1916 BEULAH ROAD

HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

GENERALIZED DEVELOPMENT PLAN

NOTES:

1. OWNER/APPLICANT:
   PSR, LLC
   9505 MACY AVENUE
   VIENNA, VA 22182
   CONTACT: MR. ROBERT RUCKS

2. THE PROPERTY SHOWN ON THIS PLAN IS IDENTIFIED ON THE FAIRFAX COUNTY ZONING MAP AS 038-2-01-0004.

3. THE SITE IS CURRENTLY ZONED R-1. THIS REZONING APPLICATION REQUESTS THE SITE BE REZONED TO THE R-3 ZONING DISTRICT. PROPOSED USE IS SINGLE FAMILY DETACHED DWELLINGS.

4. THERE ARE NO PUBLIC FACILITIES PROPOSED WITH THIS DEVELOPMENT.

5. THE BOUNDARY AND TOPOGRAPHIC INFORMATION IS FROM A FIELD RUN SURVEY BY WALTER L. PHILLIPS, INC. CONTOUR INTERVAL IS TWO FEET.

6. THERE ARE EXISTING RESIDENTIAL/SCHOOL USES SURROUNDING THE PROPERTY. THE PROPOSED RESIDENTIAL USE WILL NOT POSE ANY ADVERSE IMPACTS ON THE ADJACENT OR NEIGHBORING PROPERTIES.

7. IT IS ANTICIPATED THAT DEVELOPMENT OF THIS SUBDIVISION WILL OCCUR IMMEDIATELY FOLLOWING COUNTY APPROVAL OF THE SUBDIVISION PLAN.

8. A REVIEW OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 515525 0050 D, REVISED MARCH 5, 1990, SHOWS THIS PROPERTY TO LIE IN FLOOD ZONE X, "AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN." THIS SITE IS LOCATED IN AN RMA, AND IS NOT IN AN RPA OR EQC.

9. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO GRAVES OR BURIAL GROUNDS LOCATED ON THE SITE.

10. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO KNOWN UTILITY EASEMENTS ON THE PROPERTY HAVING A WIDTH OF 25 FEET OR MORE.

11. THIS PROPOSED DEVELOPMENT COMPLIES WITH THE CURRENT COMPREHENSIVE PLAN RECOMMENDATION.

12. TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THERE ARE NO HAZARDOUS SUBSTANCES ON THIS PROPERTY.

13. THERE ARE NO SCENIC ASSETS OR NATURAL FEATURES ON THIS PROPERTY DESERVING OF PROTECTION AND/OR PRESERVATION.

14. THIS SITE IS SERVED BY PUBLIC WATER AND SANITARY SEWER.

15. A MINIMUM OF TWO OFF-STREET PARKING SPACES ARE PROVIDED ON EACH LOT.

16. THE PROPOSED APPLICATION CONFORMS TO THE PROVISIONS OF ALL ORDINANCES, REGULATIONS, AND ADOPTED STANDARDS, EXCEPT AS NOTED IN WAIVERS REQUESTED SECTION.

17. NO DAM EMBANKMENT OR EMERGENCY SPILLWAYS ARE PROPOSED WITH THIS PLAN.

18. PER THE TRAILS MAP, A MAJOR ASPHALT TRAIL IS REQUIRED. A WAIVER IS REQUESTED TO ALLOW THE EXISTING 5' ASPHALT TRAIL TO BE WIDENED TO 6' TO SATISFY THE TRAIL REQUIREMENT (SEE WAIVERS/MODIFICATIONS REQUESTED, THIS SHEET.)

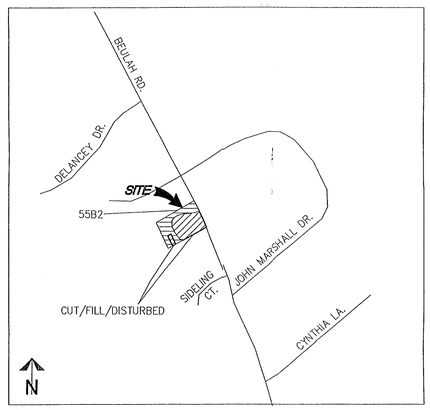
WAIVERS/MODIFICATION REQUESTED:

1. WAIVE FRONTAGE IMPROVEMENTS ALONG BEULAH ROAD (CURB, GUTTER AND SIDEWALK). FUNDS FOR FUTURE CONSTRUCTION TO BE ESCROWED PER PROFFERS.

2. MODIFY THE 10' TRAIL REQUIREMENT TO ALLOW THE EXISTING 5' ASPHALT TRAIL TO BE WIDENED TO A 6' ASPHALT TRAIL.

3. DIRECT DPW&ES TO WAIVE PFM SECT. 8-0202 DUE TO EXISTING TOPOGRAPHY AND TRAIL CONFIGURATION, TO ALLOW THE EXISTING TRAIL TO BE MODIFIED TO 6' UTILIZING THE SAME GRADES AND LOCATION OF THE EXISTING TRAIL.

4. PER DISCUSSIONS WITH DPW&ES, AN UNDERGROUND DETENTION WAIVER FOR RESIDENTIAL DEVELOPMENT IS NOT REQUIRED BECAUSE THE STORMWATER MANAGEMENT AND WATER QUALITY REQUIREMENTS ARE BEING MET VIA INFILTRATION.



SOILS MAP SCALE: 1"=500'

SOILS DATA

SOIL ID NUMBERS	SERIES NAME	FOUNDATION SUPPORT	SUBSURFACE DRAINAGE	SLOPE STABILITY	ERODABILITY	GEOTECH REPORT REQ'D
55	GLENELG	GOOD	GOOD	B	MODERATE	

SOIL INFORMATION IS FROM FAIRFAX COUNTY SOILS IMAP AND PRIVATE CONSULTANT.
* INCLUSION OF FOUNDATION DRAINS MAY PRECLUDE NEED FOR SOILS REPORT.

STORMWATER MANAGEMENT CHECKLIST

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

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

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (8-011 2J & 2L)	Special Exception (9-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP P Districts (except PRC) (16-502 1F & 1Q)	Amendments (16-102 10F & 10I)

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

[X] 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 2,5.

[X] 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)
~~INFILTRATION TRENCH #1~~	~~±0.33~~	~~N/A~~	~~±0.33~~	~~±2,240~~	~~±4,875CF~~	~~N/A~~
INFILTRATION TRENCH #1	±0.33	N/A	±0.33	±2,240	±4,875CF	N/A
INFILTRATION TRENCH #2	±0.27	N/A	±0.27	±2,220	±4,625CF	N/A
Totals						

[X] 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 2.
Pond inlet and outlet pipe systems are shown on Sheet 2.

[X] 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet N/A.
Type of maintenance access road surface noted on the plat is N/A (asphalt, geoblock, gravel, etc.).

[X] 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 3,4.

[X] 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 5.

[X] 8. A description of the existing conditions of each numbeered 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 5.

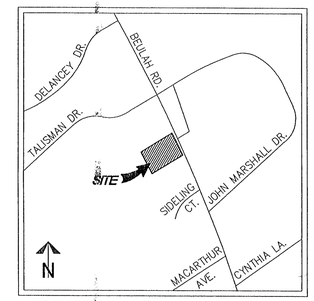
[X] 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 5.

[X] 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.

[X] 11. A submission waiver is requested for UNDERGROUND DETENTION IN A RESIDENTIAL AREA

[ ] 12. Stormwater management is not required because N/A.

*** NOTE: ON-SITE AREA SERVED MAY BE REVISEED AT TIME OF SUBDIVISION PLAN PER FINAL GRADING, HOWEVER, ANY SHEET FLOW FRCOM THE SITE WILL BE REDUCED BELOW PRE-DEVELOPMENT CONDITIONS.**



VICINITY MAP SCALE: 1"=2000'

ZONING TABULATION

FIELD SURVEYED SITE AREA = ±54,481 SF OR ±1.2507 AC.*
(TOTAL RECORD AREA OF THE PROPERTY IS 1.25269 ACRES.)
EXISTING ZONE: R-1 (RESIDENTIAL, 1 DU/AC)
PROPOSED ZONE: R-3 (RESIDENTIAL, 3 DU/AC)

	REQUIRED	PROVIDED
AVERAGE LOT AREA	11,500 SF	APPROX. 27,240 SF
MIN. LOT AREA	10,500 SF	APPROX. 26,404 SF
MIN. LOT WIDTH	80 FT.	APPROX. 80 FT.
MAX. BLD. HT.	35 FT.	MAX. 35 FT.
MIN. YARD REQUIREMENTS:		
FRONT	30 FT.	MIN. 30 FT.
SIDE	12 FT.	MIN. 12 FT.
REAR	25 FT.	MIN. 25 FT.
MAX. DENSITY	3 DU/AC	±1.6 DU/AC**
OPEN SPACE	NONE	N/A

*INCLUDES ±720 SF OF RIGHT OF WAY DEDICATION
**DENSITY IS BASED ON PRE-DEDICATION SITE AREA.

Application No. RZ 2006-HM-023 Staff RB
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/8/07
Date of (BOS) (PC) approval 3/12/07
Sheet 1 of 5

SHEET INDEX

1. COVER SHEET
2. GENERALIZED DEVELOPMENT PLAN
3. CONCEPTUAL LANDSCAPE PLAN
4. EXISTING VEGETATION MAP
5. SWM/BMP COMPUTATIONS AND OUTFALL ANALYSIS
5A. GEOTECHNICAL ENGINEERING ANALYSIS.

RECEIVED
Department of Planning & Zoning
JAN 09 2007
Zoning Evaluation Division

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE, FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

SCALE: 1" = 30' DATE: 05/11/06; REV. 12/5/06, 1/9/07 DRAWN: JV

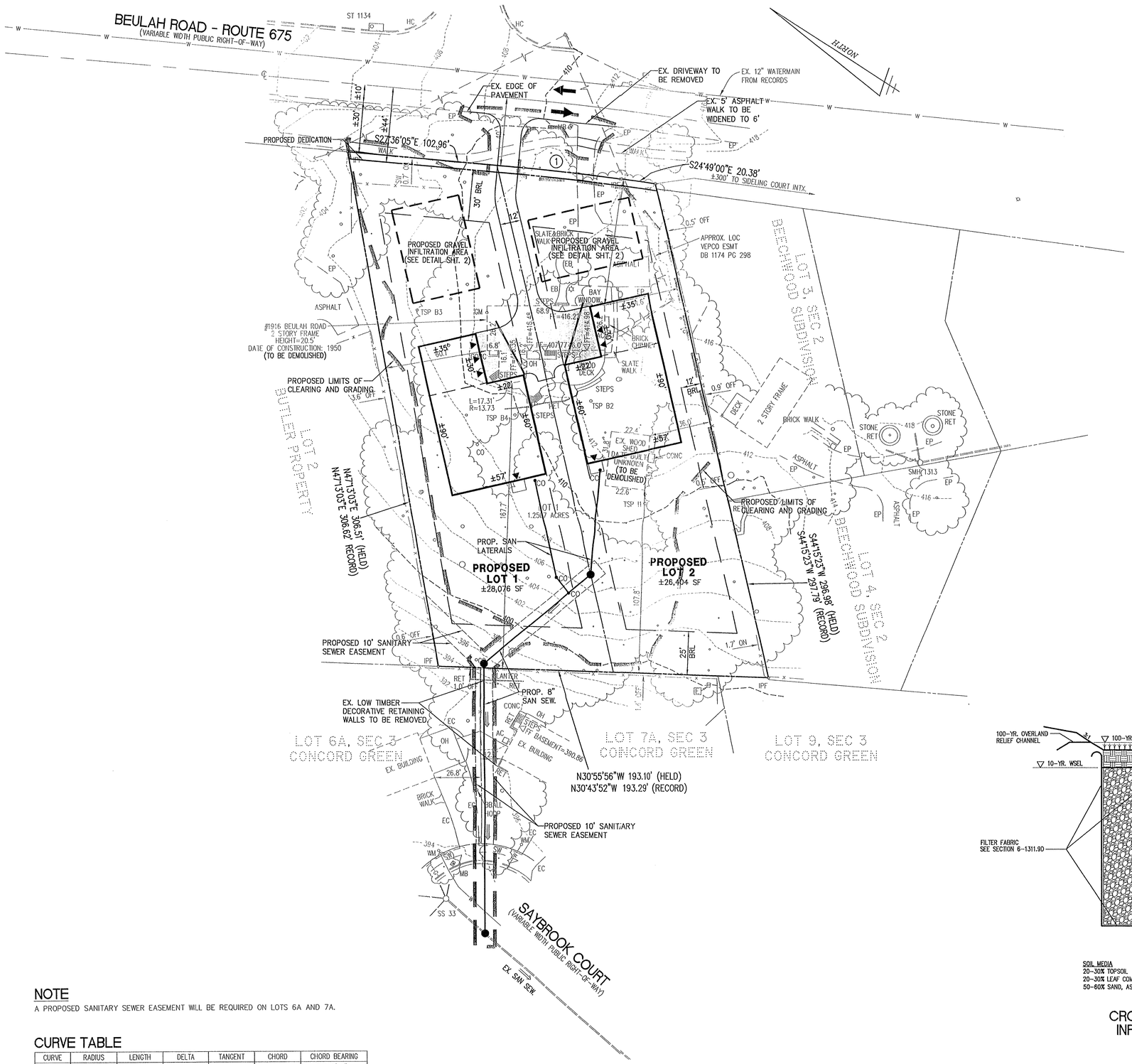
COMMONWEALTH OF VIRGINIA
JEFFREY J. STUCHELL
NO. 031215
1/9/07
PROFESSIONAL ENGINEER

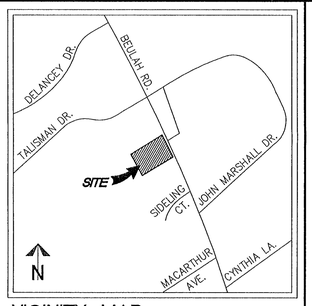
NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

COVER SHEET

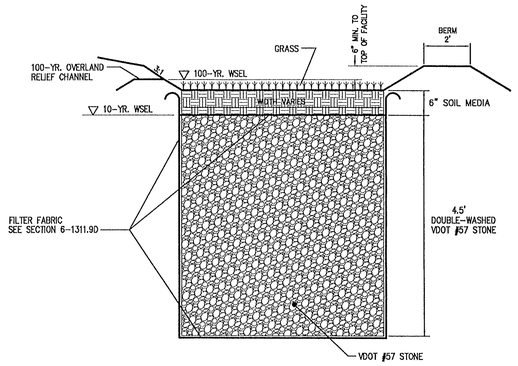
1916 BEULAH ROAD
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA





VICINITY MAP SCALE: 1"=2000'

Application No. RZ 2006-HM-023 Staff FB
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/8/07
Date of (BOS) (PC) approval 3/12/07
Sheet 2 of 6



SOIL MEDIA
20-30% TOPSOIL
20-30% LEAF COMPOST
50-60% SAND, ASTM C-33

NOTE: SIDE SLOPES OF FACILITY EXCAVATED BELOW GROUND MAY BE AS STEEP AS THE SITU SOILS WILL PERMIT. ALL EXCAVATION MUST BE PERFORMED IN ACCORDANCE WITH VOSH REQUIREMENTS.

CROSS SECTION VIEW
INFILTRATION AREA
NTS

AS-BUILT DATA

SS 33		
MANHOLE TOP =		393.38
INV. IN	(N.EAST) =	385.33
INV. IN	(N.WEST) =	385.33
INV. IN	(WEST) =	385.31
INV. IN	(N.EAST) =	385.08
INV. OUT	(SS 32) =	384.91
SS 32		
MANHOLE TOP =		400.29
INV. IN	(S.WEST) =	383.96
INV. IN	(SS 33) =	383.73
INV. OUT	(WEST) =	383.57

NOTE

A PROPOSED SANITARY SEWER EASEMENT WILL BE REQUIRED ON LOTS 6A AND 7A.

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
1	1,178.21'	57.26'	2°47'05"	28.64'	57.26'	S26°12'32"E

0 15 30 60
(IN FEET)
1 INCH = 30'

GENERALIZED DEVELOPMENT PLAN

1916 BEULAH ROAD

HUNTER MILL DISTRICT

FAIRFAX COUNTY, VIRGINIA

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

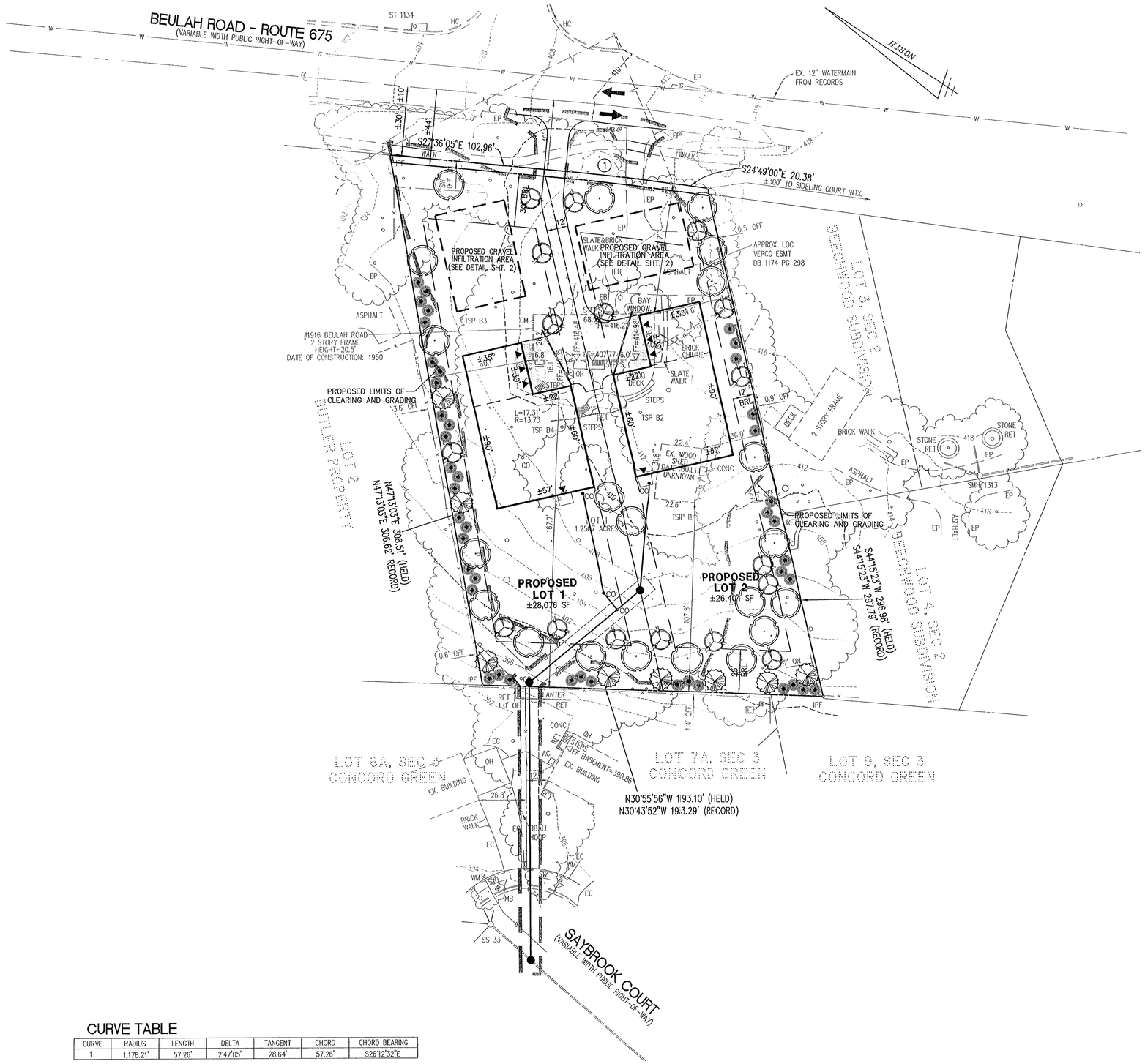
SCALE: 1" = 30' DATE: 5/11/06; REV. 12/5/06, 1/9/07 DRAWN: MPM

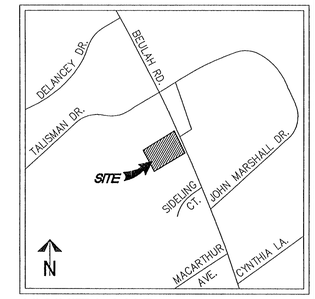
COMMONWEALTH OF VIRGINIA
JEFFREY STUCHELL
NO. 031215
1/9/07
PROFESSIONAL ENGINEER

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

File No. Tax Map No. 38-2 Job No. 05-124 Cadd Dwg. File: GDP/05124GDP Xref:





VICINITY MAP SCALE: 1"=2000'

Application No. RZ 2006-HM-023 Staff BB
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/8/07
Date of (BOS) (PC) approval 3/12/07
Sheet 3 of 6

LEGEND

- PROPOSED DECIDUOUS TREES
- PROPOSED FLOWERING TREES
- PROPOSED LARGE EVERGREEN TREES
- PROPOSED MEDIUM EVERGREEN TREES

TREE COVER CALCULATIONS

TOTAL SITE AREA	±54,481	S.F.
DEDICATION AREA	±700	S.F.
ADJUSTED SITE AREA	±53,781	S.F.
PERCENT REQUIRED	X 20	%
TREE COVER REQUIRED	**±10,757**	**S.F.**

TREE COVER PROVIDED (PLANTED)

20 LARGE DECIDUOUS TREES @ 200 SF	±4,000	S.F.
16 FLOWERING TREES @ 150 SF	±2,400	S.F.
9 LARGE EVERGREEN TREES @ 200 SF	±1,800	S.F.
39 MEDIUM EVERGREEN TREES @ 75 SF +	±2,925	S.F.
TOTAL TREE COVERAGE PROPOSED	**±11,125**	**S.F. (±20.5%)**

NOTES

1. FINAL PROPOSED TREE LOCATIONS TO BE DETERMINED AT SUBDIVISION PLAN BASED ON HOUSE AND DRIVEWAY LOCATIONS.
2. PROPOSED LANDSCAPING SHALL SUPPLEMENT EXISTING LANDSCAPING AND SHALL BE COORDINATED WITH EXISTING TREES TO REMAIN.

0 15 30 60
(IN FEET)
1 INCH = 30'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
1	1,178.21'	57.26'	2°47'05"	28.64'	57.26'	S26°12'32"E

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

SCALE 1" = 30' | DATE: 5/11/06; REV. 12/5/06, 1/9/07 | DRAWN: MRW

COMMONWEALTH OF VIRGINIA
JEFFREY J. STUCHELL
NO. 031215
1/9/07
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE
REVISION APPROVED BY					

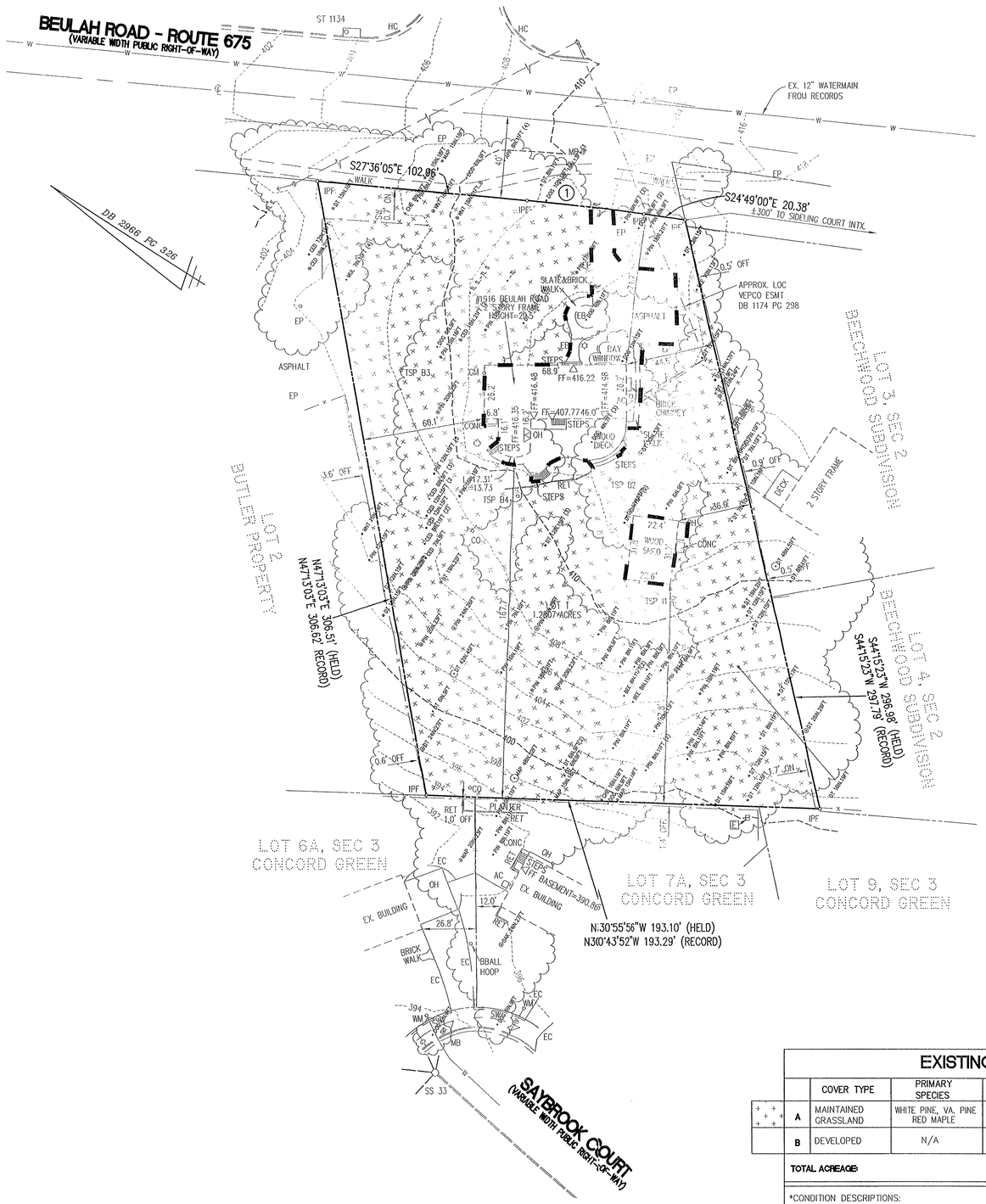
CONCEPTUAL LANDSCAPE PLAN

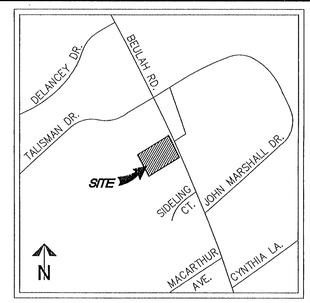
1916 BEULAH ROAD

HUNTER MILL DISTRICT

FAIRFAX COUNTY, VIRGINIA

File No. Tax Map No. 38-2 Job No. 05-124 Cadd Dwg. File: GDP/05124GDP Xref:





VICINITY MAP SCALE: 1"=2000'

Application No. RZ 2006-MM-023 Staff PB
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/8/07
Date of (BOS) (PC) approval 3/12/07
Sheet 4 of 6

EXISTING VEGETATION MAP INFORMATION

	COVER TYPE	PRIMARY SPECIES	SUCCESSIONAL STAGE	CONDITION*	ACREAGE	COMMENTS
A	MAINTAINED GRASSLAND	WHITE PINE, VA. PINE RED MAPLE	SUBCLIMAX	FAIR	47,692 SF OR 1.0949 AC	SEE CONDITION
B	DEVELOPED	N/A	N/A	N/A	6,789 SF OR .1558 AC	SEE CONDITION
TOTAL ACREAGE:					54,481 SF OR 1.2507 AC	

*CONDITION DESCRIPTIONS:

COVER TYPE A: MAINTAINED LAWN AND LANDSCAPED AREAS, FEW ORNAMENTAL TREES IN FAIR CONDITION. EXISTING CANADIAN HEMLOCKS ALONG BEULAH ROAD IN POOR CONDITION. EXISTING WHITE AND VIRGINIA PINES SCATTERED THROUGHOUT THE SITE IN FAIR TO GOOD CONDITION. THERE IS A LARGE SYCAMORE AND A RED MAPLE ALONG THE WESTERN PROPERTY LINE IN GOOD/EXCELLENT CONDITION. AND OF THE PINES ALONG THE SOUTHWEST PROPERTY LINE WOULD BE GOOD CANDIDATES FOR PRESERVATION.

COVER TYPE B: EXISTING BUILDINGS AND DRIVEWAYS.

0 15 30 60
(IN FEET)
1 INCH = 30'

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
1	1178.21'	57.26'	2°47'05"	28.64'	57.26'	S26°12'32"E

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046 WWW.WLPINC.COM
(703) 532-6163 FAX (703) 533-1301

DATE: 05/11/06; REV. 12/5/06, 1/9/07 DRAWN: KLM
SCALE: 1" = 30'

COMMONWEALTH OF VIRGINIA JEFFREY J. STUCHELL NO. 031215 PROFESSIONAL ENGINEER 1/9/07

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

EXISTING VEGETATION MAP

1916 BEULAH ROAD

HUNTER MILL DISTRICT

FAIRFAX COUNTY, VIRGINIA

OVERALL SITE DRAINAGE SUMMARY:

I. PRE-DEVELOPMENT:

A. TOTAL AREA = 1.25 AC.

CONTRIBUTING AREAS:

0.14 AC. @ 0.90 (IMPERVIOUS AREA ON-SITE)
1.11 AC. @ 0.30 (GREEN AREA ON-SITE)
1.25 AC.

B. WEIGHTED "C":

$$\frac{(0.14)\ (0.90) + (1.11)\ (0.3)}{1.25} = 0.37$$

C. TIME OF CONCENTRATION = 5 MIN.

D. RUNOFF: Q2 = (0.37) (5.45) (1.25) = 2.52 CFS
Q10 = (0.37) (7.27) (1.25) = 3.36 CFS

II. POST-DEVELOPMENT:

A. AREAS TO INFILTRATION TRENCHES: *

0.27 AC. @ 0.90 (IMPERVIOUS AREA ONSITE)
0.32 AC. @ 0.30 (GREEN AREA ONSITE)
0.59 AC.

ONSITE UNCONTROLLED (SHEET FLOW):

0.66 AC. @ 0.30 (GREEN AREA ONSITE)

B. WEIGHTED "C":

$$\frac{(0.59)\ (0.00) + (0.66)\ (0.30)}{1.25} = 0.16$$

C. RUNOFF: Q2 = (0.16) (5.45) (1.25) = 1.09 CFS
Q10 = (0.16) (7.27) (1.25) = 1.45 CFS

III. DECREASE:

Q2 = 2.52 − 1.09 = 1.43 CFS
Q10 = 3.36 − 1.45 = 1.91 CFS

NOTE:
ALL 2 YEAR AND 10 YEAR RUNOFF FROM THE PROPOSED HOUSES AND THE FRONT YARDS WILL BE DIRECTED TO THE TWO PROPOSED INFILTRATION TRENCHES WHICH WILL INFILTRATE INTO THE GROUND.

BMP FACILITY DESIGN CALCULATIONS

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

SUBAREA DESIGNATION AND DESCRIPTION (1)	"C" (2)	ACRES (3)
* A_1 ONSITE DRAINAGE AREA TO INFILTRATION TRENCH	0.57	0.59
A_2 ONSITE UNCONTROLLED (SHEET FLOW)	0.30	0.66
TOTAL SITE AREA		1.25 AC.

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

(A) AREA OF THE SITE (a) 1.25 ACRES

(B) WEIGHTED AVERAGE "C" FACTOR= 0.43

(SEE STORMWATER MANAGEMENT SUMMARY THIS SHEET)

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)
A_1	ONSITE DRAINAGE AREA TO INFILTRATION TRENCH	70 x	0.59/1.25 x	0.57/0.43	= 44
				(a) TOTAL =	44

PART 4: DETERMINE COMPLIANCE WITH PHOSPHORUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT (a) 40%

* WATER SUPPLY OVERLAY DISTRICT (OCCOQUAN WATERSHED) = 50 %

* CHESAPEAKE BAY PRESERVATION AREA (NEW DEVELOPMENT) = 40 %

* CHESAPEAKE BAY PRESERVATION AREA (REDEVELOPMENT) = [1−0.9 x ("C"PRE/"C"POST)] x 100 =

(B) IF LINE 3(a) 44 > LINE 4(a) 40 THEN PHOSPHORUS REMOVAL REQUIREMENT IS SATISFIED.

BMP NARRATIVE:

THE PROPOSED DEVELOPMENT HAS A PHOSPHOROUS REMOVAL REQUIREMENT OF 40%. THE C-FACTOR INCREASES FROM 0.37 PRE-DEVELOPMENT TO 0.43 POST-DEVELOPMENT. THE PHOSPHOROUS REMOVAL REQUIREMENT IS PROPOSED TO BE MET THROUGH THE USE OF TWO INFILTRATION TRENCHES. THE INFILTRATION TRENCHES HAVE BEEN DESIGNED TO PROVIDE COMPLETE INFILTRATION FOR THE 10-YR STORM. INFILTRATION TRENCHES HAVE A PHOSPHOROUS REMOVAL EFFICIENCY OF 70%. THE ONSITE AREA DRAINING TO THE TRENCH MAY BE REDUCED AT THE TIME OF SUBDIVISION PLAN PER FINAL GRADING.

SWM NARRATIVE:

DETENTION AND INFILTRATION OF THE 10-YEAR STORM IS PROPOSED TO BE PROVIDED VIA TWO INFILTRATION TRENCHES (ONE LOCATED AT THE FRONT OF EACH PROPOSED LOT). THE ENTIRE 10-YEAR STORM VOLUME IS PROPOSED TO BE INFILTRATED WITH A RELEASE RATE OF 0 CFS.

WITH THE INSTALLATION OF THESE TRENCHES, THE RELEASE RATES FROM THE SITE FOR THE 2-YEAR AND 10-YEAR STORMS WILL BE REDUCED WELL BELOW THE PRE-DEVELOPMENT RATES OF 2.52 CFS FOR THE 2 YEAR STORM AND 3.36 CFS FOR THE 10-YEAR STORM. THE REAR OF THE SITE WILL CONTINUE TO SHEET FLOW POST DEVELOPMENT. THE ROOF DRAINS AND DRIVEWAYS WILL BE DIRECTED TOWARDS THE INFILTRATION TRENCHES.

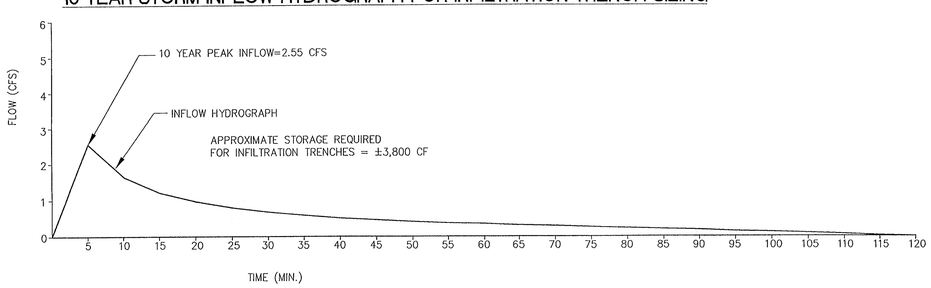
PLEASE NOTE THAT THE ONSITE AREA SERVED BY THE INFILTRATION TRENCH MAY BE REDUCED AT THE TIME OF SUBDIVISION PLAN PER FINAL GRADING.

OUTFALL NARRATIVE:

THE ENTIRE 10-YEAR STORM VOLUME IS PROPOSED TO BE INFILTRATED WITH A RELEASE RATE OF 0 CFS. PLEASE NOTE THAT THE ONSITE AREA SERVED BY THE INFILTRATION TRENCHES MAY BE REDUCED AT THE TIME OF SUBDIVISION PLAN PER FINAL GRADING. SHEET FLOW FROM THE SITE WILL BE REDUCED FROM PRE-DEVELOPMENT CONDITIONS.

DUE TO THE FACT THAT NO CHANNELIZED FLOW WILL BE RELEASED FROM THE SITE AND SHEET FLOW WILL BE WELL REDUCED BELOW PRE-DEVELOPMENT CONDITIONS, IT IS IN THE OPINION OF THE SUBMITTING ENGINEER THAT THIS SITE HAS ADEQUATE OUTFALL. THIS OUTFALL ANALYSIS IS SUBJECT TO CHANGE WITH FINAL ENGINEERING AND WILL BE REEVALUATED AND VERIFIED WITH FUTURE PLANS.

10 YEAR STORM INFLOW HYDROGRAPH FOR INFILTRATION TRENCH SIZING



Application No. 82 2006-HM-023 Staff PB
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/6/07
Date of (BOS) (PC) approval 3/12/07
Sheet 5 of 6

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046 WWW.WLPINC.COM
(703) 532-6163 FAX (703) 533-1301

DATE: 05/11/06; REV. 12/5/06, 1/9/07 DRAWN: JV
SCALE: AS NOTED

COMMONWEALTH OF VIRGINIA JEFFREY J. STUCHELA NO. 031215 1/9/07 PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

REVISION APPROVED BY

SWM/BMP COMPUTATIONS AND OUTFALL ANALYSIS

1916 BEULAH ROAD

HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

ECS MID-ATLANTIC, LLC
Geotechnical • Construction Materials • Environmental • Facilities

December 29, 2006

Mr. Robert Rucks
c/o Ms. Jill Vinson
Walter L. Phillips, Inc.
207 Park Avenue
Falls Church, Virginia 22046

ECS Job No. 12118

Reference: Letter Addendum Report of Subsurface Exploration and Geotechnical Engineering Analysis, Relocated SWM/BMP Facility, 1916 Beulah Road, Vienna, Fairfax County, Virginia

Dear Ms. Vinson:

As authorized, ECS Mid-Atlantic, LLC (ECS) has completed the field exploration and in situ testing for the proposed relocated SWM/BMP facilities at the above referenced property. The results and recommendations addressing the proposed SWM/BMP facility are provided in the following sections.

In summary, we believe that the areas set forth for the proposed SWM/BMP facilities are suitable at the infiltration depths tested. Included within the attached letter report are general design recommendations which address the design infiltration rate assignment for the proposed facility, specific test locations, and infiltration testing procedures, results, and recommendations.

Subsurface Exploration Procedures

The geotechnical infiltration auger probes were performed with a 6 inch hand auger. The auger bucket is advanced manually until full and then it's removed, emptied and reinserted. This process is repeated until the excavation reaches depth. During the progression of the boring, auger cuttings are removed from the bucket and visually examined for classification. Representative samples are taken at regular intervals and the samples are retained in a moisture proof jar, labeled and returned to our office in Chantilly, Virginia for later laboratory testing.

Field Infiltration Investigation and Testing Procedures

Our infiltration exploration and testing program was developed to help identify soils capable of infiltrating high volumes of collected stormwater runoff. Our field exploration focused on two prospective test areas, and the infiltration tests were run five feet below the current surface grade. The proposed facility subgrade soils were tested to evaluate the saturated conductivity characteristics of the in situ soils. The infiltration quality of the soil was initially evaluated based upon soil type according to the USDA Soil Classification System, color with respect to hue-value-chroma, and restrictive horizontal conditions as encountered.

Following a positive visual evaluation of the soil infiltration characteristics at the proposed inverts, the actual infiltration presoak and infiltration testing was carried out as described in the Field Infiltration Test Procedure below.

Infiltration tests were performed at two locations (I-3 and I-4). The infiltration testing was performed utilizing a modified falling head method. Each test location was presoaked and then each infiltration test was performed over a four-hour test duration, with the drop in water head being constantly monitored and recorded at regular intervals. The water level drop recorded for the last half hour of the test period is primarily used as a basis for determining the final design infiltration rate. A table containing all the raw infiltration test data for each test location is attached to this letter for reference.

Once the infiltration testing was completed, the test hole was deepened an additional three feet utilizing the 6 inch hand auger. The consistency of the soils remained the same as was encountered at the above referenced test depths, no ground water was identified, and no signs of restrictive soil conditions were encountered.

Laboratory Testing Program

Each soil sample was visually classified on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS) for all geotechnical borings and auger probes. All soils recovered during the infiltration boring procedures were classified on the basis of texture and plasticity in accordance with the USDA Soil Classification System.

Soil samples representative of the proposed infiltration facility subgrade will be retained in our laboratory for a period of 60 days, after which they will be discarded unless other instructions are received as to their disposition.

Infiltration Test Results and Recommendations

Based upon the infiltration test results and associated visual classification, the proposed facility locations indicated on the attached test location Diagram appear suitable for installation of an infiltration design. The design subgrade should be set at approximately five feet below the current surface grade in each facility area. We recommend that a rate of 1.50 inches per hour be used in planning the facility.

The soil underlying the proposed facilities is composed of LOAM type soils (USDA Soil Classification System) or ML soils (Unified Soil Classification System). Based upon resources provided from the Maryland Department of Environmental Management, DEM, theoretical infiltration rates may be derived by accurate textural classification of the infiltration soils. The LOAM encountered during our investigation theoretically has a minimum infiltration rate of 0.52 inches/hour (DEM source: Rawles, Brakensiek, and Saxton, 1982).

The field infiltration test results identified raw conductivity rates at I-3 and I-4, over the last ½ hour of testing, as 4.0 and 15.0 inches/hour, respectively. A standing head of water approximately 7.5 to 14 inches was present in each of the test holes at the last half hour of record, and this head was allowed to fall without recharge throughout the completion of the test.

Based upon the results of the infiltration testing, we recommended that a design infiltration rate of 1.5 inches/hour be applied to sizing the proposed facility. The design infiltration rate recommended above applies a 2.7 or greater safety factor.

We stress that final approval of all recommendations contained herein concerning infiltration facility design will come from Fairfax County. The test procedures utilized and the results of testing herein submitted will be reviewed as part of that approval process. While we anticipate no additional requests for field testing, the County always reserves the right to clarify any questions which might impact the proper function of the facility.

We have enjoyed being of service to you on this project. If you have any questions with regard to the information and recommendations presented in the accompanying report, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,

ECS MID-ATLANTIC, LLC

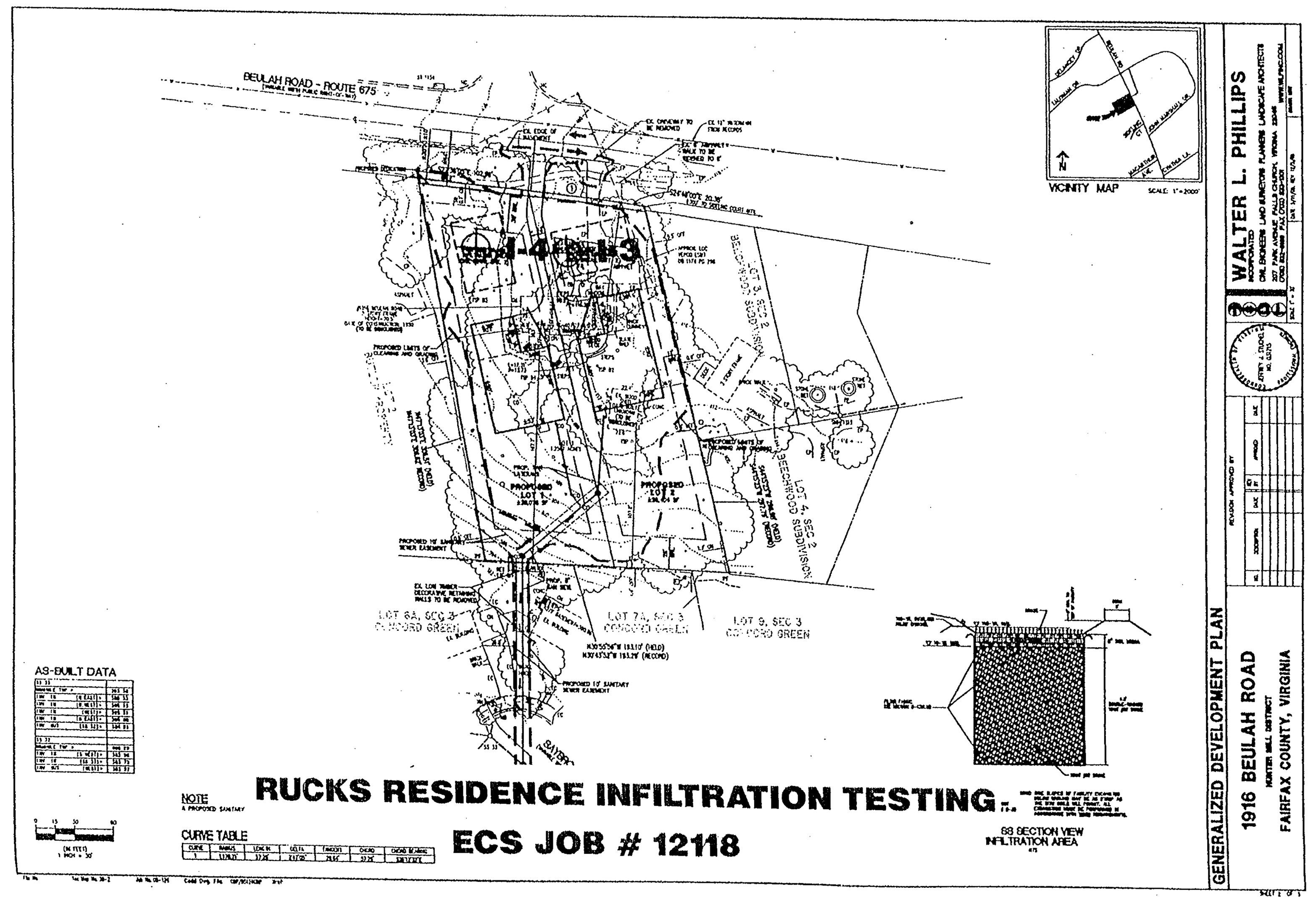
Charles P. Reynolds, C.P.G.
Principal Engineering Geologist

Bryan C. Layman, P.E., C.P.S.S., A.O.S.E.
Principal Engineer

COMMONWEALTH OF VIRGINIA
BRYAN C. LAYMAN
No. 023314
01/03/07
PROFESSIONAL ENGINEER

Attachments: Raw Field Infiltration Data Spreadsheet
Boring Location Diagram

14026 Thunderbolt Place, Suite 100, Chantilly, VA 20151 • (703) 471-8400 • FAX (703) 834-5527 • www.ecslimited.com
Aberdeen, MD · Baltimore, MD · Chantilly, VA · Charlottesville, VA* · Frederick, MD · Fredericksburg, VA · Manassas, VA · Ocean City, MD* Richmond, VA · Roanoke, VA · Virginia Beach, VA · Waldorf, MD · Williamsburg, VA · Winchester, VA · York, PA
* testing services only



INFILTRATION TEST RECORD/CALCULATION SHEET

Job No: 12118 Job Name: Ruck's Property Date: 12/19/06

Boring No: HA-3 (I-3)

Perc Hole Depth (in.): 60.0

Reference Depths for Test (In):
12" = 48.0 24"= 36.00

Test Intervals/Duration (Hrs.)	0.00	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00
Actual Test Time (Start/Finish)	10:20	10:35	10:50	11:05	11:20	11:50	12:20	12:50	13:20	13:50	14:20
Measured Depth to water (in.)		42.0	39.3	39.0	37.5	43.5	41.0	39.8	43.5	46.0	48.0
Measured Depth. Added or initial (in.)	36.0	36.0	36.0	34.5	37.5	36.0	36.0	39.8	43.5	46.0	
Head (in.)	24.0	24.0	24.0	25.5	22.5	24.0	24.0	20.2	16.5	14.0	
Fall (in.)		6.0	3.3	3.0	3.0	6.0	5.0	3.8	3.7	2.5	2.0

Calculated Infiltration Rate (in./hr.):
Based on Last Hour: 4.5
Based on Last 1/2 Hour: 4

Comments:

Boring No: HA-4 (I-4)

Perc Hole Depth (in.): 60.0

Reference Depths for Test (In):
12" = 48.0 24"= 36.00

Test Intervals/Duration (Hrs.)	0.00	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00
Actual Test Time (Start/Finish)	10:25	10:40	10:55	11:10	11:25	11:55	12:25	12:55	13:25	13:55	14:25
Measured Depth to water (in.)		49.0	44.5	43.8	41.5	48.3	45.5	45.0	47.5	52.5	60.0
Measured Depth. Added or initial (in.)	36.0	36.0	36.0	33.5	36.0	33.5	35.0	39.0	47.5	52.5	
Head (in.)	24.0	24.0	24.0	26.5	24.0	26.5	25.0	21.0	12.5	7.5	
Fall (in.)		13.0	8.5	7.8	8.0	12.3	12.0	10.0	8.5	5.0	7.5

Calculated Infiltration Rate (in./hr.):
Based on Last Hour: 12.5
Based on Last 1/2 Hour: 15

Comments:

Application No. RZ 2006-HM-023 Staff PR
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 2/8/07
Date of (BOS) (PC) approval 3/12/07
Sheet 6 of 6

GEOTECHNICAL ENGINERING ANALYSIS

1916 BEULAH ROAD

HUNTER MILL DISTRICT

FAIRFAX COUNTY, VIRGINIA

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

COMMONWEALTH OF VIRGINIA
JEFFREY J. STUCHEL
NO. 031215
1/9/07
PROFESSIONAL ENGINEER

WALTER L. PHILLIPS
INCORPORATED
CIVIL ENGINEERS LAND SURVEYORS PLANNERS LANDSCAPE ARCHITECTS
207 PARK AVENUE FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 FAX (703) 533-1301 WWW.WLPINC.COM

SCALE: NONE DATE: 05/11/06; REV. 1/9/07 DRAWN: JV