WHICH STATES "TREE PRESERVATION AREA - KEEP OUT" SHALL BE INSTALLED ON TREE PROTECTION FENCING EVERY 30 FEET.
- A CERTIFIED ARBORIST SHALL MONITOR THE INSTALLATION OF TREE PROTECTION FENCING.

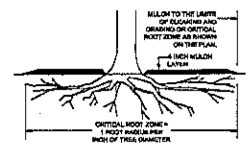


1/24 TREE PROTECTION FENCE
NOT TO SCALE



- PRIOR TO ANY CONSTRUCTION ACTIVITY, ALL TREES MARKED FOR PRESERVATION ALONG THE LIMITS OF CLEARING AND GRADING SHALL BE ROOT PRUNED WHERE SHOWN ON THE PLAN.
- ROOT PRUNING SHALL BE CONDUCTED USING A TRENCHER OR VIBRATORY PLOW.
- THE ROOT PRUNING TRENCH SHALL BE A MAXIMUM OF 8 INCHES WIDE AND 18-24 INCHES DEEP. ONCE COMPLETED, THE ROOT PRUNING TRENCH SHALL BE IMMEDIATELY BACK FILLED.
- ROOT PRUNING SHALL BE CONDUCTED UNDER THE SUPERVISION OF A CERTIFIED ARBORIST.

2/24 ROOT PRUNING
NOT TO SCALE



- SPREAD MULCH BY HAND TO A UNIFORM THICKNESS OF 4 INCHES.
- MULCH SHALL COVER AS MUCH OF THE ENTIRE CRITICAL ROOT ZONE AS POSSIBLE UP TO 10' FROM THE LIMITS OF CLEARING AND GRADING.
- MULCH SHALL CONSIST OF A WOODY MATERIAL THAT HAS BEEN CHIPPED OR SHREDDED OR OTHER APPROVED MATERIAL.
- MULCH SHALL NOT TOUCH THE BASE OF THE TREE.

3/24 PROTECTIVE MULCHING
NOT TO SCALE

TREE PRESERVATION AREA
KEEP OUT
NO EQUIPMENT OR MATERIALS ARE TO BE STORED OR DEPOSITED WITHIN THIS AREA. TRAFFIC BY CONSTRUCTION EQUIPMENT AND PERSONNEL IS PROHIBITED.
(CONSTRUCTION COMPANY NAME)
(COMPANY CONTACT PERSON & TELEPHONE NUMBER)
PENALTY FOR VIOLATIONS
STRICTLY ENFORCED

SPECIFICATIONS:
DIMENSIONS: WIDTH: 17 INCHES MINIMUM
HEIGHT: 11 INCHES MINIMUM
BACKGROUND COLOR: WHITE
LETTER COLOR: BLACK
LETTER SIZE:
LETTER 1: 1.5 INCH MINIMUM (LARGEST)
LETTER 2: 0.75 INCH MINIMUM
LETTER 3: 0.5 INCH MINIMUM
LETTER 4: 0.375 INCH MINIMUM (SMALLEST)
LANGUAGE: ENGLISH AND SPANISH (SEPARATE SIGNS)

NOTE: ALTERNATE SIGNAGE MAY BE SUBMITTED TO FAIRFAX COUNTY FOR APPROVAL.

4/24 TREE PRESERVATION SIGN
NOT TO SCALE

SITE MONITORING SCHEDULE

LIST OF DUTIES	DATE	DESCRIPTION OF DUTIES
PRE-CONSTRUCTION MEETING IN FIELD TO WALK LIMITS OF CLEARING AND GRADING	SPECIFIED BY UFMD	PRIOR TO THE PRE-CONSTRUCTION MEETING AND BEFORE ANY CLEARING, GRADING OR DEMOLITION ACTIVITIES HAVE OCCURED, A CERTIFIED ARBORIST SHALL WALK THE LIMITS OF CLEARING AND GRADING WITH A REPRESENTATIVE FROM FAIRFAX COUNTY'S URBAN FOREST MANAGEMENT DIVISION (UFMD) TO DETERMINE WHERE ADJUSTMENTS TO THE CLEARING LIMITS CAN BE MADE TO INCREASE THE SURVIVABILITY OF TREES TO BE PRESERVED THAT OCCUR ALONG THE EDGE OF THE LIMITS OF CLEARING AND GRADING, AND/OR TO IDENTIFY HAZARDOUS, DAMAGED OR DISEASED TREES THAT NEED TO BE REMOVED.
INSTALLATION OF TREE PROTECTION FENCE	AFTER UFMD'S APPROVAL OF LOCATION	THE INSTALLATION OF ALL TREE PROTECTION FENCING SHALL BE PERFORMED UNDER THE SUPERVISION OF A CERTIFIED ARBORIST AND ACCOMPLISHED IN A MANNER THAT DOES NOT HARM EXISTING VEGETATION THAT IS REQUIRED TO BE PRESERVED. AT LEAST THREE DAYS PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRADING OR DEMOLITION ACTIVITIES AND PRIOR TO THE INSTALLATION OF TREE PROTECTION FENCING, UFMD SHALL BE NOTIFIED IN WRITING AND GIVEN THE OPPORTUNITY TO INSPECT THE SITE TO ASSURE THAT ALL INDIVIDUAL TREES TO BE PRESERVED AND ALL AREAS TO BE LEFT UNDISTURBED HAVE BEEN CORRECTLY DELINEATED.
CONSTRUCTION/ SITE ANALYSIS	MONTHLY ANALYSIS OF SITE OR AS SPECIFIED BY UFMD	THE APPLICANT SHALL ACTIVELY MONITOR THE SITE TO ENSURE THAT INAPPROPRIATE ACTIVITIES SUCH AS THE STORAGE OF CONSTRUCTION MATERIALS, DUMPING OF CONSTRUCTION DEBRIS, AND TRAFFIC BY CONSTRUCTION EQUIPMENT AND PERSONNEL DO NOT OCCUR WITHIN THESE AREAS

CERTIFIED ARBORIST

International Society of Arboriculture
CERTIFIED ARBORIST
Dennis Dale Dixon
Certificate Number MA-4913A
Expiration Date Dec 31, 2011

TREE PRESERVATION NARRATIVE:

1. ALL WORK PERFORMED IN ASSOCIATION WITH THIS PLAN SHALL MEET OR EXCEED CURRENT INDUSTRY STANDARDS AS PUBLISHED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), OR THE TREE CARE INDUSTRY ASSOCIATION (TCIA). IN THE EVENT TREATMENTS PRESCRIBED ARE NOT COVERED BY AN EXISTING STANDARD, WORK SHALL MEET OR EXCEED STANDARDS APPROVED BY FAIRFAX COUNTY'S URBAN FOREST MANAGEMENT DIVISION (UFMD).

2. THE DEVELOPER SHALL RETAIN A CERTIFIED ARBORIST ("THE ARBORIST") TO ENSURE THE PROPER IMPLEMENTATION OF THE TREE PRESERVATION PLAN ("THIS PLAN"). ALL WORK REQUIRED BY THIS PLAN SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF THE ARBORIST AS SPECIFIED IN THE SITE MONITORING SCHEDULE AND TO ENSURE THAT ALL ACTIVITIES ARE CONDUCTED IN ACCORDANCE WITH THIS PLAN, ANY APPLICABLE DEVELOPMENT CONDITIONS AND/OR AS APPROVED BY UFMD. MONITORING SHALL OCCUR AT ALL TIMES DURING THE INSTALLATION OF TREE PROTECTION FENCING AND, DURING ANY CLEARING OR GRADING, REMOVAL OF TREES, VEGETATION, OR STRUCTURES OR, THE TRANSPLANTING OF TREES OR VEGETATION OR, ANY OTHER SIMILAR ACTIVITIES ON THE SITE WITHIN 25 FEET OF THE LIMITS OF CLEARING AND GRADING.

3. PRIOR TO ANY CONSTRUCTION ACTIVITY, ALL INDIVIDUAL TREES AND GROUPS OF TREES SHOWN TO BE PRESERVED ON THIS PLAN SHALL BE PROTECTED BY FENCING AS SPECIFIED ON THIS PLAN. THE PROTECTIVE FENCE INSTALLATION SHALL BE MONITORED AS NOTED IN THE SITE MONITORING SCHEDULE. THE FENCING SHALL BE MADE CLEARLY VISIBLE TO ALL CONSTRUCTION PERSONNEL. THE FENCING SHALL BE INSTALLED PRIOR TO ANY WORK BEING CONDUCTED ON THE SITE, INCLUDING THE DEMOLITION OF ANY EXISTING STRUCTURES OR FENCES. THE ARBORIST MUST VERIFY IN WRITING THAT THE FENCING HAS BEEN INSTALLED PRIOR TO ANY WORK OR DEMOLITION ACTIVITIES AND IN ACCORDANCE WITH THE STANDARDS SET FORTH BY THIS PLAN.

4. THE ARBORIST SHALL WALK THE LIMITS OF CLEARING AND GRADING WITH AN URBAN FORESTER FROM UFMD AS NOTED IN THE SITE MONITORING SCHEDULE. ANY ADJUSTMENTS AGREED TO BY THE ARBORIST AND UFMD SHALL BE MEMORIALIZED IN WRITING BY BOTH PARTIES BEFORE ANY SUCH ADJUSTMENTS ARE IMPLEMENTED. TREES TO BE REMOVED SHALL BE TAGGED IN THE FIELD. TREES WITHIN THE UNDISTURBED AREA THAT ARE IDENTIFIED IN WRITING BY UFMD AS DEAD OR DYING, IN POOR CONDITION (INCLUDING DISEASED AND DAMAGED), OR TREES THAT POSE A POTENTIAL HAZARD TO HUMAN HEALTH OR PROPERTY MAY BE REMOVED AS PART OF THE CLEARING OPERATION. ANY TREE THAT IS SO IDENTIFIED 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 THE ADJACENT TREES AND ASSOCIATED UNDERSTORY VEGETATION AND SOIL CONDITIONS.

5. 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, INCLUDING ANY WOODY AND/OR HERBACEOUS VEGETATION OCCURRING IN THE UNDERSTORY. TREES DESIGNATED FOR REMOVAL ALONG THE LIMITS OF DISTURBANCE SHALL BE REMOVED USING A CHAINSAW SO AS TO AVOID DAMAGE TO SURROUNDING TREES TO BE PRESERVED AND UNDERSTORY VEGETATION. THE USE OF POWER EQUIPMENT IN THESE AREAS SHALL BE LIMITED TO SMALL HAND-OPERATED EQUIPMENT SUCH AS CHAINSAWS. ANY WORK THAT REQUIRES THE USE OF LARGER MOTORIZED EQUIPMENT SUCH AS, BUT NOT LIMITED TO, TREE TRANSPLANTING SPADES, SKID LOADERS, TRACTORS, OR ANY ACCESSORY OR ATTACHMENT CONNECTED TO SUCH EQUIPMENT SHALL NOT OCCUR UNLESS REVIEWED AND APPROVED IN WRITING BY UFMD.

6. AS PART OF THE IMPLEMENTATION OF THIS PLAN AND THE SITE PLAN, MANAGEMENT PRACTICES SHALL PROVIDE FOR THE PROTECTION OF UNDERSTORY PLANT MATERIALS, LEAF LITTER AND SOIL CONDITIONS FOUND IN AREAS TO BE LEFT UNDISTURBED, SUBJECT TO THE APPROVAL OF UFMD. THE APPLICANT SHALL ACTIVELY MONITOR THE SITE TO ENSURE THAT INAPPROPRIATE ACTIVITIES SUCH AS THE STORAGE OF CONSTRUCTION MATERIALS, DUMPING OF CONSTRUCTION DEBRIS, AND TRAFFIC BY CONSTRUCTION EQUIPMENT AND PERSONNEL DO NOT OCCUR WITHIN THESE AREAS. THE UNDERSTORY PLANT MATERIALS, LEAF LITTER AND SOIL CONDITIONS SHALL BE RESTORED BY THE APPLICANT TO THE SATISFACTION OF UFMD IF THESE ARE FOUND TO BE DAMAGED, REMOVED OR ALTERED IN A MANNER NOT ALLOWED IN WRITING BY UFMD.

7. PRIOR TO THE SITE PRE-CONSTRUCTION MEETING AND SITE WALK WITH AN URBAN FORESTER FROM UFMD AND THE ARBORIST, THE APPLICANT SHALL HAVE THE LIMITS OF CLEARING AND GRADING MARKED WITH A CONTINUOUS LINE OF FLAGGING.

8. AT LEAST THREE DAYS PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRADING, OR DEMOLITION ACTIVITIES AND PRIOR TO THE INSTALLATION OF TREE PROTECTION FENCING, UFMD SHALL BE NOTIFIED IN WRITING AND GIVEN THE OPPORTUNITY TO INSPECT THE SITE TO ASSURE THAT ALL INDIVIDUAL TREES TO BE PRESERVED AND ALL AREAS TO BE LEFT UNDISTURBED HAVE BEEN CORRECTLY DELINEATED. UFMD SHALL PROVIDE WRITTEN NOTICE TO THE APPLICANT AS TO WHETHER OR NOT THE AREAS HAVE BEEN DELINEATED CORRECTLY. IF IT IS DETERMINED BY UFMD THAT THE AREAS ARE NOT DELINEATED CORRECTLY, NO GRADING OR CONSTRUCTION ACTIVITIES SHALL OCCUR ON THE SUBJECT PROPERTY UNTIL THE DELINEATION IS CORRECTED AND FIELD VERIFIED BY THE UFMD.

9. ROOT PRUNING: ROOT PRUNING SHALL BE PERFORMED WHEREVER GRADES WILL BE ALTERED WITHIN THE CRITICAL ROOT ZONE OF A TREE TO BE PRESERVED AND SHALL BE CONDUCTED WHERE SHOWN ON THE PLAN OR AS MOST PRACTICAL GIVEN SITE CONSTRAINTS. A VIBRATING PLOW, TRENCHER, STUMP CUTTER OR ARBORIST APPROVED EQUAL SHALL BE USED TO A DEPTH OF 18 INCHES. IF A TRENCHER IS USED THE TRENCH SHALL BE BACKFILLED IMMEDIATELY TO PREVENT ROOT DEHYDRATION. IF SILT FENCE IS TO BE INSTALLED AT THE LIMITS, THE ROOT PRUNING TRENCH MAY BE USED FOR THE INSTALLATION OF SILT FENCE. WHEREVER POSSIBLE, ROOT PRUNING TRENCHES SHOULD BE MULCHED WITH WOOD CHIPS OR MULCH FOUR INCHES DEEP.

10. WOOD CHIPS OR MULCH: WOOD CHIPS OR LEAF AND BRANCH MULCH SHALL BE PLACED AROUND THE LIMITS OF CLEARING AND GRADING IN AREAS WHERE TREES ARE WITHIN 20' OF THE LIMITS OF CLEARING AND GRADING AS SHOWN ON THIS PLAN. CHIPS OR MULCH THAT ARE PRODUCED AS A RESULT OF CLEARING OPERATIONS ON-SITE MAY BE USED FOR THIS PURPOSE AND SHALL BE PLACED BY HAND WITHOUT THE USE OF ENGINE-DRIVEN MACHINERY. CHIPS OR MULCH ARE NOT TO BE PLACED MORE THAN TEN FEET BEYOND THE LIMITS OF CLEARING AND GRADING AND SHALL NOT BE PLACED AT A DEPTH OF NO MORE THAN FOUR INCHES WITHIN THE PRESERVATION AREAS. OUTSIDE THE PRESERVATION AREAS, (WITHIN THE DISTURBED AREA), CHIPS OR LEAF AND BRANCH MULCH MAY BE PLACED AT A DEPTH NOT TO EXCEED TEN INCHES.

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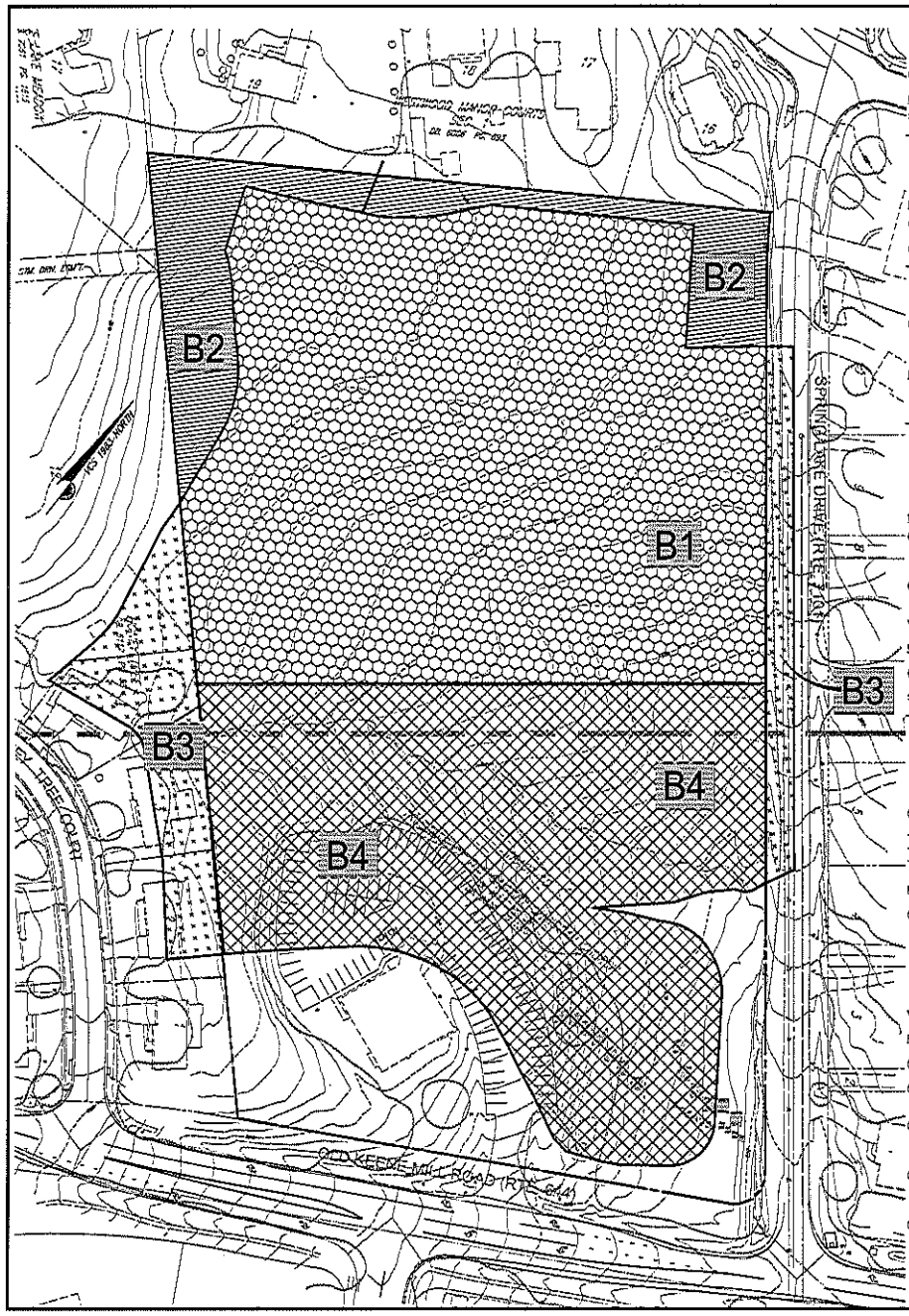
COMMONWEALTH OF VIRGINIA
PETER L. RIKE
Lic. No. 366
LANDSCAPE ARCHITECT

TREE PRESERVATION DETAILS
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

BC REVISIONS
MAY 22, 2013
APPLICANT

DESIGNED BY: PLR
DRAFTED BY: CAD
CHECKED BY: PLR
DATE: JANUARY 2013
SCALE: HOR. N/A VERT. N/A
SHEET 10 OF 15
CO. NO.
CAD NAME: 011582TPP-DET
LAYOUT: TPP-DET
FILE NO. 11582.01-00



BMP FACILITY DESIGN CALCULATIONS

Plan Name: Enclave of Burke
Co. Plan #: Rezoning Application

II. WATERSHED INFORMATION

PART 1: LIST ALL OF THE SUBAREAS AND "C" FACTORS USED IN THE BMP COMPUTATIONS

SUBAREA DESIGNATION & DESCRIPTION (1)		"C" (2)	AREA (AC.) (3)
B1	Onsite to Extended Detention	0.55	4.48
B2	Onsite Untreated	0.41	0.80
B3	Offsite to Extended Detention 100% credit)	0.52	0.79
B4	Offsite to Extended Detention (20% credit)	0.39	3.33

PART 2: COMPUTE THE WEIGHTED AVERAGE "C" FACTOR FOR THE SITE

(A) AREA OF THE SITE (a) 5.91 ACRES

(B) SUBAREA DESIGNATION

	(1)	"C" (2)		AREA (AC.) (3)		PRODUCT (4)
B1	Onsite to Extended Detention	0.55	X	4.48	=	2.46
B2	Onsite Untreated	0.41	X	0.80	=	0.33
				(b) TOTAL	=	2.79

(C) WEIGHTED AVERAGE "C" FACTOR (b) / (a) = (c) 0.47

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	Onsite to Extended Detention	40	X	0.85	X	1.04	=	30.30
B2	Onsite Untreated	0	X	0.15	X	0.78	=	0.00
B3	Offsite to Extended Detention 100% credit)	40	X	0.15	X	0.98	=	5.89
B4	Offsite to Extended Detention (20% credit)	40	X	0.63		0.74	=	3.72
						(a) TOTAL	=	44.91 %

PART 4: DETERMINE COMPLIANCE WITH PHOSPHORUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT: (a) 40.0 %
(FAIRFAX COUNTY CHESAPEAKE BAY PRESERVATION AREA - 40%)
OR (FAIRFAX COUNTY WATER SUPPLY OVERLAY DISTRICT - 50%)

(B) IF LINE 3 (a) 44.91 % > LINE 4(a) 40.0 %
THEN PHOSPHORUS REMOVAL REQUIREMENT IS SATISFIED.

V. STORAGE

PART 7: COMPUTE THE WEIGHTED AVERAGE "C" FACTOR FOR EACH PROPOSED BMP FACILITY

(A) LIST AREAS TO BE CONTROLLED BY THE PROPOSED BMP.

SUBAREA DESIGNATION (1)		"C" (2)		AREA (AC.) (3)		PRODUCT (4)
B1	Onsite to Extended Detention	0.55	X	4.48	=	2.46
B3	Offsite to Extended Detention 100% credit)	0.52	X	0.79	=	0.41
B4	Offsite to Extended Detention (20% credit)	0.39	X	3.33	=	1.30
				(a) 5.60	(b)	4.17

(C) WEIGHTED AVERAGE "C" FACTOR (b) / (a) = (c) 0.45

TOTAL IMPERVIOUS AREA TO EXTENDED DETENTION DRY POND 1.04 AC
TOTAL PROPOSED AREA TO EXTENDED DETENTION DRY POND 5.60 AC
TOTAL % IMPERVIOUS TO EXTENDED DETENTION DRY POND 22.56 %

PART 8: DETERMINE THE STORAGE REQUIRED FOR EACH PROPOSED FACILITY

(A) EXTENDED DETENTION DRY POND
CHART A5-45 VALUE (APPENDIX A-3) FOR BMP STORAGE PER ACRE
[(437.5 x "C") - 87.5] OR [31.25 x % IMP.] = (a) 705 CF/AC

DESIGN 1 (48 HOUR DRAWDOWN)
LINE 7(a) 5.60 X LINE 8(a) 705 = 6,552.5 CF

VI. OUTLET COMPUTATION

PART 9: DETERMINE THE REQUIRED ORIFICE SIZE FOR EACH EXTENDED DETENTION FACILITY

(A) BMP STORAGE REQUIREMENT (S) FROM PART 8. (a) 6,553 CF

(B) MAXIMUM HEAD (h) AT THE REQUIRED BMP STORAGE FROM THE ELEVATION STORAGE CURVE FOR THE FACILITY. (b) 1.3 FT.

(C) PEAK OUTFLOW RATE (Qp) AT THE MAXIMUM HEAD FOR DRAWDOWN TIME OF 48 HOURS [Qp = S / (0.5 x 3600 x 48)]
0.0005116 x LINE 9 (a) 6,553 = (c) 0.07 CFS

(D) REQUIRED ORIFICE AREA (A) [A = Qp / (0.6 x[64.4 x h]^0.5)]
LINE 9(c) 0.07 /(0.60 x (64.4 x LINE 9(b) 1.32)^0.5]
= (d) 0.01 SQ. FT.
OR 1.4 SQ. IN.

(E) DIAMETER OF CIRCULAR ORIFICE
2.0 x (LINE 9(d) 0.01 / 3.1415927)^0.5 = (e) 0.13 FT.
OR 1.5 IN.

WATER QUALITY NARRATIVE

THE USE OF AN EXTENDED DETENTION DRY POND IS PROPOSED TO MEET WATER QUALITY REQUIREMENTS. THE EXTENDED DETENTION DRY POND WILL COLLECT 4.48 ACRES OF ONSITE AND 4.12 ACRES OF OFFSITE RUNOFF. THIS EXTENDED DETENTION DRY POND WILL PROVIDE 40% PHOSPHORUS REMOVAL EFFICIENCY. ONLY 20% CREDIT HAS BEEN USED FOR ALL OFFSITE AREAS THAT ARE UNDEVELOPED DRAINING TO THE EXTENDED DETENTION DRY POND. UTILIZING THIS METHOD OF WATER QUALITY TREATMENT IT WILL RESULT IN A TOTAL PHOSPHORUS REMOVAL FOR THE ENTIRE SITE OF 44.91%. THERE IS AN EXISTING DRY POND THAT CURRENTLY SERVES PARCEL 10 BUT DOES NOT SERVE AS A BMP WATER QUALITY FACILITY. THE EXISTING DRY POND WILL BE DEMOLISHED AND REPLACED WITH THIS PROPOSED EXTENDED DETENTION DRY POND. SINCE THIS SITE IS LOCATED IN CHESAPEAKE BAY RESOURCE MANAGEMENT AREA (RMA), A REMOVAL EFFICIENCY OF 40% IS REQUIRED AND MET.

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 the application.

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (9-011 2.J & 2L)	Special Exceptions (9-011 2.J & 2L)
Cluster Subdivision (9-615 10 & 18)	Commercial Revitalization Districts (9-622 3A (12) & (14))
Development Plans (PRD District (15-302 2.E-4L))	PRD Plan (15-303 1B & 1C)
FOD-P Districts (Areas PRD) (15-822 1F & 1G)	Amendments (15-922 1D1 & 1D)

☑ 1. Plat is at a minimum scale of 1"=50' (areas 5 lb distinct 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 encompassing the stormwater management facility(ies), storm drainage pipe systems and outlet protection, pond spillways, access roads, site outlets, energy dissipation devices, and stream restoration (measures as shown on Sheet 12).

☑ 3. Provide:

Facility Name/ Type & No. (Ex. Dry Pond)	Onsite area served (acres)	Offsite area served (acres)	Drainage area (acres)	Peak pond area (sf)	Storage Volume (cf)	N pond, dam height (ft)
	4.48	4.12	8.60	9,150	44,904	10.0
Totals						

☑ 4. A. Onsite drainage channels, outlets and pipe systems are shown on Sheet 12-14.
Pond trial and lead pipe systems are shown on Sheet 12.

☑ 5. B. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 12.
Type of maintenance access road surface noted on the plat is asphalt, gravel, grass, pave, etc.

☑ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 5.

☑ 7. A "stormwater management/impact narrative" which contains a description of how detention and best management practices requirements will be met is provided on Sheet 12-14.

☑ 8. A description of the existing conditions of each numbered site outlet 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 12-14.

☑ 9. A description of how the outlet requirements, excluding contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 12-14.

☑ 10. Existing topography with maximum contour intervals of two (2) feet and a note as to whether it is an as-built survey or field run is provided on Sheets 2-4.

☑ 11. A submission waiver is requested for Onsite Detention.

☐ 12. Stormwater management is not required because n/a.

B1– ONSITE TREATED = 4.48 Ac.

B2–ONSITE UNTREATED = 0.80 Ac.

B3–OFFSITE TREATED = 0.79 Ac.

B4–OFFSITE TREATED = 3.33 Ac.

50' 25' 0' 50' 100'
SCALE: 1"= 50'

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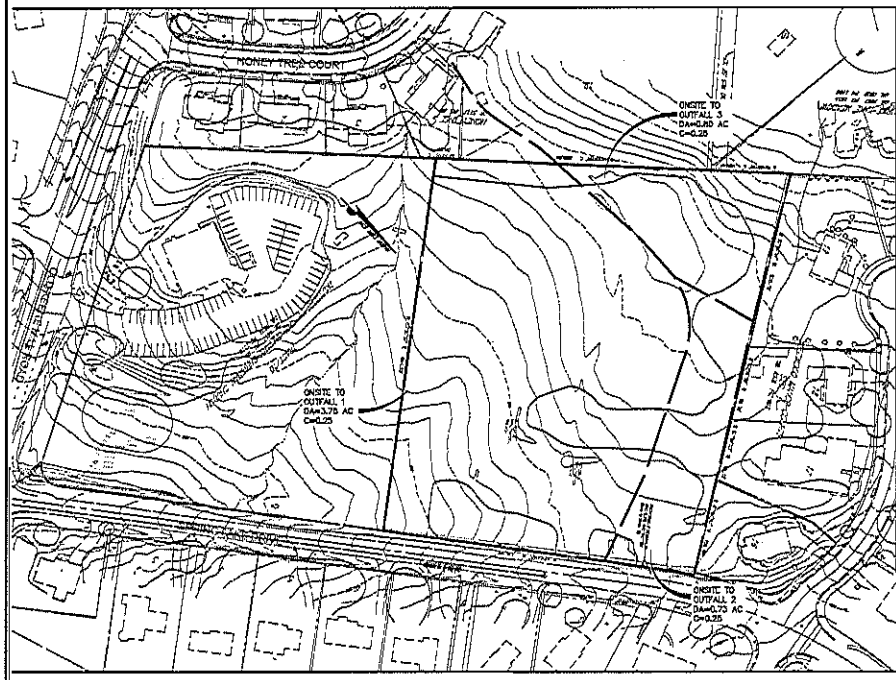
(703)449-8100 (703)449-8108 (Fax)
www.bcconsultants.com

COMMONWEALTH OF VIRGINIA
PUBLIC INSPECTOR
Lic. No. 3638
LICENSED

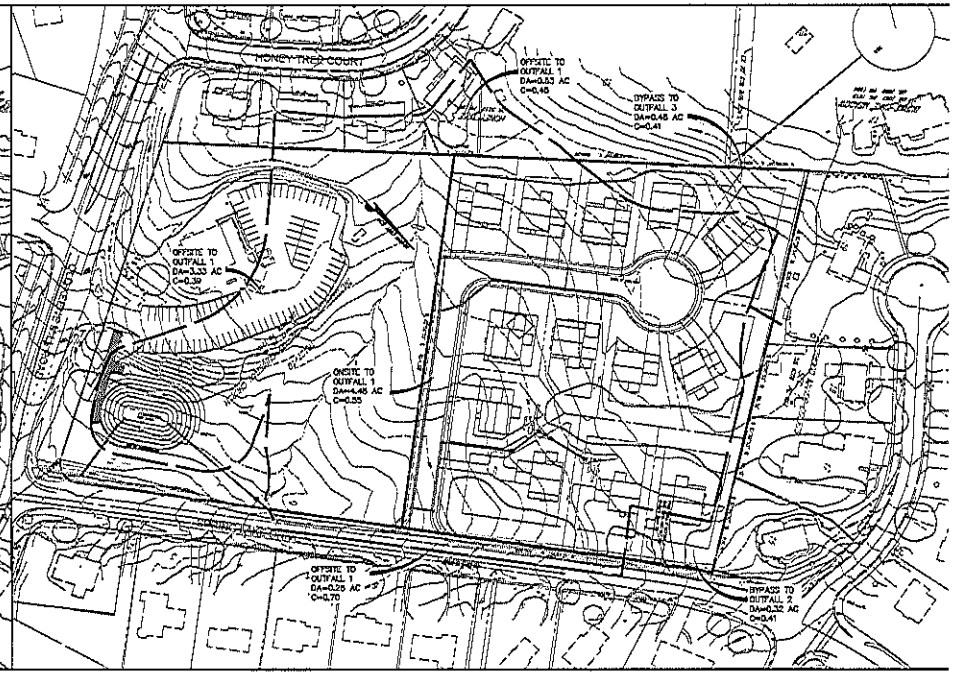
BMP COMPUTATIONS
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
Springfield District
FAIRFAX COUNTY, VIRGINIA

BC REVISIONS MAY 22, 2013	APPLICANT
DESIGNED BY: PLR	
DRAFTED BY: CAD	
CHECKED BY: PLR	
DATE: JANUARY 2013	
SCALE: HOR. 1"= 50' VERT. N/A	
SHEET 11 OF 16	
CO. NO.	
CAD NAME: C11562BMP	
LAYOUT: BMP	
FILE NO. 11562.01-00	

PRE-DEVELOPMENT DRAINAGE DIVIDES
1"=75'



POST-DEVELOPMENT DRAINAGE DIVIDES
1"=75'



BC Consultants
Planners • Engineers • Surveyors • Landscape Architects

May 22, 2013

Mr. Biljan Sistani, P.E., Branch Chief
Fairfax County DPWES
Environmental and Site Review Division
12055 Government Center Parkway
Suite #525
Fairfax, VA 22035

Re: Onsite Stormwater Detention Waiver
Enclave of Burke
County Map # 098-1-((2)) Parcel 8
BC Project #: 11562.02

Dear Ms. Smith,

On behalf of our client, MHGerring Lake, LLC, C/O Madison Homes Inc., we hereby request a waiver of an onsite stormwater detention facility requirement for the referenced project as stated in Section 6-0202.2 of the Fairfax County Public Facilities Manual (PFM). A 13 detached single family subdivision is proposed with an extended dry pond on the adjacent parcel (10). Due to the proposed improvements, a facility is required to meet adequate outfall and water quality requirements, Section 6-0301.00 and 6-0401.2A.

A stormwater detention facility is proposed to be constructed on the adjacent parcel to meet stormwater management and water quality requirements for the proposed thirteen (13) lot subdivision. The adjacent property owned by the Trustees of the Calvary Christian Church has an existing stormwater detention facility onsite. The existing facility is too demolished and replaced with a single detention facility to meet stormwater management requirements for both Calvary Church and the proposed subdivision.

For this reason, we believe an onsite detention waiver is justified. If you have any questions or require additional information, please do not hesitate to call.

Sincerely,
THE BC CONSULTANTS, INC.

Carl R. Crouch, P.E.
Project Engineer

(N:\projects_2009\11562\dwg\Documents\Waivers & Modifications\11562 Onsite SWM Waiver.doc)

The BC Consultants, Inc.
12400 Fair Lakes Circle, Suite 100, Fairfax, Virginia 22033
(703) 449-8100 Fax (703) 449-8108

OUTFALL ANALYSIS COMPUTATIONS
(Total Site)

Project Name: Enclave of Burke Date: 5/22/2013
Site Area (acres) = 5.23 Ac. Rev.

Onsite Pre-Development: Flow Calculations

Storm Frequency	"C"		I (in/hr)		A (Ac.)		Pre-Develop. Peak Flow (cfs)
Outlet #1							
Q 2-Year =	0.25	x	6.45	x	3.75	=	6.11
Q 10-Year =	0.25	x	7.27	x	3.75	=	6.82
Outlet #2							
Q 2-Year =	0.25	x	6.45	x	0.75	=	0.99
Q 10-Year =	0.25	x	7.27	x	0.75	=	1.36
Outlet #3							
Q 2-Year =	0.25	x	6.45	x	0.80	=	1.06
Q 10-Year =	0.25	x	7.27	x	0.80	=	1.45

Offsite Pre-Development: Flow Calculations

Storm Frequency	"C"		I (in/hr)		A (Ac.)		Pre-Develop. Peak Flow (cfs)
Outlet #1							
Q 2-Year =	0.41	x	6.45	x	4.12	=	9.21
Q 10-Year =	0.41	x	7.27	x	4.12	=	12.29

Onsite Post-Development: Flow Calculations

Storm Frequency	"C"		I (in/hr)		A (Ac.)		Peak Flow (cfs)
Outlet #1 Detention Facility Release							
Q 2-Year =	Actual Release From SWM Facility					=	9.53
Q 10-Year =	Actual Release From SWM Facility					=	14.29

** - Area and "C" factor for this Outfall is based on flow not detained by the Dry Pond.*
(The 2- and 10 Year flows from the 0.80 Ac. area are detained by the Dry Pond.)

Outlet #2							
Q 2-Year =	0.41	x	6.45	x	0.32	=	0.72
Q 10-Year =	0.41	x	7.27	x	0.32	=	0.95
Outlet #3							
Q 2-Year =	0.41	x	6.45	x	0.48	=	1.07
Q 10-Year =	0.41	x	7.27	x	0.48	=	1.43

Overall Flow Calculation - Outfall Analysis

	Pre-Develop. Peak Flow (cfs)		Post-Develop. Peak Flow (cfs)
Outlet #1			
Q 2-Year =	14.32	>	9.53
Q 10-Year =	19.10	>	14.29
Outlet #2			
Q 2-Year =	0.99	>	0.72
Q 10-Year =	1.33	>	0.95
Outlet #3			
Q 2-Year =	1.09	>	1.07
Q 10-Year =	1.46	>	1.43

STORMWATER DETENTION COMPUTATIONS
Old Keene Mill - Pond 1

Pre-Development Flow Calculations, Tc = 5 min

Storm Frequency	Cf	C	I	A	Peak Flow
2-Year (Site Area)	1.00	0.250	6.45	5.26	7.19
10-Year (Site Area)	1.00	0.250	7.27	5.26	9.60

Post-Development: Controlled/Uncontrolled Areas Tc = 5 min

Description:	Weighted "C(i)"	Weighted "C(o)"	Area (ac.):	C(i)*A	C(o)*A	Q-2	Q-10
To Dry Pond 1 - Onsite	0.55	0.55	4.46	2.45	2.45	10.41	17.36
To Dry Pond 1 - Offsite	0.41	0.41	4.12	1.69	1.69	9.21	12.29
Uncontrolled	0.41	0.41	0.80	0.33	0.33	1.80	2.40
Total to Pond 1			8.58	4.15	4.15		
Composite "C" to Pond				0.48	0.48		

Post-Development: Pond 1 Inflow Hydrograph Peaks

Storm Frequency	Cf	C	I	A	Peak Inflow
2-Year	1.00	0.48	6.45	8.60	22.60
10-Year	1.00	0.48	7.27	8.60	30.05

Post-Development: Maximum Allowable Outflow from Pond 1

Storm Frequency	Pre-Dev.	+	Offsite to Pond	-	Unmo. Lnfs		Allowable Release
2-Year	7.19	+	9.21	-	1.80	=	14.60
10-Year	9.60	+	12.29	-	2.40	=	19.49

Post-Development: Actual Flow from Site

Storm Frequency	Actual Release From Facility	+	Post-Uncon. Release	=	Actual Release for Site (cfs)	<	Pre-Develop. Peak Flow (cfs)
2-Year	9.53	+	1.80	=	11.33	<	14.32
10-Year	14.29	+	2.40	=	16.69	<	21.60

STORMWATER MANAGEMENT NARRATIVE

PRE-DEVELOPMENT CONDITIONS

THIS 5.26 ACRE SITE IS CURRENTLY A VACANT LOT THAT IS WOODS COVERED. THE PROPERTY IS CURRENTLY ZONED R-1. THE ADJACENT PARCELS TO THE NORTH, EAST AND WEST ARE SINGLE FAMILY HOUSES AND A RELIGIOUS FACILITY LOCATED TO THE SOUTH. SPRING LAKE DRIVE BORDERS THE PROPERTY TO THE EAST. THE SITE HAS THREE (3) OUTFALLS WHICH ARE OVERLAND. THE FIRST OUTFALL WHICH IS 3.75 ACRES, FLOWS TO THE EAST CORNER OF THE PROPERTY AND THEN BY A STORM SEWER SYSTEM ACROSS OLD KEENE MILL ROAD. THE SECOND OUTFALL, WHICH IS 0.77 ACRES FLOWS TO THE NORTH CORNER OF THE PROPERTY. THE THIRD OUTFALL, WHICH IS 0.75 ACRES FLOWS TO THE WEST CORNER OF THE PROPERTY. THE OFFSITE WATER MAINLY COMES FROM THE SUBDIVISION TO THE WEST AND FROM SPRING LAKE DRIVE.

POST-DEVELOPMENT CONDITIONS

THE PROPOSED CONDITIONS FOR THIS SITE IS FOR 13 SINGLE FAMILY HOMES. AN EXTENDED DETENTION DRY POND WILL BE CONSTRUCTED OFFSITE AND WILL COLLECT WATER FROM THE COMBINATION OF OVERLAND FLOW AND A PROPOSED STORM SEWER SYSTEM. APPROXIMATELY 4.46 ACRES ONSITE AND 4.12 ACRES OFFSITE ARE DETAINED IN THIS STORMWATER MANAGEMENT FACILITY. THE EXTENDED DETENTION FACILITY DETAINS THE 2-YEAR AND 10-YEAR STORM EVENT IN ORDER TO MEET THE PFM (SECTION 6-0202) ADEQUATE OUTFALL REQUIREMENTS. REFER TO THE ALLOWABLE RELEASE COMPUTATIONS, OUTFLOW COMPUTATIONS, AND VOLUME SHOWN ON THIS SHEET SHEET. THIS SWM FACILITY THEN OUTFALLS INTO AN EXISTING STORM SEWER SYSTEM THAT EXTENDS ACROSS OLD KEENE MILL ROAD AND INTO THE EXISTING FLOODPLAIN. STORMWATER MANAGEMENT REQUIREMENTS HAVE BEEN MET AS THE POST-DEVELOPMENT PEAK RELEASE RATES FOR THE 2-YEAR AND 10-YEAR STORMS ARE LESS THAN PRE-DEVELOPMENT CONDITIONS AND ALL THREE (3) OUTFALLS ARE ADEQUATE. SEE THE TABLE ON THIS SHEET FOR A SUMMARY OF FLOWS DEMONSTRATING THE REDUCTION IN PEAK FLOW RATES FOR THE SITE.

AN ONSITE STORMWATER MANAGEMENT FACILITY WAIVER WILL BE SUBMITTED AS SHOWN ON THIS SHEET AND THE POND WILL BE MAINTAINED BY FAIRFAX COUNTY.

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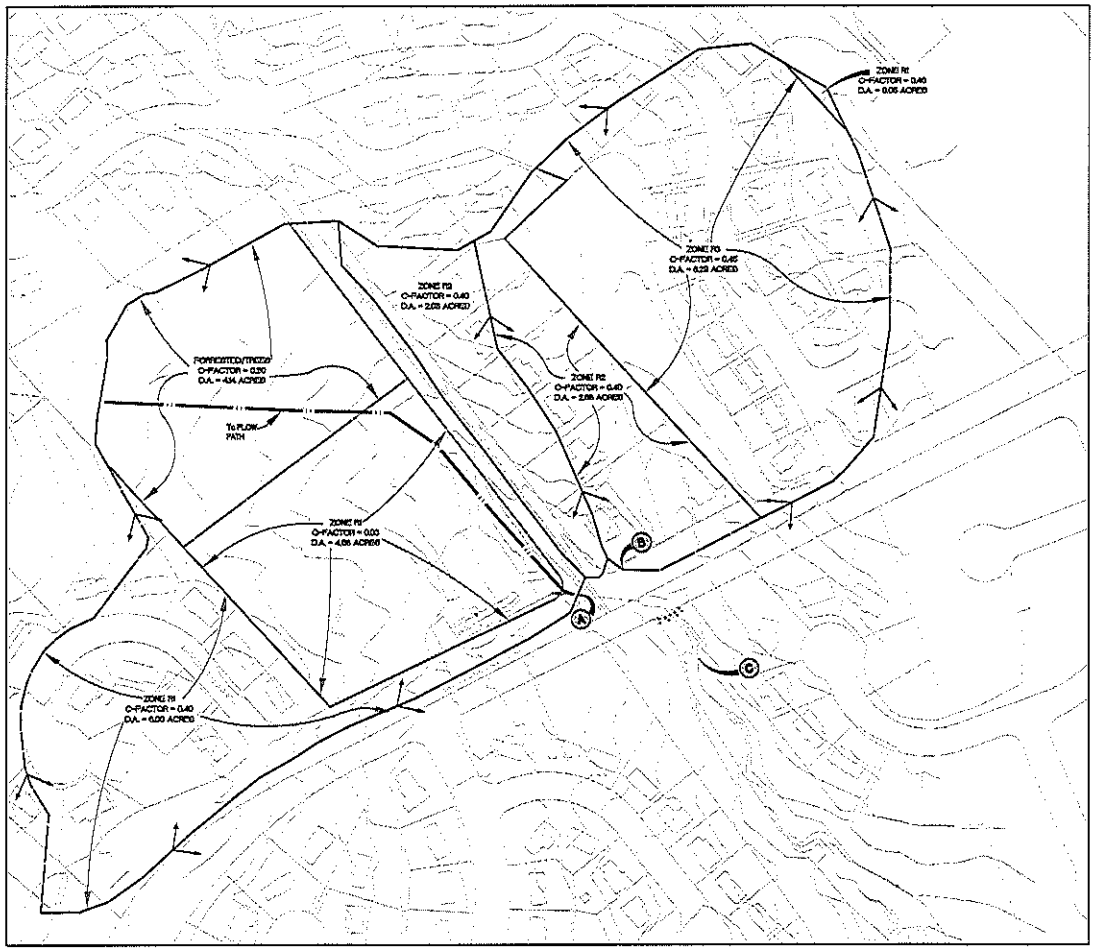
COMMONWEALTH OF VIRGINIA
PAUL R. RICE
Lic. No. 553
PROFESSIONAL ENGINEER

STORMWATER CALCULATIONS
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
Proposed Project
FAIRFAX COUNTY, VIRGINIA

BC REVISIONS	
MAY 22, 2013	
	APPROVAL
DESIGNED: BY PLR	
DRAFTED: BY: CAD	
CHECKED: BY: PLR	
DATE: JANUARY 2013	
SCALE: HOR. 1"=75' VERT.AS SHOWN	
SHEET 12 OF 15	
CD. NO.	
CAD NAME: OKUMBAS.DWG	
LAYOUT: LAYOUT	
FILE NO. 11562.01-00	

EXTENT OF REVIEW MAP



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

EXTENT OF REVIEW NARRATIVE

THERE IS ONE OUTFALL FOR WHICH IMPROVEMENTS ARE BEING PROPOSED AND TWO OUTFALLS FOR WHICH EXISTING SHEET FLOW IS REDUCED. THE FIRST OUTFALL IS TO THE SOUTHEAST WHERE RUNOFF IS COLLECTED WITHIN A PROPOSED EXTENDED DETENTION DRY POND LOCATED OFFSITE ON THE ADJACENT PROPERTY. THE SECOND OUTFALL IS TO THE NORTH, WHERE RUNOFF SHEET FLOWS TO THE WESTWOOD MANOR COURT SUBDIVISION. THE THIRD OUTFALL IS TO THE WEST, WHERE RUNOFF SHEET FLOWS TO THE BURKE LAKE MEADOW SUBDIVISION.

OUTFALL #1
THE PROPOSED IMPROVEMENTS FOR THIS OUTFALL END OFFSITE INTO THE ADJACENT PROPERTY LOCATED TO THE SOUTHEAST AND INCLUDE THE CONSTRUCTION OF AN EXTENDED DETENTION DRY POND. SINCE THE RUNOFF THAT IS BEING DISCHARGED FROM THIS OUTFALL IS CONCENTRATED, THE ADEQUACY OF THIS OUTFALL WILL NEED TO BE ADDRESSED.

THE PROPOSED POINT OF DISCHARGE FOR THIS OUTFALL IS AT POINT 'A', WHERE THE EXTENDED DETENTION DRY POND DISCHARGES. SINCE THE PROPOSED IMPROVEMENTS END AT THIS POINT, IT WILL ALSO BE THE POINT AT WHICH THE EXTENT OF REVIEW WILL COMMENCE. THE TOTAL DRAINAGE AREA AT THIS POINT IS 8.33 ACRES. THE POND FLOW AND ADDITIONAL OFFSITE FLOW ARE THEN BEING PICKED UP BY A CULVERT THAT CROSSES UNDER SPRING LAKE DRIVE WHERE IT REACHES THE POINT OF CONFLUENCE AT EXISTING STORM STRUCTURE #2, OR POINT 'B'. AT THIS POINT, THE CONTRIBUTING DRAINAGE AREA FROM THE FOUR OAKS ESTATE SUBDIVISION IS 10.96 ACRES. SINCE THE CONTRIBUTING DRAINAGE AREA IS 90% OR GREATER THAN THE TOTAL SITE AREA, PER PFM 96-0203.2A; THE EXTENT OF REVIEW WILL NEED TO CONTINUE TO A POINT THAT IS 150' DOWNSTREAM, OR POINT 'C'.

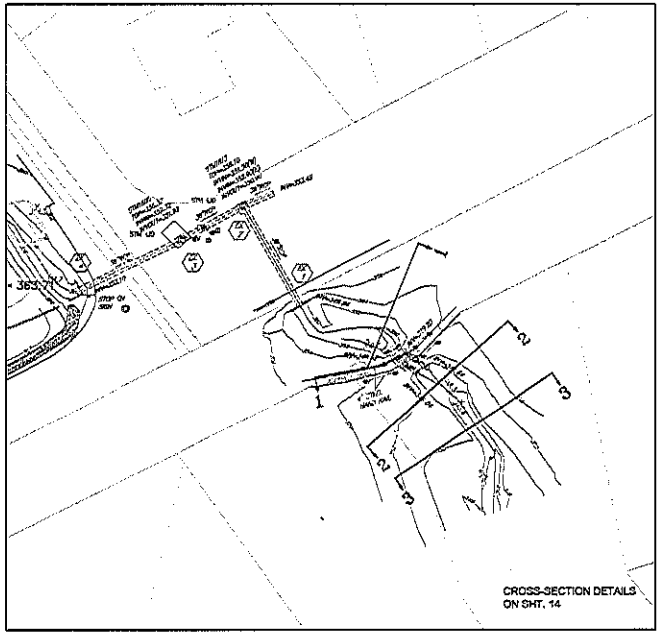
ONCE RUNOFF IS COLLECTED AT POINT 'B', IT CROSSES OLD KEENE MILL THROUGH A CULVERT AND IT DISCHARGES INTO A WELL DEFINED AND STABLE CHANNEL THAT IS PART OF A FLOOD PLAIN. SINCE POST-DEVELOPMENT RELEASE RATES FROM THE EXTENDED DETENTION POND WILL BE REDUCED TO PRE-DEVELOPMENT LEVELS FOR THE SITE, IT IS THE OPINION OF THE ENGINEER THAT THIS OUTFALL IS ADEQUATE. FOR ADEQUATE OUTFALL CALCULATIONS IN THE EXISTING STORM SEWER SYSTEM, AS WELL AS THE OPEN CHANNEL, REFER TO COMPUTATIONS ON SHEET 14.

OUTFALL #2
RUNOFF FROM THIS OUTFALL SHEET FLOWS NORTH TO THE WESTWOOD MANOR COURT SUBDIVISION. SINCE POST-DEVELOPMENT FLOWS WILL BE REDUCED FROM PRE-DEVELOPMENT LEVELS AND THE FLOW IS NOT CONCENTRATED, PER PFM 6-0202.6, THE OUTFALL IS ADEQUATE.

OUTFALL #3
RUNOFF FROM THIS OUTFALL SHEET FLOWS WEST TO THE BURKE LAKE MEADOW SUBDIVISION SUBDIVISION. SINCE POST-DEVELOPMENT FLOWS WILL BE REDUCED FROM PRE-DEVELOPMENT LEVELS AND THE FLOW IS NOT CONCENTRATED, PER PFM 6-0202.6, THE OUTFALL IS ADEQUATE.

LEGEND

- (A) THE POINT WHERE IMPROVEMENTS TO EXISTING STORM SEWER END AT EXISTING STRUCTURE 4 AND EXTENT OF REVIEW BEGINS (DRAINAGE AREA=8.33 AC.)
- (B) POINT OF CONFLUENCE WHERE THE CONTRIBUTING DRAINAGE AREA (10.96 ACRES) IS GREATER THAN 90% OF THE DRAINAGE AREA AT POINT A, WHICH IS 8.33 ACRES. [PFM 96-0203.2A]
- (C) 150' DOWNSTREAM FROM CONFLUENCE AT POINT D. THE EXTENT OF REVIEW ENDS HERE [PFM 6-0203.2A]
- FLOW PATH



CROSS-SECTION DETAILS
ON SHT. 14

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COMMONWEALTH OF VIRGINIA
PETER L. RUCK
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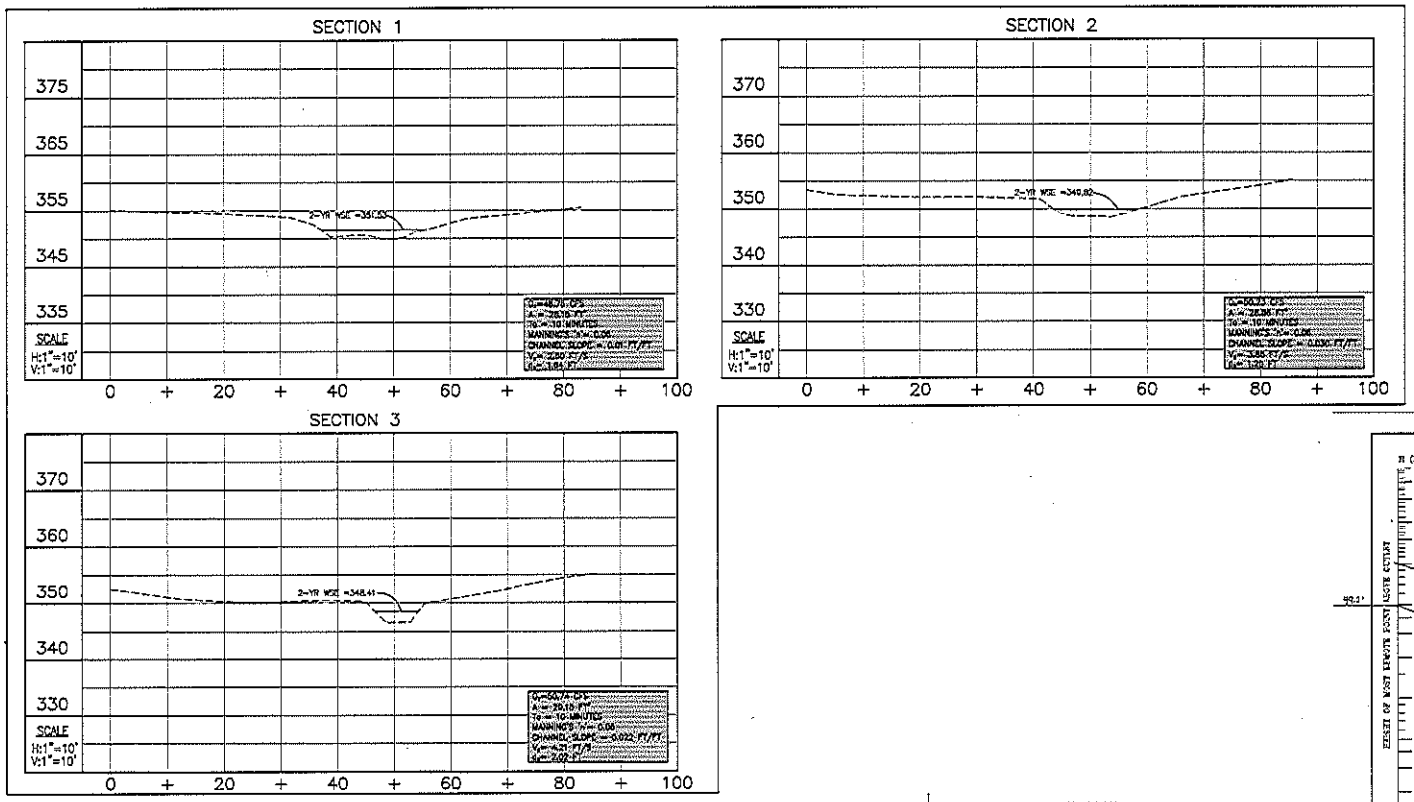
PROFESSIONAL ENGINEER

EXTENT OF REVIEW
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
FAIRFAX COUNTY, VIRGINIA

REVISIONS	
MAY 22, 2013	APPLICANT

DESIGNED BY: PLR	
DRAFTED BY: CAD	
CHECKED BY: PLR	
DATE: JANUARY 2013	
SCALE:	HOR. AS SHOWN VERT. AS SHOWN
SHEET 13 OF 15	
CO. NO.	
CAD NAME: 11082-OUT.DWG	
LAYOUT:	EXTENT OF REVIEW
FILE NO.	11082.01-00



STORM DRAIN DESIGN COMPUTATIONS

From Struct. #	To Struct. #	Structure Type	Drainage Area (acres)	Runoff C Factor	C*A Increm. C*A	C*A Accum. C*A	Time of Concentration: In To Pipe (min.)	Time in Pipe (min.)	Accum. Time (min.)	Intensity "I" (in/hr)	Flow: Q Increm. (c.f.s.)	Q Accum. (c.f.s.)	Pipe Diameter (inches)	Slope (%)	Energy: Manning's "n" Factor	Maximum Q (c.f.s.)	Flow Full Velocity (f.p.s.)	Profile: Length (ft.)	Fall (ft.)	Upper Invert	Lower Invert	Top Elev.	Upstream Cover
4	3	FW	4.00	0.70	4.74	4.74	10.0	-	10.0	6.40	30.36	30.36	36"	1.74%	0.013	76.46	10.88	61'	1'	343.10	342.32	347.24	1.14'
3	2	YD	3.03	0.48	6.81	11.55	10.0	-	10.0	6.40	43.61	73.97	36"	1.74%	0.013	77.21	10.87	70'	4.2'	342.82	341.60	346.37	1.40
2	1	MH	10.00	0.48	4.82	16.37	10.0	-	10.0	6.40	30.84	104.81	36"	1.74%	0.013	77.22	10.94	70'	1.2'	341.60	340.00	346.10	4.2'

ADEQUATE OUTFALL OF EXISTING 36" PIPE SYSTEM
ACCUMULATED FLOW IS LESS THAN THE CAPACITY OF THE EXISTING 36" PIPE, THUS THE PIPES ARE ADEQUATE.

TABLE 5-22

PERMISSIBLE VELOCITIES FOR UNLINED EARTHEN CHANNELS

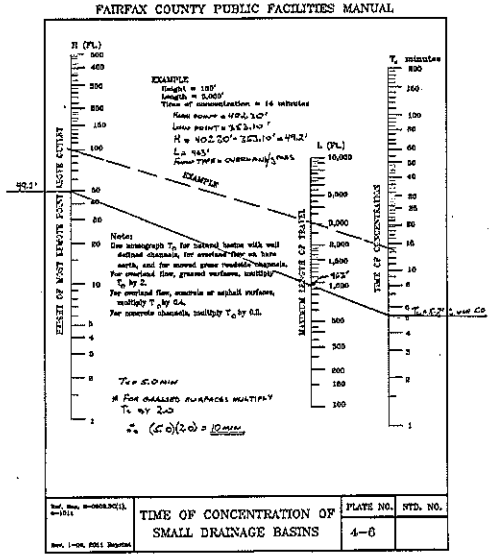
Soil Types	Permissible Velocity (ft./sec.)
Fine Sand (noncolloidal)	2.5
Sandy Loam (noncolloidal)	2.5
Silt Loam (noncolloidal)	3.0
Ordinary Firm Loam	3.5
Fine Gravel	5.0
Stiff Clay (very colloidal)	5.0
Graded, Loam to Cobbles (noncolloidal)	5.0
Graded, Silt to Cobbles (noncolloidal)	5.5
Alluvial Silts (noncolloidal)	3.5
Alluvial Silts (colloidal)	5.0
Coarse Gravel (noncolloidal)	6.0
Cobbles and Shingles	5.5
Shales and Hard Pans	6.0

Source: American Society of Civil Engineers

EXISTING CHANNEL CONDITIONS AT CROSS SECTION 3. EXISTING CHANNEL VELOCITY IS LESS THAN THE PERMISSIBLE VOLICITY, THEREFORE CHANNEL CROSS SECTION IS ADEQUATE.

EXISTING CHANNEL CONDITIONS AT CROSS SECTIONS 1-2. EXISTING CHANNEL VELOCITIES ARE LESS THAN THE PERMISSIBLE VOLICITIES, THEREFORE CHANNEL CROSS SECTIONS ARE ADEQUATE.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



	TIME OF CONCENTRATION OF SMALL DRAINAGE BASINS	PLATE NO. 4-6	STD. NO.

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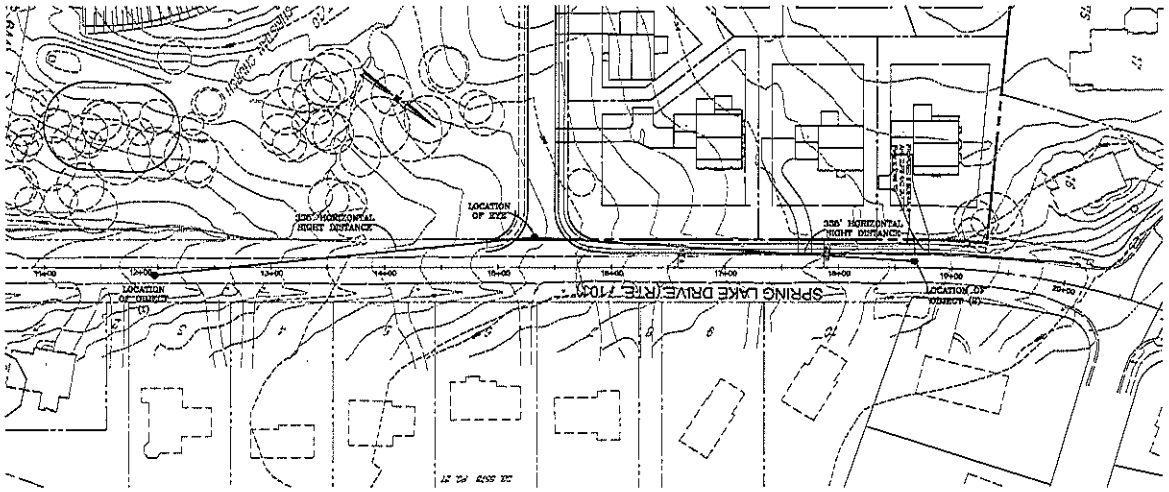
COMMONWEALTH OF VIRGINIA
REG. No. 333
LICENSED PROFESSIONAL ENGINEER

OUTFALL ANALYSIS
GENERALIZED DEVELOPMENT PLAN
ENCLAVE OF BURKE
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

BY	REVISIONS	APPROVED
	MAY 22, 2013	

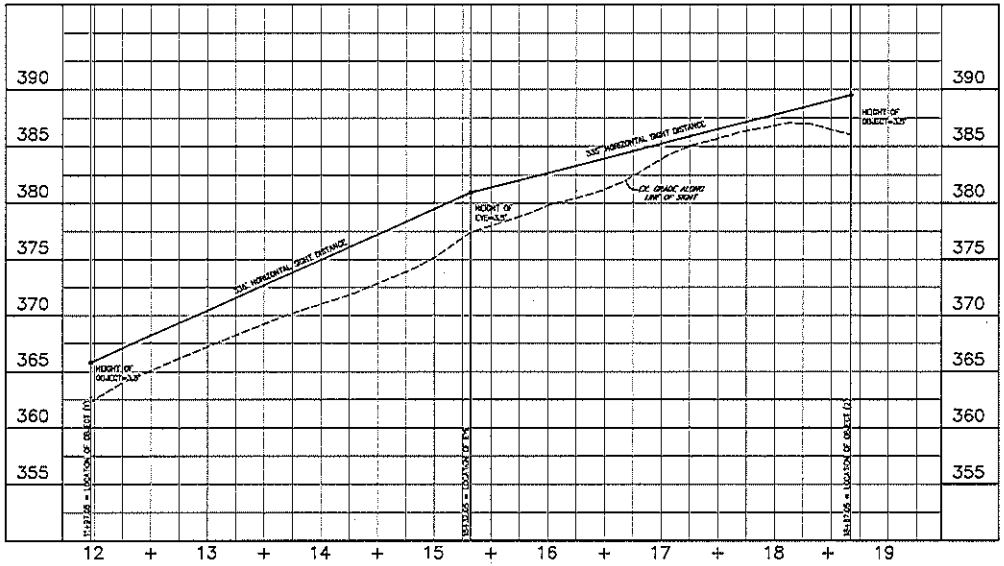
DESIGNED BY: PLR
DRAFTED BY: CAD
CHECKED BY: PLR
DATE: JANUARY 2013
SCALE: HOR. AS SHOWN VERT. AS SHOWN
SHEET 14 OF 15
CO. NO.
CAD NAME: 11062-OUT.DWG
LAYOUT: XSECTIONS
FILE NO. 11062.01-00



EX. SPRING LAKE DRIVE – ROUTE 2458

ROW= VPD=

DESIGN SPEED= 30 MPH POSTED SPEED= 25 MPH



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SIGHT DISTANCE

GENERALIZED DEVELOPMENT PLAN

ENCLAVE OF BURKE

FAIRFAX COUNTY, VIRGINIA

BC REVISIONS	
MAY 22, 2013	
APPLICANT:	
DESIGNED BY: PLR	
DRAFTED BY: CAD	
CHECKED BY: PLR	
DATE: JANUARY 2013	
SCALE: HOR. 1"=60' VERT. N/A	
SHEET 15 OF 15	
CO. NO.	
CAD NAME: 11562-RDBS	
LAYOUT: SIGHT DIST	
FILE NO. 11562.01-00	