CAR WASH

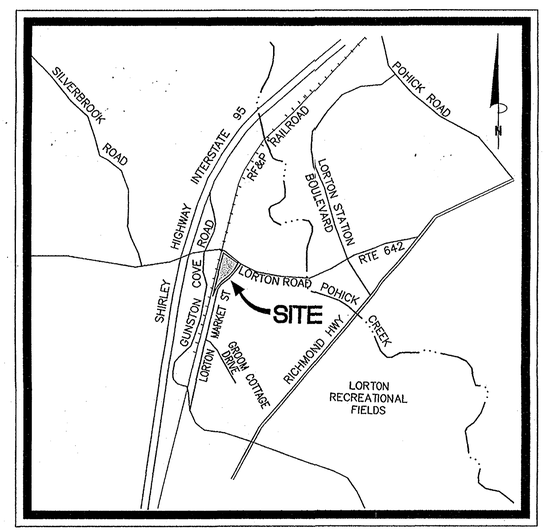
LORTON STATION SOUTH COMMERCIAL CENTER

ADDITION OF CAR WASH USE TO PREVIOUSLY PROFFERED PLAN

MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

GENERALIZED DEVELOPMENT PLAN
SPECIAL EXCEPTION PLAT

MAY 24, 2007
APRIL 20, 2007
MARCH 01, 2007



VICINITY MAP
SCALE: 1" = 2000'

APPLICANT:

MARKET PLACE CAR WASH, LLC.
10015 HIGH HILL PLACE
GREAT FALLS, VA 22066

PREPARED BY:

BOWMAN CONSULTING GROUP, LTD.
14020 THUNDERBOLT PLACE, SUITE 300
CHANTILLY, VA 20151

AGENT:

SACK, HARRIS, AND MARTIN, P.C.
8270 GREENSBORO DRIVE
SUITE 810
MCLEAN, VA 22102

Application No. SE 2007-MV-005 Staff S.U.
APPROVED GDP / SP PLAN
SITE DEV CONDS DATED July 19, 2007
Date of BOS (BZA) approval Sept. 10, 2007
Sheet 1 of 8
Concurrent w/ PCA 1999-MV-025-4
Proffers dated: August 29, 2007

RECEIVED
Department of Planning & Zoning
OCT 16 2007
Zoning Evaluation Division

SHEET INDEX

1. COVER SHEET
2. NOTES & TABULATIONS
3. LIMITS OF PCA / SEA
4. OVERALL SHOPPING CENTER SITE (RZ-1999-MV-025) *
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5. SWM/BMP SUMMARY AND NARRATIVES **

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5B. SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS **
5C. SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS **

** *SWM/BMP FACILITY AS APPROVED AND CONSTRUCTED WITH SITE PLAN 4865-SP-10-02 AS PREPARED BY BOWMAN CONSULTING GROUP FOR INFORMATION ONLY.*

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COVER SHEET
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JOHN MARK D. BONDI
Lic. No. 001979
5/24/07
LICENSED LANDSCAPE ARCHITECT

PLAN STATUS	
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

DATE	DESCRIPTION

JDB	RRM	JDB
DESIGN	DRAWN	CHKD

SCALE H: AS NOTED V:
JOB No. 1299-16-002
DATE: JANUARY 2007
FILE No. 1299-D-ZP-004

SHEET 1 OF 5

GENERAL NOTES:

1. THIS PARTIAL PROFFERED CONDITION AMENDMENT PLAT & SPECIAL EXCEPTION AMENDMENT (PCA/SEA) ACCOMPANIES AN APPLICATION TO PERMIT A FULL SERVICE DRIVE THRU CAR WASH USE TO BE LOCATED ON PAD 'B'.
2. THE SUBJECT PROPERTY IS CURRENTLY ZONED TO THE C-6 ZONING DISTRICT AND IS LOCATED IN THE MOUNT VERNON MAGISTERIAL DISTRICT.
3. THE SUBJECT PROPERTY WAS ORIGINALLY APPROVED PURSUANT TO RZ 1999-MV-025 & SE 99-V-020 ON APRIL 20, 2000, WHICH INCLUDED THE REZONING OF 32.97 ACRES. SUBSEQUENTLY, THE REZONING HAS BEEN AMENDED TO INCLUDE A CHILD CARE CENTER UNDER PLAN (PCA 1999-MV-025-01 AND SEA 99-V-020-01) & A DRIVE-IN BANK UNDER PLAN (PCA 1999-MV-025-02 & SEA-V-020-02).
4. THE TOPOGRAPHY SHOWN ON SHEET 3, WITHIN THE AREA OF PAD 'B', IS AT A CONTOUR INTERVAL OF TWO (2) FEET AS OBTAINED FROM AERIAL PHOTOGRAPHY BY AIR SURVEY, INC..
5. ACCORDING TO COUNTY TAX RECORDS, THE SUBJECT PROPERTY IS IDENTIFIED AS TAX MAP 107-4 ((23)) C. THE THE METES & BOUNDS SHOWN ARE FROM A BOUNDARY SURVEY PREPARED BY BOWMAN CONSULTING, AND ARE RECORDED IN DB 13375/PG 491. THE AREA THAT IS SUBJECT TO THIS PARTIAL PCA/SE IS EQUAL TO 1.03946 ACRES.
6. STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) REQUIREMENTS FOR THIS SITE HAVE BEEN PROVIDED WITHIN THE ON-SITE SWM/BMP FACILITIY PER APPROVED PLANS FOR LORTON MARKET STREET (FAIRFAX COUNTY PLAN # 4865-SP-005). THESE ABOVE GROUND FACILITIES, LOCATED ADJACENT TO AND NORTH OF PAD 'C', ARE GENERALLY SHOWN IN THE LOCATIONS DEPICTED ON SHEET 3 OF THIS PLAN.
7. THE LANDSCAPING AND OPEN SPACE AREAS AS REPRESENTED ON THE ORIGINAL REZONING (RZ 1999-MV-25/ SE 99-V-020) ARE SUBJECT TO MINOR MODIFICATIONS AT TIME OF FINAL ENGINEERING AND DESIGN. LANDSCAPING AND TREE COVER WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 13 OF THE ZONING ORDINANCE. LANDSCAPING TO BE PROVIDED AS SHOWN ON SHEET 3 OF THE PLAN.
8. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO UTILITY EASEMENTS HAVING A WIDTH OF TWENTY-FIVE (25) OR GREATER LOCATED ON WITHIN THE SUBJECT PROPERTY OF THIS AMENDMENT.
9. THERE ARE NO EXISTING STRUCTURES ON THE SUBJECT PROPERTY.
10. THE NORTH/SOUTH SPINE ROAD IS DEDICATED AS A PUBLIC STREET (LORTON MARKET STREET) AND WAS BUILT WITH SITE PLAN #4865-SP-005.
11. AN EXISTING 5' WIDE SIDEWALK, CONSTRUCTED WITH SITE PLAN #4865-SP-005, RESIDES WITHIN THE RIGHT-OF-WAY OF LORTON MARKET STREET. ACCORDING TO THE COMPREHENSIVE TRAILS PLAN, NO ADDITIONAL TRAILS ARE REQUIRED FOR THE SUBJECT PROPERTY.
12. THERE IS NO FLOODPLAIN WITHIN THE SUBJECT PROPERTY AS DESIGNATED BY THE FEDERAL INSURANCE ADMINISTRATION, UNITED STATES GEOLOGICAL SURVEY OR FAIRFAX COUNTY. THERE IS NO RESOURCE PROTECTION AREAS (RPA) OR ENVIRONMENTAL QUALITY CORRIDOR (EQC) WITHIN THE SUBJECT PROPERTY.
13. THE VAST MAJORITY OF THE SITE HAS BEEN CLEARED & GRADED THUS THE DEVELOPER HAS REQUESTED A WAIVER FROM THE REQUIREMENT THAT AN EXISTING VEGETATION MAP (EVM) BE SUBMITTED WITH THIS APPLICATION.
14. THE MINIMUM YARD REQUIREMENTS SET FORTH IN THE C-6 DISTRICT REGULATIONS OF THE ZONING ORDINANCE ARE AS FOLLOWS:

    FRONT YARD: CONTROLLED BY A 45' ANGLE OF BULK PLANE, BUT NOT LESS THAN 40 FEET.
    SIDE YARD: NO REQUIREMENT.
    REAR YARD: 20 FEET.

15. PURSUANT TO THE PREVIOUSLY APPROVED PROFFERS, APPLICATION AND SITE PLAN (RZ 1999-MV-025/PCA 1996-MV-037/SE 99-V-020), A WAIVER OF THE BARRIER REQUIREMENTS ALONG THE EASTERN, SOUTHERN, AND WESTERN BOUNDARIES AS GRANTED IN ACCORDANCE WITH SECT. 13-304 OF THE ZONING ORDINANCE.
16. PURSUANT TO THE PREVIOUSLY APPROVED PROFFERS, APPLICATION AND SITE PLAN (RZ 1999-MV-025/PCA 1996-MV-037/SE 99-V-020), A MODIFICATION OF THE TRANSITIONAL SCREENING REQUIREMENTS ALONG THE EASTERN, SOUTHERN, AND NORTHERN BOUNDARIES WAS GRANTED IN ACCORDANCE WITH SECT. 13-304 OF THE ZONING ORDINANCE.
17. THE SUBJECT PROPERTY IS LOCATED IN SUBUNIT E-8 OF THE LORTON-SOUTH ROUTE 1 PLANNING SECTOR OF THE ADOPTED COMPREHENSIVE PLAN FOR A MIX OF USES. THE PROPOSED DEVELOPMENT IS CONSISTENT WITH THAT RECOMMENDATION.
18. AT A MINIMUM, PARKING WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 11 OF THE ZONING ORDINANCE. THE DEVELOPER RESERVES THE RIGHT TO PROVIDE FEWER OR MORE THAN THE NUMBER OF PARKING SPACES PRESENTED HEREON PROVIDED THAT THE AMOUNT OF OPEN SPACES IS NOT DECREASED.
19. A STATEMENT THAT CONFIRMS THE OWNERSHIP OF THIS SUBJECT PROPERTY AND THE NATURE OF THE DEVELOPER'S INTEREST IN SAME IS PROVIDED IN AN AFFIDAVIT SUBMITTED SEPARATELY.
20. THE FOOTPRINT OF THE BUILDING SHOWN HEREON MAY BE MODIFIED IN ACCORDANCE WITH PAR. 4 OF SECT 9-004 AND PAR. 5 SECT. 18-204 OF THE ZONING ORDINANCE. THE TOTAL GROSS FLOOR AREA AND THE BUILDING HEIGHT PRESENTED IN THE TABULATIONS IS TO BE CONSIDERED A MAXIMUM. THE DEVELOPER RESERVES THE RIGHT TO DEVELOP A LESSER AMOUNT OF GROSS FLOOR AREA (GFA) FROM THE TOTAL PRESENTED IN THE TABULATION AND THE BUILDING FOOTPRINT. ANY CHANGE TO THE GFA WILL MODIFY THE ASSOCIATED PARKING LOT LAYOUT ACCORDINGLY. ADDITIONAL PARKING SPACES MAY BE PROVIDED WHERE A BUILDING FOOTPRINT IS REDUCED, SHIFTED OR MODIFIED SO LONG AS THE AREA OF OPEN SPACE PROVIDED IS NOT DECREASED. IT IS UNDERSTOOD THAT SUCH DEVIATIONS ARE PERMITTED PROVIDED THE RESULTS ARE IN SUBSTANTIAL CONFORMANCE WITH THIS PLAN.
21. ADDITIONAL SITE FEATURES SUCH AS PLANTERS, ENTRANCE SIGNS, TRASH/RECYCLING FACILITIES AND/OR WALLS NOT REPRESENTED HEREON MAY BE PROVIDED.
22. DEVELOPMENT OF THE PROPERTY HAS AND WILL COMMENCE WHEN ALL REQUIRED APPROVALS AND PERMITS HAVE BEEN OBTAINED. IT IS CURRENTLY ANTICIPATED THAT DEVELOPMENT OF THE AMENDED PORTION OF THIS APPLICATION WILL COMMENCE UPON RECEIPT OF THE REQUIRED APPROVALS AND PERMITS. HOWEVER, THIS MAY CHANGE SUBJECT TO MARKET CONDITIONS.
23. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO GRAVES LOCATED ON THE PROPERTY SUBJECT TO THIS AMENDMENT.
24. TO THE BEST OF OUR KNOWLEDGE THE USE REPRESENTED HEREON WILL NOT GENERATE, UTILIZE, STORE, TREAT AND/OR DISPOSE OF ANY HAZARDOUS OR TOXIC SUBSTANCES AS SET FORTH IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 116.4, 302.4, AMD 355; ANY HAZARDOUS WASTE AS SET FORTH IN COMMONWEALTH OF VIRGINIA/DEPARTMENT OF WASTE MANAGEMENT VR 672-10-1 - VIRGINIA HAZARDOUS WASTE MANAGEMENT REGULATIONS; AND/OR ANY PETROLEUM PRODUCTS AS DEFINED IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 280; HOWEVER, ANY SUCH SUBSTANCES THAT MAY BE UTILIZED, STORED AND/OR DISPOSED OF IN CONJUNCTION WITH THE USES WILL BE IN ACCORDANCE WITH SAID REGULATIONS.
25. THERE ARE NO AREAS THAT HAVE SCENIC ASSETS OR NATURAL FEATURES DESERVING OF PROTECTION OR PRESERVATION ON THE SITE.
26. THERE ARE NO COMMUNITY OR PUBLIC FACILITIES BEING PROPOSED IN CONJUNCTION WITH THE DEVELOPMENT OF THIS PROPERTY.
27. PUBLIC IMPROVEMENTS HAVE INCLUDED THE CONSTRUCTION AND DEDICATION OF LORTON MARKET STREET .
28. ARCHITECTURAL SKETCHES/PHOTOGRAPHIC ILLUSTRATIVES OF THE BUILDING ARE INCLUDED UNDER SEPARATE COVER.
29. WITH THE EXCEPTION OF THE WAIVERS REQUESTED ABOVE, TO THE BEST OF OUR KNOWLEDGE, THE PROPOSED DEVELOPMENT OF THE SUBJECT PROPERTY CONFORMS TO ALL CURRENT APPLICABLE LAND DEVELOPMENT ORDINANCES, REGULATIONS, AND ADOPTED STANDARDS.

ZONING ORDINANCE SECTION 9-011
SPECIAL EXCEPTION SUBMISSION REQUIREMENTS

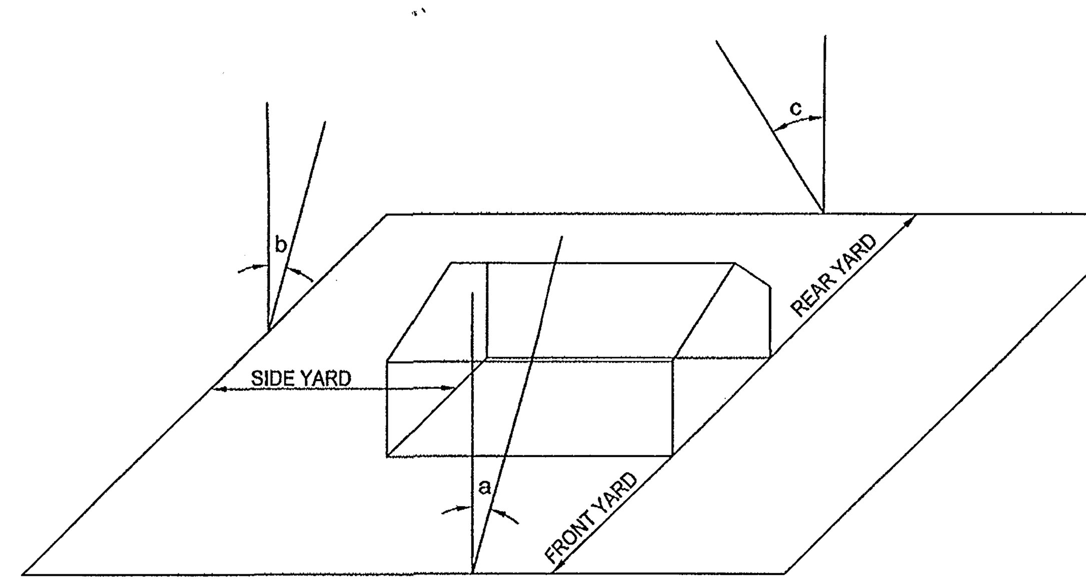
1. APPLICATION FORM TO BE SUBMITTED UNDER SEPARATE COVER.
2. TWENTY-THREE (23) COPIES OF A 24" X 36" PLAT AT A SCALE OF NOT LESS THAN (1" = 50') AND A 8.5" X 11" REDUCTION SHALL BE PROVIDED UPON REQUEST AT THE TIME OF APPLICATION ACCEPTANCE.

    A. BOUNDARY OF THE ENTIRE PROPERTY WITH BEARING & DISTANCES HAS BEEN SHOWN ON SHEET 4. SEE GENERAL NOTE#5.
    B. THE SITE TABULATIONS FOR THE PARTIAL PCA/SE ON 1.03946 AC. AND THE OVERALL TABULATIONS OF THE ORIGINAL REZONING (PCA 1999-MV-025/SEA 99-V-20) ON 32.97 AC. ± HAVE BEEN PROVIDED ON SHEET 2 OF THE PLAN.
    C. SCALE AND NORTH ARROW PROVIDED ON EACH SHEET AS REQUIRED.
    D. THE PROPOSED CAR WASH TO BE A MAXIMUM OF 6,000 G.S.F. OVERALL DIMENSIONS ARE AS SHOWN ON SHEET 3 OF THE PLAN. THE MAXIMUM PROPOSED HEIGHT IS 35 FEET. THERE ARE NO EXISTING STRUCTURES ON THE SUBJECT PROPERTY. PROPOSED SIGNAGE TO BE PROVIDED UNDER SEPERATE COVER.
    E. MINIMUM YARD REQUIREMENTS AND A GRAPHIC DEPICTION OF THE BULK PLANE HAVE BEEN PROVIDED ON SHEET 2 OF THE PLAN. DISTANCES FROM EXISTING STRUCTURES AND LOT LINES ARE AS SHOWN ON SHEET 3 OF THE PLAN. SEE GENERAL NOTE #14.
    F. EXISTING ROADS WITH NAME, ROUTE NUMBERS, AND DIMENSIONS ARE AS SHOWN ON SHEET 3 OF THE PLAN. SEE GENERAL NOTE #27.
    G. INGRESS AND EGRESS ARE AS SHOWN ON SHEETS 3 AND 4 OF THE PLAN.
    H. THE PARKING TABULATIONS FOR THE PARTIAL PCA/SE ON 1.03946 AC. AND THE OVERALL PARKING TABULATIONS OF THE ORIGINAL REZONING (PCA 1999-MV-025/SEA 99-V-20) ON 32.33 AC.± HAVE BEEN PROVIDED ON SHEET 2 OF THE PLAN. DISTANCES OF PARKING FROM THE PROPERTY LINE ARE AS SHOWN ON SHEET 3 OF THE PLAN. SEE GENERAL NOTE #18.
    I. THE SITE WILL BE SERVED BY PUBLIC WATER AND SEWER SERVICE TO BE PROVIDED BY FAIRFAX WATER AND FAIRFAX COUNTY WASTE WATER COLLECTION RESPECTIVELY.
    J. NO STORMWATER MANAGEMENT IS REQUIRED FOR THIS SITE. THE ABOVE GROUND STORMWATER MANAGEMENT/BMP FACILITY WAS BUILT WITH FAIRFAX COUNTY SITE PLAN 4865-SP-005 AND WAS ENGINEERED TO HANDLE ALL THE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICE (BMP) REQUIREMENTS FOR THIS SITE. THE STORMWATER SHEETS FROM SITE PLAN 4865-SP-005 DEPICTING THE LOCATION AND SWM/BMP COMPUTATIONS WILL BE SUBMITTED UNDER SEPERATE COVERSEE GENERAL NOTE #6.
    K. THE MAXIMUM F.A.R. HAS BEEN STATED IN THE SITE TABULATIONS FOR THE PARTIAL PCA/SE ON 1.03946 AC.± AND THE OVERALL TABULATIONS OF THE ORIGINAL REZONING (RZ 1999-MV-025/SE 99-V-20) ON 32.97 AC.± AS SHOWN ON SHEET 2 OF THE PLAN.
    L. THE EXISTING TOPOGRAPHY SHOWN ON SHEET 3 OF THE PLAN IS AT A CONTOUR INTERVAL OF 2' AND WAS MAPPED USING AERIAL PHOTRGRAMATTIC METHODS BY AIR SURVEYS, INC.
    M. INFORMATION REGARDING THE LIMITS OF CONSTRUCTION & GRADING AND SITE LANDSCAPING IS SHOWN ON SHEET 3 OF THE PLAN. SEE GENERAL NOTES #7 AND #13.
    N. THERE ARE NO FLOODPLAINS, EQC, OR RPA THAT EXIST ON THE SITE. SEE GENERAL NOTE #12.
    O. ANY ADDITIONAL SITE FEATURES AND OR AMENITIES IF PROVIDED ARE AS SHOWN ON SHEET 3 OF THE PLAN.
    P. SEE GENERAL NOTE #8.
    Q. THERE ARE NO REQUIRED TRAILS PER THE COMPREHENSIVE PLAN THAT ARE TO BE PROVIDED ON THIS PARTIAL PCA/SE. SEE GENERAL NOTE #11.
    R. SEE GENERAL NOTE #23.
    S. SEAL AND SIGNATURE PROVIDED ON EACH SHEET OF THE PLAT AS REQUIRED.

3. FAIRFAX COUNTY TAX MAP AT A SCALE OF (1"-500') TO BE PROVIDED UNDER SEPARATE COVER.
4. ALL PHOTO DOCUMENTATION OF THE PROPERTY TO BE PROVIDED UNDER SEPARATE COVER.
5. NOT APPLICABLE FOR COMMERCIAL DEVELOPMENT.
6. AFFIDAVIT TO BE PROVIDED UNDER SEPARATE COVER.
7. A WRITTEN STATEMENT TO BE PROVIDED UNDER SEPARATE COVER.
8. OWNERSHIP AND INTEREST TO BE PROVIDED UNDER SEPARATE COVER.
9. NOT APPLICABLE
10. APPLICATION FEE TO BE INCLUDED UNDER SEPARATE COVER.

ANGLE OF BULK PLANE DETAIL

** NOT TO SCALE



NOTES:

1) MINIMUM YARD REQUIREMENTS

    FRONT YARD: ∠a 45° BUT NOT LESS THAN 40'.
    SIDE YARD: ∠b NO REQUIREMENT
    REAR YARD: ∠c NOT LESS THAN 20'.

2) MAXIMUM BUILDING HEIGHT = 40'
3) PROPOSED BUILDING HEIGHT = 35'

SITE TABULATIONS:

GDP/SE FOR PAD 'B' CAR WASH

PARTIAL PCA/SE SUBJECT LAND AREA	1.03946 AC ± OR 45,279 S.F. ±
EXISTING GROSS FLOOR AREA (GFA) (PAD 'B' SUBJECT OF THIS APPLICATION)	UP TO 2,500 SF
PROPOSED CAR WASH GROSS FLOOR AREA:	5,200 ± SF
PAD 'B' FLOOR AREA RATIO	.115 F.A.R.
PARKING REQUIRED:	4 SPACES PER DETAILING BAY = 4 + 1 SPACE PER EMPLOYEE = 14 FOR TOTAL OF 18 SPACES
PARKING PROVIDED:	18 SPACES
SERVICE BAYS PROPOSED:	1
STACKING SPACES REQUIRED:	10 PER SERVICE BAY
STACKING SPACES PROVIDED:	10 TOTAL
(SEE SHEET 3 FOR STACKING GEOMETRY)	
OPEN SPACE REQUIRED (15%):	.155 AC. OR 6,751.8 S.F.
OPEN SPACE PROVIDED (24%):	.249 AC OR 10,846.44

OVERALL SHOPPING CENTER ORIGINAL APPROVAL (CASE # RZ-1999-MV-025)

CURRENT ZONING	C-6
TOTAL LAND AREA	32.97± AC
APPROVED GROSS FLOOR AREA	187,750 SF
SHOPPING CENTER (MAIN BUILDING)	134,500 SF
SPECIAL EXCEPTION USES (PADS A, B & C)	16,250 SF
NON-RETAIL	37,000 SF
TOWNHOUSE OFFICE	21,000 SF
SHOPPING CENTER (MAIN BUILDING)	16,000 SF
PERMITTED MAXIMUM FLOOR AREA RATIO	0.40
APPROVED FLOOR AREA RATIO	0.13
MAXIMUM BUILDING HEIGHT (PERMITTED/PROPOSED):	40 FT*
PARKING SPACES REQUIRED	737
RETAIL (150,750 ÷ 1,000 x 4)	603
OFFICE & OTHER NONRETAIL USES (37,000 ÷ 1,000 x 3.6)	134
PARKING SPACES PROVIDED	912**
OPEN SPACE REQUIRED (15%)	4.64± AC
OPEN SPACE PROVIDED (30%)	10.00± AC

* EXCLUSIVE OF THE PROPOSED 65± FOOT CLOCK TOWER

** THERE ARE APPROXIMATELY 65 SPACES RESERVED FOR COMMUTER PARKING DURING NORMAL WORKING HOURS INCLUDED IN THIS TOTAL

ation No. SE 2007-MV-005 S.W.
APPROVED SE PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 2 of 8
Concurrent w/PCA 1999-MV-025-4
Proffers dated: August 29, 2007

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 Exceptions (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 (18-202 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 ____.
- [ ] 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)
(e.g. dry pond A, infil. trench, underground vault, etc.)						
Totals						

- [x] 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet ____. Pond inlet and oulet pipe systems are shown on Sheet ____.
- [x] 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet ____. Type of maintenance access road surface noted on the plat is ________ (asphalt, geoblock, gravel, etc.).
- [x] 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet ____.
- [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 ____.
- [x] 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 ____.
- [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 ____.
- [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 ________.
- [ ] 11. A submission waiver is requested for ________________.
- [x] 12. Stormwater management is not required because THE ABOVE GROUND STORMWATER MANAGEMENT/BMP FACILITY WAS BUILT WITH FAIRFAX COUNTY SITE PLAN 4865-SP-005 AND WAS ENGINEERED TO HANDLE ALL THE STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICE (BMP) REQUIREMENTS FOR THIS SITE. SEE SHEETS 5-5C FOR THE STORMWATER SHEETS FROM SITE PLAN 4865-SP-005 DEPICTING THE LOCATION AND SWM/BMP COMPUTATIONS WILL BE SUBMITTED UNDER SEPARATE COVER.

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NOTES & TABULATIONS
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

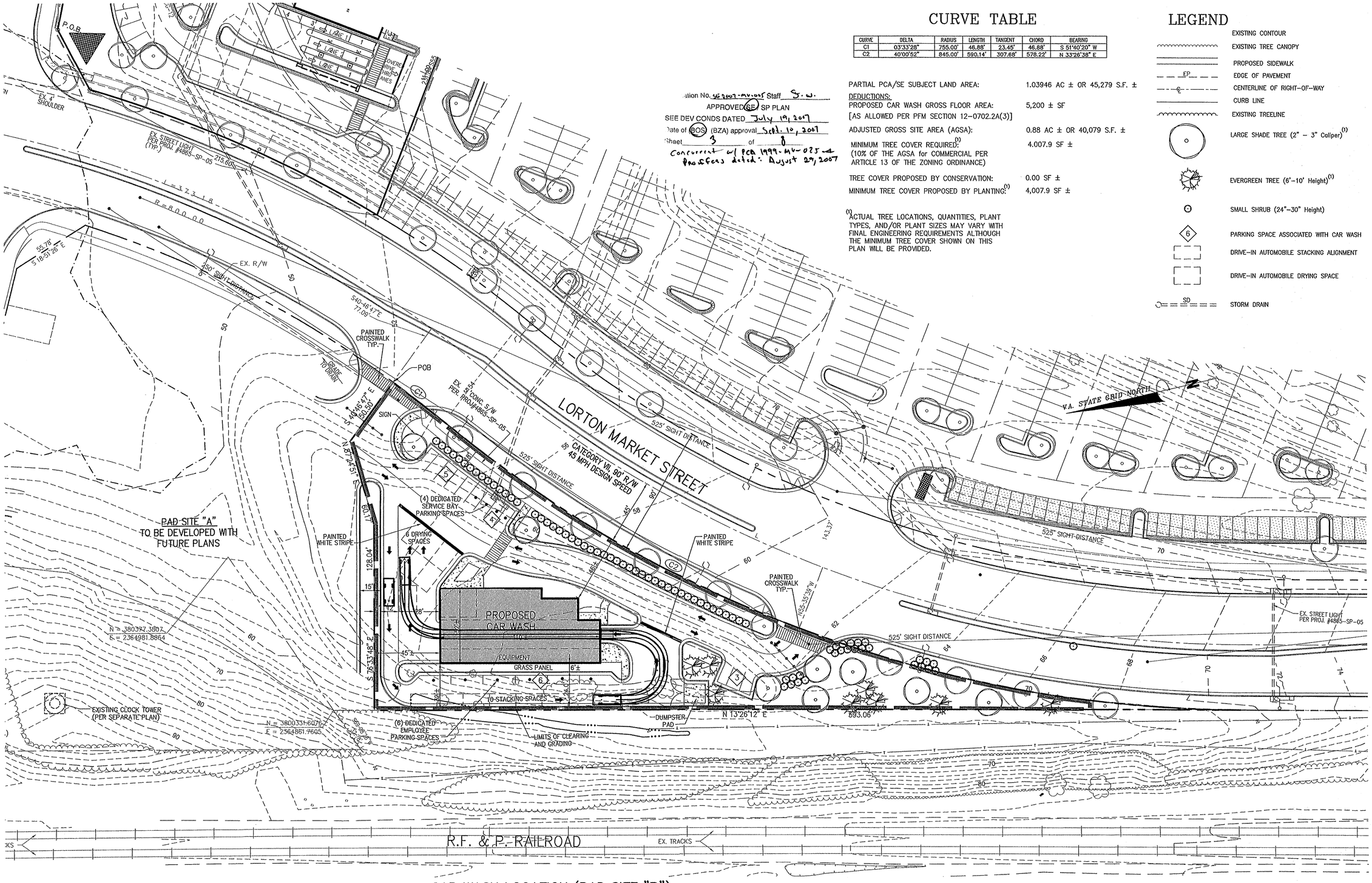
PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No.001379
5/24/07
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS

DATE	DESCRIPTION
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

JDB DESIGN	RRM DRAWN	JDB CHKD
SCALE	H: NO SCALE V:	
JOB No.	1299-16-002	
DATE:	JANUARY 2007	
FILE No.	1299-D-ZP-004	
SHEET	2 OF 5	



CAR WASH LOCATION (PAD SITE "B")

SCALE: 1"=30'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	BEARING
C1	03°33'28"	755.00'	46.88'	23.45'	46.88'	S 51°40'20" W
C2	40°00'52"	845.00'	590.14'	307.68'	578.22'	N 33°26'38" E

...ation No. SE 2007-MV-005 Staff S.W.
APPROVED (SE) SP PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 3 of 8
Concurrent w/ PCA 1999-MV-025-4
Proffers dated: August 29, 2007

PARTIAL PCA/SE SUBJECT LAND AREA:	1.03946 AC ± OR 45,279 S.F. ±
DEDUCTIONS:	
PROPOSED CAR WASH GROSS FLOOR AREA: [AS ALLOWED PER PFM SECTION 12-0702.2A(3)]	5,200 ± SF
ADJUSTED GROSS SITE AREA (AGSA):	0.88 AC ± OR 40,079 S.F. ±
MINIMUM TREE COVER REQUIRED:(1) (10% OF THE AGSA for COMMERCIAL PER ARTICLE 13 OF THE ZONING ORDINANCE)	4,007.9 SF ±
TREE COVER PROPOSED BY CONSERVATION:	0.00 SF ±
MINIMUM TREE COVER PROPOSED BY PLANTING:(1)	4,007.9 SF ±

(1) ACTUAL TREE LOCATIONS, QUANTITIES, PLANT TYPES, AND/OR PLANT SIZES MAY VARY WITH FINAL ENGINEERING REQUIREMENTS ALTHOUGH THE MINIMUM TREE COVER SHOWN ON THIS PLAN WILL BE PROVIDED.

LEGEND

- EXISTING CONTOUR
- EXISTING TREE CANOPY
- PROPOSED SIDEWALK
- EP — EDGE OF PAVEMENT
- ℄ — CENTERLINE OF RIGHT-OF-WAY
- CURB LINE
- EXISTING TREELINE
- LARGE SHADE TREE (2" – 3" Caliper)(1)
- EVERGREEN TREE (6'–10' Height)(1)
- SMALL SHRUB (24"–30" Height)
- 6 — PARKING SPACE ASSOCIATED WITH CAR WASH
- DRIVE-IN AUTOMOBILE STACKING ALIGNMENT
- DRIVE-IN AUTOMOBILE DRYING SPACE
- SD — STORM DRAIN

SPECIAL EXCEPTION AMENDMENT NOTES:

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

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LIMITS OF PCA / SEA

CAR WASH

LORTON STATION SOUTH COMMERCIAL CENTER

FAIRFAX COUNTY, VIRGINIA

MOUNT VERNON DISTRICT

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No. 001379
5/24/07
CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS	
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

DATE	DESCRIPTION

JDB	RRM	JDB
DESIGN	DRAWN	CHKD

SCALE H: 1" = 30' V:

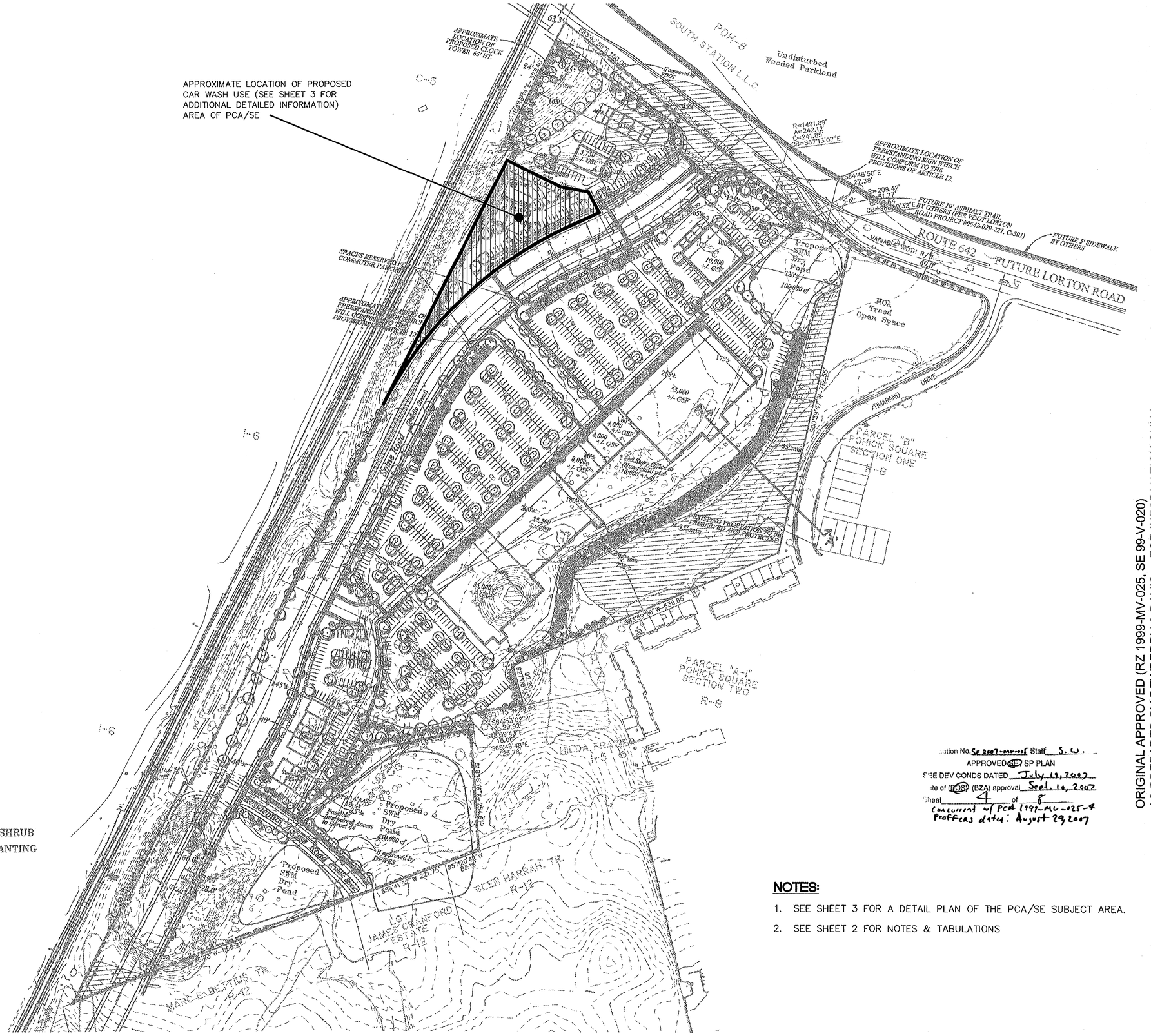
JOB No. 1299-16-002

DATE: JANUARY 2007

FILE No. 1299-D-ZP-004

SHEET 3 OF 5

Cad file name : P:\1299 - LORTON STATION SOUTH\1299-16-002 (PLN)\Planning\03-PCA SEA.dwg



LEGEND

- PROPOSED SHADE/STREET TREES
- PROPOSED ORNAMENTAL TREE
- PROPOSED EVERGREEN TREE
- PROPOSED EVERGREEN AND/OR DECIDUOUS SHRUB
- PROPOSED LOW GROUNDCOVER/SEASONAL PLANTING
- LIMITS OF CLEARING AND GRADING
- EXISTING WETLANDS
- EXISTING WATER
- WATER
- SANITARY SEWER
- EXISTING SANITARY SEWER
- SIDEWALK
- PROPOSED VDOT TRAIL
- SPACES RESERVED FOR COMMUTER PARKING

Application No. SE 2007-MV-005 Staff S. W.
APPROVED (SE) SP PLAN
SITE DEV CONDS DATED July 19, 2007
date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 4 of 8
Concurrent w/ PCA 1999-MV-025-4
Proffers dated: August 29, 2007

NOTES:

1. SEE SHEET 3 FOR A DETAIL PLAN OF THE PCA/SE SUBJECT AREA.
2. SEE SHEET 2 FOR NOTES & TABULATIONS

ORIGINAL APPROVED (RZ 1999-MV-025, SE 99-V-020)
AS PREPARED BY DEWBERRY & DAVIS - FOR INFORMATION ONLY

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OVERALL SHOPPING CENTER SITE (RZ-1999-MV-025)

CAR WASH

LORTON STATION SOUTH COMMERCIAL CENTER

MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

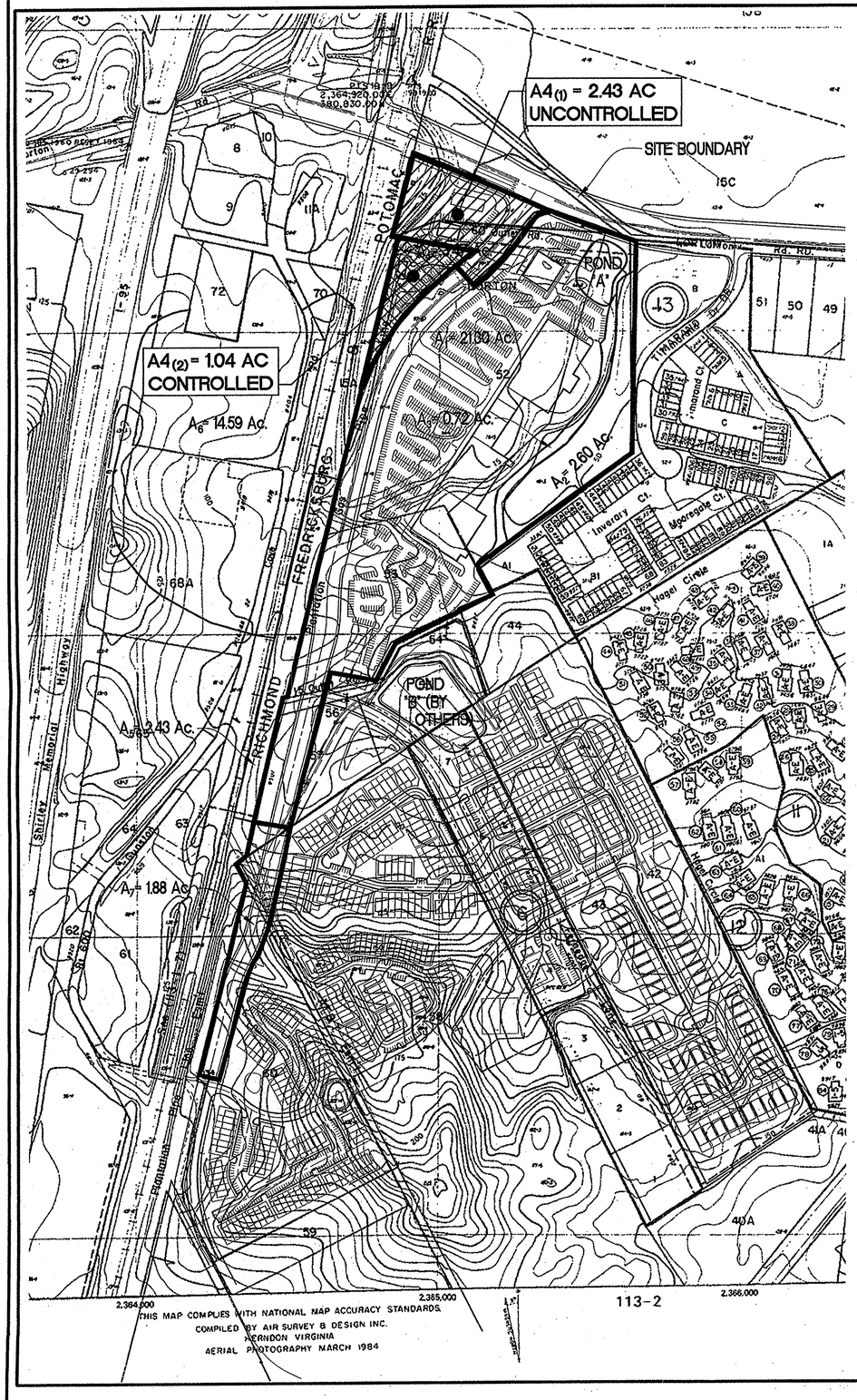
PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No. 001379
5/24/07
LICENSED LANDSCAPE ARCHITECT

PLAN STATUS	
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

DATE	DESCRIPTION	
JDB DESIGN	RRM DRAWN	JDB CHKD
SCALE	H: 1"= 100' V:	
JOB No.	1299-16-002	
DATE:	JANUARY 2007	
FILE No.	1299-D-ZP-004	
SHEET	4 OF	5

Cad file name : P:\1299 LORTON STATION SOUTH\1299-16-002 (PLN)\Planning\04-OVERALL SITE.dwg



(IN FEET)
1 inch = 200 ft.

BMP FACILITY DESIGN CALCULATIONS

Plan Name: SUDS CAR WASH
Plan Number:

Date: May 24, 2007
Engineer: ARV

PART I: SUBAREA DESIGNATION AND DESCRIPTION.

		"C"	ACRES
A1	CONTROLLED, DRY POND	0.85	21.300
A2	UNDISTURBED - CONSERVATION EASEMENT	0.30	2.600
A3	UNCONTROLLED	0.30	0.720
A4(1)	ON-SITE, UNCONTROLLED	0.75	2.430
A4(2)	ON-SITE, CONTROLLED, DRY POND	0.75	1.040
A5	OFF-SITE TO DRY POND	0.30	2.430
A6	OFF-SITE TO DRY POND	0.80	14.590
	TOTAL		45.11

PART 2: COMPUTE THE WEIGHTED AVERAGE "C" FACTOR FOR THE SITE
(A) AREA OF SITE (a) 28.09 Ac

Subarea	Description	"C"	ACRES	C X A
A1	CONTROLLED, DRY POND	0.85	21.300	18.11
A2	UNDISTURBED - CONSERVATION EASEMENT	0.30	2.600	0.78
A3	UNCONTROLLED	0.30	0.720	0.22
A4(1)	ON-SITE, UNCONTROLLED	0.75	2.430	1.82
A4(2)	ON-SITE, CONTROLLED, DRY POND	0.75	1.040	0.78
				TOTAL = 21.70

WT."C" = 0.77

PART 3: CALCULATE TOTAL PHOSPHOROUS REMOVAL FOR SITE.

Subarea	BMP Type	Removal EFF. (%)	Area Ratio	C"Factor Ratio	Product
A1	DRY POND	40	0.758	1.100	33.37
A2	CONS. ESM'T	100	0.093	0.388	3.59
A3	UNCONTROLLED	--	--	--	0.00
A4(1)	UNCONTROLLED	--	--	--	0.00
A4(2)	DRY POND	40	0.037	0.971	1.44
A5	OFF-SITE TO DRY POND	40	0.017	0.388	0.27
A6	OFF-SITE TO DRY POND	40	0.104	1.035	4.30
				TOTAL =	42.97 Percent (%)

PART 4: DETERMINE COMPLIANCE WITH PHOSPHOROUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT (a) 40%

* WATER SUPPLY OVERLAY DISTRICT (OCCOQUAN WATERSHED) = 50% (FAIRFAX COUNTY AND PRINCE WILLIAM COUNTY)

* CHESAPEAKE BAY PRESERVATION AREA (NEW DEVELOPMENT) = 40% (FAIRFAX COUNTY) 50% (PRINCE WILLIAM COUNTY)

* CHESAPEAKE BAY PRESERVATION AREA (REDEVELOPMENT) = [1-0.9 x ("I" PRE/"I" POST)] X 100 = ___ %

(B) IF LINE 3(a) 42.97 > OR = LINE 4(a) 40% THEN PHOSPHORUS REMOVAL REQUIREMENT IS SATISFIED.

BEST MANAGEMENT PRACTICES NARRATIVE

BMP REQUIREMENTS FOR THIS SITE AND THE FUTURE ADJACENT COMMERCIAL AREA (SEE MAP THIS SHEET) ARE PROVIDED BY WAY OF A PROPOSED DRAWDOWN DRY POND (POND "A" PER PROJ. #4865-SP-05) AND CREATION OF A CONSERVATION EASEMENT FOR UNDISTURBED OPEN SPACE. 40% PHOSPHORUS REMOVAL CREDIT IS TAKEN FOR THE DRY POND AND 100% PHOSPHORUS REMOVAL CREDIT IS TAKEN FOR THE CONSERVATION EASEMENT. THS TOTAL PHOSPHORUS REMOVAL FOR THIS SITE EXCEEDS THE REQUIRED 40% (SEE SUPPORTING CALCULATIONS THIS SHEET). THIS REQUIREMENT IS ACHIEVED BY PROVIDING BMP STORAGE VOLUME IN THE POND FOR APPROXIMATELY 14.59 ACRES OF OFF-SITE INDUSTRIAL AREA. IN CONCLUSION, ALTHOUGH THE RUNOFF FOR THIS SITE REMAINS UNCONTROLLED, THE BMP REQUIREMENTS FOR THIS DEVELOPMENT HAVE BEEN ADEQUATLY PROVIDED.

STORMWATER MANAGEMENT NARRATIVE

A STORMWATER MANAGEMENT (SWM) WAIVER HAS BEEN REQUESTED FOR THIS SITE. (SEE SHEET 18). THEREFORE, PROVISIONS FOR STORMWATER DETENTION ARE NOT PROPOSED WITH THIS SITE.

~~ADEQUATE OUTFALL NARRATIVE~~

~~STORMWATER RUNOFF FROM THIS SITE WILL DISCHARGE INTO A PROPOSED STORM SEWER SYSTEM WHICH DISCHARGES DIRECTLY INTO THE BED AND BANKS CHANNEL OF POHICK CREEK, WITHIN POHICK CREEK'S 100-YEAR FLOOD-PLAIN. POHICK CREEK HAS A DRAINAGE AREA OF APPROXIMATELY 5,060 ACRES AT LORTON ROAD. ACCORDING TO SECTION 6-0203-6C OF THE FAIRFAX COUNTY PFM, POHICK CREEK SATISFIES REQUIREMENTS FOR AN ADEQUATE OUTFALL. IT IS THE OPINION OF THE SUBMITTING ENGINEER THAT NO ADVERSE IMPACTS TO DOWNSTREAM PROPERTIES WILL RESULT OF THE PROPOSED DEVELOPMENT AND THAT ADEQUATE OUTFALL HAS BEEN PROVIDED.~~

ADEQUATE OUTFALL NARRATIVE

STORMWATER FROM THIS SITE (LABELED AS AREA A4(2) ON MAP, THIS SHEET IS COLLECTED IN A CLOSED CONDUIT SYSTEM THAT CONVEYS TO EXISTING SWM/BMP IN THE WATER ACROSS LORTON MARKET STREET OSS TIMBRAND POND 'A'. THE POND DISCHARGES TO THE EAST ACROSS TIMBRAND DRIVE AND DIRECTLY INTO THE BED AND BANKS CHANNEL OF POHICK CREEK'S 100 YR FLOODPLAIN. STORMWATER FROM OFFSITE AREA A4(1) IS COLLECTED IN A CLOSED CONDUIT SYSTEM UNDER LORTON ROAD. THE RECEIVING CLOSED CONDUIT SYSTEM WAS DESIGNED BY VDOT WITH THE WIDENING OF LORTON ROAD ANTICIPATING THE PROPOSED DRAINAGE FROM THE DEVELOPMENT OF THIS AREA. THE STORM WATER BYPASSES POND 'A' AND DISCHARGES EVENTUALLY INTO THE BED AND BANKS OF POHICK CREEK WITHIN POHICK CREEK'S 100YR FLOODPLAIN. POHICK CREEK HAS A DRAINAGE AREA OF APPROX. 5,060 ACRES AT LORTON ROAD, WHICH IS GREATER THAN 100 TIMES THE CONTRIBUTING SITE AREA. ACCORDING TO SECTION 6-0203.2B OF THE FAIRFAX COUNTY PFM, POHICK CREEK SATISFIES THE REQUIREMENTS FOR AN ADEQUATE OUTFALL. DETAILED SUPPORTING CALCULATIONS WILL BE PROVIDED WITH FINAL ENGINEERING. IT IS THE OPINION OF THE SUBMITTING ENGINEER (BOWMAN CONSULTING GROUP, LTD) THAT NO ADVERSE IMPACTS TO DOWNSTREAM PROPERTIES WILL RESULT FROM THE PROPOSED DEVELOPMENT AND THAT ADEQUATE OUTFALL HAS BEEN PROVIDED.

...ation No. SE 2007-MV-005 Staff S. W.
APPROVED (SP) / SP PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 5 of 8
Con current w/ PCA 1999-MV-025-4
Proffers dated: August 29, 2007

BOWMAN CONSULTING GROUP
ENGINEERS PLANNERS SURVEYORS

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SWM/BMP SUMMARY AND NARRATIVES
SOUTH SECTION 6
LORTON STATION
FAIRFAX COUNTY, VIRGINIA
MOUNT VERNON DISTRICT

COMMONWEALTH OF VIRGINIA
BLAKE A. SMITH
No.033994
5/31/00
PROFESSIONAL ENGINEER

PLAN STATUS	
5/31/00	ISSUED TO CLIENT
6/7/00	1st SUB. DPWES

DATE	DESCRIPTION	
BAS DESIGN	SH DRAWN	BAS CHKD
SCALE	H: 1"=200' V:	
JOB No. 1299-01-008		
DATE MAY 31, 2000		
FILE No. 1299-D-CP-007		

SHEET 10 OF 24

Bowman CONSULTING

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SWM/BMP SUMMARY AND NARRATIVES
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
FAIRFAX COUNTY, VIRGINIA
MOUNT VERNON DISTRICT

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

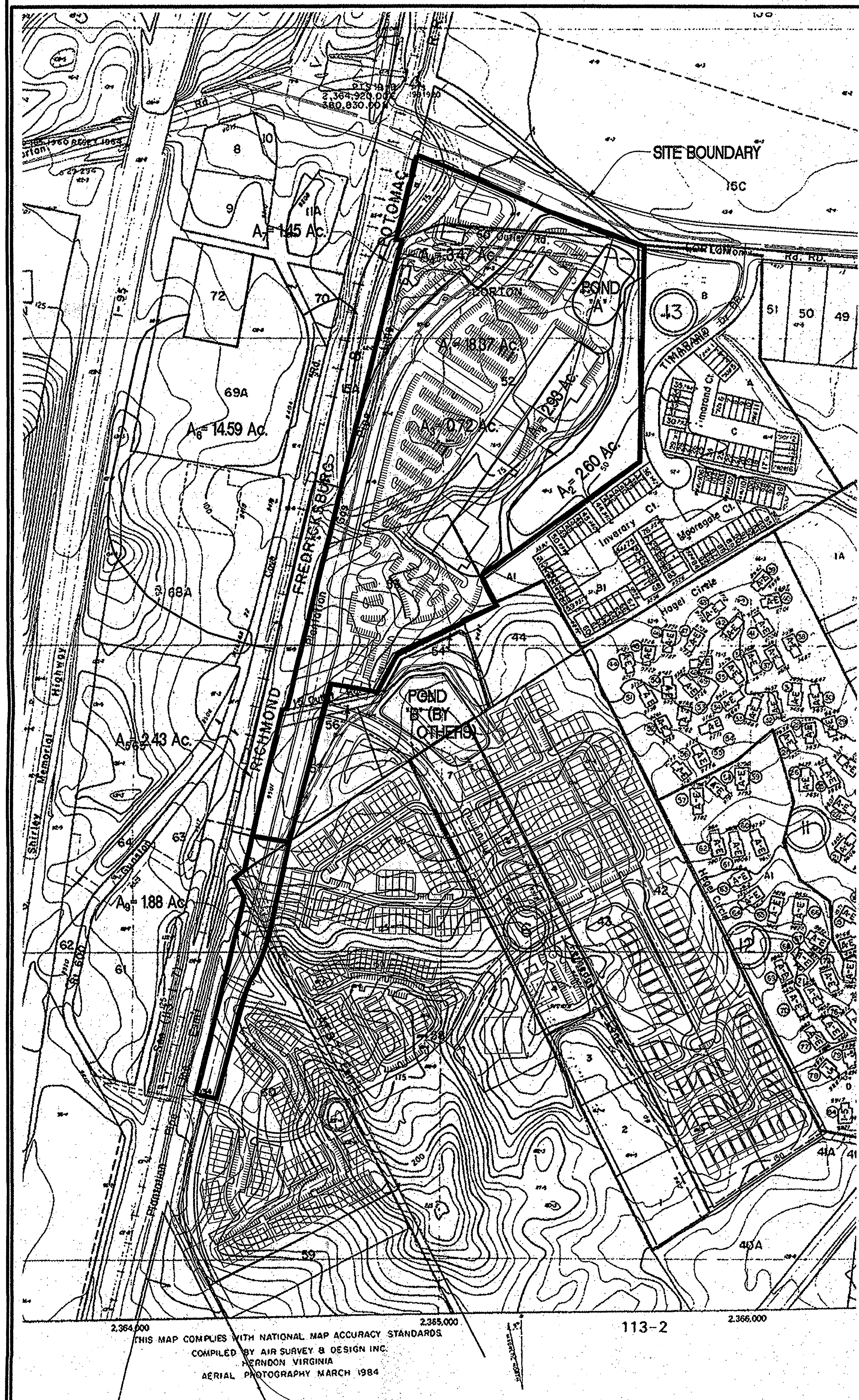
COMMONWEALTH OF VIRGINIA
JOHN D. BONDI
Lic. No.001379
5/24/07
REGISTERED LANDSCAPE ARCHITECT

PLAN STATUS	
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

DATE	DESCRIPTION	
JDB DESIGN	RRM DRAWN	JDB CHKD
SCALE	H: N/A V:	
JOB No. 1299-16-002		
DATE: JANUARY 2007		
FILE No. 1299-D-ZP-004		

SHEET 5 OF 5

Cad file name : P:\1299 LORTON STATION SOUTH\1299-16-002 (PLN)\Planning\05A-SWM BMP.dwg



(IN FEET)
1 inch = 200 ft.

BMP DESIGN CALCULATIONS

PART 1
WATERSHED SUBAREAS ARE DELINEATED ON THIS SHEET.

SUBAREA DESIGNATION (1)	"C" (2)	ACRES (3)
A_1 CONTROLLED–DRY POND	0.85	18.37
A_2 UNDISTURBED–CONSERVATION ESM'T.	0.30	2.60
A_3 UNCONTROLLED	0.30	0.72
A_4 CONTROLLED–DRY POND	0.75	3.47
A_5 OFFSITE–TO DRY POND	0.30	2.43
A_6 OFFSITE–TO DRY POND	0.80	14.59
A_7 OFFSITE–TO DRY POND	0.30	1.45
A_8 UNCONTROLLED	0.90	2.93
A_9 CONTROLLED–TO POND "B"	0.90	1.88

COMMONWEALTH OF VIRGINIA
BLAKE A. SMITH
No. 033994
4/16/01
PROFESSIONAL ENGINEER

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

(A) AREA OF THE SITE (a) 28.09 ACRES

(B)

SUBAREA DESIGNATION (1)	"C" (2)		ACRES (3)		PRODUCT (4)
A_1 CONTROLLED–DRY POND	0.85	X	18.37	=	15.61
A_2 UNDISTURBED–CONSERVATION ESM'T.	0.30	X	2.60	=	0.78
A_3 UNCONTROLLED	0.30	X	0.72	=	0.22
A_4 CONTROLLED–DRY POND	0.75	X	3.47	=	2.60
A_8 UNCONTROLLED	0.90	X	2.93	=	2.64

(C) WEIGHTED AVERAGE "C" FACTOR (b) TOTAL = 21.85
(b) / (a) = (c) 0.78

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)
A1	DRY POND	40	X	0.65	X	1.09	=	28.34
A2	CONS. ESM'T.	100	X	0.09	X	1.00	=	9.00
A3	UNCONTROLLED	---	X	---	X	---	=	---
A4	DRY POND	40	X	0.12	X	0.96	=	4.61
A5	OFFSITE–TO DRY POND	40	X	0.2(2.43/28.09)	X	0.38	=	0.26
A6	OFFSITE–TO DRY POND	40	X	0.2(14.59/28.09)	X	1.03	=	4.28
A7	OFFSITE–TO DRY POND	40	X	0.2(1.45/28.09)	X	0.38	=	0.16
A8	UNCONTROLLED	---	X	---	X	---	=	---
						(a) TOTAL	=	46.65

DETERMINE COMPLIANCE WITH PHOSPHOROUS REMOVAL REQUIREMENT

PHOSPHOROUS REMOVAL PROVIDED (3a) =46.65% > 40% REQUIRED, ∴ PHOSPHOROUS REMOVAL PROVIDED

PART 4
DETERMINE COMPLIANCE WITH PHOSPHORUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT (a) 40%

- WATER SUPPLY OVERLAY DISTRICT (OCCOQUAN WATERSHED) = 50% (FAIRFAX COUNTY AND PRINCE WILLIAM COUNTY)
- CHESAPEAKE BAY PRESERVATION AREA (NEW DEVELOPMENT) = 40% (FAIRFAX COUNTY) 50% (PRINCE WILLIAM COUNTY)
- CHESAPEAKE BAY PRESERVATION AREA (REDEVELOPMENT) = [1–0.9 x ("I" PRE/"I" POST)] x 100 = __%

(B) IF LINE 3(a) 46.65 ≥ LINE 4(a) 40% THEN PHOSPHORUS REMOVAL REQUIREMENT IS SATISFIED.

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

(A) AREA TO THE PROPOSED BMP FACILITY (a) 25.53 ACRES

(B)

SUBAREA DESIGNATION (1)	(2)	"C" (3)		ACRES (4)		PRODUCT
A1	DRY POND	0.85	X	18.37	=	15.61
A4	DRY POND	0.75	X	3.47	=	2.60
A5	OFFSITE–TO DRY POND	0.30	X	0.2(2.43)	=	0.15
A6	OFFSITE–TO DRY POND	0.80	X	0.2(14.59)	=	2.33
A7	OFFSITE–TO DRY POND	0.30	X	0.2(1.45)	=	0.09
				(a) TOTAL	=	20.78
				(b)/(a)	=	0.81

PART 8
DETERMINE THE STORAGE REQUIRED FOR POND

(A) EXTENDED DETENTION DRY POND

CHART A6–40 VALUE (APPENDIX 4–3) FOR BMP STORAGE PER ACRE
[(4375 X "C") – 875] OR [31.25 X % IMP.] = (a) 2,700 cf/ac

DESIGN 1 (48 HOUR DRAWDOWN)
LINE 25.53 X LINE 8(a) 2,700 = 68,931 cf

PART 9
OUTLET COMPUTATION
DETERMINE THE REQUIRED ORIFICE SIZE FOR POND

(A) BMP STORAGE REQUIREMENT (S) FOR POND (a) 68,931

(B) MAXIMUM HEAD (h) AT THE REQUIRED BMP STORAGE FROM THE ELEVATION–STORAGE CURVE FOR THE FACILITY (b) 6.65'

(C) PEAK OUTFLOW RATE (Qp) AT THE MAXIMUM HEAD FOR A DRAWDOWN TIME OF 48 HOURS [$Qp = S/(0.5 \times 3600 \times 48)$].
0.0000116 X LINE (a) 68,931 = (c) 0.80

(D) REQUIRED ORIFICE AREA (A) [$A = Qp/(0.6 \times (64.4 \times h)^{0.5})$]
LINE (c) 0.80 / [0.60 X (64.4 X LINE (b) 6.65)$^{0.5}$)] = (d) 0.064 SF

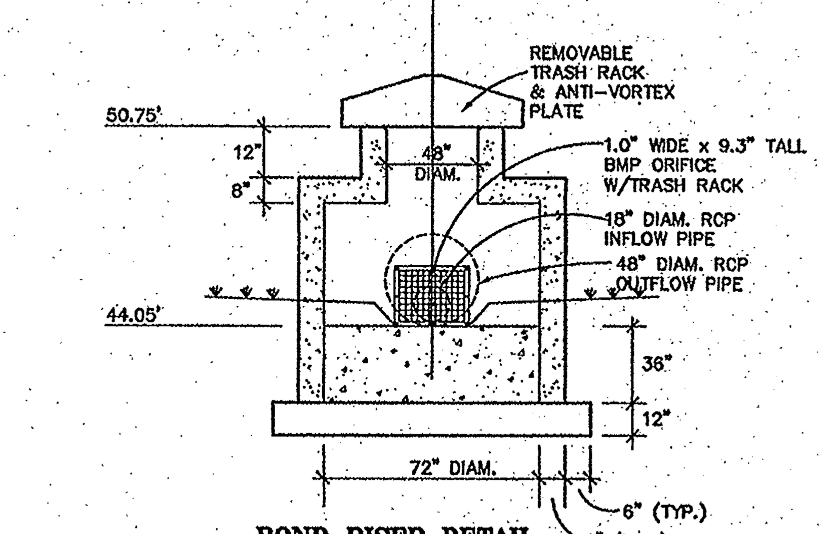
REQUIRED AREA = 0.064 SF X 144 = 9.28 SQ. IN.
USE 1.0" X 9.3" SLOT

BEST MANAGEMENT PRACTICES NARRATIVE

BMP REQUIREMENTS FOR THIS SITE AND THE FUTURE ADJACENT COMMERCIAL AREA (SEE MAP THIS SHEET) ARE PROVIDED BY WAY OF A PROPOSED DRAWDOWN DRY POND (POND "A") AND CREATION OF A CONSERVATION EASEMENT FOR UNDISTURBED OPEN SPACE. 40% PHOSPHORUS REMOVAL CREDIT IS TAKEN FOR THE DRY POND AND 100% PHOSPHORUS REMOVAL CREDIT IS TAKEN FOR THE CONSERVATION EASEMENT. THE TOTAL PHOSPHORUS REMOVAL FOR THIS SITE EXCEEDS THE REQUIRED 40% (SEE SUPPORTING CALCULATIONS THIS SHEET).

SECTION 6 BMP NARRATIVE

SECTION 6 IS CONTAINED WITHIN THE BMP AREAS SHOWN ON THIS SHEET. AS THESE CALCULATIONS SHOW, BMP REQUIREMENTS HAVE BEEN SATISFIED FOR SECTION 6.



POND RISER DETAIL
N.T.S.
NOTE: FOR ADDITIONAL DETAILS SEE SHEET 15

NOTES:

1) STRUCTURE IS SHOWN SCHEMATICALLY. STRUCTURAL DRAWINGS SHALL BE PREPARED AND SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. ALL DESIGNS SHALL BE CERTIFIED BY A LICENSED VIRGINIA PROFESSIONAL ENGINEER. ALL CONNECTIONS/ JOINTS IN STRUCTURE SHALL BE WATERTIGHT.
2) STRUCTURE TO BE PROVIDED IN GENERAL CONFORMANCE WITH FAIRFAX COUNTY PFM PLATE 53–6 & 61–6.
3) STEPS SHALL BE PROVIDED ON INTERIOR AND EXTERIOR OF RISER.
4) THE SPILLWAY DESIGN FLOOD (SDF) IS THE 100–YEAR STORM EVENT. THE FREEBOARD HYDROGRAPH (FBH) IS 1.5 TIMES THE 100 YEAR STORM EVENT, IN ACCORDANCE WITH PFM PLATE 46–6.
5) THE SDF & FBH WERE ROUTED USING NO STORAGE BELOW THE RISER TOP.
6) A CLASS "C" DAM IS PROPOSED IN ACCORDANCE WITH PFM PLATE 64–6. A MINIMUM FREEBOARD OF 2' IS REQUIRED. FREEBOARD PROVIDED = (57.20 – 55.19 = 2.01 FT.)
7) A CLASS "C" DAM REQUIRES A GEOTECHNICAL REPORT AND A SEALED GEOTECHNICAL DESIGN. THE REPORT AND DESIGN SHALL BE SUBMITTED AS PART OF THE 2ND SUBMISSION OF THIS SITE PLAN.
8) DAM CONSTRUCTION SPECIFICATIONS SHALL COMPLY WITH PFM 6–1607 AND THE ATTACHED GEOTECHNICAL RECOMMENDATIONS.
9) SHOULD THE DAM FAIL, THE BREACH RUNOFF WILL NOT ADVERSELY IMPACT ANY DOWNSTREAM STRUCTURES.
10) SWM/BMP POND TO BE PRIVATELY MAINTAINED BY COMMERCIAL CENTER OWNER.
11) ALL AREA WITHIN PROP. CONSERVATION ESM'TS. ARE WATER QUALITY MANAGEMENT AREAS. BMP CREDIT ALLOWED FOR OPEN SPACE. NO USE OR DISTURBANCE IS PERMITTED W/O THE EXPRESS WRITTEN PERMISSION OF THE DIRECTOR OF DPWES.

BUOYANCY CALCULATIONS

VOLUME OF CONC. IN RISER = 281.02 CF

DISPLACED VOLUME OF RISER= 444.01 CF
BOUYANT FORCE = (444.01)(62.4)= 27,706 Lb.
WEIGHT OF STR.= (281.02)(150)= 42,153 Lb.
FACTOR OF SAFETY= 1.52

...ation No. SE 2007-MV-005 Staff S.W.
APPROVED (SE) / SP PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 6 of 8
Concurrent w/ PCA 1999-MV-025-2 Proffers dated: August 29, 2007

THIS SHEET FOR INFORMATION PURPOSES ONLY!!

BOWMAN CONSULTING GROUP
ENGINEERS PLANNERS SURVEYORS

BOWMAN CONSULTING GROUP, LTD.
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CHANTILLY, VIRGINIA 20151
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BMP DIVIDES, CALCULATIONS, AND NARRATIVE
LORTON MARKET STREET
(FFX. Co. PLAN #4865-SP-05)
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

COMMONWEALTH OF VIRGINIA
BLAKE A. SMITH
No. 033994
PROFESSIONAL ENGINEER

PLAN STATUS	
~~3/3/00~~	~~ISSUED TO CLIENT~~
~~3/21/00~~	~~1st SUB. DPWES~~
~~3/9/00~~	~~OUTSIDE AGENCIES~~
~~...~~	~~2nd SUB. DPWES~~
5/9/01	2ND SUB. DPWES
DATE	DESCRIPTION

BAS DESIGN	WRS DRAWN	BAS CHKD

SCALE H: 1"=200' V:
JOB No. 1299-01-002
DATE MARCH 1, 2000
FILE No. 1299-D-CP-007
SHEET ~~17 OF 36~~ 10A OF 24

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BMP DIVIDES, CALCULATIONS, AND NARRATIVE
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No. 001379
CERTIFIED LANDSCAPE ARCHITECT
5/24/07

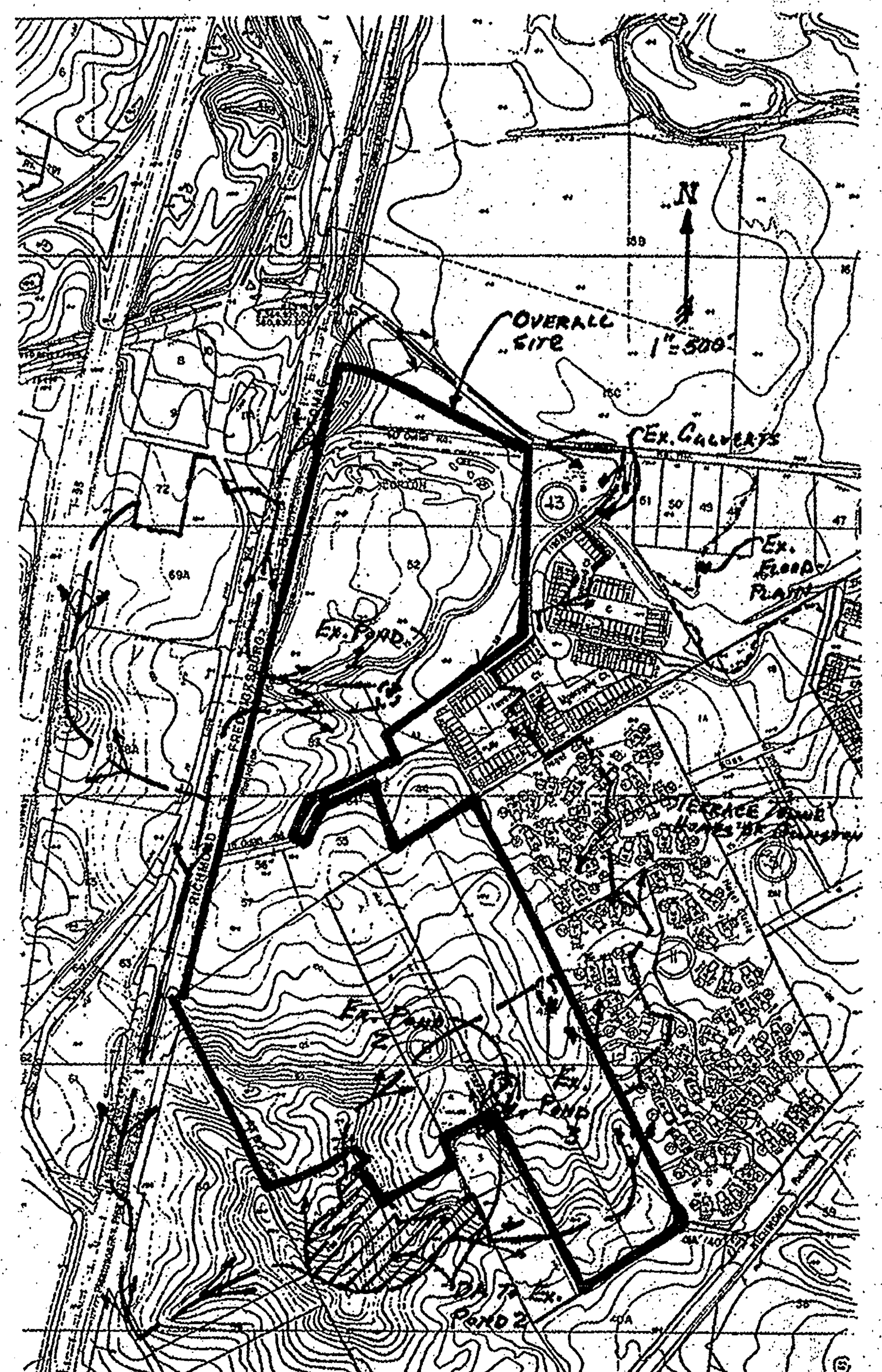
PLAN STATUS	
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION
DATE	DESCRIPTION

JDB DESIGN	RRM DRAWN	JDB CHKD

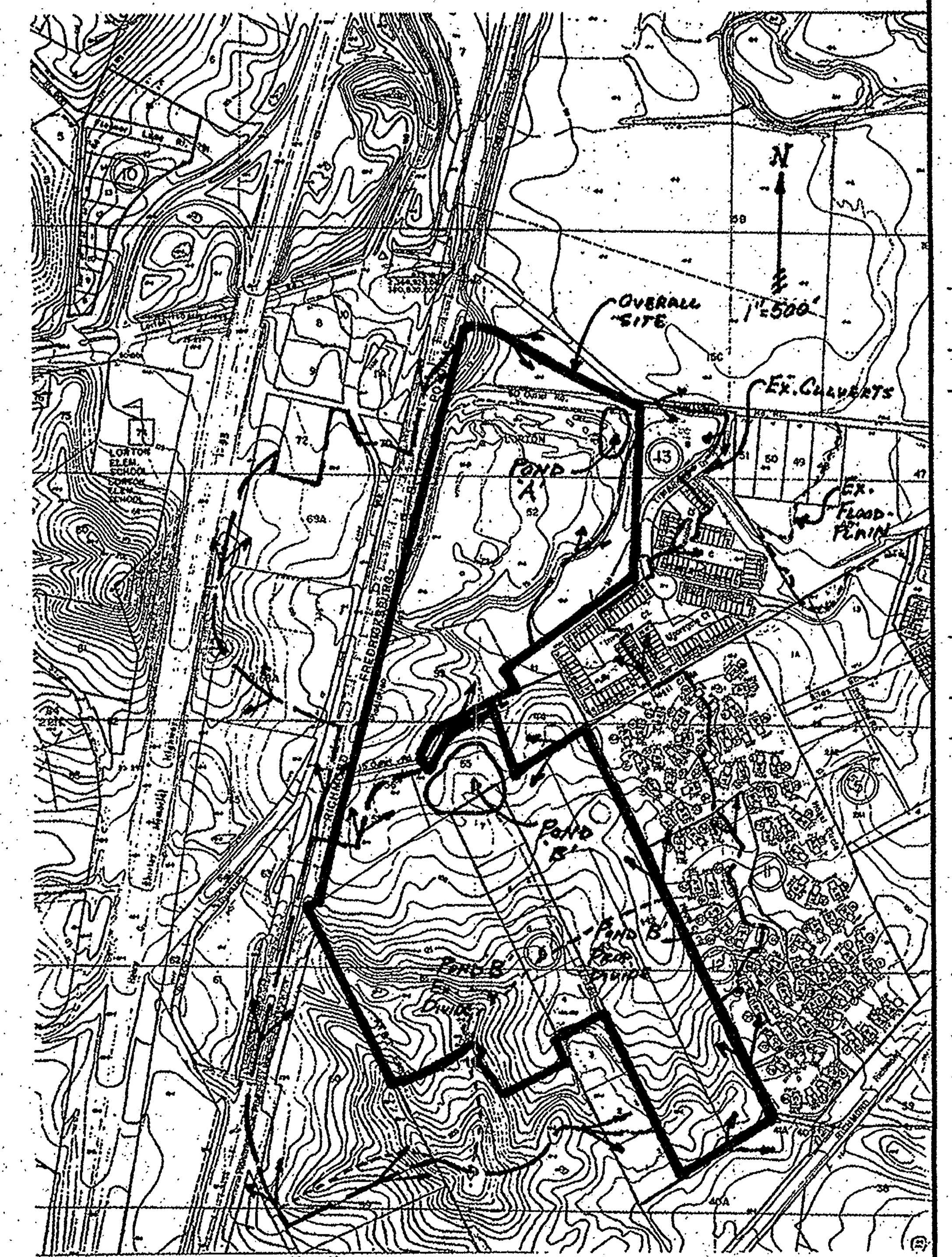
SCALE H: N/A V:
JOB No. 1299-16-002
DATE: JANUARY 2007
FILE No. 1299-D-ZP-004
SHEET 5A OF 5

Cad file name : P:\1299 LORTON STATION SOUTH\1299-16-002 (PLN)\Planning\05A-SWM BMP.dwg

EXISTING CONDITIONS



PROPOSED CONDITIONS



EX. POND 1:

DA = ±16.6 AC.
CN = 85(A/B SOILS)
tc = 10 MIN.
*Q_2 =±33.0 cfs
*Q_{10}=±67.0 cfs
*Q_{100}=±105.0 cfs

*PEAK FLOW FROM GENERATED HYDROGRAPH FOR POST-DEVELOPED CONDITIONS. POST-DEVELOPED CONDITIONS ARE ASSUMED SINCE EX. POND ESM'TS/AGREEMENTS & ROUTING CALCS. WERE UNABLE TO BE FOUND. ONLY EVIDENCE FOUND IS THAT EX. POND 1 IS A SEDIMENT BASIN.

EXISTING POND 2 & 3:

EX. POND 2:
*Q_2 =7.0 cfs
*Q_{10}=8.0 cfs
*Q_{100}=±15.0 cfs (ASSUMED)

*PEAK FLOW FROM POND ROUTING CALCS. FOR GUNSTON SQUARE SECTION 2 (PLAN #5395-SP-02)

EXISTING POND 3
EX. POND 3 WAS CONSTRUCTED FOR FUTURE DEVELOPMENT USE. WHICH WAS NEVER CONSTRUCTED. THE CURRENT DISHCARGE FROM EX. POND 3 IS NEGLIGIBLE.

ADDITIONAL DISCHARGE:
DA = ±14.1AC. (DOES NOT INCLUDE DA TO EX. POND 2)
CN = 65 (A/B SOILS - WOODS/GRASS COMBINATION)
tc = 10 MIN.
*Q_2 = ±8.0 cfs
*Q_{10}= ±24.0 cfs
*Q_{100}= ±54.0 cfs (ASSUMED)

*PEAK FLOW FROM GENERATED HYDROGRAPH FOR EX. CONDITIONS.

COMBINED DISCHARGE:

	Q_2	Q_{10}	Q_{100}
EX. POND 2 :	±7.0 cfs	±8.0 cfs	±15.0 cfs
EX. POND 3 :	-	-	-
ADDITIONAL :	±8.0 cfs	±24.0 cfs	±54.0 cfs
*TOTAL :	±15.0 cfs	±32.0 cfs	±69.0 cfs

*TOTAL PEAK FLOW INTO TERRACE TOWNE HOMES OF GUNSTON DEVELOPMENT.

RESIDUAL AREA:

	AREA	CN	A * CN
RESIDENTIAL :	±18.0 AC.	80	1440.0
UNDEVELOPED :	±80.1 AC.	65	5206.5
	98.1 AC.		6646.5

WEIGHTED CN : 6646.5 / 98.1 AC. = ±68
tc = ±30 MIN.
*Q_2 = ±38.0 cfs
*Q_{10}= ±128.0 cfs
*Q_{100}= ±231.0 cfs

*PEAK FLOW FROM GENERATED HYDROGRAPH FOR EX. CONDITIONS.

POND "B":

DA = ±42.0 AC. (FOR PRE-DEVELOPED CONDITION)
CN = 65 (A/B SOILS - WOODS/GRASS COMBINATION)
tc = ±30 MIN.
*Q_2 = ±13.0 cfs + ±15.0 cfs (EX. PONDS 2&3) = ±28.0 cfs
*Q_{10}= ±40.0 cfs + ±32.0 cfs (EX. PONDS 2&3) = ±72.0 cfs
**Q_{100} = ±269.0 cfs

*PEAK FLOW FROM GENERATED HYDROGRAPH FOR PRE-DEVELOPED CONDITIONS. PRE-DEVELOPED CONDITIONS ASSUMED SINCE POND B PLANS (PLAN #7464-SP-01 (BY OTHERS)) ARE NOT YET APPROVED. ALSO, PRE-DEVELOPED CONDITIONS ASSUME MAXIMUM ALLOWABLE DISCHARGE FOR 2 & 10-YR. EVENTS.

POND "A":

*Q_2 = ±56.3 cfs
*Q_{10}= ±109.6 cfs
*Q_{100}= ±207.6 cfs

**PEAK FLOW FROM ACTUAL POND B ROUTING PER PLAN #7464-SP-01 (BY OTHERS)

*PEAK FLOW FROM POND ROUTING CALCS. FOR PROPOSED POND A.

RESIDUAL AREA:

	AREA	CN	A * CN
RESIDENTIAL :	±12.6 AC.	78	982.8
UNDEVELOPED :	±6.3 AC.	60	378.0
COMMERCIAL :	±2.9 AC.	90	261.0
	21.8 AC.		1621.8

WEIGHTED CN : 1621.8 / 21.8 AC. = ±74
tc = ±15 MIN.
*Q_2 = ±17.0 cfs
*Q_{10}= ±50.0 cfs
*Q_{100}= ±86.0 cfs

*PEAK FLOW FROM GENERATED HYDROGRAPH FOR EX. CONDITIONS.

TOTAL EX. FLOW TO EX. CULVERTS:

	Q_2	Q_{10}	Q_{100}
EX. POND 1 :	±33.0 cfs	±67.0 cfs	±105.0 cfs
EX. POND 2&3 :	±15.0 cfs	±32.0 cfs	±69.0 cfs
ADDITIONAL :	±38.0 cfs	±128.0 cfs	±231.0 cfs
*TOTAL :	±86.0 cfs	±227.0 cfs	±405.0 cfs

TOTAL PROP. FLOW TO EX. CULVERTS:

	Q_2	Q_{10}	Q_{100}
POND "B" :	±28.0 cfs	±72.0 cfs	±269.0 cfs
POND "A" :	±38.3 cfs	±105.0cfs	±207.6 cfs
RESIDUAL AREA :	±17.0 cfs	±50.0 cfs	±86.0 cfs
*TOTAL :	±83.3 cfs	±227.0 cfs	±562.6 cfs

Lorton Station South
Pond B
2 - Year Pre-Developed Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Woods/Grass	42.00	65.0	0.50	0.50	3.20	0.60	.34 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 42.00 acres or 0.06562 sq.mi
Peak discharge = 13 cfs

EX. POND 1
ROUTED HYDROGRAPH RESULTS

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 10-09-2000 10:10:35
Watershed file: --> d:\pondpack\lorton\overall\EXPD12Y .WSD
Hydrograph file: --> d:\pondpack\lorton\overall\EXPD12Y .HYD

Lorton Station South
Pond 1
2 - Year Pre-Developed Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Industrial	16.60	85.0	0.20	0.10	3.20	1.76	.11 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.60 acres or 0.02594 sq.mi
Peak discharge = 33 cfs

Lorton Station South
Pond 1
10 - Year Pre-Developed Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Industrial	16.60	85.0	0.20	0.10	5.20	3.55	.07 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.60 acres or 0.02594 sq.mi
Peak discharge = 67 cfs

Lorton Station South
Pond 1
100- Year Pre-Developed Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Industrial	16.60	85.0	0.20	0.10	7.30	5.54	.05 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.60 acres or 0.02594 sq.mi
Peak discharge = 105 cfs

Application No. SE 2007-MV-005 Staff S.W.
APPROVED (SE) SP PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 7 of 8
Concurrent w/ PCA 1999-MV-025-4
Proffers dated: August 29, 2007

EX. RESIDUAL AREA
ROUTED HYDROGRAPH RESULTS

Lorton Station South
Existing Residual Area
2 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	98.10	68.0	0.50	0.50	3.20	0.73	.29 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 98.10 acres or 0.15328 sq.mi
Peak discharge = 38 cfs

Lorton Station South
Existing Residual Area
10 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	98.10	68.0	0.50	0.50	5.20	2.02	.18 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 98.10 acres or 0.15328 sq.mi
Peak discharge = 128 cfs

Lorton Station South
Existing Residual Area
100- Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	98.10	68.0	0.50	0.50	7.30	3.65	.13 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 98.10 acres or 0.15328 sq.mi
Peak discharge = 231 cfs

PROPOSED POND B
ROUTED HYDROGRAPH RESULTS

Lorton Station South
Pond B
10 - Year Pre-Developed Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Woods/Grass	42.00	65.0	0.50	0.50	5.20	1.79	.21 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 42.00 acres or 0.06562 sq.mi
Peak discharge = 40 cfs

EX. POND 2 & 3
ROUTED HYDROGRAPH RESULTS

Lorton Station South
Existing Residual Area - Pond 2 & 3
2 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Woods/Grass	14.10	65.0	0.20	0.10	3.20	0.60	.34 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 14.10 acres or 0.02203 sq.mi
Peak discharge = 8 cfs

Lorton Station South
Existing Residual Area - Pond 2 & 3
10 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Woods/Grass	14.10	65.0	0.20	0.10	5.20	1.79	.21 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 14.10 acres or 0.02203 sq.mi
Peak discharge = 24 cfs

Lorton Station South
Existing Residual Area - Pond 2 & 3
100- Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Woods/Grass	14.10	65.0	0.20	0.10	7.30	3.34	.15 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 14.10 acres or 0.02203 sq.mi
Peak discharge = 54 cfs

PROPOSED RESIDUAL
ROUTED HYDROGRAPH RESULTS

Lorton Station South
Proposed Residual Area
2 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	21.80	74.0	0.20	0.30	3.20	1.04	.22 .30

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 21.80 acres or 0.03406 sq.mi
Peak discharge = 17 cfs

Lorton Station South
Proposed Residual Area
10 - Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	21.80	74.0	0.20	0.30	5.20	2.52	.14 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 21.80 acres or 0.03406 sq.mi
Peak discharge = 50 cfs

Lorton Station South
Proposed Residual Area
100- Year Storm Event

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
Weighted	21.80	74.0	0.20	0.30	7.30	4.30	.1 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 21.80 acres or 0.03406 sq.mi
Peak discharge = 86 cfs

Pond B (SDF)
100-Year Post-Developed Storm Event

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 359.00 cfs
Peak Outflow = 269.02 cfs
Peak Elevation = 85.10 ft

COMMONWEALTH OF VIRGINIA
BLAKE A. SMITH
No. 033994
4/16/01
PROFESSIONAL ENGINEER

THIS SHEET FOR INFORMATION PURPOSES ONLY!!

SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS
LORTON MARKET STREET
(FFX. CO. PLAN #4865-SP-05)
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

BOWMAN CONSULTING GROUP
ENGINEERS PLANNERS SURVEYORS
BOWMAN CONSULTING GROUP, LTD.
14020 THUNDERBOLT PL., SUITE 300
CHANTILLY, VIRGINIA 20151
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COMMONWEALTH OF VIRGINIA
BLAKE A. SMITH
No. 033994
4/7/00
PROFESSIONAL ENGINEER

PLAN STATUS

DATE	DESCRIPTION
5/9/01	2ND SUB. DPWES

BAS DESIGN	WRS DRAWN	BAS CHKD

SCALE H: 1"=50' V: 1"=5'
JOB No. 1299-01-002
DATE MARCH 1, 2000
FILE No. 1299-D-CP-007
SHEET ~~23 OF 36~~ 10 B OF 24

Bowman CONSULTING

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Chantilly, Virginia 20151
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SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA
JONATHAN D. BONDI
Lic. No. 001379
5/24/07
CERTIFIED LANDSCAPE ARCHITECT

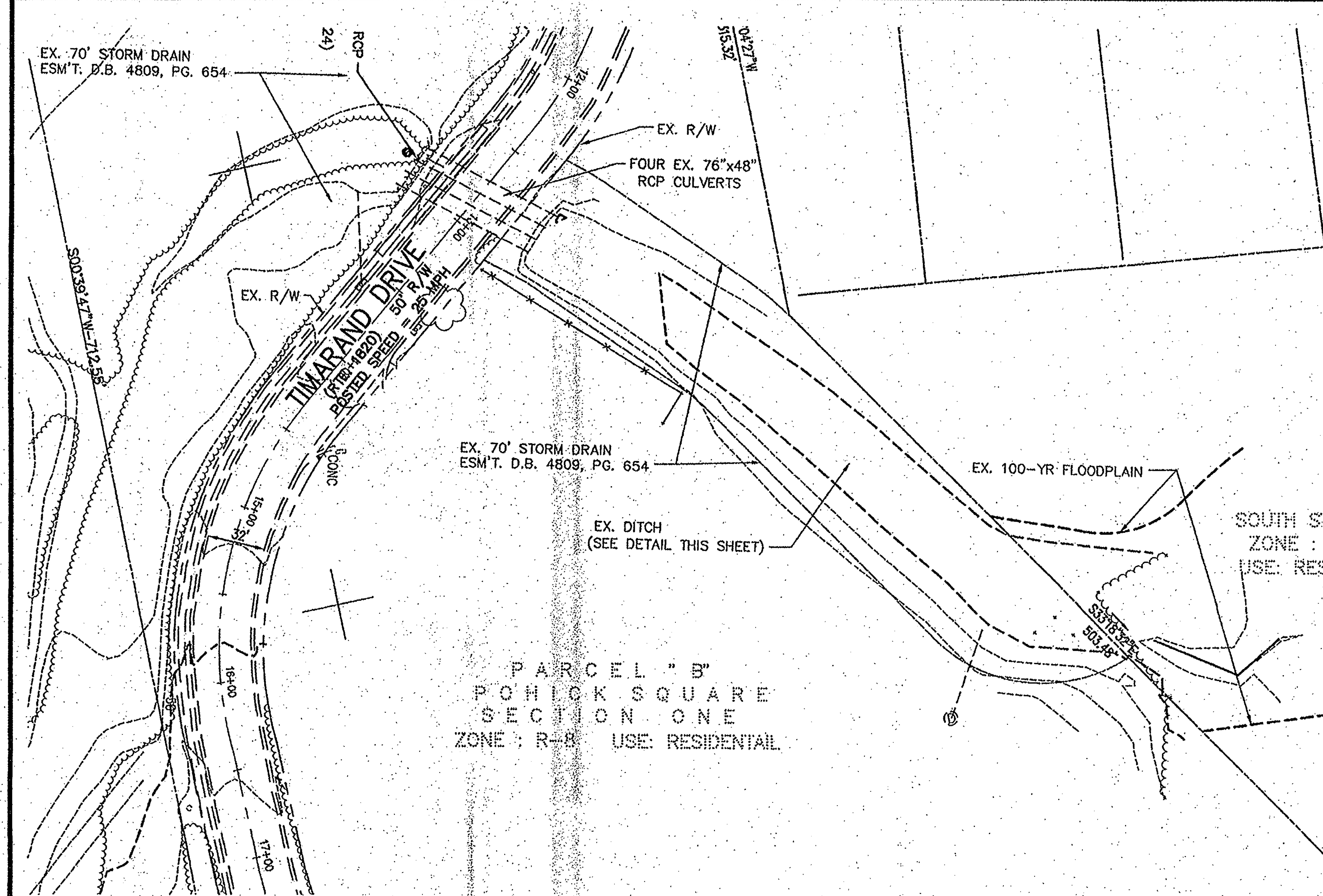
PLAN STATUS

DATE	DESCRIPTION
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

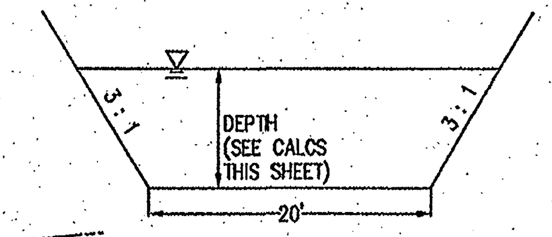
JDB DESIGN	RRM DRAWN	JDB CHKD

SCALE H: N/A V:
JOB No. 1299-16-002
DATE: JANUARY 2007
FILE No. 1299-D-ZP-004

Cad file name : P:\1299 'ORTON STATION SOUTH\1299-16-0^^ (PLN)\Planning\05A-SWM BMP.dwg



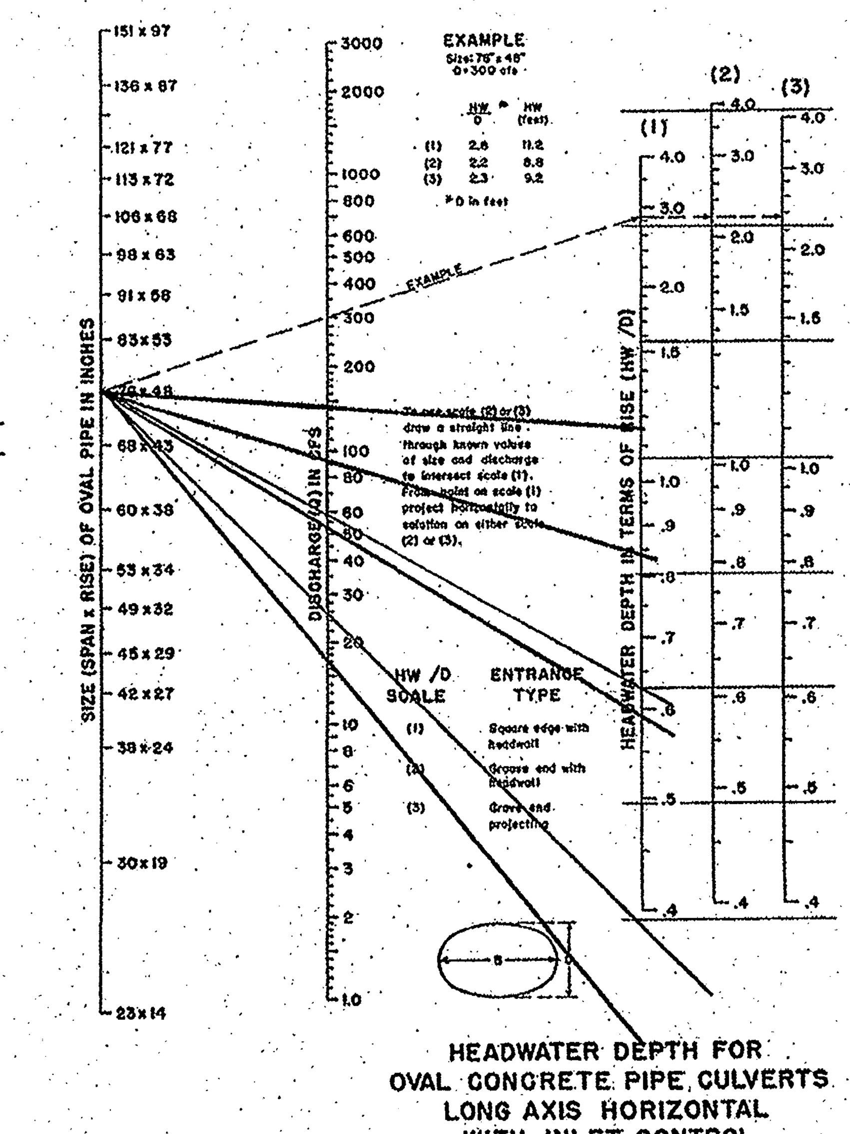
THIS SHEET FOR INFORMATION PURPOSES ONLY!!



SECTION D–D
EXISTING DITCH LEADING
TO & EXITING EXISTING CULVERT
SCALE: H: 1" = 10'
V: 1" = 1'

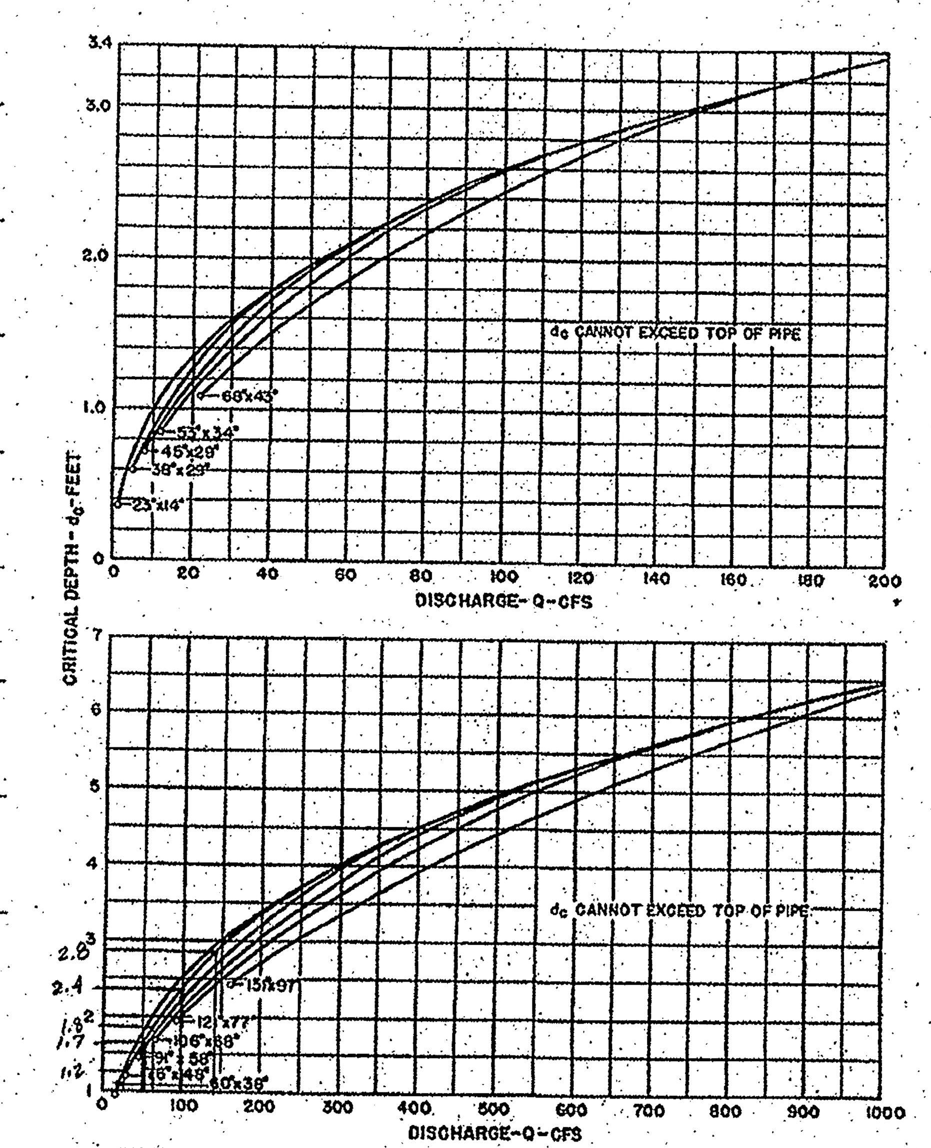
WATER SURFACE ELEVATIONS AT SECTION D-D

2-YR W.S.E. = ±13.9'
10-YR W.S.E. = ±14.7'
100-YR W.S.E. = ±16.1'



BUREAU OF PUBLIC ROADS JAN. 1963

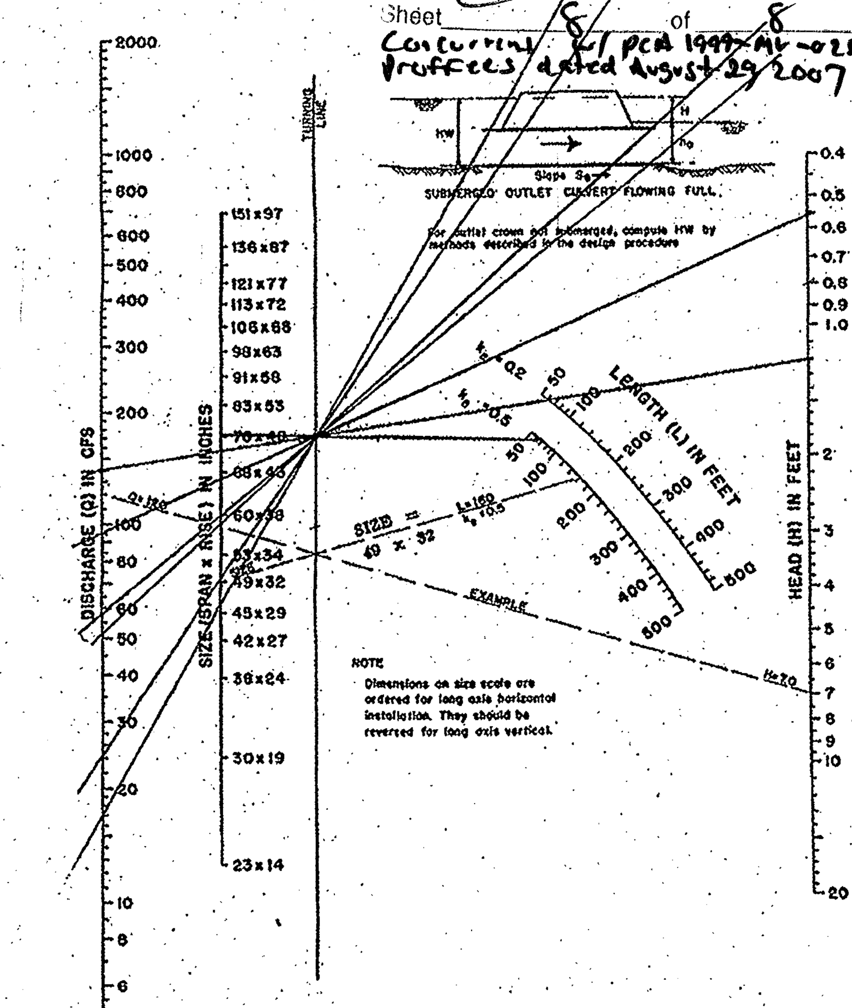
HEADWATER DEPTH FOR
OVAL CONCRETE PIPE CULVERTS
LONG AXIS HORIZONTAL
WITH INLET CONTROL



BUREAU OF PUBLIC ROADS
JAN. 1964

CRITICAL DEPTH
OVAL CONCRETE PIPE
LONG AXIS HORIZONTAL

Application No. SE 2007-MV-005 Staff S.U.
APPROVED (SE) / SP PLAN
SEE DEV CONDS DATED July 19, 2007
Date of (BOS) (BZA) approval Sept. 10, 2007
Sheet 8 of 8
Concurrent w/ PCA 1999-MV-025-4 Proffers dated August 29, 2007



BUREAU OF PUBLIC ROADS JAN. 1963

HEAD FOR
OVAL CONCRETE PIPE CULVERTS
LONG AXIS HORIZONTAL OR VERTICAL
FLOWING FULL
n=0.012

EXISTING DITCH & CULVERT CALCULATIONS

PROJECT: Lorton Station South – Existing Conditions
STATION: ____ SHEET ____ OF ____
CULVERT DESIGN FORM
DESIGNER/DATE: EP / 1/31/00
REVIEWER/DATE: ____ / ____

HYDROLOGICAL DATA
- ☐ METHOD: SCS TYPE II 24-HR
- ☐ DRAINAGE AREA: ____ ☐ STREAM SLOPE: ____
- ☒ CHANNEL SHAPE: TRAPEZOIDAL
- ☒ ROUTING: ____ ☐ OTHER: ____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)
2-YR	±69.0 cfs	1.3'
10-YR	±208.0 cfs	3.2'
100-YR	±382.0 cfs	3.0'

ROADWAY ELEVATION: ±45.8 (ft)
EL_i 39.88 (ft); EL_o: 39.68 (ft)
$S = S_o - FALL/L_o$; S = 0.30%; L_o = 66'

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HW_i/D (2)	HW_i	FALL (3)	EL_hi (4)	TW (5)	d_c	(d_c+D)/2	h_o (6)	k_e	H (7)	EL_ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
4-76"x48" RCP w/ Flared End Section	69	17	.30	1.20	–	41.1	1.1	1.1	2.6	2.6	0.5	–	42.3	42.3		
	208	52	.59	2.36	–	42.2	2.1	1.7	2.9	2.9	0.5	–	42.6	42.6		
	382	96	.84	3.36	–	43.2	2.9	2.4	3.2	3.2	0.5	0.6	43.5	43.5		

TECHNICAL FOOTNOTES:
(1) USE Q/NB FOR BOX CULVERTS
(2) $HW_i/D = HW/D$ OR HW_i/D FROM DESIGN CHARTS
(3) $FALL = HW_i - (EL_{hd} - EL_{sf})$; FALL IS ZERO FOR CULVERTS ON GRADE
(4) $EL_{hi} = HW_i + EL_i$ (INVERT OF INLET CONTROL SECTION)
(5) TW BASED ON DOWN STREAM CONTROL OR FLOW DEPTH IN CHANNEL.
(6) $h_o = TW$ or $(d_c + D/2)$ (WHICHEVER IS GREATER)
(7) $H = [1 + k_e + (29n^2 L)/R^{1.33}] V^2/2g$
(8) $EL_{ho} = EL_o + H + h_o$

SUBSCRIPT DEFINITIONS: a. APPROXIMATE; f. CULVERT FACE; hd. DESIGN HEADWATER; hi. HEADWATER IN INLET CONTROL; ho. HEADWATER IN OUTLET CONTROL; i. INLET CONTROL SECTION; o. OUTLET; sf. STREAMBED AT CULVERT FACE; tw. TAILWATER

COMMENTS / DISCUSSION:

CULVERT BARREL SELECTED: SIZE: ____ SHAPE: ____ MATERIAL: ____ n ____ ENTRANCE: ____

Worksheet for Trapezoidal Channel

Project Description			
Worksheet	Trapezoidal Chann	Trapezoidal Chann	Trapezoidal Chann
Flow Element	Trapezoidal Chann	Trapezoidal Chann	Trapezoidal Chann
Method	Manning's Formula	Manning's Formula	Manning's Formula
Solve For	Channel Depth	Channel Depth	Channel Depth
Input Data			
Mannings Coeffic	0.030	0.030	0.030
Slope	003000 ft/ft	003000 ft/ft	003000 ft/ft
Left Side Slope	3.00 H : V	3.00 H : V	3.00 H : V
Right Side Slope	3.00 H : V	3.00 H : V	3.00 H : V
Bottom Width	20.00 ft	20.00 ft	20.00 ft
Discharge	69.00 cfs	208.00 cfs	382.00 cfs
Results			
Depth	1.12 ft	2.09 ft	2.91 ft
Flow Area	26.1 ft²	54.9 ft²	83.8 ft²
Wetted Perim	27.06 ft	33.21 ft	38.43 ft
Top Width	26.70 ft	32.53 ft	37.49 ft
Critical Depth	0.69 ft	1.39 ft	2.02 ft
Critical Slope	0.015464 ft/ft	0.012650 ft/ft	0.011428 ft/ft
Velocity	2.65 ft/s	3.79 ft/s	4.56 ft/s
Velocity Head	0.11 ft	0.22 ft	0.32 ft
Specific Energ	1.23 ft	2.31 ft	3.24 ft
Froude Numb	0.47	0.61	0.54
Flow Type	Subcritical	Subcritical	Subcritical

PROPOSED DITCH & CULVERT CALCULATIONS

PROJECT: Lorton Station South – Post-Developed Conditions
STATION: ____ SHEET ____ OF ____
CULVERT DESIGN FORM
DESIGNER/DATE: BAS / 3/11/00
REVIEWER/DATE: ____ / ____

HYDROLOGICAL DATA
- ☐ METHOD: SCS TYPE II 24-HR
- ☐ DRAINAGE AREA: ____ ☐ STREAM SLOPE: ____
- ☐ CHANNEL SHAPE: TRAPEZOIDAL
- ☒ ROUTING: ____ ☐ OTHER: ____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)
2-YR	±101 cfs	1.4'
10-YR	±232 cfs	2.2'
100-YR	±453 cfs	3.2'

ROADWAY ELEVATION: ±45.8 (ft)
EL_i 39.88 (ft); EL_o: 39.68 (ft)
$S = S_o - FALL/L_o$; S = 0.30%; L_o = 66'

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HW_i/D (2)	HW_i	FALL (3)	EL_hi (4)	TW (5)	d_c	(d_c+D)/2	h_o (6)	k_e	H (7)	EL_ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
4-76"x48" RCP w/ Flared End Section	101	25	.39	1.6	–	41.5	1.4'	1.2	2.6	2.6	0.5	–	42.3	42.3		
	232	58	.63	2.5	–	42.4	2.2'	1.8	2.9	2.9	0.5	–	42.6	42.6		
	663	141	1.16	4.6	–	44.5	3.2'	2.8	3.4	3.4	0.5	1.2	44.3	44.5		

TECHNICAL FOOTNOTES:
(1) USE Q/NB FOR BOX CULVERTS
(2) $HW_i/D = HW/D$ OR HW_i/D FROM DESIGN CHARTS
(3) $FALL = HW_i - (EL_{hd} - EL_{sf})$; FALL IS ZERO FOR CULVERTS ON GRADE
(4) $EL_{hi} = HW_i + EL_i$ (INVERT OF INLET CONTROL SECTION)
(5) TW BASED ON DOWN STREAM CONTROL OR FLOW DEPTH IN CHANNEL.
(6) $h_o = TW$ or $(d_c + D/2)$ (WHICHEVER IS GREATER)
(7) $H = [1 + k_e + (29n^2 L)/R^{1.33}] V^2/2g$
(8) $EL_{ho} = EL_o + H + h_o$

SUBSCRIPT DEFINITIONS: a. APPROXIMATE; f. CULVERT FACE; hd. DESIGN HEADWATER; hi. HEADWATER IN INLET CONTROL; ho. HEADWATER IN OUTLET CONTROL; i. INLET CONTROL SECTION; o. OUTLET; sf. STREAMBED AT CULVERT FACE; tw. TAILWATER

COMMENTS / DISCUSSION: Conclusions: Ex. culverts are adequate. 100-yr post-developed flow does not put culvert in pressure flow conditions. ±1.3' of freeboard exists for 100-yr event.

CULVERT BARREL SELECTED: SIZE: ____ SHAPE: ____ MATERIAL: ____ n ____ ENTRANCE: ____

Worksheet for Trapezoidal Channel

Project Description			
Worksheet	Trapezoidal Chann	Trapezoidal Chann	Trapezoidal Chann
Flow Element	Trapezoidal Chann	Trapezoidal Chann	Trapezoidal Chann
Method	Manning's Formula	Manning's Formula	Manning's Formula
Solve For	Channel Depth	Channel Depth	Channel Depth
Input Data			
Mannings Coeffic	0.030	0.030	0.030
Slope	003000 ft/ft	003000 ft/ft	003000 ft/ft
Left Side Slope	3.00 H : V	3.00 H : V	3.00 H : V
Right Side Slope	3.00 H : V	3.00 H : V	3.00 H : V
Bottom Width	20.00 ft	20.00 ft	20.00 ft
Discharge	101.00 cfs	232.00 cfs	663.00 cfs
Results			
Depth	1.39 ft	2.22 ft	3.68 ft
Flow Area	33.6 ft²	59.2 ft²	110.2 ft²
Wetted Perim	28.79 ft	34.04 ft	42.67 ft
Top Width	28.34 ft	33.31 ft	41.61 ft
Critical Depth	0.88 ft	1.49 ft	2.54 ft
Critical Slope	0.014394 ft/ft	0.012415 ft/ft	0.010747 ft/ft
Velocity	3.01 ft/s	3.92 ft/s	6.11 ft/s
Velocity Head	0.14 ft	0.24 ft	0.41 ft
Specific Energ	1.53 ft	2.46 ft	3.99 ft
Froude Numb	0.49	0.62	0.55
Flow Type	Subcritical	Subcritical	Subcritical

SECTION 6 SWM NARRATIVE

AS THE CALCULATIONS ON SHEETS 10B AND 10C SHOW, SWM REQUIREMENTS FOR SECTION 6 HAVE BEEN SATISFIED. ADDITIONALLY, DPWES HAS VERIFIED THAT A WAIVER FOR OFF-SITE SWM FACILITY IS NOT REQ'D., SINCE THIS SITE IS CONTAINED WITHIN THE LORTON STATION SOUTH DEVELOPMENT (NEW DEVELOPMENT).

SECTION 6 ADEQUATE OUTFALL NARRATIVE

AS THE CALCULATIONS ON THIS SHEET SHOW, ADEQUATE OUTFALL IS SATISFIED WITH THIS PLAN, WHICH DISCHARGES BY WAY OF A STORM SEWER SYSTEM AND AN IMPROVED DITCH ALONG LORTON ROAD (SEE SHEET 7) INTO POND A PROPOSED WITH THE LORTON MARKET STREET PLANS (PLAN #4865-SP-05). RUNOFF FROM THE SITE IS DISCHARGED AT NON-EROSIVE VELOCITIES, AND NO ADVERSE IMPACTS TO DOWNSTREAM PROPERTIES ARE ANTICIPATED.

COMMONWEALTH OF VIRGINIA – BLAKE A. SMITH – No. 033994 – 4/16/01 – PROFESSIONAL ENGINEER

SWM NARRATIVE

Full stormwater detention for the 2 and 10-yr storm events has been provided in the proposed detention pond serving the northern portion of the Lorton Station South overall development plus additional off-site drainage areas. These calculations summarize the overall drainage discharging into four existing 76"x48" RCP culverts under Timarand Drive. As these calculations show, the approximate existing peak flow to these culverts is as follows:

- 2-Year Storm Event: 86 cfs
- 10-Year Storm Event: 227 cfs

The approximate proposed peak discharge to these culverts is as follows:

- 2-Year Storm Event: 83 cfs
- 10-Year Storm Event: 227 cfs

The rip rap provided at the pond outlet will dissipate the velocity of the 2-year post-developed peak discharge to non-erosive levels. Stormwater management and best management practices for the southern portion of the Lorton Station South overall development will be served by a proposed detention pond currently under design (Plan #7464-SP-01)(by others).

ADEQUATE OUTFALL NARRATIVE

Adequate outfall exists for the proposed development. Stormwater from the proposed development discharges into the proposed detention pond. The outlet storm system for the detention pond discharges directly into an existing trapezoidal channel contained within an existing drainage easement which leads from the site to the 100-year floodplain of Pohick Creek. The Board of Supervisors adopted the Pohick Creek floodplain on July 10, 1972. Pohick Creek at Lorton Road has a drainage area of approximately 5,060 acres. According to Section 6-0203.6C of the Fairfax County Public Facilities Manual, Pohick Creek satisfies county requirements for an adequate outfall.

Four 76"x48"RCP culverts run under Timarand Drive. These culverts adequately convey the 2, 10 and 100-year post-developed runoff from the proposed development and all the adjacent areas discharging to these culverts. Supporting calculations may be found in this plan (see sheet 23 & 24). As the calculations show, the post-developed peak runoff for the 100-year storm event results in a freeboard of approximately 1.3 feet for Timarand Drive. for the post-developed 100-year storm event. Based on all these drainage considerations, it is the opinion of the submitting engineer that no adverse impacts to downstream properties will result as a consequence of the proposed development, and that adequate outfall has been provided.

ADDITIONALLY, THE RIP RAP PROVIDED AT THE CURB TURNOUT AND AT THE POND "A" OUTLET ARE DESIGNED TO DISSIPATE THE VELOCITY OF THE 2-YEAR POST-DEVELOPED PEAK DISCHARGE TO NON-EROSIVE LEVELS. FURTHERMORE, OVERLAND RELIEF IS PROVIDED SUCH THAT NO FLOODING OF STRUCTURES WILL OCCUR FOR THE 100-YEAR POST-DEVELOPED STORM EVENT.

SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS
LORTON MARKET STREET
(FFX. CO. PLAN #4865-SP-05)
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

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ENGINEERS PLANNERS SURVEYORS
BOWMAN CONSULTING GROUP, LTD.
14020 THUNDERBOLT PL., SUITE 300
CHANTILLY, VIRGINIA 20151
PHONE (703) 464-1000
FAX (703) 481-9720

PLAN STATUS

DATE	DESCRIPTION
~~[illegible]~~	~~ISSUED TO CLIENT~~
~~[illegible]~~	~~1st SUB. DPWES~~
~~[illegible]~~	~~OUTSIDE AGENCIES~~
~~[illegible]~~	~~2nd SUB. DPWES~~
5/9/01	2ND SUB. DPWES

DESIGN	DRAWN	CHKD
BAS	WRS	BAS

SCALE H: 1"=50' V: 1"=5'
JOB No. 1299-01-002
DATE MARCH 1, 2000
FILE No. 1299-D-CP-007
SHEET ~~24 OF 36~~ 10C OF 24

COMMONWEALTH OF VIRGINIA – BLAKE A. SMITH – No. 033994 – PROFESSIONAL ENGINEER (crossed out)

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SWM/ADEQUATE OUTFALL NARRATIVE & CALCULATIONS
CAR WASH
LORTON STATION SOUTH COMMERCIAL CENTER
MOUNT VERNON DISTRICT FAIRFAX COUNTY, VIRGINIA

PCA 1999-MV-025-04
SE 2007-MV-005
COUNTY PROJECT NUMBER

COMMONWEALTH OF VIRGINIA – JONATHAN D. BONDI – Lic. No. 001379 – 5/24/07 – CERTIFIED LANDSCAPE ARCHITECT

PLAN STATUS

DATE	DESCRIPTION
03/01/07	1st SUBMISSION
04/20/07	2nd SUBMISSION
05/24/07	3rd SUBMISSION

DESIGN	DRAWN	CHKD
JDB	RRM	JDB

SCALE H: N/A V:
JOB No. 1299-16-002
DATE: JANUARY 2007
FILE No. 1299-D-ZP-004
SHEET 5C OF 5

Cad file name : P:\1299 ORTON STATION SOUTH\1299-16-0 (PLN)\Planning\05A-SWM BMP.dwg