



See also CC036

CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: CC037

DATE VERIFIED: September 27, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

Date: March 23, 2012
To: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
From: Leah Hardenbergh
PO: 110426
Re: Files Approved for Scanning

General File ID or BMP ID: CC037 *CC 036*
PIN: 4130100004
Owner Name (if known): WHITINGS FUNERAL HOME
Legal Property Description: SWMF LOCATED IN THE CITY OF WILLIAMSBURG
Site Address: 1118 IRONBOUND ROAD (NOT IN JCC)

(For internal use only):

Box # 1

Agreements (in file as of scan date): Y Book or Doc #: 050030523/070025277 Page:

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

- ✓ 1. As-built plan
- ✓ 2. Completed construction certification
3. Construction Plan
- ✓ 4. Design Calculations
- ✓ 5. Watershed Map *at end of calc.*
- ✓ 6. Maintenance Agreement
7. Correspondence with owners
8. Inspection Records
9. Enforcement Actions

Also have mylars in flat files



COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 30th day of August, 2007,
between William T. Stone, and
all successors in interest, ("COVENANTOR(S),") owner(s) of the following property:

Parcel Identification Number: 4130100004
Legal Description: Topping House Est
Project or Subdivision Name: Whiting Funeral Home
Document No. 050030523
OR Deed Book _____, Page No. _____,
and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.

4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, monitoring, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance

Instrument # 070025277
Page 1

Revised 05/06

Recorded on Sept. 7, 2007

work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

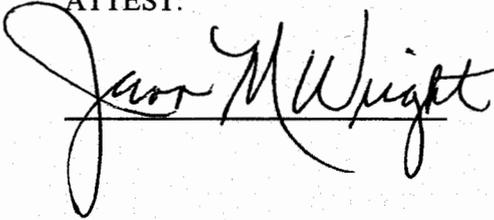
IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)



Print Name/Title William T. Stone

ATTEST:



COVENANTOR(S)

Print Name/Title _____

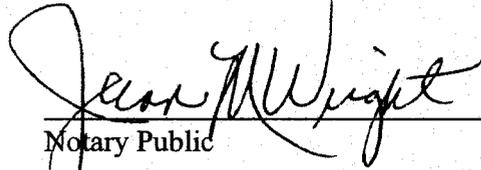
ATTEST:

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF James City

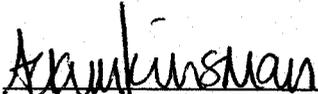
I hereby certify that on this 30th day of August, 2007, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared William T. Stone and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 30th day of August, 2007.


Notary Public

My Commission expires: Jan 31, 2010 Notary Registration # 183260

Approved as to form:


County Attorney

This Declaration of Covenants prepared by:

Robert M. Oliver
(Print Name)

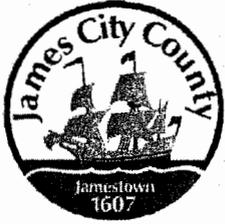
Director
(Title)

213 Ingram Rd
(Address)

Williamsburg, VA 23188
(City) (State) (Zip)

757-220-0856
(Phone Number)

drainage1.pre



**James City County Environmental Division
Stormwater Management/BMP Record Drawing &
Construction Certification Review
Tracking Form**

- Project Name: Whitting Funeral Home BMP #2
County Plan No.: SP-006-07
Stormwater Management Facility: DRY SWALE
BMP Phase #: I II III
 Information Package Received. Date/By: 6/30/2009 Jamestown Construction LLC
 Completeness Check:
 Record Drawing Date/By: 6/29/09 Jeffrey J. Vierretter
 Construction Certification Date/By: 6/25/09 Douglas Mi Will
 RD/CC Standard Forms (Required for a BMPs after Feb 1st 2001 Only)
 Insp/Maint Agreement # / Date: 070025277 9/7/2007
 BMP Maintenance Plan Location: Sheet C 5.1 Item 4
 Other: _____
 Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
 Yes No Location: C51
 Assign County BMP ID Code #: Code: CC037
 Preliminary Input/Log into Division's "As-Built Tracking Log"
 Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
 Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
 Active Project File Review (correspondence, H&H, design computations, etc.)
 Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.)
 Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
 Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
 Final Inspection (FI) Performed Date: 7/22/2009
 Record Drawing (RD) Review Date: 7/21/2009
 Construction Certification (CC) Review Date: 7/21/2009
 Actions:
 No comments.
 Comments. Letter Forwarded. Date: _____
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other : _____
 Second Submission: _____
 Reinspection (if necessary): _____
 Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
 Complete "Surety Request Form".
 Check/Clean active file of any remaining material and finish "As-Built" file.
 Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
 Copy Final Inspection Report into County BMP Inspection Program file.
 Obtain Digital Photographs of BMP and save into County BMP Inventory.
 Request mylar/reproducible from As-Built plan preparer.
 Complete "As-built Tracking Log".
 Last check of BMP Access Database (County BMP Inventory).
 Add BMP to JCC Hydrology & Hydraulic database (optional).
 Add BMP to Municipal BMP list (if a County-owned facility)
 Add BMP to PRIDE BMP ratings database.

Final Sign-Off

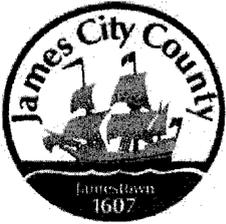
Inspector: _____

Date: _____

Chief Engineer: _____

Date: _____

*** See separate checklist, if needed.



**James City County Environmental Division
Stormwater Management/BMP Record Drawing &
Construction Certification Review
Tracking Form**

Project Name: Whiting Funeral Home BMP #1
County Plan No.: SP-008-07
Stormwater Management Facility: BMP I
BMP Phase #: I II III
 Information Package Received. Date/By: 6/30/2009 James Town Contracting LLC
 Completeness Check:
 Record Drawing Date/By: 6/29/09 Jeffrey J. Vierrether
 Construction Certification Date/By: 6/29/09 Douglas M. Will
 RD/CC Standard Forms (Required for all BMPs after Feb 1st 2001 Only)
 Insp/Maint Agreement # / Date: 090025277 9/7/2007
 BMP Maintenance Plan Location: Sheet 05.1
 Other: _____
 Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review
 Yes No Location: 05.1
 Assign County BMP ID Code #: Code: CC036
 Preliminary Input/Log into Division's "As-Built Tracking Log"
 Add Location to GIS Map. Obtain basic site information (GPIN, Owner, Address, etc.)
 Preliminary Log into Access Database (BMP ID #, Plan No., GPIN, Project Name, etc.)
 Active Project File Review (correspondence, H&H, design computations, etc.).
 Initial As-Built File setup (File label, folder, copy plan/details/design information, etc.).
 Inspector Check of RD/CC (forward to Inspector using transmittal for cursory review).
 Pre-Inspection Drawing Review of Approved Plan (Quick look prior to Field Inspection).
 Final Inspection (FI) Performed Date: _____
 Record Drawing (RD) Review Date: _____
 Construction Certification (CC) Review Date: _____
 Actions:
 No comments.
 Comments. Letter Forwarded. Date: _____
 Record Drawing (RD)
 Construction Certification (CC)
 Construction-Related (CR)
 Site Issues (SI)
 Other : _____
 Second Submission: _____
 Reinspection (if necessary): _____
 Acceptable for SWM Purposes (RD/CC/CR/Other). Ok to proceed with bond release.
 Complete "Surety Request Form".
 Check/Clean active file of any remaining material and finish "As-Built" file.
 Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
 Copy Final Inspection Report into County BMP Inspection Program file.
 Obtain Digital Photographs of BMP and save into County BMP Inventory.
 Request mylar/reproducible from As-Built plan preparer.
 Complete "As-built Tracking Log".
 Last check of BMP Access Database (County BMP Inventory).
 Add BMP to JCC Hydrology & Hydraulic database (optional).
 Add BMP to Municipal BMP list (if a County-owned facility)
 Add BMP to PRIDE BMP ratings database.

Final Sign-Off

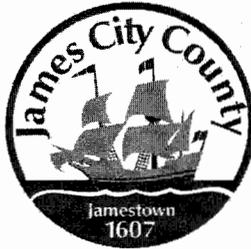
Inspector: _____

Date: _____

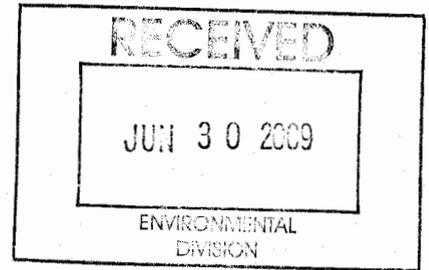
Chief Engineer: _____

Date: _____

*** See separate checklist, if needed.



James City County, Virginia
Environmental Division



Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 - Site Information:

Project Name: Whiting Funeral Home BMP as-built Survey
Structure/BMP Name: BMP #1 and BMP #2
Project Location: 705 Pocahontas Trail, Williamsburg, VA 23185
BMP Location: on-site
County Plan No.: SP - 008 - 07 Amended plan: SP-033-08

Project Type: Residential Business Commercial Office Institutional Industrial Public Roadway Other
Tax Map/Parcel No.: 4130100004
BMP ID Code (if known):
Zoning District: B-1
Land Use: Funeral Home
Site Area (sf or acres): 1.85 AC

Brief Description of Stormwater Management/BMP Facility:

BMPs are linked together by one 15" RCP.
Two on-site BMPs collect surface flow from Funeral Home.

Nearest Visible Landmark to SWM/BMP Facility: _____

Nearest Vertical Ground Control (if known):

JCC Geodetic Ground Control USGS Temporary Arbitrary Other
Station Number or Name: 337
Datum or Reference Elevation: NGVD 29 Elev = 76.68
Control Description: 3-1/4" disk in concrete
Control Location from Subject Facility: adjacent to site to the southeast on Pocahontas Trail.

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: 7-08
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: Jamestown Contracting LLC
Name of Professional Firm Who Routinely Monitored Construction: ECS
Date of Completion for SWM/BMP Facility: 6-12-09
Date of Record Drawing/Construction Certification Submittal: 6-25-09

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Environmental Division prior to final inspection, acceptance and bond or surety release.)

Section 3 - Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*

Name: William T. Stone
Mailing Address: 7345 Pocahontas Trail
Williamsburg, VA 23185
Business Phone: 757-291-8010 Fax: _____
Contact Person: William T. Stone Title: _____

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*

Firm Name: MSA, PC
Mailing Address: 5033 Rouse Dr
VA Beach, VA 23462
Business Phone: 757-490-9264
Fax: 757-490-0634
Responsible Plan Preparer: Edner Rull
Title: Project Engineer
Plan Name: Amended site plan of Whiting Funeral Home
Firm's Project No. 05224
Plan Date: 4-8-08
Sheet No.'s Applicable to SWM/BMP Facility: C5.1 / D1.2 / D1.3 / _____ / _____

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*

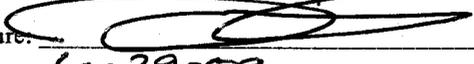
Name: Jamestown Contracting, LLC
Mailing Address: 213 Ingram Rd
Williamsburg, VA 23188
Business Phone: 757-220-0856
Fax: 757-220-0916
Contact Person: Bob Oliver
Site Foreman/Supervisor: Bob Oliver
Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: (Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)

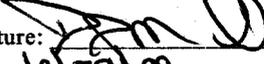
Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

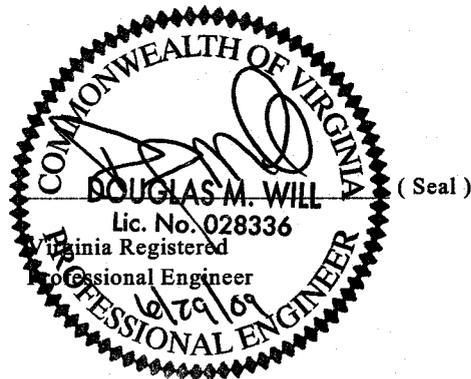
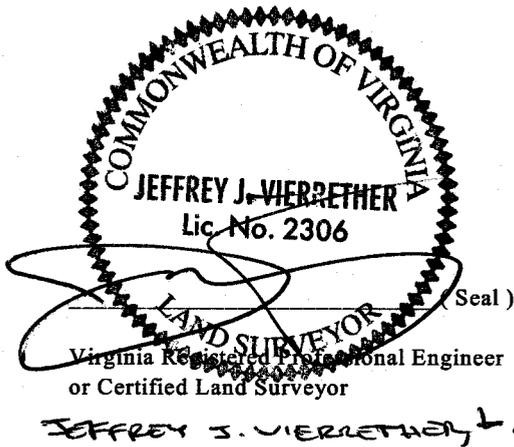
Firm Name: MSA, PC
Mailing Address: 5033 Rouse Dr
VA Beach, VA 23462
Business Phone: 757-490-9264
Fax: 757-490-0634
Name: Jeffrey Vierrether, LS
Title: Director of Survey
Signature: 
Date: 6-29-09

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

Construction Certification

Firm Name: MSA, PC
Mailing Address: 5033 Rouse Dr
VA Beach, VA 23462
Business Phone: 757-490-9264
Fax: 757-490-0634
Name: Douglas Will, P.E.
Title: Principal Vice President
Signature: 
Date: 6/29/09

I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



Section 5 - Record Drawing and Construction Certification Requirements and Instructions:

☑ PreConstruction Meeting - Provides an opportunity to review SWM / BMP facility construction, maintenance and operation plans and address any questions regarding construction and/or monitoring of the structure. The design engineer, certifying professionals (if different), Owner/Applicant, Contractor and County representative(s) are encouraged to attend the preconstruction meeting. Advanced notice to the Environmental Division is requested. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meetings held for the project.

☑ A fully completed ***STORMWATER MANAGEMENT / BMP FACILITIES, RECORD DRAWING and CONSTRUCTION CERTIFICATION FORM*** and ***RECORD DRAWING CHECKLIST***. All applicable sections shall be completed in their entirety and certification statements signed and sealed by the registered professional responsible for individual record drawing and/or construction certification.

☑ The Record Drawing shall be prepared by a Registered Professional Engineer or Certified Land Surveyor for the drainage system of the project including any Best Management Practices.

☑ Construction Certification. Construction of Stormwater Management / BMP facilities which contain impoundments, embankments and related engineered appurtenances including subgrade preparation, compacted soils, structural fills, liners, geosynthetics, filters, seepage controls, cutoffs, toe drains, hydraulic flow control structures, etc. shall be visually observed and monitored by a Registered Professional Engineer or his/her authorized representative. The Engineer must certify that the structure, embankment and associated appurtenances were built in accordance with the approved design plan, specifications and stormwater management plan and standard accepted construction practice and shall submit a written certification and/or drawings to the Environmental Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation may be required by the Environmental Division to substantiate the certification, if specifically requested. The Engineer shall have the authority and responsibility to make minor changes to the approved plan, in coordination with the assigned County inspector, in order to compensate for unsafe or unusual conditions encountered during construction such as those related to bedrock, soils, groundwater, topography, etc. as long as changes do not adversely affect the integrity of the structure(s). Major changes to the approved design plan or structure must be reviewed and approved by the original design professional and the James City County Environmental Division.

☑ Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of Stormwater Management / BMP facility construction. Submittals must be reviewed and accepted by James City County Environmental Division prior to final inspection, acceptance and bond/surety release.

Dual Purpose Facilities - Completion of construction also includes an interim stage for Stormwater Management / BMP facilities which serve dual purpose as temporary sediment basins during construction and as permanent stormwater management / BMP facilities following construction, once development and stabilization are substantially complete. For these dual purpose facilities, construction certification is required once the temporary sediment basin phase of construction is complete. Final record drawing and construction certification of additional permanent components is required once permanent facility construction is complete.

Interim Construction Certification is required for those dual purpose embankment-type facilities that are generally ten (10) feet or greater in dam height (*) and may not be converted, modified or begin function as a permanent SWM / BMP structure for a period generally ranging from six (6) to eighteen (18) months or more from issuance of a Land Disturbance permit for construction.

Interim or final record drawing and construction certifications are not required for temporary sediment basins which are designed and constructed in accordance with current minimum standards and specifications for temporary sediment basins per the Virginia Erosion and Sediment Control Handbook (VESCH); have a temporary service life of less than eighteen (18) months; and will be removed completely once associated disturbed areas are stabilized, unless a distinct hazard to the public's health, safety and welfare is determined by the Environmental Division due to the size or presence of the structure or due to evidence of improper construction.

(*Note: Dam Height as referenced above is generally defined as the vertical distance from the natural bed of the stream or waterway at the downstream toe of the embankment to the top of the embankment structure in accordance with 4VAC50-20-30, Virginia Impoundment Structure Regulations and the Virginia Dam Safety Program.)

Record Drawings shall provide, at a minimum, all information as shown within these requirements and the attached **RECORD DRAWING CHECKLIST** specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the James City County Environmental Division. *(Note: Refer to the current edition of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual for a complete list of acceptable BMP's. Currently there are over 20 acceptable water quality type BMP's accepted by the County.)*

Record Drawings shall consist of blue/black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater management plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject SWM / BMP facility. The set shall indicate "**RECORD DRAWING**" in large text in the lower right hand corner of each sheet with record elevations, dimensions and data drawn in a clearly annotated format and/or boxed beside design values. Approved design plan values, dimensions and data shall not be removed or erased. Drawing sheet revision blocks shall be modified as required to indicate record drawing status. Elevations to the nearest 0.1' are sufficiently accurate except where higher accuracy is needed to show positive drainage. Certification statements as shown in Section 4 of the Record Drawing and Construction Certification Form, *or similar forms thereof*, and professional signatures and seals, with dates matching that of the record drawing status in the revision or title block, are also required on all associated record drawing plans, prints or reproducible.

Submission Requirements. Initial and subsequent submissions for review shall consist of a minimum of one (1) blue/black line set for record drawings and one copy of the construction certification documents with appropriate transmittal. Under certain circumstances, it is understood that the record drawing and construction certification submissions may be performed by different professional firms. Therefore, record drawing submission may be in advance of construction certification or vice versa. Upon approval and prior to release of bond/surety, final submission shall include one (1) reproducible set of the record drawings, one (1) blue/black line set of the record drawings and one (1) copy of the construction certification. Also for current and/or future incorporation into the County BMP database and GIS system, it is requested that the record drawings also be submitted to the Environmental Division on a diskette or CD-ROM in an acceptable electronic file format such as *.dxf, *.dwg, etc. or in a standard scanned and readable format. The electronic file requirement can be discussed and coordinated with Environmental Division staff at the time of final submission.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

I. Methods and Presentation: (Required for all Stormwater Management / BMP facilities.)

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All plan sheet revision blocks modified to indicate date and record drawing status.
- XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: (Required for all Stormwater Management / BMP facilities, as applicable.)

- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
- XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
- XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
- XX 4. Top widths, berm widths and embankment side slopes.
- XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
- XX 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.
- NA 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
- XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

- XX 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- ___ 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- ___ 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- ___ 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- XX 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- XX 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- XX 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- XX 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- NA 19. Fencing location and type, if applicable to facility.
- XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- NA 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

III. Group A - Wet Ponds (Includes A-1 Small Wet Ponds; A-2 Wet Ponds; A-3 Wet Ext Det Ponds.)

NA

- A1. All requirements of Section II, Minimum Standards, apply to Group A facilities.
- A2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- A3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
- A4. Access for maintenance and equipment is provided to the forebay(s). Access corridors are at least 12 ft. wide, have a maximum slope of 15 percent and are adequately stabilized to withstand heavy equipment or vehicle use.
- A5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
- A6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.
- A7. Minimum 6 percent slope safety bench extending a minimum of 15 feet outward from normal pool edge and/or an aquatic bench extending a minimum of 10 feet inward from the normal shoreline with a maximum depth of 12 inches below the normal pool elevation, if applicable, per the approved design plans. (Note: Safety benches may be waived if pond side slopes are no steeper than 4H:1V).
- A8. No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
- A9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
- A10. Low flow orifice has a non-clogging mechanism.
- A11. A pond drain pipe with valve was provided.
- A12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
- A13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)

IV. Group B - Wetlands (Includes B-1 Shallow Marsh; B-2 Ext Det Shallow Wetlands; B-3 Pond Wetland System and B-4 Pocket Wetland)

NA



- B1. Same requirements as Group A Wet Ponds.
- B2. Minimum 2:1 length to width flow path provided across the facility.
- B3. Micropool provided at or around outlet from BMP (generally 3 to 6 ft. deep).
- B4. Wetland type landscaping provided in accordance with approved plan. Includes correct pondscaping zones, plant species, planting arrangements, wetland beds, etc. Wetland plants include 5 to 7 emergent wetland species. Individual plants at 18 inches on center in clumps.
- B5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15 ft. setback to structures).
- B6. No more than one-half (½) of the wetland surface area is planted.
- B7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.
- B8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)

V. Group C - Infiltration Practices

(Includes C-1 Infiltration Trench; C-2 Infiltration Trench;
C-3 Infiltration Basin; and C-4 Infiltration Basin)

NA

- C1. All requirements of Section II, Minimum Standards, apply to Group C facilities as applicable.
- C2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent.
- C3. Pretreatment devices provided prior to entry into the infiltration facility. Acceptable pretreatment devices include sediment forebays, sediment basins, sediment traps, sump pits or inlets, grass channels, plunge pools or other acceptable measures.
- C4. Three (3) or more of the following pretreatment devices provided to protect long term integrity of structure: grass channel; grass filter strip; bottom sand layer; upper filter fabric layer; use of washed bank run gravel aggregate.
- C5. Sides of infiltration practice lined with filter fabric.
- C6. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- C7. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- C8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.
- C9. Minimum twenty-five (25) foot separation down gradient from any structure.
- C10. Stormwater outfalls provided for overflow associated with larger design storms.
- C11. No visual signs of erosion or channel degradation immediately downstream of facility.
- C12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties.
- C13. Observation well provided.
- C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VI. Group D - Filtering Systems (Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)

- NA
- D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.
 - D2. Sediment pretreatment devices provided.
 - D3. For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
 - D4. For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.
 - D5. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
 - D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .
 - D7. Filtering system is off-line from storm drainage conveyance system.
 - D8. Overflow outlet has adequate erosion protection.
 - D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
 - D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
 - D11. Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.
 - D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
 - D13. No visual signs of erosion or channel degradation immediately downstream of facility.
 - D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

**STORMWATER MANAGEMENT / BMP FACILITIES
AS-BUILT PLAN CHECKLIST**

(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)

VII. Group E - Open Channel Systems (Includes E-1 Wet Swales (Check Dams); E-2 Dry Swales; and E-3 Biofilters)

NA

- E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.
- E2. Open channel system has constructed longitudinal slope of less than four (4) percent.
- E3. No visual signs of erosion in the open channel system's soil and/or vegetative cover.
- E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.
- E5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 systems (Wet Swales).
- E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.
- E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.
- E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.
- E9. Grass cover/stabilization in the open channel system appears adaptable to the specific soils and hydric conditions for the site and along the channel system.
- E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.
- E11. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- E12. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.
- E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.
- E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.
- E15. For E-3 BMPs (Biofilters), the constructed channel slope is less than or equal to three (3) percent at any location.
- E16. For E-3 BMPs (Biofilters), the constructed grass channel is approximately equivalent to the constructed roadway length.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VIII. Group F - Extended Dry Detention (Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)

- XX F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.
- XX F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.
- NA F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)
- NA F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.
- XX F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.
- NA F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- NA F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.
- XX F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.
- NA F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.
- NA F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.
- XX F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.
- XX F12. Stilling basin or standard outlet protection provided at principal spillway outlet.
- XX F13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide, slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.
- XX F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.
- XX F15. No visual signs of erosion or channel degradation immediately downstream of facility.
- XX F16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

IX. Group G - Open Spaces (Includes All Open Space Types G-1; G-2; and G-3)

NA



- G1. All requirements of Section II, Minimum Standards, apply to Group G facilities as applicable.
- G2. Constructed impervious areas appear to conform with locations indicated on the approved plan and appear less than sixty (60) percent impervious in accordance with the requirements of the James City County Chesapeake Bay Preservation Ordinance.
- G3. Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensures perpetual protection.
- G4. Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked).
- G5. Adequate protection measures were implemented during construction to protect the defined dedicated open space areas.
- G6. Dedicated open space areas were not disturbed during construction (ie. cleared, grubbed or graded).

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

X. Storm Drainage Systems (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her own discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

- XX SD1. All requirements of Section II, Minimum Standards, apply to Storm Drainage Systems.
- XX SD2. Horizontal location of all pipe and structures relative to the SWM/BMP facility.
- XX SD3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.).
- XX SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.
- XX SD5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

XII. Other Systems

(Includes any non-typical, specialty, manufactured or innovative stormwater management/BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management / BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception .)

- _____ O1. All requirements of Section II, Minimum Standards, apply to this section.
- _____ O2. Certification criteria to be determined on a case-by-case basis by the Environmental Division specific to the proposed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

XIII. References *(The James City County Record Drawing and Construction Certification Forms and Checklists for Stormwater Management / BMP facilities were developed using the following sources and references.)*

- Baltimore County, Maryland Soil Conservation District, As-Built Stormwater Management Pond Checklist.
- James City County, Virginia, Guidelines for Design and Construction of Stormwater Management BMP's (October 1999).
- James City County, Virginia, Stormwater Detention/Retention Basin Design Checklist and Erosion and Sediment Control and Stormwater Management Design Plan Checklists.
- James City County Stormwater Policy Framework, Final Report of the James City County BMP Policy Project, October 1998, The Center for Watershed Protection.
- Prince Georges County, Maryland, As-Built Requirements Retention or Detention Pond/Basin.
- Prince William County, Virginia, Stormwater Management Fact Sheet.
- Stafford County, Virginia, As-Built Plan Checklist.
- Stormwater Management Design Manual, NRCS Maryland Code No. 378, Pond Standards and Specifications.
- USEPA/Watershed Management Institute, Stormwater Management Inspection Forms.
- Virginia Impounding Structure Regulations (Dam Safety), Department of Conservation & Recreation, 1997.
- Virginia Erosion and Sediment Control Handbook, Third Edition 1992, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.
- Virginia Stormwater Management Handbook, 1999 edition, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.

File: Shared\SWMPProg\BMP\CertifRDCC_fillable.wpd

RECORD DRAWING OF BMP

FOR

WHITING FUNERAL HOME

JAMES CITY COUNTY, VIRGINIA

SHEET INDEX

C1.1 TITLE SHEET
C5.1 STORM SEWER / BMP AS-BUILT SURVEY
D1.1 DETAILS

SITE DATA

CIVIL LEGEND	
EXISTING	
○	MANHOLE
○	SANITARY CLEANOUT
○	VALVE
○	WATER METER
○	FIRE HYDRANT
○	WELL
○	DROP INLET
○	CURB INLET
○	GAS METER
○	POWER POLE
○	LIGHT POLE
○	LIGHT POLE /CONCRETE BASE
○	PEDESTAL
=	CURB AND GUTTER
- - -	FENCE
=	PROPERTY LINE
=	BUILDINGS
=	STORM SEWER
=	SANITARY SEWER
=	WATER
=	ELECTRIC & TELEPHONE LINE
=	TRAFFIC BOX
=	SIGN
=	TREE
=	BUSH
=	PAVEMENT
=	CONCRETE
=	TEMPORARY BENCHMARK (TBM)
=	ELEVATIONS
=	TOP OF CURB ELEVATIONS
=	BOTTOM OF SWALE/INV OF PIPE
=	SILT FENCE
=	UNLESS NOTED OTHERWISE

- NOTES**
- THIS PROPERTY APPEARS TO FALL IN FLOOD ZONE 'X' AS SHOWN ON PANEL 5102940005B OF THE FLOOD INSURANCE RATE MAPS FOR THE CITY OF JAMES CITY COUNTY, VIRGINIA, DATED FEBRUARY 6, 1991. FLOOD ZONE INFORMATION SHOWN HEREON IS NOT GUARANTEED AND WAS APPROXIMATELY SCALED FROM F.E.M.A. FLOOD MAPS. MSA, P.C., IS NOT A PARTY IN DETERMINING THE REQUIREMENTS FOR THE FLOOD INSURANCE ON THE PROPERTY SHOWN HEREON. FOR FURTHER INFORMATION AND TO CONFIRM THE FLOOD ZONE FOR THIS PROPERTY, CONTACT THE LOCAL COMMUNITY FLOOD OFFICIAL. FLOOD ZONE DETERMINATION IS BASED ON THE FLOOD INSURANCE RATE MAPS AND DOES NOT IMPLY THAT THIS PROPERTY WILL OR WILL NOT BE FREE FROM FLOODING OR DAMAGE.
 - NORTH MERIDIAN SHOWN HEREON BASED IN PLAT BOOK 58, PAGE 68-A.
 - ELEVATIONS SHOWN HEREON BASED ON N.G.V.D. 1929 AND WERE ESTABLISHED FROM JAMES CITY COUNTY VERTICAL CONTROL STATION NUMBER 337. ELEVATION = 76.68.
 - AS-BUILT SURVEY WAS PERFORMED IN THE FIELD BY MSA, PC ON JUNE 12, 2009.

I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT/BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.



SITE ADDRESS: 7005 POCAHONTAS TRAIL
WILLIAMSBURG, VA. 23185

SITE AREA: ±80486 SF - 1.85 AC

DISTURBED AREA: 1.85 AC

PROPOSED IMPERVIOUS AREA: 45667 SF = 1.08 AC
= 58% OF SITE

PROPOSED USE: FUNERAL HOME

PROPOSED BUILDING AREA: ±9997 SF = 0.23 AC
= 12.4% OF SITE

ZONING DISTRICT: B-1

TAX PARCEL ID: 4130100004

OPEN SPACE REQUIRED: 0 AC

OPEN SPACE PROVIDED: 0 AC

BUILDING SETBACK: FRONT YARD: 50'
SIDE YARD: 20'
REAR YARD: 20'

PARKING REQUIRED: (1 SPACE/ 4 SEAT*150 SEATS) = 37.5 SPACES

PARKING PROVIDED:	SPACES	50
	HC SPACES	3
	TOTAL	53

WETLAND AREA: 0 AC

AREA OF 25% OR GREATER SLOPE: 0 AC

FLOODPLAIN: 0

TIDAL SHORES: 0

RPA'S: 0

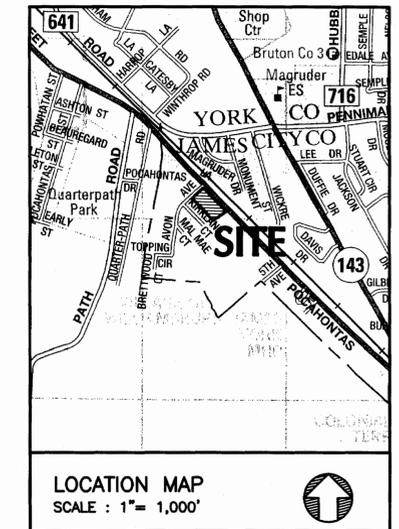
HYDRIC SOILS: 0

SEWER FLOW: 45 GPM (PEAK)
11 GPM (AVG)

WATER DEMAND: 45 GPM (PEAK)
11 GPM (AVG)

FIRE FLOW DEMAND: 2500 GPM (PER JCC)

OWNER/DEVELOPER: WILLIAM T. STONE
7345 POCAHONTAS TRAIL
WILLIAMSBURG, VA 23185
PHONE: (757) 291-8010



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RECORD DRAWING

JAMES CITY COUNTY
AMENDED SITE PLAN # SP-033-08

cc036
cc037
ORIGINAL SITE PLAN
JCC# SP-8-07

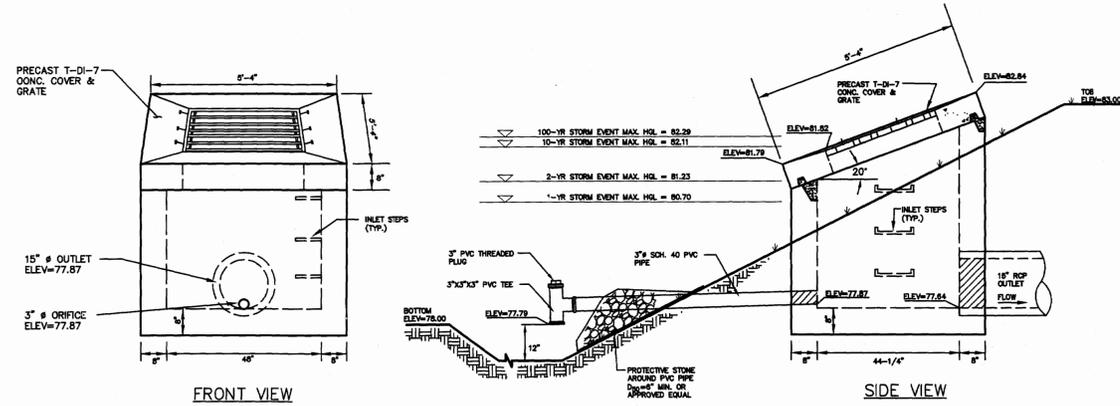
MSA, P.C.

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757-490-9264 (Ofc) 757-490-0634 (Fax)
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Offices in Virginia Beach & Eastville, VA

PLAN STATUS			WHITING FUNERAL HOME
DATE	INITIAL	DESCRIPTION	
06-22-09	JJV	1st COUNTY BMP AS-BUILT SURVEY SUBMITTAL	C1.1 1 of 3 Sheets PROJ. NO.: 05224A

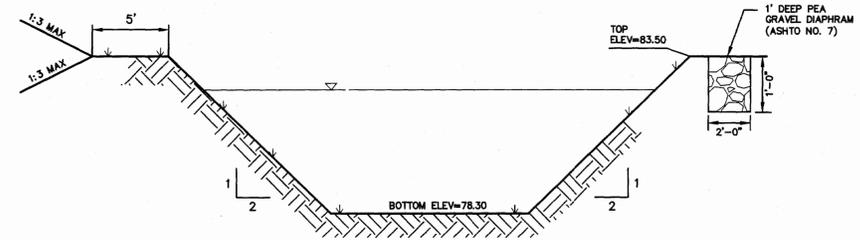
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT/BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS AND STORMWATER MANAGEMENT PLAN, EXCEPT AS SPECIFICALLY NOTED.



OUTLET STRUCTURE #1 DETAIL & BMP #1 PROFILE

SCALE: 1" = 2'

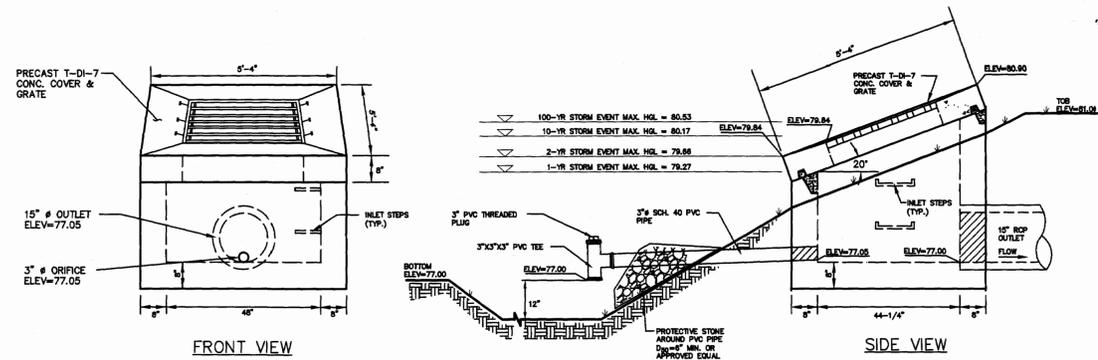
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BMP #1

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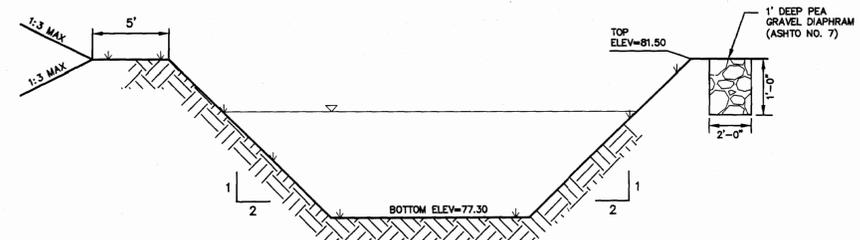
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OUTLET STRUCTURE #2 DETAIL & BMP #2 PROFILE

SCALE: 1" = 2'

CC037

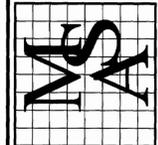


BMP #2

SCALE: N.T.S.

CC037

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DESIGNED	EBR
DRAWN	EBR/CJS
CHECKED	JJV
APPROVED	JJV
DATE	06-22-09

RECORD DRAWING OF BMP
 FOR
WHITING FUNERAL HOME
 JAMES CITY COUNTY VIRGINIA

RECORD DRAWING

JAMES CITY COUNTY
 AMENDED SITE PLAN # SP-033-08

SHEET
D1.2
3 of 3 Sheets
SCALE: AS SHOWN
PROJ. NO.: 05224A

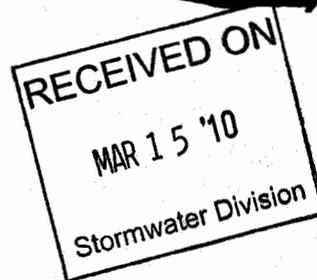
Subject: Record Drawing/Mylar

Whitting Funeral Home (Two Files)

TO: James City County Stormwater Division

From: Environmental Division

ATTN: Greg Johnson



Comments:

For your files (Two files).



MSA, P.C.

Environmental Sciences · Planning · Surveying · Civil & Environmental Engineering · Landscape Architecture

5033 Rouse Drive , Virginia Beach, VA 23462-3708

(757) 490-9264 Office

(757) 490-0634 Fax

16416 Courthouse Road, Eastville, VA 23347

P.O. Box 246, Eastville, VA 23347

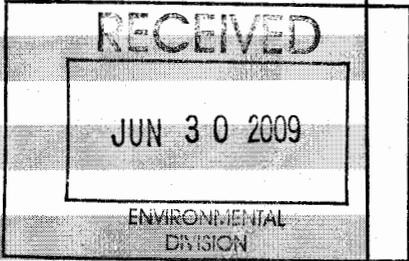
Office (757) 414-0234

Fax (757) 678-7882

To Joe Buchite James City County Environmental Division 101-E Mounts Bay Road Williamsburg, VA 23187	Date 06/29/2009	Project Number MSA Project No.: 05224A Amended Site Plan No.: SP-033-08 Original Site Plan No.: SP-8-07
Subject Record Drawing of BMP for Whiting Funeral Home		

We are sending you the following items:

Copies	Date	Description
1	06/29/2009	MSA Cover Letter
1		Record Drawing and Construction Certification Form
1		Paper Copy Record Drawing of BMP
1		Mylar Record Drawing of BMP

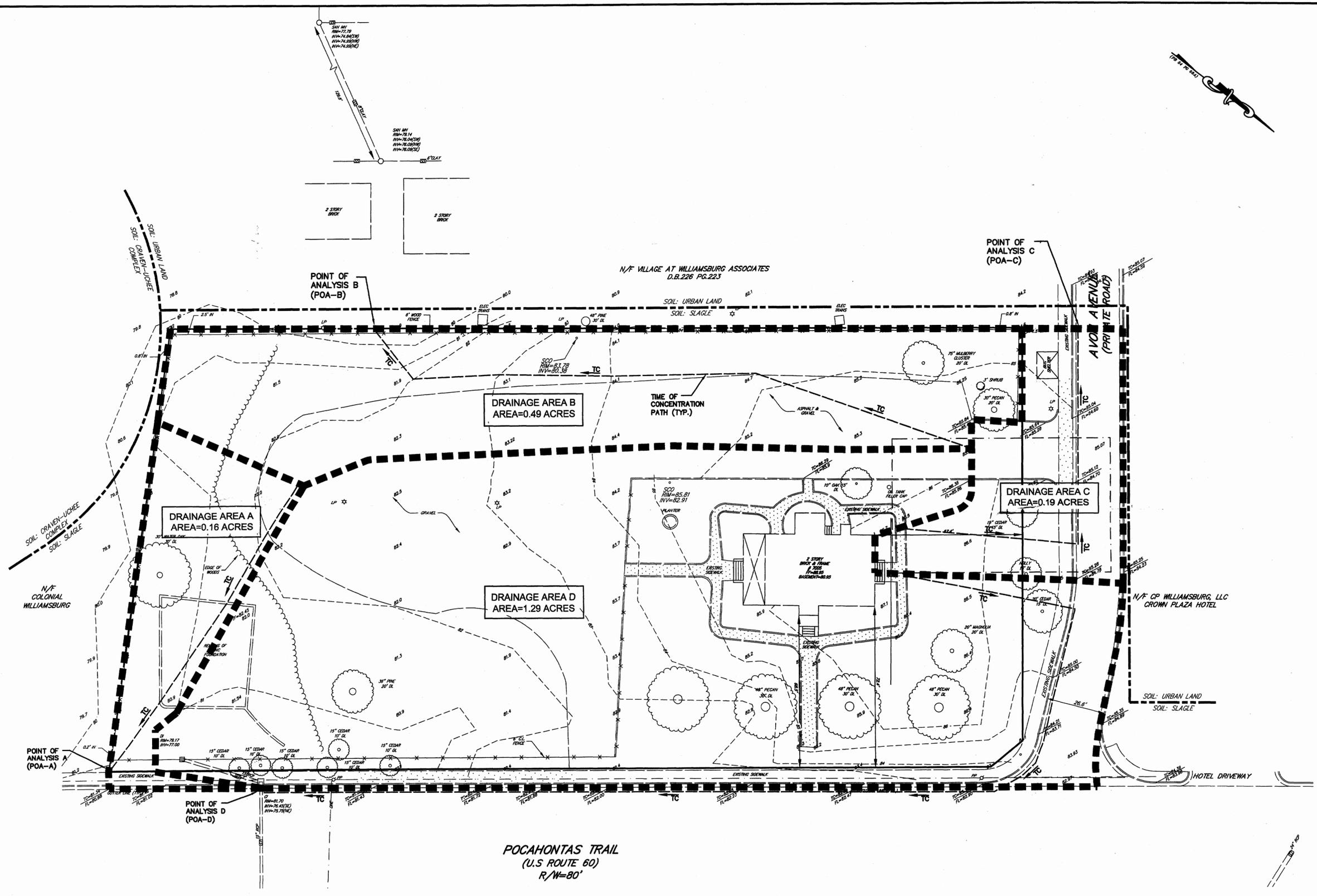


- | | | |
|--|---|---|
| <input type="checkbox"/> For your use | <input checked="" type="checkbox"/> For recordation | <input type="checkbox"/> Mail |
| <input type="checkbox"/> As requested | <input type="checkbox"/> For signature | <input checked="" type="checkbox"/> Deliver |
| <input checked="" type="checkbox"/> For review & comment | <input type="checkbox"/> For signature and notarization | <input type="checkbox"/> Pickup |
| <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Response required | <input type="checkbox"/> Overnight |
| <input type="checkbox"/> Other | <input type="checkbox"/> Email | <input type="checkbox"/> Via Fax # 757-259-4032 |

Remarks

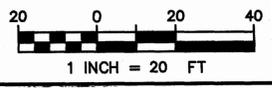
Copy To:
 Bob Oliver - Jamestown Contracting, LLC
 File

By: Chris Stephens
 Title: Survey CADD Technician
 Office: Virginia Beach



POCAHTONTAS TRAIL
(U.S. ROUTE 60)
R/W=80'

*** CAUTION ***
THE UTILITIES SHOWN ARE SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
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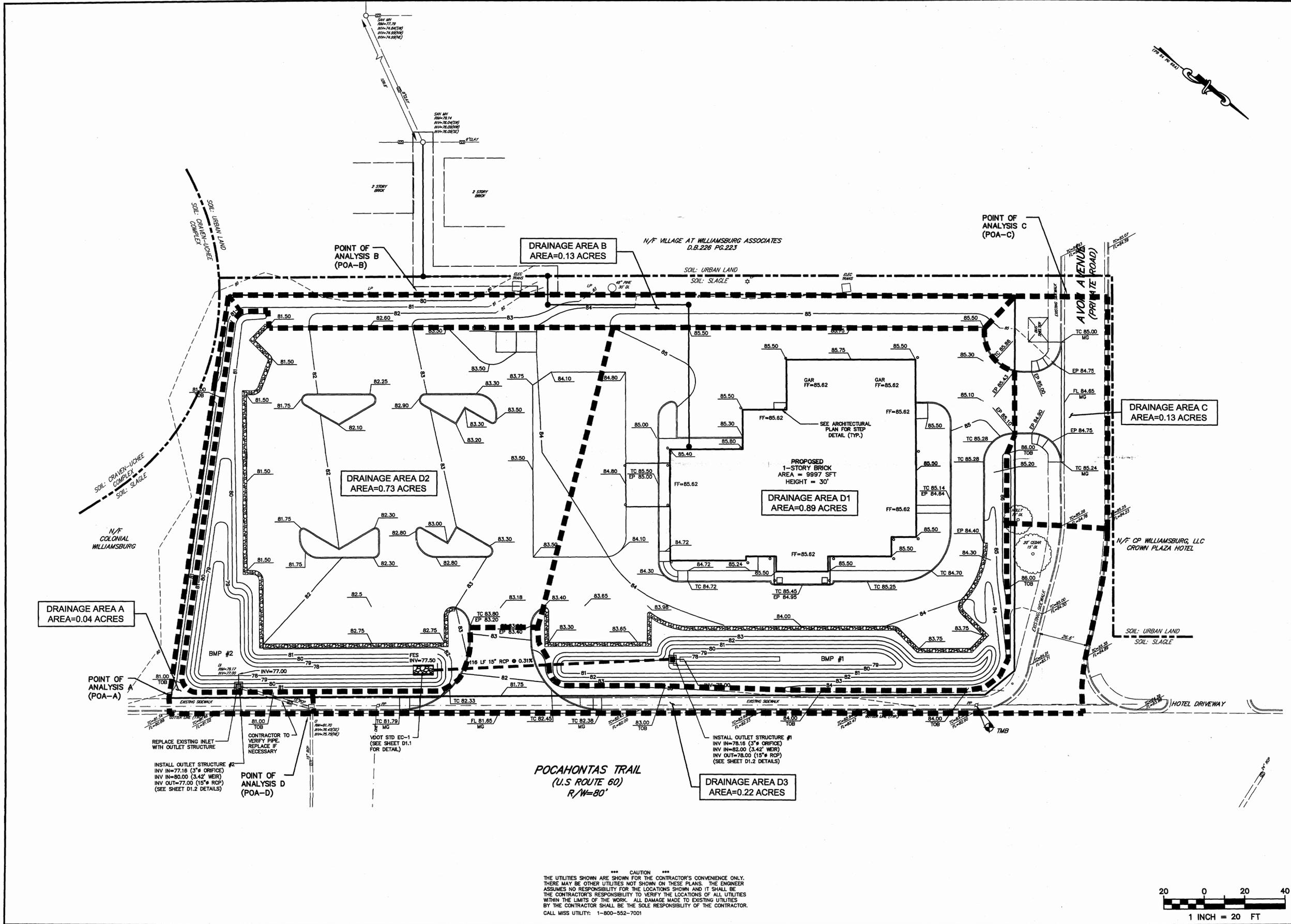
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DESIGNED	EBR	DATE	04/08/08
DRAWN	EBR		
CHECKED	DMW		
APPROVED	DMW		

PRE-DEVELOPMENT DRAINAGE AREA MAP OF WHITING FUNERAL HOME

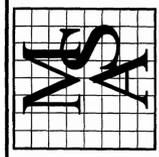
JAMES CITY COUNTY VIRGINIA

SHEET **DA.1**
1 of 2 Sheets
SCALE: GRAPHIC
PROJ. NO.: 05224



MSA, P.C.
 Environmental Sciences • Geosciences • Planning
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5033 Rouse Drive, Virginia Beach, VA 23462
 757-490-9264 (Tel) 757-490-0634 (Fax)
 www.msaonline.com
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DESIGNED	EBR
DRAWN	EBR
CHECKED	DMW
APPROVED	DMW
DATE	04/09/08



POST DEVELOPMENT DRAINAGE AREA MAP
 OF
WHITING FUNERAL HOME
 JAMES CITY COUNTY
 VIRGINIA

SHEET
DA.2
 2 of 2 Sheets
 SCALE: GRAPHIC
 PROJ. NO.: 05224

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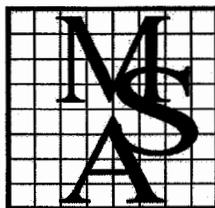
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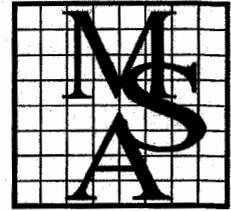
**EROSION & SEDIMENT CONTROL NARRATIVE
FOR
WHITING FUNERAL HOME**

**May 31, 2007
MSA#05224**

Prepared by:



**MSA, P.C.
5033 Rouse Drive
Virginia Beach, Virginia 23462
Telephone (757) 490-9264
Fax Number (757) 490-0634**



EROSION AND SEDIMENT CONTROL

Whiting Funeral Home
James City County, Virginia
File # SP-08-07
MSA File #05224

NARRATIVE

A. Project Description:

The Whiting Funeral Home is located at 7005 Pocahontas Trail in James City County, Virginia. The site is bordered to the East by Pocahontas trail; to the West by the Avon Avenue; and to the South by the N/F Village at Williamsburg Associates.

B. Existing Site Conditions:

The 1.85 acre parcel consists of funeral home along Pocahontas trail with woods and gravel comprising the remaining of the property. The site slopes towards the main road. Approximately 1.85 acres of the property will be impacted by this proposed development.

C. Critical Areas:

There are 10 - 15% slopes in the rear of the site adjacent to the N/F VILLAGE AT WILLIAMSBURG ASSOCIATES. The disturbance in this area will be minimized and protected with silt fence, tree protection and permanent seeding during construction.

D. Adjacent Areas:

There is an existing townhouse development to the South of the site and Pocahontas Trail (State Route 60) borders the site to the East. In addition to the required 20' side yard setback, silt fence and tree protection along with dust control measurements will be used as required to protect these areas. Construction access to Pocahontas Trail from the site will be restricted to the proposed stabilized construction entrance.

E. Off-Site Areas:

The fill required for this site will be imported from an approved borrow pit. All material removed from the site shall be disposed of in a state approved landfill. There will be no off-site impacts resulting from this development.

F. Soil Description:

See soil descriptions on Site Plan sheet C2.1.

G. Erosion and Sediment Control Measures:

A construction entrance will be provided for access to Whiting Funeral Home (State Route 60). Silt fence and tree protection will be used for perimeter protection along the limits of disturbance.

Erosion and Sediment Control Measures

Soil in the disturbed area must be modified to provide an optimum environment for seed germination and seeding growth. The surface soil must be loose enough for water infiltration and root penetration. The pH (acidity and alkalinity) of the soil must be such that it is not toxic and nutrients are available, usually between pH 6.0-7.0. Sufficient nutrient (added as fertilizer) must be prepared. After seed is in place, it must be protected with a mulch to hold moisture and modify temperature extremes, and to prevent erosion while seedlings are growing. For plant specifications please refer to the seeding schedule on sheet C6.0 of the site plan. On-site soils shall be tested for soil texture and pH levels to ensure values within the range of productive growth.

I. Structural Practices

1. **Outlet Protection – (STD & SPEC 3.18)**
Outlet Protection was selected to prevent scour at stormwater outlets, to protect the outlets structure, and to minimize the potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows.
2. **Silt Fence Barrier – (STD & SPEC 3.05)**
Silt fence was selected to intercept and detain small amounts of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the site. Silt Fence will be used along the perimeter of land disturbance.
3. **Tree Protection – (STD & SPEC 3.38)**
Tree protection was selected to ensure the preservation of desirable trees from mechanical and other injury during land disturbing and construction activity. Tree protection will be employed along the tree line.
4. **Temporary Construction Entrance – (STD & SPEC 3.02)**
A temporary stone construction entrance was selected to reduce the amount of mud transported onto paved public roads by motor vehicles or runoff. A Standard Construction Entrance shall be used at the entrance to the site.
5. **Storm Drain Inlet Protection – (STD & SPEC 3.07)**
Inlet protection was selected to prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area. Inlet protection will be used for the proposed inlet structures during construction.
6. **Temporary Sediment Trap – (STD & SPEC 3.13)**
Temporary Sediment Trap, which is a barrier with a controlled outfall, shall be used. Temporary sediment basin was selected to detain sediment-laden runoff from disturbed areas in “wet” and “dry” storage long enough for the majority of the sediment to settle out. All details and calculations for the proposed sediment trap are included with the site plan. The trap will serve an area of 1.85 AC and have a dry/wet storage requirement of 248 CY.

Note: The temporary sediment trap will be installed before any construction is begun. The trap and surrounding disturbed area will be seeded immediately to control sediment and erosion during construction. Only after all construction is completed will the sediment trap be converted to the permanent dry swale. This conversion will be coordinated during a dry weather period within the minimum time necessary to complete this task in order to reduce the risk of erosion of the site and sediment runoff.

II. Vegetative Practices

1. **Temporary Seeding – 3.31**
Temporary Seeding shall be used to reduce erosion and sedimentation by stabilizing disturbed areas that will not be brought to final grade for a period of more than 30 days. Temporary seeding will also reduce damage from sediment and runoff to downstream or off-site areas, and to provide protection to bare soils exposed during construction until permanent vegetative or other erosion control measures can be established. Seed shall be evenly applied with a broadcast seeder, drill, cultipacker seeder, or hydroseeder. Small grains shall be planted no more than 1 ½ inches deep. Small seeds, such as Kentucky Bluegrass, should be planted no more than ¼ inch deep. Other Grasses and Legumes should be planted from ¼ inch to ½ inch deep.
2. **Permanent Seeding – 3.32**

Permanent Seeding is the establishment of perennial vegetative cover on disturbed areas by planting seed. The purpose of permanent seeding is to reduce erosion and decrease sediment yield from disturbed areas. Permanently stabilized disturbed areas are economical, adaptable to site conditions, and allow selection of the most appropriate plant materials. Permanent seeding improves wildlife habitat and enhances natural beauty. Rate and time of application will be indicated in the and in the steep slope areas to protect the Skiffes Creek tributary from sediment. Inlet protection will be used to prevent sediment from entering the newly constructed storm drainage system.

H. Permanent Stabilization:

A seeding schedule has been provided on the site plans, and the contractor has been instructed to establish a permanent vegetative cover over any disturbed areas immediately after final grading. The vegetative cover shall be maintained throughout construction.

I. Stormwater Runoff Considerations:

The proposed improvements for the 1.85-acre Parcel will consist of Funeral Home with associated parking, driveway and utility improvements. The project site falls under the jurisdiction of James City County with regards to stormwater quantity and quality management. Based on the "James City County Guidelines for Design and Construction of Stormwater Management BMP's", the proposed development must comply with nonpoint source pollution control requirements for Chesapeake Bay Preservation areas for water quality. James City County requires 24-hour detention of the 1-year, 24-hour storm event for the water quantity management as well as safe conveyance of the higher event storms.

The dry swale facility has been routed for the 1-year, 2-year, 10-year and 100-year storm events. In all cases, the facility conveys the storm events with no adverse impact to the site or adjacent property. The ponding is restricted to the facility and the storm drainage conveyance systems. The proposed stormwater management facility's principle spillway discharge into a tributary to existing storm water sytem.

J. Stormwater and E & S Calculations:

Please see attached stormwater management calculations.

K. Maintenance:

The erosion and sediment control measures will be checked regularly and repaired as necessary. The contractor will be responsible for establishing and maintaining perimeter protection throughout construction. Any inadvertent erosion shall be repaired immediately and any inadvertent sedimentation shall be removed.

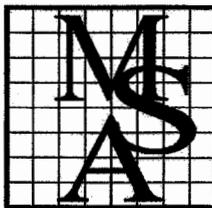
**GEOLOGICAL REPORT
FOR
WHITING FUNERAL HOME**

**May 31, 2007
MSA#05224**

SP-8-07



Prepared by:



**MSA, P.C.
5033 Rouse Drive
Virginia Beach, Virginia 23462
Telephone (757) 490-9264
Fax Number (757) 490-0634**

WHITING FUNERAL HOME
7005 POCAHONTAS TRAIL
JAMES CITY COUNTY, VIRGINIA

STORMWATER MANAGEMENT – HYDROGEOLOGICAL INVESTIGATION

Charles Hall, P.G.

Report Date: May 8, 2007

MSA PROJECT #05224

1. Three soil borings (HA-1, HA-2, HA-3) were conducted by hand auger to depths of 10.5-ft below ground surface (3/3/2006).
2. The general soil profile included 18" of topsoil overlying clay to depths of 7.5-ft to 8.25-ft below ground surface. The clay then grades into a clayey fine to medium grained sand.
3. The clay soil will not effectively permit vertical or lateral infiltration of stormwater. It is unsuitable for the bottom of an infiltrating BMP and should at least be removed.
4. The clayey soil below the clay layer is better for infiltration but still not recommended as it would be susceptible to loss of porosity due to sediment clogging over time and result in a reduced capacity to infiltrate stormwater. Thus, it would be best to avoid using this stratum as well for infiltration.

5. In short, it is recommended that the BMP design not rely on natural infiltration for stormwater management.

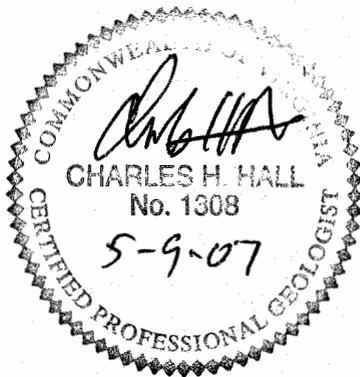
6. If the clayey sand stratum is utilized for the BMP bottom infiltration surface, the estimated saturated hydraulic conductivity of that soil is 0.05-ft/day based on experience and published values for similar soil textures. This value is a coefficient and is not directly equivalent to the rate which water will infiltrate.
7. Free water was not encountered in any of the borings. In addition, no indicators of a seasonal high water table were observed within 10.5-ft below the ground surface. These observations were made during a time of seasonal high water tables. The low chromas found in the clay strata are reflective of the clay's ability to retain water rather than an indicator of the free water table.

Notes:

- a) *The saturated hydraulic conductivity value is a coefficient that is related to the ability of the aquifer to transmit water. It is not equal to*

- the rate at which water will seep through the bottom and sidewalls of a BMP. Other factors are considered in that calculation.*
- b) *The saturated hydraulic conductivity is only valid for the soil conditions under which the tests were conducted. Site development activities and post-development activities can, and often do, decrease the conductivity and thus, the BMP's ability to infiltrate stormwater.*
 - c) *These activities include but are not limited to: compaction of soil by heavy equipment; failure to undercut all of the unsuitable soil recommended herein for removal; failure to provide adequate E&S controls at the BMP or its related structures.*

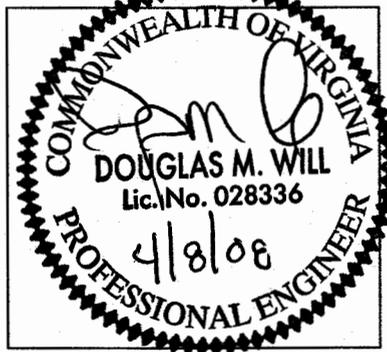
Due to unavoidable loss of porosity and permeability at the BMP bottom and sidewalls as a result of construction activities and or natural sediment inputs, a conservative factor of safety should be considered for values of conductivity in sizing the BMP. Thus, the recommended hydraulic conductivity value for use in BMP sizing calculations is 0.01 ft/day.



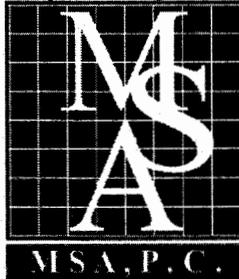


**STORMWATER MANAGEMENT
REPORT
FOR
WHITING FUNERAL HOME
JAMES CITY COUNTY, VA**

**April 8, 2008
JCC# SP-033-08; MSA# 05224**



Prepared by: EBR



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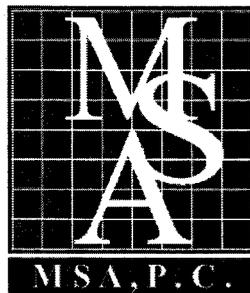
**5033 Rouse Drive
Virginia Beach, Virginia 23462
Telephone (757) 490-9264
Fax Number (757) 490-0634**

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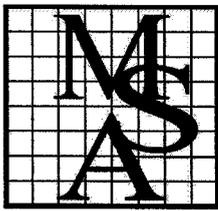
I. NARRATIVE

April 8, 2008
JCC# SP-033-08; MSA# 05224



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Introduction

The existing property is located at the southeastern corner of Avon Avenue and Pocahontas Trail (U.S. Route 60) in the James City County, Virginia. The site is bordered to the South by townhouses and to the East by wooded land.

The property consists of a total tract area of 1.85 acres and occupied by a two-story brick and frame dwelling, remains of concrete foundation, asphalt and gravel parking areas. The site has four drainage areas. The first drainage area drains southeasterly towards a low point along the southeastern property line. The second drainage area drains south towards a low point along the southwestern property line. The third drainage area drains northwesterly towards the gutter line of Avon Avenue. And, the fourth drainage area originates from the existing 2-story dwelling and drains towards north and east then ends into an existing stormwater inlet along the northwestern side of Pocahontas Trail.

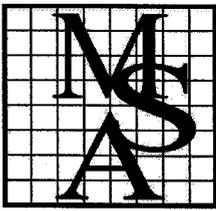
The applicant/owner of the property proposes to demolish all existing structures and appurtenances and replaced it with approximately 10,000 square feet, one-story brick building, paved driveway and parking areas, drainage facilities and utility improvements.

The site will be serviced by public water and sewer.

The purpose of this report is to present an analysis and calculations associated with the stormwater management aspects of the proposed development.

Site's Soil Type

Hydrologic Soil Group - C
Slagle fine sandy loam



Stormwater Management Design Criteria

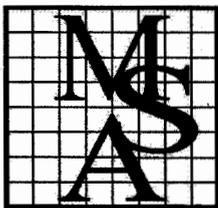
The proposed development will utilize a detention basin to enhance water quality and to control stormwater runoff rates during rainfall events. This report and the designs implemented on the site plan will demonstrate compliance with James City County Guidelines for Design and Construction of Stormwater Management BMP's and Chesapeake Bay Preservation Act standards, designed to reduce the impact and prevent nonpoint source pollution to areas downstream of this project site.

The U.S. Department of Agriculture, Soil Conservation Service Technical Release Number 55, Urban Hydrology for Small Watersheds (TR 55) methodology, was used to prepare this report. The CivilStorm software was used to calculate time of concentrations, runoff hydrographs, basin volumes, as well as basin routing hydrographs. The James City County 24-Hour rainfall depths used were 2.8, 3.5, 5.8 and 8.0 inches for the 1, 2, 10 and 100-year storm events, respectively, taken from VA Stormwater Management Manual. Runoff curve numbers (CN) for the undeveloped and developed conditions were taken from VDOT Drainage Manual, Chapter 6 Hydrology, Appendix 6H-3 to 5.

Analysis

As mentioned above, the subject site is currently occupied by a two-story brick and frame dwelling, remains of concrete foundation, asphalt and gravel parking areas. The existing site has four (4) drainage areas, Area **A**, **B**, **C** and **D** shown on the attached Drainage Area Maps. Drainage area **A** drains southeasterly towards a low point along the southeastern property line. Drainage area **B** drains south towards a low point along the southwestern property line. Drainage area **C** drains northwesterly towards the gutter line of Avon Avenue. And, Drainage area **D** drains towards north and east then ends into an existing stormwater inlet along the northwestern side of Pocahontas Trail. Under proposed conditions, the same low points and stormwater inlet will be used for points of analysis.

After construction, the majority of the stormwater runoff from the impervious area will be collected into the proposed onsite BMPs via sheet and overland flows. The BMPs will be utilized to enhance water quality and to control stormwater runoff rates during rainfall events to reduce the water quantity post-development runoff characteristics, as nearly as practicable, equal to or better than the pre-development runoff characteristics.



Water Quality

The two BMPs have been designed to include a 3" dewatering PVC pipe for the water quality storm. The entire one (1) year storm as well as the two (2) year storm flow is routed through only the 3" pipe in the outlet structure.

Water Quantity

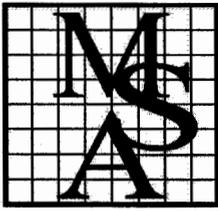
Water quantity management has been analyzed for the 2 and 10-year storm events. For drainage area A, B, C and D, the post-development rates of runoff for the 2 and 10-year storm events have been reduced to less than the pre-development rates of runoff.

Drainage Runoff Summary:

	Storm Year	Pre-Development Condition Rates (cfs)	Post-Development Condition Rates (cfs)
Drainage Area A	2	0.31	0.11
	10	0.75	0.23
Drainage Area B	2	1.44	0.24
	10	2.93	0.59
Drainage Area C	2	0.65	0.49
	10	1.23	0.89
Drainage Area D	2	2.99	1.03 *
	10	6.00	2.51*

* Peak outflow from BMP #2 plus peak outflow from sub-drainage area D3 (See II.B.2.c for peak runoff rates).

The proposed outlet structures have been designed to safely pass the 100-year storm events as shown on the attached routing hydrographs.



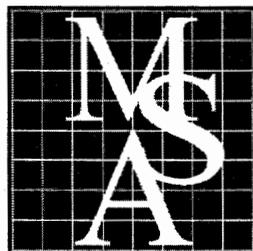
Conclusion

The proposed stormwater management facilities provide both water quality and quantity management in accordance with the James City County and CBPA guidelines.

The required water quality volume is provided in accordance with the non-point source pollution control requirements for Chesapeake Bay Preservation areas for water quality.

II. DRAINAGE AREA INFORMATION

April 8, 2008
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A. EXISTING CONDITIONS

Pre-Development Drainage Area A

Existing Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.03	2.50
Woods (Good Condition) - Soil C	70	0.11	7.70
Lawn (Good Condition) - Soil C	74	0.02	1.48

Total Area = 0.16
Total CNxArea = 11.68

Weighted CN = 75

Pre-Development Drainage Area B

Existing Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.22	21.48
Woods (Good Condition) - Soil C	70	0.05	3.30
Lawn (Good Condition) - Soil C	74	0.23	16.89

Total Area = 0.49
Total CNxArea = 41.68

Weighted CN = **84**

Pre-Development Drainage Area C

Existing Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.10	10.28
Lawn (Good Condition) - Soil C	74	0.08	5.98

Total Area = 0.19
Total CNxArea = 16.26

Weighted CN = **88**

Pre-Development Drainage Area D

Existing Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.59	57.82
Woods (Good Condition) - Soil C	70	0.07	4.89
Lawn (Good Condition) - Soil C	74	0.63	46.62

Total Area = 1.29
Total CNxArea = 109.33

Weighted CN = **85**

Tc Data Collection

Runoff

TR-55 Sheet Flow

Hydraulic Length	65.00	ft
Manning's n	0.240	
Slope	0.010	ft/ft
2 Year 24 Hour Depth	3.500	in

TR-55 Shallow Concentrated Flow

Hydraulic Length	400.00	ft
Is Paved	False	
Slope	0.010	ft/ft

Calculation Executive Summary

Scenario

Label 2 Year Storm Event

Storm Event

Label 2 Year Rainfall Runoff

Global Storm Event 35: SCS 3.5 in Type II-24 hr

Return Event 2 years

Calculation Executive Summary

Total Inflow Volume	0.35 ac-ft
Total System Outflow Volume	0.35 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	2676

Catchment FlexTable:
 Pre-Dev Drainage Area
 2 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.16	75	0.10	0.31	11.95
Drain Area B	0.49	84	0.10	1.44	11.93
Drain Area C	0.19	88	0.10	0.65	11.93
Drain Area D	1.29	85	0.28	2.99	12.05

Calculation Executive Summary

Scenario

Label 10 Year Storm Event

Storm Event

Label 10 Year Rainfall Runoff

Global Storm Event 37: SCS 5.8 in Type II-24 hr

Return Event 10 years

Calculation Executive Summary

Total Inflow Volume	0.72 ac-ft
Total System Outflow Volume	0.72 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	3088

Catchment FlexTable:
 Pre-Dev Drainage Area
 10 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.16	75	0.10	0.75	11.93
Drain Area B	0.49	84	0.10	2.93	11.93
Drain Area C	0.19	88	0.10	1.23	11.93
Drain Area D	1.29	85	0.28	6.00	12.05

Calculation Executive Summary

Scenario

Label 100 Year Storm Event

Storm Event

Label 100 Year Rainfall Runoff

Global Storm Event 39: SCS 8.0 in Type II-24 hr

Return Event 100 years

Calculation Executive Summary

Total Inflow Volume	1.09 ac-ft
Total System Outflow Volume	1.09 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	3292

Catchment FlexTable:
 Pre-Dev Drainage Area
 100 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.16	75	0.10	1.21	11.93
Drain Area B	0.49	84	0.10	4.37	11.93
Drain Area C	0.19	88	0.10	1.79	11.93
Drain Area D	1.29	85	0.28	8.90	12.05

B. PROPOSED CONDITIONS

DRAINAGE AREA A, B & C
HYDROLOGY

Post Development Drainage Area A

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.01	1.27
Lawn (Good Condition) - Soil C	74	0.03	1.90

Total Area = 0.04
Total CNxArea = 3.17

Weighted CN = **82**

Post Development Drainage Area B

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Lawn (Good Condition) - Soil C	74	0.13	9.98

Total Area = 0.13
Total CNxArea = 9.98

Weighted CN = 74

Post Development Drainage Area C

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.10	9.31
Lawn (Good Condition) - Soil C	74	0.04	2.89

Total Area = 0.13
Total CNxArea = 12.21

Weighted CN = 91

Calculation Executive Summary

Scenario

Label 2 Year Storm Event

Storm Event

Label 2 Year Rainfall Runoff
Global Storm Event 35: SCS 3.5 in Type II-24 hr
Return Event 2 years

Calculation Executive Summary

Total Inflow Volume	0.05 ac-ft
Total System Outflow Volume	0.05 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	2091

Catchment FlexTable:
Post Dev Drainage Area
2 Year Storm Event
Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.04	82	0.10	0.11	11.93
Drain Area B	0.13	74	0.10	0.24	11.95
Drain Area C	0.13	91	0.10	0.49	11.93

Calculation Executive Summary

Scenario

Label 10 Year Storm Event

Storm Event

Label 10 Year Rainfall Runoff

Global Storm Event 37: SCS 5.8 in Type II-24 hr

Return Event 10 years

Calculation Executive Summary

Total Inflow Volume	0.10 ac-ft
Total System Outflow Volume	0.10 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	2391

Catchment FlexTable:
 Post Dev Drainage Area
 10 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	To (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.04	82	0.10	0.23	11.93
Drain Area B	0.13	74	0.10	0.59	11.92
Drain Area C	0.13	91	0.10	0.89	11.93

Calculation Executive Summary

Scenario

Label 100 Year Storm Event

Storm Event

Label 100 Year Rainfall Runoff
Global Storm Event 39: SCS 8.0 in Type II-24 hr
Return Event 100 years

Calculation Executive Summary

Total Inflow Volume	0.15 ac-ft
Total System Outflow Volume	0.15 ac-ft
Total System Overflow Volume	0.00 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	0.00 ac-ft
Continuity Error	0.0 %
Total N-R Iterations	2541

Catchment FlexTable:
 Post Dev Drainage Area
 100 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Drain Area A	0.04	82	0.10	0.35	11.93
Drain Area B	0.13	74	0.10	0.97	11.93
Drain Area C	0.13	91	0.10	1.26	11.93

DRAINAGE AREA D
HYDROLOGY

Post Development Sub-Drainage Area D1

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.62	60.78
Lawn (Good Condition) - Soil C	74	0.27	19.91

Total Area = 0.89
Total CNxArea = 80.69

Weighted CN = **91**

Post Development Sub-Drainage Area D2

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.47	46.10
Lawn (Good Condition) - Soil C	74	0.26	18.98

Total Area = 0.73
Total CNxArea = 65.08

Weighted CN = **90**

Post Development Sub-Drainage Area D3

Proposed Conditions - Curve Number Weighting

Description	CN	Area (Acres)	CNxArea
Impervious Cov - Soil C	98	0.16	15.99
Lawn (Good Condition) - Soil C	74	0.06	4.17

Total Area = 0.22
Total CNxArea = 20.15

Weighted CN = **92**

Calculation Executive Summary

Scenario

Label 1 Year Storm Event

Storm Event

Label 1 Year Rainfall Runoff

Global Storm Event 30: SCS 2.8 in Type II-24 hr

Return Event 1 years

Calculation Executive Summary

Total Inflow Volume	0.29227 ac-ft
Total System Outflow Volume	0.29623 ac-ft
Total System Overflow Volume	0.00000 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	-0.00287 ac-ft
Continuity Error	0.4 %
Total N-R Iterations	3380

Catchment FlexTable:
 Post Dev Drainage Area
 1 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Sub-Drain Area D1	0.890	91.000	0.10	2.51	11.93
Sub-Drain Area D2	0.730	90.000	0.10	1.98	11.93
Sub-Drain Area D3	0.220	92.000	0.10	0.65	11.93

Calculation Executive Summary

Scenario

Label 2 Year Storm Event

Storm Event

Label 2 Year Rainfall Runoff

Global Storm Event 32: SCS 3.5 in Type II-24 hr

Return Event 2 years

Calculation Executive Summary

Total Inflow Volume	0.39047 ac-ft
Total System Outflow Volume	0.39562 ac-ft
Total System Overflow Volume	0.00000 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	-0.00369 ac-ft
Continuity Error	0.4 %
Total N-R Iterations	3458

Catchment FlexTable:
 Post Dev Drainage Area
 2 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Sub-Drain Area D1	0.890	91.000	0.10	3.35	11.93
Sub-Drain Area D2	0.730	90.000	0.10	2.66	11.93
Sub-Drain Area D3	0.220	92.000	0.10	0.85	11.93

Calculation Executive Summary

Scenario

Label 10 Year Storm Event

Storm Event

Label 10 Year Rainfall Runoff

Global Storm Event 34: SCS 5.8 in Type II-24 hr

Return Event 10 years

Calculation Executive Summary

Total Inflow Volume	0.73022 ac-ft
Total System Outflow Volume	0.73811 ac-ft
Total System Overflow Volume	0.00000 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	-0.00562 ac-ft
Continuity Error	0.3 %
Total N-R Iterations	3616

Catchment FlexTable:
 Post Dev Drainage Area
 10 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Sub-Drain Area D1	0.890	91.000	0.10	6.07	11.93
Sub-Drain Area D2	0.730	90.000	0.10	4.90	11.93
Sub-Drain Area D3	0.220	92.000	0.10	1.52	11.93

Calculation Executive Summary

Scenario

Label 100 Year Storm Event

Storm Event

Label 100 Year Rainfall Runoff
Global Storm Event 36: SCS 8.0 in Type II-24 hr
Return Event 100 years

Calculation Executive Summary

Total Inflow Volume	1.06163 ac-ft
Total System Outflow Volume	1.07069 ac-ft
Total System Overflow Volume	0.00000 ac-ft
Total Gutter Volume Change	(N/A) ac-ft
Total System Volume Change	-0.00644 ac-ft
Continuity Error	0.2 %
Total N-R Iterations	3700

Catchment FlexTable:
 Post Dev Drainage Area
 100 Year Storm Event
 Report

Drainage Area	Area (acres)	SCS CN	Tc (hours)	Peak Flow (ft ³ /s)	Time To Peak (hours)
Sub-Drain Area D1	0.890	91.000	0.10	8.64	11.93
Sub-Drain Area D2	0.730	90.000	0.10	7.02	11.93
Sub-Drain Area D3	0.220	92.000	0.10	2.15	11.93

**ELEVATION/STORAGE DATA
FOR BMP #1**

Elevation-Area Curve

Physical

Elevation (ft)	Area (acres)	Percent Void Space (%)
78.00	0.000	100.0
79.00	0.017	100.0
80.00	0.028	100.0
81.00	0.049	100.0
82.00	0.069	100.0
83.00	0.092	100.0

**OUTLET STRUCTURE #1
CONFIGURATION**

Control Structure

Detailed Report: Outlet Structure #1

<General>

ID	25
Label	Outlet Structure #1

Outlet Structure

Maximum Iterations	30
Minimum Hw Tolerance	0.01 ft
Maximum Hw Tolerance	0.50 ft
Minimum Tw Tolerance	0.01 ft
Maximum Tw Tolerance	0.50 ft
Minimum Q Tolerance	0.001 ft ³ /s
Maximum Q Tolerance	10.000 ft ³ /s

Orifice

Flow Direction	Forward and Reverse Flow
Elevation	78.16 ft
# of Openings	1
Orifice Coefficient	0.600
Orifice	Circular Orifice
Orifice Diameter	3.0 in

Weir

Flow Direction	Forward and Reverse Flow
Elevation	82.00 ft
Weir Coefficient	3.33 US
Weir	Rectangular Weir
Weir Length	3.42 ft
Rectangular Weir	Supressed

ROUTING HYDROGRAPHS

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Volume (ac-ft)	BMP 1 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	78.00
0.50	0.00	0.00017	0.00	78.03
1.00	0.00	0.00029	0.00	78.05
1.50	0.00	0.00040	0.00	78.07
2.00	0.00	0.00050	0.00	78.09
2.50	0.00	0.00058	0.00	78.10
3.00	0.00	0.00066	0.00	78.12
3.50	0.00	0.00073	0.00	78.13
4.00	0.00	0.00080	0.00	78.14
4.50	0.00	0.00087	0.00	78.15
5.00	0.00	0.00093	0.00	78.16
5.50	0.00	0.00099	0.00	78.17
6.00	0.00	0.00103	0.01	78.18
6.50	0.00	0.00097	0.00	78.17
7.00	0.01	0.00101	0.01	78.18
7.50	0.01	0.00106	0.01	78.19
8.00	0.01	0.00111	0.01	78.20
8.50	0.02	0.00119	0.02	78.21
9.00	0.02	0.00130	0.02	78.23
9.50	0.03	0.00140	0.03	78.25
10.00	0.04	0.00154	0.04	78.27
10.52	0.06	0.00181	0.05	78.32
11.02	0.09	0.00225	0.07	78.40
11.52	0.18	0.00316	0.12	78.56
12.02	2.02	0.04666	0.30	80.49
12.52	0.22	0.05553	0.29	80.73
13.02	0.14	0.05159	0.27	80.62
13.52	0.11	0.04613	0.25	80.48

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Volume (ac-ft)	BMP 1 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Hydraulic Grade (ft)
14.02	0.09	0.03979	0.23	80.31
14.52	0.08	0.03291	0.22	80.13
15.02	0.07	0.02664	0.19	79.94
15.52	0.06	0.02271	0.17	79.77
16.02	0.05	0.01884	0.16	79.59
16.52	0.05	0.01476	0.14	79.41
17.02	0.05	0.01139	0.11	79.26
17.52	0.04	0.00828	0.11	79.12
18.02	0.04	0.00543	0.11	78.96
18.52	0.04	0.00446	0.10	78.79
19.02	0.04	0.00352	0.08	78.62
19.52	0.03	0.00237	0.08	78.42
20.02	0.03	0.00156	0.04	78.28
20.52	0.03	0.00144	0.03	78.25
21.02	0.03	0.00142	0.03	78.25
21.52	0.03	0.00141	0.03	78.25
22.02	0.03	0.00140	0.03	78.25
22.52	0.03	0.00139	0.03	78.25
23.02	0.03	0.00138	0.03	78.24
23.52	0.03	0.00137	0.03	78.24
24.02	0.02	0.00136	0.03	78.24
24.52	0.00	0.00094	0.00	78.17
25.02	0.00	0.00092	0.00	78.16
25.52	0.00	0.00092	0.00	78.16
26.02	0.00	0.00092	0.00	78.16
26.52	0.00	0.00092	0.00	78.16
27.02	0.00	0.00092	0.00	78.16
27.52	0.00	0.00092	0.00	78.16

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Volume (ac-ft)	BMP 1 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00092	0.00	78.16
28.52	0.00	0.00092	0.00	78.16
29.02	0.00	0.00092	0.00	78.16
29.52	0.00	0.00092	0.00	78.16
30.02	0.00	0.00092	0.00	78.16
30.52	0.00	0.00092	0.00	78.16
31.02	0.00	0.00092	0.00	78.16
31.52	0.00	0.00092	0.00	78.16
32.02	0.00	0.00092	0.00	78.16
32.52	0.00	0.00092	0.00	78.16
33.02	0.00	0.00092	0.00	78.16
33.52	0.00	0.00092	0.00	78.16
34.02	0.00	0.00092	0.00	78.16
34.52	0.00	0.00092	0.00	78.16
35.02	0.00	0.00092	0.00	78.16
35.52	0.00	0.00092	0.00	78.16
36.02	0.00	0.00092	0.00	78.16
36.52	0.00	0.00092	0.00	78.16
37.02	0.00	0.00092	0.00	78.16
37.52	0.00	0.00092	0.00	78.16
38.00	0.00	0.00092	0.00	78.16
38.50	0.00	0.00092	0.00	78.16
39.00	0.00	0.00092	0.00	78.16
39.50	0.00	0.00092	0.00	78.16
40.00	0.00	0.00092	0.00	78.16
40.50	0.00	0.00092	0.00	78.16
41.00	0.00	0.00092	0.00	78.16
41.50	0.00	0.00092	0.00	78.16

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Volume (ac-ft)	BMP 1 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 1 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00092	0.00	78.16
42.50	0.00	0.00092	0.00	78.16
43.00	0.00	0.00092	0.00	78.16
43.50	0.00	0.00092	0.00	78.16
44.00	0.00	0.00092	0.00	78.16
44.50	0.00	0.00092	0.00	78.16
45.00	0.00	0.00092	0.00	78.16
45.50	0.00	0.00092	0.00	78.16
46.00	0.00	0.00092	0.00	78.16
46.50	0.00	0.00092	0.00	78.16
47.00	0.00	0.00092	0.00	78.16
47.50	0.00	0.00092	0.00	78.16
48.00	0.00	0.00092	0.00	78.16

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Volume (ac-ft)	BMP 1 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	78.00
0.50	0.00	0.00017	0.00	78.03
1.00	0.00	0.00030	0.00	78.05
1.50	0.00	0.00040	0.00	78.07
2.00	0.00	0.00050	0.00	78.09
2.50	0.00	0.00058	0.00	78.10
3.00	0.00	0.00066	0.00	78.12
3.50	0.00	0.00074	0.00	78.13
4.00	0.00	0.00081	0.00	78.14
4.50	0.00	0.00087	0.00	78.15
5.00	0.00	0.00094	0.00	78.17
5.50	0.00	0.00098	0.00	78.17
6.00	0.01	0.00103	0.01	78.18
6.50	0.01	0.00109	0.01	78.19
7.00	0.01	0.00115	0.01	78.20
7.50	0.02	0.00121	0.02	78.21
8.00	0.02	0.00128	0.02	78.23
8.50	0.03	0.00139	0.03	78.25
9.00	0.04	0.00156	0.04	78.27
9.50	0.05	0.00169	0.04	78.30
10.00	0.06	0.00188	0.05	78.33
10.52	0.09	0.00225	0.08	78.40
11.02	0.14	0.00283	0.11	78.50
11.52	0.26	0.00415	0.15	78.73
12.02	2.66	0.06410	0.31	80.95
12.52	0.29	0.08104	0.30	81.26
13.02	0.19	0.07779	0.29	81.20
13.52	0.14	0.07207	0.28	81.10

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Volume (ac-ft)	BMP 1 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Hydraulic Grade (ft)
14.02	0.11	0.06531	0.27	80.98
14.52	0.10	0.06021	0.25	80.85
15.02	0.09	0.05490	0.24	80.71
15.52	0.08	0.04930	0.23	80.56
16.02	0.07	0.04336	0.21	80.41
16.52	0.06	0.03724	0.20	80.24
17.02	0.06	0.03082	0.18	80.08
17.52	0.06	0.02585	0.16	79.91
18.02	0.05	0.02259	0.14	79.76
18.52	0.05	0.01942	0.14	79.62
19.02	0.05	0.01590	0.13	79.46
19.52	0.04	0.01245	0.11	79.30
20.02	0.04	0.00933	0.10	79.16
20.52	0.04	0.00594	0.11	79.01
21.02	0.04	0.00477	0.10	78.84
21.52	0.04	0.00382	0.08	78.67
22.02	0.04	0.00281	0.08	78.50
22.52	0.04	0.00176	0.05	78.31
23.02	0.03	0.00153	0.04	78.27
23.52	0.03	0.00150	0.03	78.27
24.02	0.03	0.00149	0.03	78.26
24.52	0.00	0.00095	0.00	78.17
25.02	0.00	0.00092	0.00	78.16
25.52	0.00	0.00092	0.00	78.16
26.02	0.00	0.00092	0.00	78.16
26.52	0.00	0.00092	0.00	78.16
27.02	0.00	0.00092	0.00	78.16
27.52	0.00	0.00092	0.00	78.16

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Volume (ac-ft)	BMP 1 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00092	0.00	78.16
28.52	0.00	0.00092	0.00	78.16
29.02	0.00	0.00092	0.00	78.16
29.52	0.00	0.00092	0.00	78.16
30.02	0.00	0.00092	0.00	78.16
30.52	0.00	0.00092	0.00	78.16
31.02	0.00	0.00092	0.00	78.16
31.52	0.00	0.00092	0.00	78.16
32.02	0.00	0.00092	0.00	78.16
32.52	0.00	0.00092	0.00	78.16
33.02	0.00	0.00092	0.00	78.16
33.52	0.00	0.00092	0.00	78.16
34.02	0.00	0.00092	0.00	78.16
34.52	0.00	0.00092	0.00	78.16
35.02	0.00	0.00092	0.00	78.16
35.52	0.00	0.00092	0.00	78.16
36.02	0.00	0.00092	0.00	78.16
36.52	0.00	0.00092	0.00	78.16
37.02	0.00	0.00092	0.00	78.16
37.52	0.00	0.00092	0.00	78.16
38.00	0.00	0.00092	0.00	78.16
38.50	0.00	0.00092	0.00	78.16
39.00	0.00	0.00092	0.00	78.16
39.50	0.00	0.00092	0.00	78.16
40.00	0.00	0.00092	0.00	78.16
40.50	0.00	0.00092	0.00	78.16
41.00	0.00	0.00092	0.00	78.16
41.50	0.00	0.00092	0.00	78.16

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Volume (ac-ft)	BMP 1 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 2 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00092	0.00	78.16
42.50	0.00	0.00092	0.00	78.16
43.00	0.00	0.00092	0.00	78.16
43.50	0.00	0.00092	0.00	78.16
44.00	0.00	0.00092	0.00	78.16
44.50	0.00	0.00092	0.00	78.16
45.00	0.00	0.00092	0.00	78.16
45.50	0.00	0.00092	0.00	78.16
46.00	0.00	0.00092	0.00	78.16
46.50	0.00	0.00092	0.00	78.16
47.00	0.00	0.00092	0.00	78.16
47.50	0.00	0.00092	0.00	78.16
48.00	0.00	0.00092	0.00	78.16

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Volume (ac-ft)	BMP 1 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	78.00
0.50	0.00	0.00014	0.00	78.03
1.00	0.00	0.00025	0.00	78.04
1.50	0.00	0.00035	0.00	78.06
2.00	0.00	0.00043	0.00	78.08
2.50	0.00	0.00051	0.00	78.09
3.00	0.00	0.00058	0.00	78.10
3.50	0.00	0.00076	0.00	78.13
4.00	0.01	0.00104	0.01	78.18
4.50	0.02	0.00115	0.01	78.20
5.00	0.02	0.00125	0.02	78.22
5.50	0.03	0.00136	0.03	78.24
6.00	0.03	0.00147	0.03	78.26
6.50	0.04	0.00159	0.04	78.28
7.00	0.05	0.00171	0.05	78.30
7.50	0.06	0.00183	0.05	78.32
8.00	0.06	0.00195	0.06	78.34
8.50	0.08	0.00217	0.07	78.38
9.00	0.10	0.00250	0.09	78.44
9.50	0.11	0.00276	0.10	78.49
10.00	0.14	0.00311	0.12	78.55
10.52	0.20	0.00396	0.14	78.70
11.02	0.29	0.00524	0.18	78.92
11.52	0.53	0.01347	0.21	79.35
12.02	4.73	0.13480	0.33	82.13
12.52	0.50	0.12768	0.66	82.04
13.02	0.32	0.12481	0.35	82.00
13.52	0.24	0.12293	0.33	81.97

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Volume (ac-ft)	BMP 1 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Hydraulic Grade (ft)
14.02	0.19	0.11898	0.32	81.90
14.52	0.17	0.11383	0.32	81.82
15.02	0.15	0.10815	0.31	81.72
15.52	0.14	0.10195	0.30	81.61
16.02	0.12	0.09520	0.29	81.50
16.52	0.11	0.08810	0.28	81.38
17.02	0.10	0.08093	0.27	81.26
17.52	0.10	0.07364	0.26	81.13
18.02	0.09	0.06618	0.25	81.00
18.52	0.09	0.06117	0.23	80.87
19.02	0.08	0.05614	0.22	80.74
19.52	0.07	0.05094	0.21	80.60
20.02	0.07	0.04549	0.20	80.46
20.52	0.06	0.04014	0.18	80.32
21.02	0.06	0.03477	0.18	80.18
21.52	0.06	0.02895	0.17	80.03
22.02	0.06	0.02523	0.15	79.88
22.52	0.06	0.02246	0.13	79.75
23.02	0.06	0.01974	0.13	79.63
23.52	0.06	0.01672	0.14	79.50
24.02	0.05	0.01361	0.12	79.36
24.52	0.00	0.00896	0.10	79.15
25.02	0.00	0.00527	0.09	78.93
25.52	0.00	0.00394	0.07	78.70
26.02	0.00	0.00250	0.06	78.44
26.52	0.00	0.00108	0.01	78.19
27.02	0.00	0.00092	0.00	78.16
27.52	0.00	0.00092	0.00	78.16

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Volume (ac-ft)	BMP 1 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00092	0.00	78.16
28.52	0.00	0.00092	0.00	78.16
29.02	0.00	0.00092	0.00	78.16
29.52	0.00	0.00092	0.00	78.16
30.02	0.00	0.00092	0.00	78.16
30.52	0.00	0.00092	0.00	78.16
31.02	0.00	0.00092	0.00	78.16
31.52	0.00	0.00092	0.00	78.16
32.02	0.00	0.00092	0.00	78.16
32.52	0.00	0.00092	0.00	78.16
33.02	0.00	0.00092	0.00	78.16
33.52	0.00	0.00092	0.00	78.16
34.02	0.00	0.00092	0.00	78.16
34.52	0.00	0.00092	0.00	78.16
35.02	0.00	0.00092	0.00	78.16
35.52	0.00	0.00092	0.00	78.16
36.02	0.00	0.00092	0.00	78.16
36.52	0.00	0.00092	0.00	78.16
37.02	0.00	0.00092	0.00	78.16
37.52	0.00	0.00092	0.00	78.16
38.00	0.00	0.00092	0.00	78.16
38.50	0.00	0.00092	0.00	78.16
39.00	0.00	0.00092	0.00	78.16
39.50	0.00	0.00092	0.00	78.16
40.00	0.00	0.00092	0.00	78.16
40.50	0.00	0.00092	0.00	78.16
41.00	0.00	0.00092	0.00	78.16
41.50	0.00	0.00092	0.00	78.16

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Volume (ac-ft)	BMP 1 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 10 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00092	0.00	78.16
42.50	0.00	0.00092	0.00	78.16
43.00	0.00	0.00092	0.00	78.16
43.50	0.00	0.00092	0.00	78.16
44.00	0.00	0.00092	0.00	78.16
44.50	0.00	0.00092	0.00	78.16
45.00	0.00	0.00092	0.00	78.16
45.50	0.00	0.00092	0.00	78.16
46.00	0.00	0.00092	0.00	78.16
46.50	0.00	0.00092	0.00	78.16
47.00	0.00	0.00092	0.00	78.16
47.50	0.00	0.00092	0.00	78.16
48.00	0.00	0.00092	0.00	78.16

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Volume (ac-ft)	BMP 1 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	78.00
0.50	0.00	0.00015	0.00	78.03
1.00	0.00	0.00027	0.00	78.05
1.50	0.00	0.00038	0.00	78.07
2.00	0.00	0.00047	0.00	78.08
2.50	0.00	0.00058	0.00	78.10
3.00	0.01	0.00104	0.01	78.18
3.50	0.02	0.00121	0.02	78.21
4.00	0.03	0.00135	0.03	78.24
4.50	0.04	0.00150	0.03	78.26
5.00	0.05	0.00166	0.04	78.29
5.50	0.06	0.00182	0.05	78.32
6.00	0.07	0.00199	0.06	78.35
6.50	0.08	0.00216	0.07	78.38
7.00	0.09	0.00233	0.08	78.41
7.50	0.10	0.00250	0.09	78.44
8.00	0.11	0.00267	0.10	78.47
8.50	0.13	0.00298	0.11	78.53
9.00	0.17	0.00359	0.13	78.63
9.50	0.18	0.00418	0.15	78.74
10.00	0.22	0.00483	0.16	78.85
10.52	0.30	0.00746	0.19	79.08
11.02	0.43	0.01534	0.20	79.43
11.52	0.78	0.02881	0.24	80.02
12.02	6.67	0.16700	6.61	82.53
12.52	0.71	0.12796	0.84	82.04
13.02	0.45	0.12564	0.48	82.01
13.52	0.34	0.12482	0.36	82.00

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Volume (ac-ft)	BMP 1 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Hydraulic Grade (ft)
14.02	0.27	0.12370	0.33	81.98
14.52	0.24	0.12096	0.33	81.94
15.02	0.21	0.11743	0.32	81.88
15.52	0.19	0.11313	0.32	81.80
16.02	0.17	0.10805	0.31	81.72
16.52	0.15	0.10242	0.30	81.62
17.02	0.15	0.09659	0.29	81.52
17.52	0.14	0.09058	0.28	81.42
18.02	0.13	0.08443	0.27	81.31
18.52	0.12	0.07812	0.26	81.21
19.02	0.11	0.07160	0.25	81.10
19.52	0.10	0.06521	0.24	80.98
20.02	0.09	0.06066	0.23	80.86
20.52	0.09	0.05603	0.22	80.74
21.02	0.09	0.05140	0.21	80.62
21.52	0.09	0.04675	0.20	80.49
22.02	0.09	0.04224	0.19	80.38
22.52	0.08	0.03789	0.18	80.26
23.02	0.08	0.03336	0.18	80.14
23.52	0.08	0.02837	0.17	80.01
24.02	0.07	0.02545	0.15	79.89
24.52	0.00	0.02093	0.12	79.69
25.02	0.00	0.01620	0.12	79.47
25.52	0.00	0.01153	0.10	79.26
26.02	0.00	0.00724	0.09	79.07
26.52	0.00	0.00486	0.08	78.86
27.02	0.00	0.00355	0.06	78.63
27.52	0.00	0.00202	0.05	78.36

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Multiple Element Graph Table Report

Time (hours)	BMP 1 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Volume (ac-ft)	BMP 1 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00098	0.00	78.17
28.52	0.00	0.00092	0.00	78.16
29.02	0.00	0.00092	0.00	78.16
29.52	0.00	0.00092	0.00	78.16
30.02	0.00	0.00092	0.00	78.16
30.52	0.00	0.00092	0.00	78.16
31.02	0.00	0.00092	0.00	78.16
31.52	0.00	0.00092	0.00	78.16
32.02	0.00	0.00092	0.00	78.16
32.52	0.00	0.00092	0.00	78.16
33.02	0.00	0.00092	0.00	78.16
33.52	0.00	0.00092	0.00	78.16
34.02	0.00	0.00092	0.00	78.16
34.52	0.00	0.00092	0.00	78.16
35.02	0.00	0.00092	0.00	78.16
35.52	0.00	0.00092	0.00	78.16
36.02	0.00	0.00092	0.00	78.16
36.52	0.00	0.00092	0.00	78.16
37.02	0.00	0.00092	0.00	78.16
37.52	0.00	0.00092	0.00	78.16
38.00	0.00	0.00092	0.00	78.16
38.50	0.00	0.00092	0.00	78.16
39.00	0.00	0.00092	0.00	78.16
39.50	0.00	0.00092	0.00	78.16
40.00	0.00	0.00092	0.00	78.16
40.50	0.00	0.00092	0.00	78.16
41.00	0.00	0.00092	0.00	78.16
41.50	0.00	0.00092	0.00	78.16

Multiple Element Graph Table Report

Time (hours)	BMP 1 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Volume (ac-ft)	BMP 1 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 1 - 100 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00092	0.00	78.16
42.50	0.00	0.00092	0.00	78.16
43.00	0.00	0.00092	0.00	78.16
43.50	0.00	0.00092	0.00	78.16
44.00	0.00	0.00092	0.00	78.16
44.50	0.00	0.00092	0.00	78.16
45.00	0.00	0.00092	0.00	78.16
45.50	0.00	0.00092	0.00	78.16
46.00	0.00	0.00092	0.00	78.16
46.50	0.00	0.00092	0.00	78.16
47.00	0.00	0.00092	0.00	78.16
47.50	0.00	0.00092	0.00	78.16
48.00	0.00	0.00092	0.00	78.16

**ELEVATION/STORAGE DATA
FOR BMP #2**

Elevation-Area Curve

Physical

Elevation (ft)	Area (acres)	Percent Void Space (%)
77.00	0.000	100.0
78.00	0.023	100.0
79.00	0.054	100.0
80.00	0.075	100.0
81.00	0.106	100.0

**OUTLET STRUCTURE #2
CONFIGURATION**

Control Structure

Detailed Report: Outlet Structure #2

<General>

ID 319
 Label Outlet Structure #2

Outlet Structure

Maximum Iterations 30
 Minimum Hw Tolerance 0.01 ft
 Maximum Hw Tolerance 0.50 ft
 Minimum Tw Tolerance 0.01 ft
 Maximum Tw Tolerance 0.50 ft
 Minimum Q Tolerance 0.001 ft³/s
 Maximum Q Tolerance 10.000 ft³/s

Orifice

Flow Direction Forward Flow Only
 Elevation 77.16 ft
 # of Openings 1
 Orifice Coefficient 0.600
 Orifice Circular Orifice
 Orifice Diameter 3.0 in

Weir

Flow Direction Forward Flow Only
 Elevation 80.00 ft
 Weir Coefficient 3.33 US
 Weir Rectangular Weir
 Weir Length 3.42 ft
 Rectangular Weir Supressed

ROUTING HYDROGRAPHS

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Volume (ac-ft)	BMP 2 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	77.00
0.50	0.00	0.00021	0.00	77.03
1.00	0.00	0.00037	0.00	77.05
1.50	0.00	0.00050	0.00	77.06
2.00	0.00	0.00061	0.00	77.08
2.50	0.00	0.00071	0.00	77.09
3.00	0.00	0.00080	0.00	77.10
3.50	0.00	0.00089	0.00	77.12
4.00	0.00	0.00097	0.00	77.13
4.50	0.00	0.00105	0.00	77.14
5.00	0.00	0.00112	0.00	77.15
5.50	0.00	0.00119	0.00	77.15
6.00	0.01	0.00128	0.00	77.17
6.50	0.01	0.00134	0.00	77.17
7.00	0.01	0.00142	0.00	77.18
7.50	0.01	0.00152	0.01	77.20
8.00	0.02	0.00163	0.02	77.21
8.50	0.03	0.00179	0.02	77.23
9.00	0.04	0.00202	0.03	77.26
9.50	0.05	0.00227	0.04	77.30
10.00	0.06	0.00253	0.05	77.33
10.52	0.09	0.00304	0.08	77.40
11.02	0.14	0.00382	0.11	77.50
11.52	0.26	0.00538	0.14	77.70
12.02	1.90	0.04310	0.30	78.95
12.52	0.47	0.06025	0.33	79.24
13.02	0.39	0.06406	0.33	79.30
13.52	0.34	0.06524	0.34	79.31

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Bentley CivilStorm V8 XM Edition
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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Volume (ac-ft)	BMP 2 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Hydraulic Grade (ft)
14.02	0.30	0.06462	0.34	79.30
14.52	0.28	0.06263	0.33	79.27
15.02	0.25	0.05963	0.33	79.23
15.52	0.22	0.05526	0.32	79.16
16.02	0.20	0.04995	0.32	79.08
16.52	0.18	0.04453	0.31	78.99
17.02	0.15	0.04038	0.30	78.87
17.52	0.14	0.03577	0.29	78.75
18.02	0.14	0.03110	0.27	78.63
18.52	0.13	0.02606	0.26	78.49
19.02	0.11	0.02032	0.24	78.34
19.52	0.10	0.01422	0.22	78.18
20.02	0.06	0.00740	0.20	77.96
20.52	0.05	0.00554	0.15	77.72
21.02	0.05	0.00387	0.11	77.50
21.52	0.05	0.00284	0.07	77.37
22.02	0.05	0.00252	0.05	77.33
22.52	0.05	0.00243	0.05	77.32
23.02	0.05	0.00240	0.05	77.31
23.52	0.05	0.00237	0.05	77.31
24.02	0.05	0.00235	0.05	77.31
24.52	0.00	0.00153	0.01	77.20
25.02	0.00	0.00129	0.00	77.17
25.52	0.00	0.00127	0.00	77.17
26.02	0.00	0.00127	0.00	77.17
26.52	0.00	0.00127	0.00	77.17
27.02	0.00	0.00127	0.00	77.17
27.52	0.00	0.00127	0.00	77.17

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Volume (ac-ft)	BMP 2 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00127	0.00	77.17
28.52	0.00	0.00127	0.00	77.17
29.02	0.00	0.00127	0.00	77.17
29.52	0.00	0.00127	0.00	77.17
30.02	0.00	0.00127	0.00	77.17
30.52	0.00	0.00127	0.00	77.17
31.02	0.00	0.00127	0.00	77.17
31.52	0.00	0.00127	0.00	77.17
32.02	0.00	0.00127	0.00	77.17
32.52	0.00	0.00127	0.00	77.17
33.02	0.00	0.00127	0.00	77.17
33.52	0.00	0.00127	0.00	77.17
34.02	0.00	0.00127	0.00	77.17
34.52	0.00	0.00127	0.00	77.17
35.02	0.00	0.00127	0.00	77.17
35.52	0.00	0.00127	0.00	77.17
36.02	0.00	0.00127	0.00	77.17
36.52	0.00	0.00127	0.00	77.17
37.02	0.00	0.00127	0.00	77.17
37.52	0.00	0.00127	0.00	77.17
38.00	0.00	0.00127	0.00	77.17
38.50	0.00	0.00127	0.00	77.17
39.00	0.00	0.00127	0.00	77.17
39.50	0.00	0.00127	0.00	77.17
40.00	0.00	0.00127	0.00	77.17
40.50	0.00	0.00127	0.00	77.17
41.00	0.00	0.00127	0.00	77.17
41.50	0.00	0.00127	0.00	77.17

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 1 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Volume (ac-ft)	BMP 2 - 1 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 1 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00127	0.00	77.17
42.50	0.00	0.00127	0.00	77.17
43.00	0.00	0.00127	0.00	77.17
43.50	0.00	0.00127	0.00	77.17
44.00	0.00	0.00127	0.00	77.17
44.50	0.00	0.00127	0.00	77.17
45.00	0.00	0.00127	0.00	77.17
45.50	0.00	0.00127	0.00	77.17
46.00	0.00	0.00127	0.00	77.17
46.50	0.00	0.00127	0.00	77.17
47.00	0.00	0.00127	0.00	77.17
47.50	0.00	0.00127	0.00	77.17
48.00	0.00	0.00127	0.00	77.17

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Volume (ac-ft)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	77.00
0.50	0.00	0.00021	0.00	77.03
1.00	0.00	0.00036	0.00	77.05
1.50	0.00	0.00048	0.00	77.06
2.00	0.00	0.00059	0.00	77.08
2.50	0.00	0.00069	0.00	77.09
3.00	0.00	0.00078	0.00	77.10
3.50	0.00	0.00086	0.00	77.11
4.00	0.00	0.00094	0.00	77.12
4.50	0.00	0.00102	0.00	77.13
5.00	0.00	0.00109	0.00	77.14
5.50	0.01	0.00130	0.00	77.17
6.00	0.01	0.00144	0.00	77.19
6.50	0.02	0.00157	0.01	77.21
7.00	0.02	0.00171	0.02	77.22
7.50	0.03	0.00186	0.03	77.24
8.00	0.04	0.00201	0.03	77.26
8.50	0.05	0.00223	0.04	77.29
9.00	0.07	0.00257	0.06	77.34
9.50	0.08	0.00291	0.07	77.38
10.00	0.10	0.00326	0.08	77.43
10.52	0.14	0.00393	0.11	77.51
11.02	0.21	0.00510	0.14	77.66
11.52	0.35	0.00702	0.18	77.92
12.02	2.44	0.06295	0.33	79.28
12.52	0.54	0.08418	0.36	79.61
13.02	0.44	0.08869	0.36	79.68
13.52	0.39	0.09053	0.37	79.71

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Bentley CivilStorm V8 XM Edition
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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Volume (ac-ft)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Hydraulic Grade (ft)
14.02	0.36	0.09073	0.37	79.71
14.52	0.33	0.08977	0.37	79.70
15.02	0.31	0.08800	0.36	79.67
15.52	0.29	0.08550	0.36	79.63
16.02	0.27	0.08224	0.36	79.58
16.52	0.25	0.07821	0.35	79.52
17.02	0.23	0.07373	0.35	79.45
17.52	0.21	0.06855	0.34	79.37
18.02	0.18	0.06228	0.33	79.27
18.52	0.18	0.05551	0.32	79.16
19.02	0.17	0.04872	0.31	79.06
19.52	0.15	0.04291	0.30	78.94
20.02	0.14	0.03807	0.29	78.81
20.52	0.14	0.03308	0.28	78.68
21.02	0.13	0.02800	0.27	78.54
21.52	0.11	0.02237	0.25	78.39
22.02	0.11	0.01636	0.23	78.23
22.52	0.08	0.00963	0.21	78.05
23.02	0.06	0.00631	0.17	77.82
23.52	0.06	0.00468	0.13	77.61
24.02	0.06	0.00339	0.09	77.44
24.52	0.00	0.00185	0.03	77.24
25.02	0.00	0.00130	0.00	77.17
25.52	0.00	0.00126	0.00	77.16
26.02	0.00	0.00126	0.00	77.16
26.52	0.00	0.00126	0.00	77.16
27.02	0.00	0.00126	0.00	77.16
27.52	0.00	0.00126	0.00	77.16

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Volume (ac-ft)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00126	0.00	77.16
28.52	0.00	0.00126	0.00	77.16
29.02	0.00	0.00126	0.00	77.16
29.52	0.00	0.00126	0.00	77.16
30.02	0.00	0.00126	0.00	77.16
30.52	0.00	0.00126	0.00	77.16
31.02	0.00	0.00126	0.00	77.16
31.52	0.00	0.00126	0.00	77.16
32.02	0.00	0.00126	0.00	77.16
32.52	0.00	0.00126	0.00	77.16
33.02	0.00	0.00126	0.00	77.16
33.52	0.00	0.00126	0.00	77.16
34.02	0.00	0.00126	0.00	77.16
34.52	0.00	0.00126	0.00	77.16
35.02	0.00	0.00126	0.00	77.16
35.52	0.00	0.00126	0.00	77.16
36.02	0.00	0.00126	0.00	77.16
36.52	0.00	0.00126	0.00	77.16
37.02	0.00	0.00126	0.00	77.16
37.52	0.00	0.00126	0.00	77.16
38.00	0.00	0.00126	0.00	77.16
38.50	0.00	0.00126	0.00	77.16
39.00	0.00	0.00126	0.00	77.16
39.50	0.00	0.00126	0.00	77.16
40.00	0.00	0.00126	0.00	77.16
40.50	0.00	0.00126	0.00	77.16
41.00	0.00	0.00126	0.00	77.16
41.50	0.00	0.00126	0.00	77.16

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Volume (ac-ft)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 2 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00126	0.00	77.16
42.50	0.00	0.00126	0.00	77.16
43.00	0.00	0.00126	0.00	77.16
43.50	0.00	0.00126	0.00	77.16
44.00	0.00	0.00126	0.00	77.16
44.50	0.00	0.00126	0.00	77.16
45.00	0.00	0.00126	0.00	77.16
45.50	0.00	0.00126	0.00	77.16
46.00	0.00	0.00126	0.00	77.16
46.50	0.00	0.00126	0.00	77.16
47.00	0.00	0.00126	0.00	77.16
47.50	0.00	0.00126	0.00	77.16
48.00	0.00	0.00126	0.00	77.16

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Volume (ac-ft)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	77.00
0.50	0.00	0.00019	0.00	77.02
1.00	0.00	0.00033	0.00	77.04
1.50	0.00	0.00045	0.00	77.06
2.00	0.00	0.00055	0.00	77.07
2.50	0.00	0.00065	0.00	77.08
3.00	0.00	0.00073	0.00	77.10
3.50	0.00	0.00081	0.00	77.11
4.00	0.01	0.00126	0.00	77.16
4.50	0.02	0.00166	0.02	77.22
5.00	0.03	0.00190	0.03	77.25
5.50	0.04	0.00215	0.04	77.28
6.00	0.06	0.00241	0.05	77.31
6.50	0.07	0.00268	0.06	77.35
7.00	0.08	0.00295	0.07	77.38
7.50	0.09	0.00323	0.08	77.42
8.00	0.11	0.00352	0.10	77.46
8.50	0.13	0.00391	0.11	77.51
9.00	0.17	0.00465	0.13	77.61
9.50	0.19	0.00552	0.15	77.72
10.00	0.23	0.00638	0.17	77.83
10.52	0.30	0.00762	0.20	77.99
11.02	0.40	0.01567	0.22	78.21
11.52	0.63	0.02728	0.26	78.52
12.02	4.16	0.12708	1.36	80.20
12.52	1.07	0.12047	1.48	80.12
13.02	0.61	0.11237	0.68	80.03
13.52	0.53	0.11098	0.54	80.02

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Volume (ac-ft)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Hydraulic Grade (ft)
14.02	0.48	0.11041	0.49	80.01
14.52	0.46	0.11009	0.46	80.01
15.02	0.43	0.10983	0.44	80.01
15.52	0.41	0.10958	0.42	80.00
16.02	0.39	0.10931	0.39	80.00
16.52	0.37	0.10884	0.39	79.99
17.02	0.35	0.10781	0.39	79.98
17.52	0.34	0.10625	0.39	79.95
18.02	0.32	0.10420	0.38	79.92
18.52	0.30	0.10162	0.38	79.88
19.02	0.29	0.09851	0.38	79.83
19.52	0.27	0.09489	0.37	79.78
20.02	0.25	0.09081	0.37	79.71
20.52	0.24	0.08606	0.36	79.64
21.02	0.23	0.08093	0.36	79.56
21.52	0.22	0.07576	0.35	79.48
22.02	0.20	0.07007	0.34	79.39
22.52	0.18	0.06356	0.33	79.29
23.02	0.18	0.05686	0.33	79.18
23.52	0.18	0.05035	0.32	79.08
24.02	0.17	0.04431	0.31	78.98
24.52	0.10	0.03862	0.29	78.83
25.02	0.09	0.03222	0.28	78.66
25.52	0.07	0.02515	0.26	78.47
26.02	0.06	0.01704	0.23	78.25
26.52	0.01	0.00751	0.20	77.98
27.02	0.00	0.00479	0.14	77.62
27.52	0.00	0.00227	0.05	77.30

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Volume (ac-ft)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Hydraulic Grade (ft)
28.02	0.00	0.00135	0.01	77.18
28.52	0.00	0.00127	0.00	77.17
29.02	0.00	0.00126	0.00	77.16
29.52	0.00	0.00126	0.00	77.16
30.02	0.00	0.00126	0.00	77.16
30.52	0.00	0.00126	0.00	77.16
31.02	0.00	0.00126	0.00	77.16
31.52	0.00	0.00126	0.00	77.16
32.02	0.00	0.00126	0.00	77.16
32.52	0.00	0.00126	0.00	77.16
33.02	0.00	0.00126	0.00	77.16
33.52	0.00	0.00126	0.00	77.16
34.02	0.00	0.00126	0.00	77.16
34.52	0.00	0.00126	0.00	77.16
35.02	0.00	0.00126	0.00	77.16
35.52	0.00	0.00126	0.00	77.16
36.02	0.00	0.00126	0.00	77.16
36.52	0.00	0.00126	0.00	77.16
37.02	0.00	0.00126	0.00	77.16
37.52	0.00	0.00126	0.00	77.16
38.00	0.00	0.00126	0.00	77.16
38.50	0.00	0.00126	0.00	77.16
39.00	0.00	0.00126	0.00	77.16
39.50	0.00	0.00126	0.00	77.16
40.00	0.00	0.00126	0.00	77.16
40.50	0.00	0.00126	0.00	77.16
41.00	0.00	0.00126	0.00	77.16
41.50	0.00	0.00126	0.00	77.16

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Bentley CivilStorm V8 XM Edition
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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Volume (ac-ft)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 10 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00126	0.00	77.16
42.50	0.00	0.00126	0.00	77.16
43.00	0.00	0.00126	0.00	77.16
43.50	0.00	0.00126	0.00	77.16
44.00	0.00	0.00126	0.00	77.16
44.50	0.00	0.00126	0.00	77.16
45.00	0.00	0.00126	0.00	77.16
45.50	0.00	0.00126	0.00	77.16
46.00	0.00	0.00126	0.00	77.16
46.50	0.00	0.00126	0.00	77.16
47.00	0.00	0.00126	0.00	77.16
47.50	0.00	0.00126	0.00	77.16
48.00	0.00	0.00126	0.00	77.16

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Volume (ac-ft)	BMP 2 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Hydraulic Grade (ft)
0.00	0.00	0.00000	0.00	77.00
0.50	0.00	0.00016	0.00	77.02
1.00	0.00	0.00029	0.00	77.04
1.50	0.00	0.00039	0.00	77.05
2.00	0.00	0.00049	0.00	77.06
2.50	0.00	0.00057	0.00	77.07
3.00	0.01	0.00094	0.00	77.12
3.50	0.03	0.00175	0.02	77.23
4.00	0.04	0.00210	0.04	77.27
4.50	0.06	0.00243	0.05	77.32
5.00	0.08	0.00279	0.06	77.36
5.50	0.09	0.00315	0.08	77.41
6.00	0.11	0.00353	0.10	77.46
6.50	0.13	0.00392	0.11	77.51
7.00	0.15	0.00440	0.12	77.57
7.50	0.16	0.00496	0.14	77.65
8.00	0.18	0.00554	0.15	77.72
8.50	0.22	0.00626	0.17	77.82
9.00	0.26	0.00722	0.19	77.94
9.50	0.29	0.01072	0.21	78.08
10.00	0.34	0.01611	0.23	78.23
10.52	0.43	0.02319	0.25	78.41
11.02	0.55	0.03194	0.27	78.65
11.52	0.87	0.04454	0.31	78.99
12.02	11.33	0.17111	9.24	80.69
12.52	1.54	0.12025	1.96	80.12
13.02	0.86	0.11320	0.92	80.04
13.52	0.64	0.11139	0.67	80.02

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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Volume (ac-ft)	BMP 2 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Hydraulic Grade (ft)
14.02	0.55	0.11058	0.56	80.01
14.52	0.52	0.11033	0.53	80.01
15.02	0.50	0.11014	0.50	80.01
15.52	0.47	0.10994	0.48	80.01
16.02	0.44	0.10973	0.45	80.00
16.52	0.43	0.10959	0.43	80.00
17.02	0.41	0.10947	0.41	80.00
17.52	0.39	0.10934	0.40	80.00
18.02	0.38	0.10910	0.39	80.00
18.52	0.36	0.10830	0.39	79.98
19.02	0.34	0.10693	0.39	79.96
19.52	0.32	0.10503	0.38	79.93
20.02	0.31	0.10255	0.38	79.89
20.52	0.29	0.09956	0.38	79.85
21.02	0.28	0.09626	0.37	79.80
21.52	0.27	0.09268	0.37	79.74
22.02	0.26	0.08866	0.37	79.68
22.52	0.25	0.08421	0.36	79.61
23.02	0.24	0.07963	0.35	79.54
23.52	0.24	0.07508	0.35	79.47
24.02	0.21	0.07001	0.34	79.39
24.52	0.12	0.06153	0.33	79.26
25.02	0.12	0.05222	0.32	79.11
25.52	0.10	0.04348	0.31	78.96
26.02	0.09	0.03707	0.29	78.79
26.52	0.08	0.03037	0.27	78.61
27.02	0.07	0.02292	0.25	78.41
27.52	0.05	0.01450	0.22	78.18

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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Volume (ac-ft)	BMP 2 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Hydraulic Grade (ft)
28.02	0.01	0.00674	0.18	77.88
28.52	0.00	0.00398	0.12	77.52
29.02	0.00	0.00183	0.03	77.24
29.52	0.00	0.00130	0.00	77.17
30.02	0.00	0.00126	0.00	77.16
30.52	0.00	0.00126	0.00	77.16
31.02	0.00	0.00126	0.00	77.16
31.52	0.00	0.00126	0.00	77.16
32.02	0.00	0.00126	0.00	77.16
32.52	0.00	0.00126	0.00	77.16
33.02	0.00	0.00126	0.00	77.16
33.52	0.00	0.00126	0.00	77.16
34.02	0.00	0.00126	0.00	77.16
34.52	0.00	0.00126	0.00	77.16
35.02	0.00	0.00126	0.00	77.16
35.52	0.00	0.00126	0.00	77.16
36.02	0.00	0.00126	0.00	77.16
36.52	0.00	0.00126	0.00	77.16
37.02	0.00	0.00126	0.00	77.16
37.52	0.00	0.00126	0.00	77.16
38.00	0.00	0.00126	0.00	77.16
38.50	0.00	0.00126	0.00	77.16
39.00	0.00	0.00126	0.00	77.16
39.50	0.00	0.00126	0.00	77.16
40.00	0.00	0.00126	0.00	77.16
40.50	0.00	0.00126	0.00	77.16
41.00	0.00	0.00126	0.00	77.16
41.50	0.00	0.00126	0.00	77.16

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Bentley CivilStorm V8 XM Edition
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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 100 Year Storm Event - Total Inflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Volume (ac-ft)	BMP 2 - 100 Year Storm Event - Total Outflow (ft ³ /s)	BMP 2 - 100 Year Storm Event - Hydraulic Grade (ft)
42.00	0.00	0.00126	0.00	77.16
42.50	0.00	0.00126	0.00	77.16
43.00	0.00	0.00126	0.00	77.16
43.50	0.00	0.00126	0.00	77.16
44.00	0.00	0.00126	0.00	77.16
44.50	0.00	0.00126	0.00	77.16
45.00	0.00	0.00126	0.00	77.16
45.50	0.00	0.00126	0.00	77.16
46.00	0.00	0.00126	0.00	77.16
46.50	0.00	0.00126	0.00	77.16
47.00	0.00	0.00126	0.00	77.16
47.50	0.00	0.00126	0.00	77.16
48.00	0.00	0.00126	0.00	77.16

**DRAINAGE AREA D1 + D2 + D3
TOTAL RUNOFF HYDROGRAPHS**

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 2 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 2 Year Storm Event - Total Outflow (ft ³ /s)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.01	0.00	0.02
7.00	0.02	0.00	0.02
7.50	0.03	0.01	0.03
8.00	0.03	0.01	0.04
8.50	0.04	0.01	0.05
9.00	0.06	0.01	0.07
9.50	0.07	0.01	0.08
10.00	0.08	0.02	0.10
10.52	0.11	0.02	0.13
11.02	0.14	0.04	0.17
11.52	0.18	0.07	0.25
12.02	0.33	0.67	1.03
12.52	0.36	0.07	0.43
13.02	0.36	0.05	0.41

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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 2 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 2 Year Storm Event - Total Outflow (ft ³ /s)
13.52	0.37	0.04	0.40
14.02	0.37	0.03	0.40
14.52	0.37	0.02	0.39
15.02	0.36	0.02	0.39
15.52	0.36	0.02	0.38
16.02	0.36	0.02	0.38
16.52	0.35	0.02	0.37
17.02	0.35	0.02	0.36
17.52	0.34	0.01	0.36
18.02	0.33	0.01	0.35
18.52	0.32	0.01	0.34
19.02	0.31	0.01	0.32
19.52	0.30	0.01	0.32
20.02	0.29	0.01	0.30
20.52	0.28	0.01	0.29
21.02	0.27	0.01	0.27
21.52	0.25	0.01	0.26
22.02	0.23	0.01	0.24
22.52	0.21	0.01	0.22
23.02	0.17	0.01	0.18
23.52	0.13	0.01	0.14
24.02	0.09	0.01	0.10
24.52	0.03	0.00	0.03
25.02	0.00	0.00	0.00
25.52	0.00	0.00	0.00
26.02	0.00	0.00	0.00
26.52	0.00	0.00	0.00

05224 PostDev D_rev1.csd

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[08.09.023.25]

Page 2 of 4

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 2 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 2 Year Storm Event - Total Outflow (ft ³ /s)
27.02	0.00	0.00	0.00
27.52	0.00	0.00	0.00
28.02	0.00	0.00	0.00
28.52	0.00	0.00	0.00
29.02	0.00	0.00	0.00
29.52	0.00	0.00	0.00
30.02	0.00	0.00	0.00
30.52	0.00	0.00	0.00
31.02	0.00	0.00	0.00
31.52	0.00	0.00	0.00
32.02	0.00	0.00	0.00
32.52	0.00	0.00	0.00
33.02	0.00	0.00	0.00
33.52	0.00	0.00	0.00
34.02	0.00	0.00	0.00
34.52	0.00	0.00	0.00
35.02	0.00	0.00	0.00
35.52	0.00	0.00	0.00
36.02	0.00	0.00	0.00
36.52	0.00	0.00	0.00
37.02	0.00	0.00	0.00
37.52	0.00	0.00	0.00
38.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00
39.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00
40.00	0.00	0.00	0.00

05224 PostDev D_rev1.csd

Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 2 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 2 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 2 Year Storm Event - Total Outflow (ft ³ /s)
40.50	0.00	0.00	0.00
41.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00
42.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00
43.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00
44.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00
45.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00
46.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00
47.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00
48.00	0.00	0.00	0.00

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 10 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 10 Year Storm Event - Total Outflow (ft ³ /s)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.02	0.00	0.02
5.00	0.03	0.01	0.03
5.50	0.04	0.01	0.05
6.00	0.05	0.01	0.06
6.50	0.06	0.01	0.07
7.00	0.07	0.01	0.09
7.50	0.08	0.02	0.10
8.00	0.10	0.02	0.11
8.50	0.11	0.02	0.13
9.00	0.13	0.03	0.15
9.50	0.15	0.03	0.18
10.00	0.17	0.04	0.21
10.52	0.20	0.05	0.25
11.02	0.22	0.07	0.30
11.52	0.26	0.13	0.39
12.02	1.36	1.18	2.51
12.52	1.48	0.13	1.62
13.02	0.68	0.08	0.76

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Bentley CivilStorm V8 XM Edition
[08.09.023.25]

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Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 10 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 10 Year Storm Event - Total Outflow (ft ³ /s)
13.52	0.54	0.06	0.61
14.02	0.49	0.05	0.54
14.52	0.46	0.04	0.50
15.02	0.44	0.04	0.48
15.52	0.42	0.03	0.45
16.02	0.39	0.03	0.42
16.52	0.39	0.03	0.42
17.02	0.39	0.03	0.41
17.52	0.39	0.02	0.41
18.02	0.38	0.02	0.41
18.52	0.38	0.02	0.40
19.02	0.38	0.02	0.40
19.52	0.37	0.02	0.39
20.02	0.37	0.02	0.38
20.52	0.36	0.02	0.38
21.02	0.36	0.02	0.37
21.52	0.35	0.02	0.37
22.02	0.34	0.02	0.36
22.52	0.33	0.01	0.35
23.02	0.33	0.01	0.34
23.52	0.32	0.01	0.33
24.02	0.31	0.01	0.32
24.52	0.29	0.00	0.29
25.02	0.28	0.00	0.28
25.52	0.26	0.00	0.26
26.02	0.23	0.00	0.23
26.52	0.20	0.00	0.20

05224 PostDev D_rev1.csd

Bentley CivilStorm V8 XM Edition
[08.09.023.25]

Page 2 of 4

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 10 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 10 Year Storm Event - Total Outflow (ft ³ /s)
27.02	0.14	0.00	0.14
27.52	0.05	0.00	0.05
28.02	0.01	0.00	0.01
28.52	0.00	0.00	0.00
29.02	0.00	0.00	0.00
29.52	0.00	0.00	0.00
30.02	0.00	0.00	0.00
30.52	0.00	0.00	0.00
31.02	0.00	0.00	0.00
31.52	0.00	0.00	0.00
32.02	0.00	0.00	0.00
32.52	0.00	0.00	0.00
33.02	0.00	0.00	0.00
33.52	0.00	0.00	0.00
34.02	0.00	0.00	0.00
34.52	0.00	0.00	0.00
35.02	0.00	0.00	0.00
35.52	0.00	0.00	0.00
36.02	0.00	0.00	0.00
36.52	0.00	0.00	0.00
37.02	0.00	0.00	0.00
37.52	0.00	0.00	0.00
38.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00
39.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00
40.00	0.00	0.00	0.00

05224 PostDev D_rev1.csd

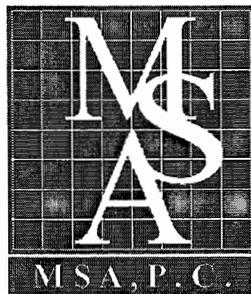
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[08.09.023.25]

Multiple Element Graph Table Report

Time (hours)	BMP 2 - 10 Year Storm Event - Total Outflow (ft ³ /s)	Sub-Drain Area D3 - 10 Year Storm Event - Total Outflow (ft ³ /s)	POA-D - 10 Year Storm Event - Total Outflow (ft ³ /s)
40.50	0.00	0.00	0.00
41.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00
42.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00
43.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00
44.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00
45.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00
46.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00
47.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00
48.00	0.00	0.00	0.00

III. APPENDIX

April 8, 2008
JCC# SP-033-08; MSA# 05224

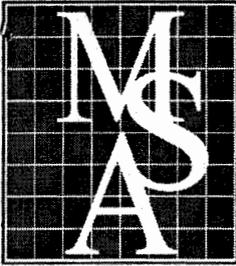


Celebrating
35 Years
Of Client
Success

**Soil Boring Log and Locations
For
WHITING FUNERAL HOME
JAMES CITY COUNTY, VA**

MSA #05224

JANUARY 30, 2007



MSA, P.C.

Environmental Sciences · Geosciences · Planning
 Surveying · Engineering · Landscape Architecture

5033 Rouse Drive, Virginia Beach, VA 23462
 757-490-9264(Ofc) 757-490-0634(Fax)
www.msaonline.com
 Offices in Virginia Beach & Belle Haven, VA

Project Information

Project Name Whiting Funeral Home
Project Number 05224
Site Location Williamsburg, VA
Inspector K. Bailey
Project Manager J. Colburn
Date Sampled 3/3/06
Method Hand Auger

Elevation (FT AMSL)
Ground Surface 82.1
Seasonal High N/E
Seasonal Low N/E
Water Table N/E

Boring No. HA-1

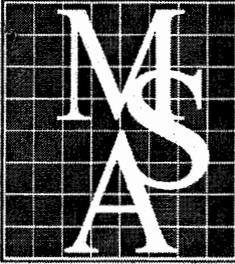
Seasonal low
 Seasonal High
 Current Depth
 Depth to Perched Water:

Depth (ft)	Lithology	Soil Description	K (ft/day)	Moisture	Matrix Color	Mottles	Notes
------------	-----------	------------------	------------	----------	--------------	---------	-------

Depth (ft)	Lithology	Soil Description	K (ft/day)	Moisture	Matrix Color	Mottles	Notes
0 - 1.5	TOPSOIL			Dry	2.5Y-4/2		Loose Gravel
1.5 - 2.5					10YR-3/4		
2.5 - 3.0	CL: Clay				10YR-5/4	7.5YR-4/4	
3.0 - 3.5						7.5YR-6/2	
3.5 - 4.0					2.5Y-6/4	7.5YR-6/2, 10YR-5/6, 5YR-4/6	
4.0 - 4.5						10YR-6/1, 10YR-5/6, 5YR-4/6	
4.5 - 5.0						2.5Y6/4, 10YR-5/6, 5YR-4/6	
5.0 - 5.5						10YR-5/4, 5YR-4/6	
5.5 - 6.0						10YR-5/6, 10YR-5/4, 5YR-4/6	
6.0 - 6.5					10YR-6/1	10YR-5/6, 10YR-5/4, 5YR-4/6	
6.5 - 7.0							
7.0 - 7.5							
7.5 - 8.0	SC: Clayey Sand [Fine-Med]						
8.0 - 8.5			~.05				
8.5 - 9.0							
9.0 - 9.5							
9.5 - 10.0						10YR-5/6	
10.0 - 10.5							
10.5 - 11.0							

Comments: SHWT = Seasonal high water table

DTW = Depth to water



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757-490-9264(Ofc) 757-490-0634(Fax)
www.msaonline.com
Offices in Virginia Beach & Belle Haven, VA

Project Information

Project Name Whiting Funeral Home
Project Number 05224
Site Location Williamsburg, VA
Inspector K. Bailey
Project Manager J. Colburn
Date Sampled 3/3/06
Method Hand Auger

Elevation (FT AMSL)
Ground Surface 82
Seasonal High N/E
Seasonal Low N/E
Water Table N/E

Boring No. HA-2

Seasonal low
 Seasonal High
 Current Depth
 Depth to Perched Water:

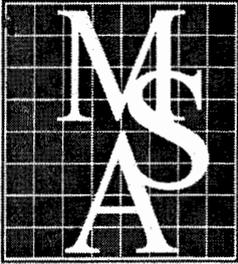
Depth (ft)	Lithology	Soil Description	K (ft/day)	Moisture	Matrix Color	Mottles	Notes
------------	-----------	------------------	------------	----------	--------------	---------	-------

0		TOPSOIL		Dry	2.5Y-4/2		Loose Gravel
1		SC: Silty-Clayey Sand			2.5Y-6/4		
2		CL: Clay			10YR-4/4	10YR-5/6	
3						2.5Y-6/2, 10YR-5/6, 5YR-4/6	
4							
5							
6						2.5Y6/4, 10YR-5/6, 5YR-4/6	
7							
8							
9		SC: Clayey Sand [Fine-Med]	~.05				
10						10YR-5/6	
11							

Comments: SHWT = Seasonal high water table

DTW = Depth to water

page 1 of 1



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www.msasonline.com
 Offices in Virginia Beach & Belle Haven, VA

Project Information

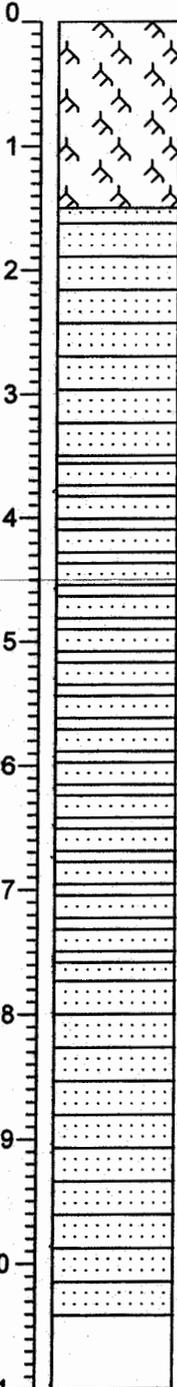
Project Name Whiting Funeral Home
Project Number 05224
Site Location Williamsburg, VA
Inspector K. Bailey
Project Manager J. Colburn
Date Sampled 3/3/06
Method Hand Auger

Elevation (FT AMSL)
Ground Surface 82.4
Seasonal High N/E
Seasonal Low N/E
Water Table N/E

Boring No. HA-3

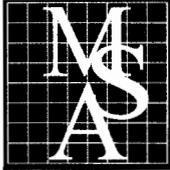
Seasonal low
 Seasonal High
 Current Depth
 Depth to Perched Water:

Depth (ft)	Lithology	Soil Description	K (ft/day)	Moisture	Matrix Color	Mottles	Notes
------------	-----------	------------------	------------	----------	--------------	---------	-------



0 - 1.5	TOPSOIL			Dry	2.5Y-4/2		Loose Gravel
1.5 - 2.0					10YR-5/4		
2.0 - 3.5	SC: Silty-Clayey Sand				2.5Y-5/6	10YR-5/6	
3.5 - 7.5	CL: Clay					10YR-5/6, 5YR-4/6, 2.5Y-5/6	
7.5 - 8.5					10YR-6/1		
8.5 - 9.5	SC: Clayey Sand [Fine-Med]		~.05			10YR-5/6, 2.5Y-5/6	
9.5 - 10.5							
10.5 - 11.0							

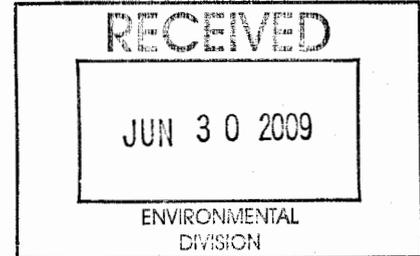
Comments: SHWT = Seasonal high water table DTW = Depth to water page 1 of 1



MSA, P.C.
5033 Rouse Drive, Virginia Beach, VA 23462-3708
Office 757-490-9264 • Fax 757-490-0634
www.msaonline.com

Environmental Sciences • Planning • Surveying • Civil & Environmental Engineering • Landscape Architecture

June 29, 2009



Mr. Joe Buchite, Inspector Supervisor
Environmental Division
101-A Mounts Bay Road
Williamsburg, Virginia 23185

RE Record Drawing of BMP for Whiting Funeral Home
MSA Project No.: 05224A
Amended Site Plan No.: SP-033-08
Original Site Plan No.: SP-8-07

Dear Mr. Buchite:

Please find enclosed for your review, record drawings of the BMP that was recently completed at Whiting Funeral Home located at 7005 Pocahontas Trail in Williamsburg. The construction of these BMPs was based on approved Amended Site Plan number SP-033-08. The BMPs were constructed by Jamestown Contracting, LLC.

Thank you for your Record Drawing review. Should you require any additional information, please contact me at 757.490.9264 or chris_stephens@msaonline.com.

Sincerely,

Chris J. Stephens
Survey CADD Technician

CJS/raa

copy Bob Oliver, Jamestown Contracting, LLC
File



**James City County Environmental Division
Stormwater Management / BMP Inspection Report
Infiltration Basin and Trench Facilities**

County BMP ID Code (if known): CCD36
 Name of Facility: Whitting's Funeral Home BMP No.: 1 Date: 7/21/2009
 Location: 7005 Pocahontas Trail
 Name of Owner: William T. Stone
 Name of Inspector: G. Johnson
 Type of Facility: Trench
 Weather Conditions: Clear/lt Type: Final Inspection County BMP Inspection Program Owners Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
- Urgent - The item checked requires immediate attention to keep the BMP operational and prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Accessibility:				
Roads	✓			
Parking Areas	✓			
Gates	-			
Locks	-			
Safety Fencing	-			
Observation Wells/Areas:				
Trap Doors	-			
Manhole Covers	-			
Grates	-			
Steps	-			
Pretreatment Devices: <input checked="" type="checkbox"/> Inlet <input type="checkbox"/> Sump <input type="checkbox"/> Forebay <input type="checkbox"/> Other				
Sediment				
Trash & Debris		✓		
Structure	✓			
Other				

Facility Item	O.K.	Routine	Urgent	Comments
Primary Storage/ Infiltration Area:				
Trash & Debris		✓		
Sediment		✓		
Ponding / Drawdown	✓			
Surface Aggregates	-			
Aesthetics	✓			
Other	-			
Inlet Structure # 1 (Describe Location):				
Condition of Structure	✓			
Erosion	✓			
Trash and Debris		✓		
Sediment	✓			
Aesthetics	✓			
Other				
Inlet Structure # 2 (Describe Location):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Aesthetics				
Other				
Inlet Structure # 3 (Describe Location):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Aesthetics				
Other				
Outlets - Overflow or Bypass Control Structures (Describe Location):				
Condition of Structure				
Erosion				
Trash and Debris				
Sediment				
Other				
Nuisance Type Conditions: <i>None</i>				

Facility Item	O.K.	Routine	Urgent	Comments
Mosquito Breeding	✓			
Animals, Rodents	✓			
Graffiti	✓			
Other	✓			
Perimeter (Contributing Drainage Area) Conditions:				
Stabilization	✓			
Vegetation Condition	✓			<i>Some dying plants</i>
Trash and Debris	✓			
Aesthetics	✓			
Other				
Remarks:				
Overall Environmental Division Internal Rating: _____				
Signature: <i>[Handwritten Signature]</i>		Date: <i>1/24/2009</i>		
Title: <i>Inspector</i>				

SWMPProg\BMP\CoInspProg\SubDetInfil.wpd

ENVIRONMENTAL DIVISION REVIEW COMMENTS**Whiting Funeral Home****COUNTY PLAN NO. SP – 008 - 07***February 26, 2007***General:**

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. Water and sewer inspection fees must be paid prior to the issuance of a Land Disturbing Permit.
3. VSMP. It appears construction activity for the site will exceed 2,500 square feet. Therefore, it is the owner's responsibility to register for coverage under the General Permit for Discharge of Stormwater from Construction Activities, in accordance with current requirements of the Virginia Department of Conservation and Recreation and the Virginia Stormwater Management Program.
4. A Standard Inspection / Maintenance agreement is required to be executed with the County due to the proposed stormwater conveyance systems and Stormwater Management/BMP facilities associated with this project.
5. RLD. The applicant must provide the name of an individual holding a valid Responsible Land Disturber (RLD) certificate who will be responsible for the land-disturbing activity prior to engaging in the land-disturbing activity. This will be necessary prior to issuance of land-disturbing for the project, not during the erosion and sediment control plan approval process. It will be required that the assigned RLD attend the preconstruction conference for the project.
6. Record Drawing and Construction Certification. The stormwater management/BMP facility as proposed for this project will require submission, review and approval of a record drawing (as-built) and construction certification prior to release of the posted bond/surety. Provide notes on the plan accordingly to ensure this activity is adequately coordinated and performed before, during and following construction in accordance with current County guidelines.
7. Miss Utility. Provide standard notes requiring contact of Miss Utility prior to any utility or site work excavations.
8. A Geotechnical Report, prepared by a professional engineer, is required to be submitted for the BMP design prior to issuance of a Land-Disturbing permit for the project.
9. Professional seal and signature is required on final and complete approved stormwater management plans, drawings, technical reports and specifications. Wet seal and signature is required on all cover sheets.
10. VDOT. It appears a VDOT CE-7 (temporary construction entrance permit) may be required. Contact the Williamsburg Residency, Permits and Subdivisions at 757-253-4832 for further information.

11. Plan Number. Please reference the assigned County plan number SP-008-07 on all subsequent submissions. Ensure that this number is on all supporting documentation so that materials may be kept together.
12. Watershed. Provide a note on the cover sheet indicating that this site lies in the James City County Watershed of College Creek.
13. Professional seal and signature is required on final and complete approved stormwater management plans, drawings, technical reports and specifications.
14. Drainage area. Provide all contributing drainage areas and sizes to the project site to show the total drainage to the site. The sheet DA-1 shows only the specific site drainage area and not any drainage areas that may be contributing runoff to this project.

Chesapeake Bay Preservation:

15. Percent Impervious. Section 23-9(b)(1)(b) of the Chesapeake Bay Preservation Ordinance states that impervious cover shall not exceed 60 percent of the site unless it can be demonstrated that the project will have the same impact on water quality as the project would have if it were 60 percent impervious.
16. Environmental Inventory. Provide an environmental inventory in accordance with Section 23-10(2) of the Chesapeake Bay Preservation ordinance. Components include tidal wetlands, tidal shores, non-tidal wetlands in RPA, resource protection areas, non-tidal wetlands in RMA, hydric soils, floodplains and slopes 25 percent or greater.
17. Percent Impervious. Section 23-9(b)(1)(b) of the Chesapeake Bay Preservation Ordinance states that impervious cover shall not exceed 60 percent of the site unless it can be demonstrated that the project will have the same impact on water quality as the project would have if it were 60 percent impervious. Information that has been provided on the initial application indicates that the site exceeds the 60% threshold and either needs to be scaled back, or additional water quality components must be added to show compliance with this section of the ordinance. Provide this information with the next submittal or the site plan may not be reviewed.

Grading and Drainage:

18. Proposed Grading. Section 24-145(8) of the Chapter 24 Zoning ordinance and Section 19-27(f) of the Chapter 19 Subdivision ordinance requires ***existing*** and ***proposed*** contours for development plans. Please provide this information on plan sheets C2.1, C3.1, and C4.1 and ensure that this proposal will be capable of being constructed within the limits of the site periphery. Without this information, other comments will be very difficult to address and additional comments may be generated due to the lack of information provided. This information was selected as provided in the checklist that was submitted with the site plan; however, the information was not provided with the plan set.

Erosion & Sediment Control Plan:

19. Limits of Work. Show and label a distinct limit of work (clearing and grading) around the site periphery. Be sure to include work associated with installation of erosion and sediment controls, onsite or offsite utility connections and ingress/egress avenues for trailer transport and installation. Ensure disturbed area estimates match land-disturbance inclusive within the limits of work.
20. Temporary Stockpile Areas. Show any temporary soil stockpile, staging and equipment storage areas (with required erosion and sediment controls) or indicate on the plans that none are anticipated for the project site.
21. Construction Entrance. Provide a note on the coversheet of the plan set indicating that the contractor shall not use the proposed or existing entrance on Avon Avenue as only one entrance shall be permitted to be used at any given time.
22. Phased Erosion and Sediment Control Plan. The concept of the proposed erosion and sediment control plan could be capable of controlling the site from an initial perspective; however, once site grading commences and the infiltration trenches begin to take shape, control of sediment will not be possible and alternate methods will need to be employed. It will be pertinent that the infiltration area are well protect against the accumulation of sediment and also against soil consolidation from the traversing of large equipment. This being the case, several areas should be outlined with safety fencing and a phased erosion and sediment control plan should be provided.
23. Perimeter E&S Control. The use of standard silt fence throughout the site periphery is not acceptable as this measure is typically damaged by the construction equipment throughout the site construction process. If silt fence is to be the only measure to guard against the loss of sediment for this project, the measure will be required to be wire reinforced or super silt fence. Should this alternate method not be considered by the designer, alternate measures will be required to control the site from an erosion and sediment control perspective such as diversions and a temporary sediment trap. .
24. Sequence of Construction. Adjust the sequence of construction to allow for the installation of the sediment trap and associated diversions dikes including proper timing of removal of these features. The sequence also needs to be modified to detail when the BMP will be installed as this is not currently clear.
25. Right of way Diversion. A right of way diversion will be needed through the construction entrance to ensure that run-off from the west side of the construction entrance will be conveyed properly to the diversion dike and subsequent sediment trap on the east side of the site.
26. Safety Fence. Use of orange colored safety fence in accordance with VESCH Minimum Standard & Spec. 3.01 of the VESCH may be warranted along the frontage of the site to maintain pedestrian safety or around temporary sediment basins or traps if in proximity to occupied dwellings or roadways. It will also be required to provide sidewalk closure signage in accordance with the information contained in the Manual of uniform Traffic Control devices (MUTCD) and the

requirements of VDOT.

27. Seeding and Mulching Specification. Provide a seeding and mulching specification or reference an appropriate mixture for the coastal plain region per the VESCH, Minimum Standard 3.32. Address both temporary and permanent stabilization requirements for the site.
28. Dust Control. Add dust control measures in accordance with Minimum Standard 3.39 of the VESCH to the erosion and sediment control plan for the site. Dust control may be warranted due to the proximity of work along Pocahontas Trail and to ensure traffic safety.

Stormwater Management / Drainage:

29. Site Tabulation. Provide a site tabulation which shows the total site area, impervious cover (with percentage if site), and disturbed area estimates for the project.
30. Redevelopment. The information presented in the application appears to reflect that this site could be considered as redevelopment, therefore lightening the requirements as related to stormwater management. Redevelopment is subject to the use of BMPs which satisfy 4VAC 3-20-71 et seq. of the Virginia Stormwater Management Regulations and the County BMP manual. If connecting to an existing downstream BMP, adherence to Section 23-9(b)(8) of the Chesapeake Bay Preservation ordinance is required.
31. Stormwater Report. Please revise the information that is contained under "Conclusion" to refer to Whiting' Funeral Home and not Pocahontas Square.
32. Lot-to-Lot Drainage. Though the site appears to be adequately controlling post-development drainage, information does not appear to be consistent with the requirements for the protection of downstream property and maintained a safe mode of bypass. While the computations reflect that the elevations related to the successive storm events will be contained in the basin, proposed contours will be required to show that this will be the case. Please provide with the next submittal.
33. Drainage Map. Provide a drainage map showing proposed drainage sub areas with divides for all stormwater drainage pipes and channels, BMPs and special points of analyses. Include the size of each drainage area as well as applicable runoff coefficients, times of concentration and applicable offsite service area.
34. Channel Adequacy and Stormwater Management. Currently, the proposal is providing that the site gain water quality points through the use of a dry swale that will attenuate stormwater flows to some extent with the use of very small dewatering pipes. There are several issues that need to be considered when revising the plan information and need to be addressed prior to the resubmittal of the plan. They are itemized below:
 - 34a. The site will be treated as redevelopment and will, for all intents and purposes, not be required to obtain 10-water quality points.

- 34b. Information needs to show that a 10% improvement in water quality has been provided for the overall project site.
- 34c. State Minimum Standard #19 will be required to be addressed and will apply to the entire stormwater conveyance system downstream of the site. This includes all pipes, culverts, and stream channels to which stormwater runoff generated from these improvements will convey.
- 34d. Dewater pipes within a stormwater basin are typically not accepted if they are proposed to be smaller than 3" as they are extremely susceptible to clogging and will require constant maintenance. Due to the location of the site among current development, information will be required to be provided on the plan to show that should the system become clogged, stormwater will be diverted away from current developments.
- 34e. Head driven stormwater systems are not acceptable and will not be approved for use. As this site required the barrel pipe from the riser structure be installed 1' below the outlet invert, this system must be revised to provide positive slope.
35. Offsite Channel Adequacy. Submit adequacy analyses for all receiving drainage facilities, whether natural (swales, channels, etc.) or man-made (pipes, culverts, etc.). Adequacy computations are required to verify that natural channels are adequate for velocity and capacity using the 2-year design storm event and man-made channels are adequate for velocity based on the 2-year event and for capacity based on the 10-year event. Specifically, provide computations to show adequacy of the VDOT system during and following construction. Information must include drainage area maps, runoff coefficients, times of concentration, and other information relative to the final determination.
36. Freeboard. Provide a minimum of one (1) foot between the crest of the principal spillway and the crest of the emergency spillway or provide 2' to crest of pond embankment.
37. Riser Top. The top unit is currently proposed as a VDOT DI-1 top unit. As these grate units are extremely susceptible to clogging, this unit will need to be revised to a modified DI-7, relocated to the side of the proposed basin, and inclined as necessary to match the side slopes. Please refer to the information contained in Appendix C of the James City County Guidelines for Design and Construction of Stormwater Management BMP's and to Chapter 3.02 of the Virginia Stormwater Management Handbook.
38. Riser Base. Provide information as to whether the riser structure requires a concrete or extended concrete base to prevent the structure from floating (buoyancy) or sinking (subsidence). Include dimensions for the size, thickness, or extension of the base and required embedment depth of the riser into the base. Include all details and dimensions as required.
39. Pretreatment. Provide a width for the proposed gravel strip that is shown throughout the site periphery.
40. BMP details. Please reference the details throughout the plan set. Currently the details for the

proposed basin are on plan sheet D1.2, but the BMP location information is on plan sheet C5.1. Please make appropriate references in the next submittal.

41. Maintenance Plan. Provide a maintenance plan for the stormwater management/BMP facility. Section 23-10(4)(b) of the Chesapeake Bay Preservation Ordinance requires stormwater management plans to include a long-term schedule for inspection and maintenance of stormwater management/BMP facilities. The plan will be required to be specific for the type being proposed.
42. Pond WSEL's. Please revise the water surface elevations provided on plan sheet D1.2 to be horizontal. The way they are currently skewed is confusing and does not represent the true elevations relative to the embankment and gravel diaphragm.
43. HGL Computations. HGL information will be required for all pipe components of the site such as the pipe beneath the eastern entrance as this has the potential to create overflow onto Richmond Road. Additionally, the computations must reflect that the outfalls are submerged as the basin will be operating in this way.
44. Pipe. Show type and class of all pipe that is being proposed for use on the site. Reinforced concrete pipe storm drains and culverts, ductile iron, PVC, and HDPE must be specifically called out and all materials must be changed to concrete prior to leaving the site. Consider dead and live loads, cover depths during and following construction, and the potential for saturation which can lead to sink holes on site should infiltration into the pipes be permitted.
45. Inlet Depths. Provide all inverts at all inlets either proposed or existing throughout the site. Include slopes and lengths on all pipe sections with inverts provided at the inlet and outfall of all culverts.
46. Infiltration Practice Separations. Current guidelines of the JCC BMP manual require an infiltration practice to have a 100 foot separation horizontally from any water supply well. In addition, Minimum Standard & Spec. 3.10 of the Virginia Stormwater Management Handbook, requires a 100 foot separation between an infiltration practice and any down gradient building. Also infiltration facilities cannot cause water problems to downgrade properties. Therefore, a 100 foot separation from the adjacent facility to the south needs to be shown on the plan set.
47. Infiltration Basin/Dry Swale. The use of a coarse sand in the proposed basin is not acceptable and needs to be revised to an open graded stone with a minimum void ratio of 40% ($e = 0.4$). In addition, specifications and details contained in the plans need to show filter fabric on all sides of the material wherever it comes in contact with the soil to prevent migration and a loss of storage volume. In addition, information provided in the soils statement on plan sheet C2.1 indicates that infiltration will not be possible and that stormwater introduced into the soil will become perched. Should infiltration remain to be proposed on the site, more information will be required and the design will need to comply with the contents of the James City County Guidelines for Design and Construction of Stormwater Management BMP's and the Virginia Stormwater Management Handbook.

48. **Overflow Path.** Show the general anticipated overflow path should the storm drain system or BMP fail or become clogged or if the design storm is exceeded. The path should be a safe escape route that will not impact downstream property or structures.

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(b) Scientific and technical information for the purpose of this part may include, but is not limited to the following:

(1) An actual copy of the recorded plat map bearing the seal of the appropriate recordation official (e.g. County Clerk, or Recorder of Deeds) indicating the official recordation and proper citation (Deed or Plat Book Volume and Page Numbers), or an equivalent identification where annotation of the deed or plat book is not the practice.

(2) A topographical map showing (i) ground elevation contours in relation to the National Geodetic Vertical Datum (NVD) of 1929, (ii) the total area of the property in question, (iii) the location of the structure or structures located on the property in question, (iv) the elevation of the lowest adjacent grade to a structure or structures and (v) an indication of the curvilinear line which represents the area subject to inundation by a base flood. The curvilinear line should be based upon information provided by any appropriate authoritative source, such as a Federal Agency, the appropriate state agency (e.g. Department of Water Resources), a County Water Control District, a County or City Engineer, a Federal Emergency Management Agency Flood Insurance Study, or a determination by a Registered Professional Engineer;

(3) A copy of the FHBM or FIRM indicating the location of the property in question;

(4) A certification by a Registered Professional Engineer or Licensed Land Surveyor that the lowest grade adjacent to the structure is above the base flood elevation.

[41 FR 46991, Oct. 26, 1976. Redesignated at 44 FR 31177, May 31, 1979, as amended at 48 FR 44544 and 44553, Sept. 29, 1983; 49 FR 4751, Feb. 8, 1984; 50 FR 36028, Sept. 4, 1985; 51 FR 30317, Aug. 25, 1986; 53 FR 16280, May 6, 1988; 59 FR 53601, Oct. 25, 1994; 62 FR 55719, Oct. 27, 1997]

§ 70.4 Review by the Director.

The Director, after reviewing the scientific or technical information submitted under the provisions of § 70.3, shall notify the applicant in writing of his/her determination within 60 days after we receive the applicant's scientific or technical information that

we have compared either the ground elevations of an entire legally defined parcel of land or the elevation of the lowest adjacent grade to a structure with the elevation of the base flood and that:

(a) The property is within a designated A, AO, A1-30, AE, AH, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, or V Zone, and will state the basis of such determination; or

(b) The property should not be within a designated A, AO, A1-30, AE, AH, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, or V Zone and that we will modify the FHBM or FIRM accordingly; or

(c) The property is not within a designated A, AO, A1-30, AE, AH, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, or V Zone as shown on the FHBM or FIRM and no modification of the FHBM or FIRM is necessary; or

(d) We need an additional 60 days to make a determination.

[66 FR 33900, June 26, 2001]

§ 70.5 Letter of Map Amendment.

Upon determining from available scientific or technical information that a FHBM or a FIRM requires modification under the provisions of § 70.4(b), the Administrator shall issue a Letter of Map Amendment which shall state:

(a) The name of the Community to which the map to be amended was issued;

(b) The number of the map;

(c) The identification of the property to be excluded from a designated A, AO, A1-30, AE, AH, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, or V Zone.

[41 FR 46991, Oct. 26, 1976. Redesignated at 44 FR 31177, May 31, 1979, as amended at 48 FR 44553, Sept. 29, 1983; 49 FR 4751, Feb. 8, 1984; 50 FR 36028, Sept. 4, 1985; 59 FR 53601, Oct. 25, 1994; 62 FR 55719, Oct. 27, 1997]

§ 70.6 Distribution of Letter of Map Amendment.

(a) A copy of the Letter of Map Amendment shall be sent to the applicant who submitted scientific or technical data to the Administrator.

(b) A copy of the Letter of Map Amendment shall be sent to the local